EFFECT OF SCHOOL ENVIRONMENT ON STUDENT ACADEMIC ACHIEVEMENT IN KAKAMEGA COUNTY, KENYA

Electine Ayiela Kisiang'ani

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE CONFIRMENT OF THE DEGREE OF DOCTOR OF PHILOSOPHY IN EDUCATION PLANNING AND MANAGEMENT OF MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY

SEPTEMBER, 2024

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Sign ..... Date……..

Prof. Lydia Wamocha

Department of Educational Planning and management

Masinde Muliro University of Science and Technology

Sign ..... Date……..

Dr. Buhere Pamela

Department of Educational Planning and Management

Masinde Muliro University of Science & Technology

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DEDICATION

I dedicate this thesis to dear family for allowing me time away and resources that would otherwise have been dedicated to other family projects.

ACKNOWLEDGEMENT

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ABSTRACT

The school environment has a substantial impact on the quality of education. A well-resourced, supportive, and positive environment can result in enhanced student outcomes, both academically and personally. This study sought to investigate the effect of school environment on student academic achievement in Kakamega County, Kenya. The specific objectives of this study were to determine the effect of institutional resources on student academic achievement, examine the effect of student welfare on student academic achievement and to establish the effect of ICT integration in school programmes on student academic achievement in Kakamega County, Kenya. The research employed the production function theory. The study was conducted using a correlational research design. This study was conducted in Kakamega County, which has thirteen sub-counties. The study focused on 423 secondary schools, which included 2 national schools, 2 national special schools, 28 extra county schools, 45 county schools, and 346 subcounty schools. The target population includes 423 administrators, 5514 teachers, and 182,893 learners, for a total of 188,830 respondents in Kakamega County secondary schools. Purposive sampling was used to choose special and national schools. The Yamane formula was used to determine a sample of 440 respondents. The study gathered data through interviews and questionnaires. A pilot study was conducted in Bungoma County to test the instruments' validity and reliability. Cronbach's alpha was employed as a statistical tool to assess reliability. The study analyzed data using the T-test, one-way ANOVA, Pearson Correlation, Linear Regression, and Chi-square. The results indicated that most of the institutions have resources that included classrooms, laboratories, libraries and others. The results further revealed that most of the schools have adequate number of teachers while a sizeable were still struggling with fewer teachers. A notable number of schools have incorporated ICTs in the learning operations. On the study's hypothesis, $H_0$1 was rejected at p=0.003, $H_0$2 was rejected at p=0.00, Ho3 was rejected at p=0.000 while $H_0$4 was rejected at p=0.000. The study recommends that given the positive impact of institutional resources on student achievement, there is a clear rationale for increasing investment in educational resources. This could include better funding for school infrastructure, learning materials, and teacher training programs. To improve academic performance, educational policies and interventions should adopt a comprehensive strategy that focuses on boosting student self-efficacy and maximizing teacher-student ratios. Educational institutions should invest in robust welfare programs that address the diverse needs of students. This includes nutritional support, mental health services, financial assistance, and co-curricular activities, which collectively contribute to a conducive learning environment. Based on the findings in objective four, the study recommends that education policymakers in Kakamega County and beyond should prioritize the integration of ICT in the curriculum.

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LIST OF ABBREVIATIONS

CFS	Child Friendly School
KCSE	Kenya Certificate of Secondary Examination
KNEC	Kenya National Examinations Council
LSE	Learner School Environment
SDG	Sustainable Development Goals
UN	United Nations
UNICEF	United Nations Children's Fund
MoH	Ministry of Education
ICT	Information Communication Technology
CFS	Child-Friendly School
KCSE	Kenya Certificate of Secondary Education
ECDE	Early childhood development and education
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women

CHAPTER ONE

1.0 Background to the Study

Government involvement in education of its populace is an indisputably desirable initiative towards realization of economic growth and overall national development. Education enables individuals to acquire knowledge, skills, abilities and competencies which they mix with training and experience to become more productive. Collectively an educated population contributes to increased national productivity, prosperity and overall national development. This variable justifies the huge investments that governments all over the world make in education (Maiyo & Bawane, 2016).

In the year 2015, the United Nations (UN) member states adopted the 2030 agenda for sustainable development whose shared vision is a peaceful poverty free world. At the core of the agenda are 17 Sustainable Development Goals (SDGS) and goal number four envisages the availability and provision of inclusive and equitable quality education and promotion of lifelong education for all (UN 2015). The concept of Learner Friendly Schools environment is enshrined in the said fourth SDG.

According to UNICEF, the LFS paradigm promotes schools to work for the benefit of their students, with instructors providing a safe, healthy, and protective environment. The strategy promotes the availability of suitable resources that enhance the physical, emotional, and social conditions for learning. In addition, the learner's rights and a learning environment that respects their identity, interests, and needs are highlighted (UNICEF 2012).

In 2015, the project Child-Friendly School (CFS) was launched in Indonesia in an effort to improve an educational system that focuses on learner-centered activities rather than teacher-centered activities and to eliminate bullying in schools. Hence, LFS is also one of the Indonesian government's efforts to realize the rights of learners (Kagawa, *et al* 2013). The Jordanian government initiated LFS projects that have led in young bonding, less bullying in schools, and general community peace (Generations for Peace.org 2014). This allows students to remain in school longer and concentrate more on academics, while supporting learning, safety, and socially acceptable behaviour. There is a heavy emphasis on academics and assistance for students in obtaining high standards (Dwyer, *et. al.;*1999).

In all facets of its Learner-Friendly School curriculum, the Philippines have achieved considerable strides. According to studies, activities such as instructor support, the use of interactive teaching methods, student participation in class, and group work enhance examination results (UNICEF, 2009).

In Nigeria, the adoption of LFS has fostered a passion for education and fostered harmony between the school community and greater society (Olaleye, 2009). The learning atmosphere at school is important for academic knowledge. This environment consists not only of physical features, but also of the norms, expectations of the overall system, and the pattern of grouping for teaching and learning, which makes the classroom a crucial location for the social and academic growth of the students (Pierce 2002).

Nevertheless, the LFS system has not been implemented adequately in Liberia. Many schools face obstacles that can be described as learner-hostile. Inadequate learning

facilities are the norm, and students sometimes take classes under trees. The few available classrooms are frequently overcrowded, and there is a chronic scarcity of skilled teachers. Because there are insufficient chairs and desks, students must sit on the floor. Aside from the aforementioned, there is limited psychosocial assistance, and students experience emotional stress. Their concerns include poverty in their life and bullying by teachers (Gbollie & Keamu 2017). This negatively affects student academic achievement in national assessments.

In Uganda, both teachers and administrators have received systematic professional development in learner-centered pedagogies, how to establish a learner-friendly environment, psychosocial education, and constructive disciplinary measures (UNICEF 2012). These activities have greater benefits for students and youth. The benefits include promoting increased levels of youth dedication and involvement in education, which leads to a longer time spent in school and ultimately higher test results.

In Kenya, the 2010 Constitution's bill of rights enshrines the LFS principles (Constitution of Kenya, 2010). The Basic Education Act was passed as a policy framework for prosperity in education sector. The state has also established a number of laws and developed a number of policies to promote the learner-friendly school idea. Following the guiding principles, basic education is free and mandatory for all learners of school age (RoK 2013). Hence, additional resources have been allocated to the education sector.

The law's nondiscrimination policy ensures equality and freedom from discrimination (RoK, 2010) and obligates the State to implement affirmative action initiatives to ensure that minorities and marginalized groups receive particular chances in education. The

Constitution of 2010 ensures that every student has the right to be safeguarded from abuse, neglect, detrimental cultural practices, all forms of violence, cruel treatment and punishment, and hazardous or exploitative labor (RoK 2010). The law also protects LFS by granting students the right to a safe and violence-free environment (MoE, 2008 and MoE, 2019).

However, implementation presents numerous obstacles. There is congestion in tuition and boarding facilities at numerous schools. The tiny size of classrooms contributes to decreased concentration during academic education. In Kenya's public schools, a poor education is typically provided, regardless of exam achievement (Chepkonga, 2017).

Furthermore, some schools lack basic facilities such as ramps for learners with disabilities, lower door handles, or any environmental adaptation for special needs learners (Ngigi et al, 2015). Also there is lack of access to resources, including technology. There is much more action lacking in ensuring a 100% LFS environment in Kenyan schools.

Failure to satisfactorily implement LFS can partly be blamed on poor academic achievement by students in Kakamega County. According to statistics, in the year 2017 only 2081(7.3%) candidates out of 28,353 scored C+ and above. In 2018 there were 3,961(12%) out of 3,1117. 1n 2019 there were 2343(7%) out of 33299, and in 2020 only 6749(18.5%) managed mean grade C+ and above (RoK 2021). The trend shows that indeed students do not achieve high scores in Kakamega County. Partly, this can be attributed to, a not so well implemented CFS.

1.2 Statement of the Problem

The Government of Kenya is committed to the implementation of the Learner Friendly School environment model. This is evidenced by adoption of several international conventions and declarations coupled with robust reforms in education. For instance, the Government of Kenya is committed to achieving the Education for All (EFA) goals which are geared towards allowing for better participation and achievement of the education sector. This is evidenced through the 100% Transition Policy in Kenya which requires all Kenyan parents and parents whose children reside in the country to enroll their children in elementary and secondary school. The movement toward achieving 100 percent transition from primary to secondary school is but one step toward achieving universal primary education. The aim is to ensure that all Kenyan learners have access to equitable and quality education, yet a fast trigger for an unfriendly environment. One way of measuring and testing the quality of an education system is by the administration of a standardized national examination. In the case of Kenya, the examination is Kenya Certificate of Secondary Education(KCSE). Good grades obtained by students who sit KCSE examinations should be the attestation to high quality education, which is presumed to be the right of every Kenyan learner.

Regrettably, statistics show that a very small percentage of students who attempt KCSE Exams obtain mean score C+ and above, which are presumed to be good grades. For example, in the year 2017, only 15% of candidates scored a mean score of C+ and above. In 2017 the percentage was 11%, while in 2018 and 2019 the percentage was 13% and 17% respectively. This is replicated in Kakamega County where 7.3% of the candidates

scored mean grade C+ and above in the year 2017. In the year 2018 the percentage was 12%, in 2019 it was 7% while in 2020 it was 18.5% (KNBS 2021).

Even though there are progressive marginal increments of high-quality grades, students still perform poorly. The question could be posed; to what extent does presence or absence of a satisfactory school environment contribute to poor academic achievement? The school environment fundamentally influences the academic achievements of students. Elements such as physical infrastructure, accessibility of educational materials, teacher-student engagements, safety measures, and the general ambiance of a school can greatly influence a student's capacity to acquire knowledge efficiently. Nevertheless, despite the general recognition of the significance of these aspects, numerous educational institutions continue to encounter obstacles that impede the creation of ideal learning environments. In many educational settings, particularly in schools that lack sufficient resources or are overcrowded, students may encounter an environment that is not optimized for learning. Consequently, there are discrepancies in academic performance among students attending various schools or even within the same school locality. Furthermore, the correlation between these environmental elements and academic achievement has not been meticulously measured or comprehended in all situations, resulting in deficiencies in understanding of how particular school environmental circumstances impact student performance.

Studies have shown that some of the factors which contribute to non-satisfactory academic achievement include; low parent education, low parent income, non-conducive school environment and inadequate learning materials. Empirical study is necessary to investigate the specific dimensions of the school environment, such as physical infrastructure, emotional

and social support systems, and resource availability that have the greatest effect on students' success. A lack of thorough comprehension poses challenges for educators, policymakers, and stakeholders in developing interventions and efficiently allocating resources to enhance academic results. This study therefore sought to establish the extent to which learner school environment contributes to academic achievement in Kakamega County, Kenya.

1.3 Purpose of the Study

The purpose of this study was to investigate the effect of learner school environment on student academic achievement in Kakamega County, Kenya.

1.4. Objectives of the Study

The specific objectives of this study were to: -

i. Determine the effect of institutional resources on student academic achievement in Kakamega County, Kenya
ii. Determine the effect of teacher – students' ratio on student academic achievement in Kakamega County, Kenya
iii. Examine the effect of student welfare on student academic achievement in Kakamega County, Kenya
iv. Establish the effect of ICT integration in school programmes on student academic achievement in Kakamega County, Kenya.

1.5 Research Hypotheses

The objectives were translated into respective null hypotheses.

The objectives were consequently translated into respective null hypotheses as follows:

$H_0$1: Institutional resources has no statistically significant effect on student academic achievement in Kakamega County, Kenya

H_o2: Teacher – student ratio has no statistically significant effect on student academic achievement in Kakamega County Kenya

Ho3: Student welfare has no statistically significant effect on student academic achievements in Kakamega County, Kenya

$H_0$4: ICT integration in curriculum implementation has no statistically significant effect on student academic achievement in Kakamega County, Kenya

1.6 Justification of the Study

Academic accomplishment is an essential subject for all stakeholders in the education industry. Thus, numerous researches have been done to identify the factors that contribute to the academic accomplishment of pupils. Yet, there are insufficient materials explaining if school environment is one of the elements leading to the improvement of students' academic achievement (Nkrumah, 2017). In addition, even though much research work has gone into learner school environments, there are few that have attempted to establish the link between learner school environments and student academic achievement. Moreover, the many approaches, research design, methodology, data analysis techniques, geographical, political, social and economic environments differ from the current study.

1.7 Significance of the study

The introduction of LFS is a relatively new phenomenon. However, it should not be studied in isolation from the academic achievement of students in national examinations

because obviously the environment created by LFS is likely to impact on how students perform. This study, hopes to provide material and data which may help to explain the linkage between learner school environment and student academic achievement in KCSE Examinations. This implies that the academic achievement of learners and a LFS paradigm must be critically examined to ascertain the extent of the impact. That is what the proposed study aims to do. Results and findings will help all stakeholders including policy makers, administrators, parents and students to appreciate the contribution of LFS to improved academic achievement.

The analysis will also reveal new gaps that will raise fresh questions for future research on learner-friendly school environments and academic attainment. Again, the study's findings will serve as the foundation for future research.

1.8 Scope and Limitations of the Study

This part of the study describes the scope and limitation of the study.

1.8.1 Scope of the study

The study narrowed to learner school environment on student academic achievement in Kakamega County which has 423 public secondary schools spread out in 13 sub counties. The county has 2 national schools, 2 national special schools, 28 extra county schools, 45 county schools, and 346 sub-county schools.

The study targeted Principals, teachers and students from all the secondary schools in Kakamega County.

1.8.2 Limitations of the Study

During the study, a number of limitations were experienced. Firstly, sampling for respondents, especially students got complicated and the study involved more than one sampling method. For instrumentation, there was a slow return rate of questionnaires and the return rate was not 100%. Secondly, the study depended largely on data from respondents' perceptions, views and opinions. To mitigate this limitation, similar items in the research instruments were administered to form four students, teachers, principals of secondary schools and the sub county quality and standards officers so as to establish credibility of the responses given. To eliminate bias among the respondents, the researcher ensured that the respondents gave their information independently and in confidentiality.

1.9 Assumptions of the Study

The first assumption was that the respondents completed the questionnaires truthfully ensuring confidentiality and independence of respondents during administration of the research instruments. The second assumption is that correlation research design was the best research design for this study. This design allows the investigator to evaluate the degree of relationship between two or more variables (Orodho, 2012).

1.10. Theoretical Framework

The study based its approach on the production function theory. The idea behind the Education Production Function (EPF) is that there is a process in education, or that there is a causal link between educational resources and student academic achievement (Monk, 1989). Results interpretation often requires a unique understanding of the term "production function" (Hanushek, 1979). The technical link between inputs and outputs is represented

by a production function, which expresses the maximum output for any possible combination of inputs (Krugman, 2009).

The Education Production Function (EPF) is a theoretical framework employed to comprehend the manner in which different factors in the educational process (such as the competencies of teachers, the state of school infrastructure, the level of parental engagement, and the impact of peers) result in outcomes, commonly assessed as the academic performance of students. The idea suggests that the production of education, as measured by student learning outcomes, is determined by the inputs introduced into the educational process from an economic perspective.

The idea posits that schools operate as a production system, wherein the quality and quantity of educational results are determined by inputs such as teacher quality, student characteristics, and school environmental factors. The EPF facilitates the identification of the correlation between these inputs and results, therefore offering a structured approach to comprehend the impact of different elements on student achievement.

According to the EPF, one important factor that may have an impact on student achievement in the context of school environments is the standard of the social and physical surroundings in which children learn. The hypothesis elucidates the manner in which several elements of the educational setting, when coupled with additional factors such as the caliber of teachers and the level of student effort, generate diverse degrees of academic achievement. Student achievement is influenced by several aspects of the school environment, which include: The quality of physical infrastructure, including classroom space, lighting, climate management, and technology access, can significantly impact

students' ability to absorb and integrate information. Lack of adequate infrastructure can impede learning and diminish concentration (Earthman, 2004). School Safety and Climate: An Analysis Research has shown that a school environment that is safe and supportive, fostering emotional security among children, can contribute to improved academic achievements. In contrast, being exposed to violence or bullying in school has a detrimental impact on academic achievement (Astor, Guerra, & Van Acker, 2010). Accessibility of educational materials: Efficient access to textbooks, laboratory equipment, and instructional materials is crucial for facilitating the processes of teaching and learning (Glewwe, Kremer, & Moulin, 2009). Relationships between teachers and students: Exemplary teacher-student connections, marked by support and mutual regard, establish an optimal learning atmosphere that amplifies academic success (Pianta, Hamre, & Allen, 2012).

The study conducted by Hanushek (1997) highlighted the significance of school inputs, namely the environment, in influencing variations in academic performance, even after accounting for family background and individual student traits. The study conducted by Uline and Tschannen-Moran (2008) provided evidence that the quality of school amenities has a substantial influence on students' opinion of their learning environment, thereby influencing their academic achievements. Research conducted by Woolfolk Hoy, Davis, and Pape (2006) revealed a correlation between the emotional and social dimensions of the school environment, including the level of support kids receive from teachers, and enhanced academic achievement, particularly among students from underprivileged families.

The educational environment exerts a considerable influence on student achievement

through several complex mechanisms: Cognitive Pathways: An intentionally organized and well-equipped educational setting immediately boosts students' capacity to interact with the curriculum, resulting in better cognitive achievements. Positive social interactions and a feeling of safety and belonging positively influence student motivation and engagement, which are important factors in determining academic achievement (Eccles & Roeser, 2011). Public health and overall wellness: An immaculate, secure, and nurturing school atmosphere enhances both physical and mental well-being, therefore facilitating kids' consistent attendance and concentration on educational pursuits (Basch, 2011). The theory of the Education Production Function offers a useful perspective to analyze the influence of the school environment on the academic performance of students. Viewing the school environment as a crucial factor in the educational production process, the theory emphasizes the need of allocating resources to enhance the quality of school facilities, resources, and social support systems in order to promote academic achievement.

Production function theory, which posits that people's knowledge and abilities, which they gain via education and experience, generate wealth for society, is related to the factors under investigation here. Basing on the discussion above, a conceptual framework was developed for further understanding of the study variables as shown below in figure 1.11.

1.11 Conceptual Framework

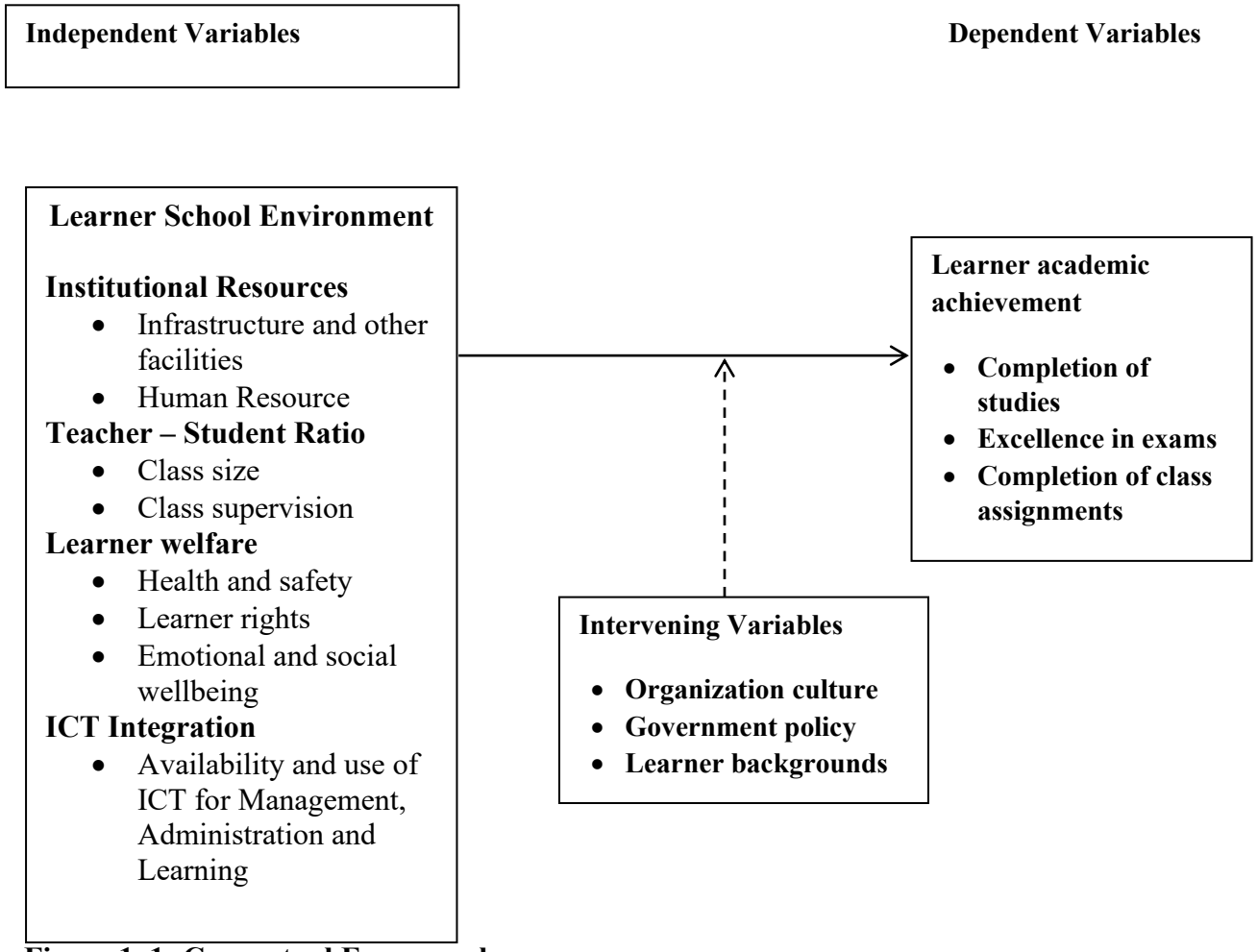


Figure 1. 1: Conceptual Framework

(Source: Researcher)

Figure 1.1 shows the relationship between the independent and dependent variables. The constructs for the independent variables are institutional, resources, teacher-student ratio, learner welfare and ICT integration. The facets for institutional resources comprise human resources, financial resources, teaching- learning materials and infrastructural facilities, Student – teacher ratio will comprise class size, class supervision while those for student welfare includes psychosocial support, pastoral care, coaching and mentorship.

Dimensions for ICT integration are availability and use of ICT for learning and administration.

The intervening variables consist of organizational culture, government policy and learner background. On the other hand, the dependent variable is learner academic achievement. Learner academic achievement can be influenced by factors such as institutional resources, student welfare, ICT integration in student affairs while in school. If secondary schools had sufficient resources, it is likely that student academic achievement would improve. On the other hand, insufficient resources in schools can negatively impact on student academic achievement. This is true for all the other three factors captured in the framework. The intervening variables have indirect influence on both learner school environments at school as well as student academic achievement.

1.12. Operational Definition of Key Terms

Academic achievement	refers to the extent to which a student, teacher, or institution has met their short or long-term educational goals. It typically involves the attainment of certain levels of performance in school or college, measured through a variety of assessments such as grades, test scores, completion of coursework, and degrees. It can encompass the acquisition of knowledge, skills, and competencies in various subjects and is often used as a key indicator of

	educational success and progress.
ICT integration	refers to the effective incorporation of Information and Communication Technology (ICT) into the educational process to enhance teaching and learning. This involves the use of various digital tools, resources, and technologies to support, enrich, and transform education practices, making learning more engaging, interactive, and accessible
Institutional resources	Human and capital requirements including teachers, infrastructure and other requirements for effective running of schools
Learner	is an individual who actively engages in the process of acquiring knowledge, skills, attitudes, or values through study, instruction, or experience. Learners can be of any age and participate in various educational contexts, such as formal schooling, informal learning environments, online courses, or self-directed study.
Learner achievement	refers to the measurable outcomes and accomplishments that students attain as a result of their educational experiences. It encompasses the knowledge, skills, attitudes, and values that students acquire through instruction, study, and practice. Learner achievement is typically assessed through various means such as

	standardized tests, classroom assessments, projects, and other performance indicators.
Learner school environment	refers to the physical, social, and academic conditions within a school that influence a student's learning experiences and outcomes. This environment encompasses various elements, including the school's infrastructure, classroom setting, peer interactions, teacher-student relationships, school culture, and available resources. A positive and supportive school environment is crucial for promoting student engagement, well-being, and academic success.
Psychosocial support	refers to the assistance given to individuals to address their psychological and social needs. This type of support helps individuals cope with and overcome challenges arising from stress, trauma, or adversity, promoting overall mental health and well-being. It encompasses a range of interventions aimed at improving emotional, cognitive, and social functioning, enabling individuals to lead healthier and more fulfilling lives.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

For this study the researcher identified, compile, evaluate and synthesize literature related to the research topic. Gaps in the literature were also reviewed and highlighted (APU, 2015).

2.1 The concept of Learner school environment

Considerable study in educational studies has examined the correlation between the school environment and student academic performance. The school environment comprises the physical, social, and psychological elements of the educational setting that have a direct or indirect impact on students' learning experiences and results. Increasingly, scholarly research highlights the crucial impact of the learning environment on student achievement in many settings.

The physical infrastructure of a school, encompassing the sufficiency of buildings, classrooms, and instructional materials, has been shown to have a substantial impact on student academic performance. Earthman (2004) highlighted that inadequately maintained school facilities have a detrimental impact on student learning. Concerns such as insufficient lighting, noise pollution, and overcrowding are identified as obstacles to successful learning. The study conducted by Uline and Tschannen-Moran (2008) revealed that properly maintained school buildings contribute to a favorable environment that improves student involvement and academic achievement.

Empirical evidence indicates that inadequate facilities have a disproportionate impact on underprivileged students, therefore exacerbating the disparity in academic performance. According to Cash (1993), learners attending schools with inadequate physical conditions consistently achieved poorer scores on standardized tests compared to their counterparts in schools with superior conditions, even when accounting for socioeconomic variables.

Schools climate encompasses the overall quality and nature of the school environment, which includes interpersonal dynamics, safety measures, and organizational procedures. An optimal school atmosphere fosters academic achievement by establishing a setting in which students experience a sense of security, get comprehensive support, and are driven to acquire knowledge. Astor, Guerra, and Van Acker (2010) emphasized the significance of school safety, pointing out that pupils in schools without safety measures are more prone to encountering stress and anxiety, consequences that might hinder cognitive abilities and diminish academic performance.

Additionally, Cohen, McCabe, Michelli, and Pickeral (2009) conducted a study that revealed that academic performance and student well-being were enhanced in schools that maintained a positive climate, which was defined by fair disciplinary policies and mutual respect between students and instructors. The authors underscored the essential role of social-emotional support in schools in establishing an optimal learning atmosphere, particularly for students who are at risk.

A strong correlation exists between positive teacher-student interactions and improved academic results. According to Pianta, Hamre, and Allen (2012), educators who cultivate loving, courteous, and supportive connections with their students contribute to the

improvement of student engagement and motivation. According to their argument, students who perceive themselves as being appreciated and comprehended by their teachers are more inclined to engage in the learning process and achieve higher academic proficiency.

Analysis conducted by Wentzel (1998) further demonstrated the essential role of teacher support in fostering both academic and social skills. The research revealed that students who have a positive perception of their teachers as compassionate and encouraging are more likely to have increased academic drive, resulting in subsequent enhancements in their performance.

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The availability of educational resources, including textbooks, technology, and instructional materials, significantly influences student academic success. The study

conducted by Glewwe, Kremer, and Moulin (2009) investigated the effects of supplying textbooks in Kenyan schools. The findings revealed that the availability of learning materials had a substantial positive effect on students' test scores. The research underscored the significance of resource availability in insufficiently funded schools, where the lack of fundamental learning tools can greatly impede educational achievements. In addition, a study conducted by Beckers, Van der Voordt, and Dewulf (2016) revealed that the integration of technology, including interactive whiteboards and digital learning tools, in the classroom setting is associated with increased student involvement and improved learning results. In contemporary educational environments, the incorporation of technology has achieved growing significance by providing students with interactive and individualized learning experiences.

The educational atmosphere is inherently intertwined with the social and cultural milieu in which it functions. Siraj-Blatchford (2010) emphasised that the wider social context, encompassing individual family history and community support, interacts with the educational setting to impact student achievements. Students hailing from economically disadvantaged households frequently encounter supplementary obstacles, such as restricted availability of educational materials inside their households, which can intensify the consequences of an imbalanced school environment.
An investigation conducted by Lee and Burkam (2003) revealed that educational settings in economically disadvantaged regions often exhibit less conducive conditions for academic success, mostly attributed to insufficient resources, overcrowding, and a scarcity of teachers. These elements collectively contribute to a decline in academic performance, indicating that initiatives aimed at enhancing school settings in underprivileged

communities are essential for reducing the achievement disparity. The psychosocial milieu of a school include factors such as interpersonal connections among peers, provision of emotional stability, and the feeling of inclusion experienced by pupils. According to Eccles and Roeser (2011), schools that facilitate a nurturing psychosocial atmosphere contribute to the enhancement of students' emotional well-being, thereby leading to an improvement in their academic achievements. Their contention was that a school culture that fosters inclusiveness and respect enables pupils to have a sense of security and worth, therefore establishing the ideal circumstances for active learning. Wang and Eccles (2013) investigated the impact of school connectedness, which refers to students' feeling of belonging and attachment to their school. Their findings revealed a significant association between elevated levels of school connectedness and academic achievement. Students who experience a sense of connection with their classmates and instructors are more inclined to actively participate in the learning process and exhibit academic perseverance when confronted with difficulties.

Cheruto et al. (2021) did research titled "Implementation of learner-friendly school programs in schools, as perceived by teachers and students from public primary schools in Chesumei Sub-County, Kenya." The researchers discovered that when schools adopted learner-friendly strategies like fairness and equality, community links and collaborations, and safe and protective school environments, both teachers and students gave them high marks. Health issues, it was suggested, should also engage the Ministry of Public Works.

2.2 Student academic achievement

Kellaghan and Greaney (2019) analyzed the function of testing in various educational systems. Examinations were found to have a significant effect on the distribution of scarce educational and economic opportunities among students from different socioeconomic backgrounds. While they acknowledged the many school and non-school elements that contribute to student accomplishment, they condemned systems that use test results as a tool for keeping schools accountable for their students' academic achievement. Further complicating matters is the fact that students of different sexes, nationalities, socioeconomic backgrounds, educational experiences, and linguistic backgrounds have different rates of success on standardized tests.

Abitew (2019) looked at the influences second-cycle Ethiopian female students in Bahir Dar had on their academic achievement. The primary objective of this research was to examine what influences second-cycle primary school girls in Bahir Dar City Administration to succeed academically. The study method used was a descriptive survey. A simple random sampling method was used to pick four public elementary schools in their second cycle. The participants in the study included students, faculty, principals, supervisors, and officials from the Education Department of the Bahir Dar City Government. The necessary information was gathered via questionnaire, interview, FGD, and observation. Descriptive statistics, such as frequency and percentage distributions, were used to make sense of the numerical data. The qualitative data was also evaluated thematically to back up the quantitative findings. The survey found that female pupils generally performed worse academically than their male counterparts. Female students' academic success was found to be largely determined by factors such as their parents'

educational background, the quality of their schools, their families' financial situations, the amount of time they spent on housework, their peers, and teachers, and the general public's perspective on the value of girls' education. In order to improve female students' academic achievement, the study suggests involving a wide range of stakeholders. This is because the issues affecting their academic achievement stem from a variety of sources.

Enu et al. (2015) discovered that a lack of sufficient teaching and learning resources, as well as a reliance on the lecture method of instruction, are among the factors that have a negative impact on students' academic achievement. The study also found that the motivation of both teachers and students plays a role in students' success in mathematics. Teachers of mathematics are urged by the findings of this study, which took into account both students' individual and institutional contexts, to employ interactive methods of instruction that have been shown to significantly enhance their students' holistic comprehension of mathematical ideas. Stakeholders, likewise, have a responsibility to supply universities with sufficient materials for classroom instruction and student development.

Quality instruction is directly correlated with access to, usage of, and maintenance of effective teaching and learning resources. Adedjei and Owoeye (2002) showed that when students used textbooks that were recommended to them, their grades improved significantly. In their extensive evaluation of activity-based learning in mathematics from kindergarten through eighth grade, Douglass and Kristin (2000) found that the use of manipulative materials led to higher accomplishment than did the use of traditional methods. They also point out that students' academic achievement and attitudes improve with consistent use of concert teaching materials by teachers who are competent in their

utilization. Opare (1999) echoed this sentiment, stating that providing students with enough human and material resources has a significant impact on their academic success. According to Ankomah (1998), a school's ability to effectively teach and learn was dependent on the quality of its human and material resources.

Students' socioeconomic status is a factor that affects how well they do on standardized tests. Parents' income, education level, and occupation are the most prevalent indicators of a child's socioeconomic standing (Jeynes, 2002). It should come as no surprise, then, that socioeconomic status is a central variable in studies of how well students do on standardized tests (Graetz, 1995). According to Considene and Zappala (2002), children of high-achieving parents are more likely to follow in their footsteps when it comes to scholastic and occupational success.

Educators all throughout the world help pupils reach their full potential in the classroom. Hanushek (1997) estimated that the gap between having an excellent teacher and having a terrible teacher in terms of annual achievement development exceeded one grade level equivalent. Similarly, the level of instructor motivation is a major factor in determining how well students do on standardized tests. When a teacher is truly invested in their work, they give it their all in the classroom (Farrant, 1968). Lockheed (1991) found that when teachers aren't invested in their students' success, it shows in their students' attendance and behavior, and ultimately in their students' academic achievement on standardized tests.

It has also been established through studies that students' individual characteristics can have an impact on how well they do on standardized tests. Students' perspectives, motivation, and confidence in their own abilities all play a role. For instance, how students

feel about mathematics affects how much time and effort they devote to learning and perfecting mathematical abilities and concepts. The National Research Council (2000), as cited in Akey (2006), found that students' perceptions of their own abilities and expectations for academic success are strongly linked to their levels of involvement and emotional conditions, which can either promote or hinder their academic development. So, a student's outlook determines how much work he or she will put into mastering a subject. Benson (1999) suggested that it was crucial for educators to have optimistic perspectives on education.

Karemera (2003) discovered that student academic achievement is highly connected with how happy they were with their classroom and school overall. Libraries, computer labs, and other institutional infrastructure also fell under this category. High school achievement and academic achievement were found to have a favorable effect on his findings, whereas a student's family's socioeconomic status was not statistically associated with his findings. Robert & Sampson (2011) found that the more knowledgeable the members of the educational board are, the more beneficial their influence is for vital student learning in schools. It has been found that the CGP is positively correlated with students' levels of participation in class. A study found that when students put out the effort and make effective use of the resources supplied to them by the institution, there is a favorable correlation between the student's learning style and the student's overall academic achievement (Norhidayah Ali, et. al., 2009) Young (1999) argued that library use and parental education level were linked to students' academic success. Students' academic outcomes improved as a result of library use. Students' success in school is positively

correlated with both their dads' educational attainment and their own grade level in school (Kirmani & Siddiquah, 2008).

Exam Results as an Indicator of Educational Effectiveness in Kenya Teachers and other educational stakeholders in Kenya place a premium on students' test scores (Mackatiani, 2017). Examination success is seen as a measure of a school's effectiveness by the Ministry of Education and the broader political class. The Kenya National Examinations Council (KNEC) was set up by the Kenyan government to be in charge of testing. The Kentucky Department of Education operates KNEC as a state-owned business. The KNEC Act (GOK,2012) states that among the Council's responsibilities are the establishment and upkeep of examination standards, the administration of public academic, technical, and other national examinations within Kenya at the primary and secondary school levels, and the issuance of certificates and diplomas to successful exam takers. Hence, the Kenya National Examinations Council is in charge of all elementary, secondary, and technical examinations in the country. Peter Hill (2010), however, pointed out that governments employ examinations as gatekeepers despite this. This suggests that entrance exams are required for more elite educational institutions. The outcomes of learning are measured by examination scores. The findings can also be used as a check on the product's quality. This, however, is a sign that policy and philosophical voids in the educational system continue. KNEC is responsible for administering all tests except those taken at universities. Kenya's 8-4-4 system promotes nine years of free, mandatory schooling. After eight years of school, students take the Kenya Certificate of Primary Education (KCPE) exams. The government is also covering the cost of applying to take the tests. Students' eligibility for promotion to the next grade level is determined by the results of this test (secondary). The

student's score on the exam also determines the type of secondary institution they are eligible to attend. National, extra-county, county, and sub-county classifications of schools have been established. It is generally agreed that national schools are superior to sub-county secondary schools. The facilities and equipment at these institutions are being taken into account.

Wamalwa et al. (2019) looked at the dismal showing of public primary schools in Kakamega North Sub-County, Kenya, on national standardized tests. They have come to the conclusion that elementary schooling is crucial in Kenya. Every student in Kenya has the right to a free and mandatory elementary education, as stated in Article 53. (1) (b) of the Constitution of Kenya (2010). Hence, passing the national exams that signify promotion from elementary to secondary school is highly valued. Exam scores continue to play a vital role in selecting not just which students advance to the next grade but also which schools they will attend. Based on their findings, the researchers advocated for a cross-sectoral strategy to improve elementary education in the sub-county.

2.3 Teacher – student ratio on students' academic achievement

Teachers are an essential component of the educational system, playing a crucial and influential role in the overall quality of education and the effectiveness of student learning. There exists a prevailing public perception that establishes a correlation between students' academic achievement and their engagement in studying and completing homework assignments. However, the academic achievement of students, which encompasses their success in course grades and general tests, can be influenced by a multitude of circumstances. The efficacy of teachers in delivering instruction to their students is a

crucial aspect that is widely regarded as the most significant school-related determinant in enhancing students' academic achievement (Miles, 2011). Hence, it is imperative to scrutinize the variables that influence the quality of teachers or their effectiveness, as well as the subsequent impact of these elements on students' academic achievement.

Numerous scholars have conducted studies to examine the efficacy of instructors and their impact on the provision of high-quality education. The aforementioned studies have placed emphasis on the significance of teacher-student contact in relation to the quality of education and academic achievement (Graue, Rauscher & Sherfinski, 2009). According to Hamre et al. (2007) and La Paro et al. (2004), the examination of social and academic interaction between teachers and students is considered to be a significant factor in determining academic achievement. The dynamics of the teacher-student relationship are commonly understood to be influenced by the individual attributes of both educators and learners. Nevertheless, it is important to consider additional factors that can influence this relationship, such as the student-to-teacher ratio inside a given educational institution.

The correlation between the student-to-teacher ratio and class size is commonly acknowledged, with the prevailing belief that lower class sizes contribute to enhanced teaching and learning outcomes. This perspective has been embraced by numerous nations, including the United States, various European countries, China, Japan, and other nations, leading them to implement policies aimed at diminishing class sizes (Blatchford & Lai, 2012). In numerous nations, there has been a reduction in the average class size. Specifically, between 2000 and 2010, there was a significant fall in the class size of lower secondary education in certain countries. Portugal saw a decrease of 33.9%, Spain saw a decrease of 27%, Japan witnessed a decrease of 20%, Korea observed a decrease of 17%,

and the United States had a decrease of 13.2%. However, a significant disparity remains in the sizes of classes across different countries. Within the member countries of the Organization for Economic Co-operation and Development (OECD), the mean class size observed at the lower secondary education level is 23. Several nations, such as Finland, Iceland, and the UK, have very small class sizes, typically about 19 students or fewer. In contrast, countries like Turkey, Korea, and China tend to have larger class sizes, ranging from 28 to as high as 54 students (OECD, 2012).

The measures aimed at decreasing class size are often met with positive reception from various stakeholders, including parents, teachers, administrators, and policy makers (Graue, Rauscher & Sherfinski, 2009). One of the primary rationales for implementing such rules is the widespread endorsement of the notion that reduced class sizes have a favorable influence on the academic achievement of students. The support is mostly derived from studies that argues the advantages of smaller class sizes. Extensive research has been conducted on the topic of class size over the past few decades, with ongoing studies being conducted by scholars at all academic levels.

Two notable studies that demonstrate the impact of class size on academic attainment are the STAR experiment conducted by the Tennessee State Department and the CSPAR project carried out in the United Kingdom. The study conducted by Word, Jahnston, Bain, Fulton, Zaharias, Achilles, Lintz, Folger, and Breda (1985-1990) revealed that students in small-sized classes consisting of 13-17 students exhibited considerably higher test results compared to students in standard courses with 22-25 individuals. The CSPAR project is recent longitudinal research that examined the impact of class size on academic achievement by observing primary school children over a period of 11 years. Blatchford

(2003) observed a significant correlation between class size and the academic achievement of pupils in the domains of mathematics and literacy.

While the concept of student-teacher ratio is commonly considered interchangeable with class size, it is crucial to clarify that they are not exactly equivalent. Class size is the number of pupils registered in a specific class or, more generally, the average number of students typically present in a particular classroom. The student-teacher ratio is the quantitative correlation between the student population and the teacher population in an educational environment, calculated as the mean number of students per teacher (Nizamettin Koc and Bekir Celik, 2015). This ratio quantifies the level of responsibility a teacher has for teaching students inside a school (Graue & Rauscher, 2009). Therefore, it is not definitive that a country, city, or school characterized by a small class size would always have a low student-teacher ratio, and vice versa. For example, an educator may teach in classrooms with a small student population, but being designated to provide instruction in several classes. Hence, in such situations, the class size may be limited, yet the student-teacher ratio can reach a high level. On the other hand, there may also be cases how the opposite situation takes place.

In educational institutions characterized by a reduced student-to-teacher ratio, educators are afforded additional time to allocate to each individual student. This allows for the monitoring of the academic advancement of each student under their care, facilitating the provision of personalized instruction tailored to the unique needs and preferences of each student (Johnson, 2011). Numerous research have been conducted in the area of class size, although the investigation of student-teacher ratio has received comparatively less

attention, despite its equal significance. Hence, the objective of this study was to investigate the relationship between the student-teacher ratio and student academic achievement among high school students in Kenya

2.4. Institutional resources and student Academic achievement in secondary school examinations

Institutional resources contribute remarkably towards a learner school environment. According to UNICEF (2009), learner environment requires a number of facilities such as classrooms, hostels, dining areas, adequate teaching learning materials, Institutional resources include safe and healthy and protective school premises, sufficient teaching learning equipment, adequate well designed and comfortable toilet facilities which are mindful of gender issues as well as taking into consideration of students with special needs. (Orkodashvili, 2010). The aforementioned resources need to be supported by, sufficient water, soap and sufficient time allocated for the students to attend to the call of nature. Availability of these facilities encourages a hygienic behavior (Abdullahi et al, 2017)

The budget shows the government's priorities. Each year, the federal government and individual provinces devote considerable sums to education. In 2018-2019, education in Pakistan will receive 980 billion rupees ($1.3 billion) (I-SAPS, 2018). This represents a huge increase of 11 percent over the budgeted amount for the previous fiscal year. About 2.4% of Pakistan's GDP is allocated to the education sector at present (Government of Pakistan, 2019). The education budget falls far short of the agreed upon targets of 15-20% of the total budget and 4% of the GDP, both of which are considered international

benchmarks. Concerns about insufficient public funding for education and its efficacy should be taken into account as we work toward achieving the Sustainable Development Goals (SDGs) by 2030.

A conducive learning environment has also been linked to better grades (Mphale & Mhlauli, 2014). Three studies (Maganga, 2016, Nghambi, 2014, and Osei-Mensah, 2012) found that a school's academic success was affected by the quality of its physical facilities, the expertise of its teaching staff, and the surrounding community.

Yadar (2011) asserts that a comprehensive course in scientific disciplines cannot be deemed complete without the inclusion of practical activity. It is imperative that folks undertake the practical work either in scientific laboratories or in classrooms. At the school level of 16, practical work becomes even more crucial due to our experiential learning approach. Scientific procedures and applications are thereby imbued with more significance. A well-established fact is that an object that is physically touched leaves a stronger impression on the mind compared to an object that is only observed from a distance or in an illustration.

Hedges and Laine (1996) found that a wide variety of resources were positively connected to student outcomes, and that effect sizes were substantial enough to suggest that minor increases in spending may be associated with big gains in achievement. The results of this study are discussed in relation to the evolution of social capital over the past two decades and the patterns of student academic achievement as measured by the National Assessment of Educational Progress. In order to use meta-analytic techniques to evaluate the direction and amplitude of the links between different school inputs and student accomplishment, a

universe of education production function studies was collected. Sixty primary research studies were either longitudinal in nature or controlled for socioeconomic factors at the school district or smaller unit level.

Physical, social, and service components all work together to create a holistic learning setting. The quality of the physical amenities has been found to have an effect on student academic achievement (Carron & Chau, 1996; Willms, 2000). Lighting, air flow, floor, roof, and wall characteristics all have an impact on student academic achievement in the classroom. Class size is also a factor in students' overall success.

Willms's (2000) research revealed a correlation between student academic achievement and class size. Students whose schools lacked the resources found in similarly-equipped schools performed worse on tests and were more likely to repeat a grade, according to the study (Willms, 2000). A good school will have just the proper amount of students enrolled in each class. Willms's (2000) research found that class size is correlated with student achievement. It also found that large classes make it difficult to implement strategies like learner-centered teaching, which in turn leads to poor student achievement. Quality education can be attained through the enhancement of instructional methods and course material through attention to the efficacy of teaching and learning (UNICEF, 2009).

Patrinos (2002) argues that the infrastructure of schools is the foundation upon which the vast majority of education is built. Quantitative expansion and the delivery of high-quality education are both influenced by the condition of school buildings. George (2013) found that rural schools in Ghana were struggling academically due to issues like inadequate logistics, a lack of competent teachers, and outdated facilities and equipment. These were identified as obstacles to creating student-centered classrooms in schools.

According to a UNESCO (2011) study conducted in both Bangladesh and India, classroom chalkboards in the former country are often placed at student eye level so that students can use them for collaborative activities like brainstorming and note taking. According to the report, the District Primary Education Program (DPEP) in India ensures that students in even the most rural areas have access to a school that is no more than one kilometer away from their home, and that these schools are specially designed and constructed with learner-friendly elements (UNESCO, 2011).

Fitriani et al. (2021) examined the LFS framework in Indonesia and discovered that, in fact, academic achievement of students at one compliant school had improved significantly. This is a publicly sponsored and administered school. As a result, the infrastructure and facilities are standard fare for public schools in Indonesia. But, as the school receives school operational assistance payments, the principal can utilize the money to enhance the learning environment by updating and expanding the school's infrastructure, resources, and technology. The funds are used for things like hall painting, new co-curricular equipment, and updated bathrooms.

The quantitative data obtained, however, were only utilized to determine what proportion of LFS model parameters were present. The analysis relied more heavily on observational data than any other source. Due to methodological, geographical, and economic differences with Kakamega County Kenya, it is possible that these results cannot be extrapolated to the proposed study.

According to Okudo & Omutoyole (2014), a learning environment encourages education as a lifetime pursuit and gives ECDE students the tools they need to create respectable

value systems that can act as a compass for them as they grow in self-awareness and feeling of national identity. According to Olagboye's (2004) proposal, current ECDE buildings should undergo periodic maintenance to ensure optimal functionality and the provision of quality education. This maintenance should involve providing adequate lighting, ventilation, and temperature control. Students, teachers, and classmates are all profoundly impacted by a classroom's physical setting. The room's dimensions, paint scheme, flooring material, and window placement all contribute to the space's physical atmosphere (Assefa, 2014). The classroom's interest centers have dedicated, well-organized space. The arts and sciences, building materials, literature, role-playing, the senses, songwriting, woodworking, and games that require manipulation all fall within this category. The classroom atmosphere also includes a library, an exploration area, a wet/dry kitchen, and computers (Haile, 2010).

Also, students with and without language barriers should have equal access to classrooms and instructional materials. Textbooks should include stories about people from a variety of backgrounds; plastic play food could include items from different cultures (such as play rice); and the classroom environment should include displays of people from a variety of backgrounds (Worthington, 2008) to best serve the students there.

Jepleting (2013) cites Mark Schroeder's (2002) argument that those with a hand in school planning and design can improve ECDE students' chances of acquiring the skills they need to succeed in school by providing them with a more conducive learning environment that is also peaceful, secure, comfortable, and healthful. An increasing corpus of research has established a connection between the quality of the air in classrooms and students' academic outcomes and achievement. According to the Ministry of Public Health and

Sanitation, there is a significant risk of the transmission of airborne diseases like tuberculosis in a classroom with inadequate ventilation (Jepleting, 2013).

Higgins et al. (2005) did a study in Newcastle, United Kingdom. Where school infrastructure was deteriorating, students performed poorly. However the study could not prove conclusively that better school amenities linked to better student academic achievement in the classroom.

Regarding the classroom atmosphere and the provision of excellent education, Chepkonga (2017) did a study in West Pokot County's public early learner hood Development Education facilities. Both qualitative and quantitative approaches to research were used in the study. There were 365 principals, 682 teachers, and 4 DICECE officials included in the sample for this study. Questionnaires, interviews, and in-person observations were used to compile the data for the study. Quantitative data was evaluated with descriptive and inferential statistics, while qualitative data was examined using thematic content analysis. The study found that 37.1 percent of ECDE centers in West Pokot County lacked a standard physical environment that would allow them to provide students with a high-quality education. Teachers in ECDE programs should collaborate with principals to make their schools safe and productive learning environments, according to the study's recommendations. There are two reasons why the findings of Chepkonga (2017) cannot be applied universally. The primary difference is that it focused on early childhood development and education (ECDE) rather than secondary school students' results on standardized tests. Second, the research took place in West Pokot County, which is distinct from Kakamega in terms of geography, culture, and economy.

According to Olaleye (2009), the Nigerian student is confronted with a learning environment that is deficient in a number of key areas, including sufficient physical space, adequate teaching and learning equipment, adequate health and sanitation facilities, and high-quality instructional strategies and teacher motivation. Access to appropriate classroom space and instructional materials is critical for providing an inclusive learning environment. Chabbott (2008) argues that the success of inclusive education depends on the quality and sufficiency of the school's physical facilities, equipment, teaching, and learning materials. Restrooms, walkways, furniture, ramps, open floor plans, and play areas should all be accessible. Students with special needs benefit from a disability-friendly setting, as stated in the Kochung Report (Minister of Education, 2009). There were obstacles to effective inclusive education due to inadequate infrastructure, such as buildings and schools' ability to acquire the necessary physical amenities for students with special needs.

Kadima (2006) and Kithuka (2008) reported that students with special needs often had trouble finding a seat in the overcrowded classrooms and that the bathrooms were too narrow. The current study aimed to establish the extent to which schools were adopting the dimension of inclusive education, whereas the previous two studies focused on the factors impacting the implementation of inclusive education.

Physical accessibility is just one example of the many issues that students and teachers with special needs confront in inclusive classrooms (UNESCO, 2012). For certain students, especially those with mobility issues, the school environment presents challenges. According to UNESCO, schools in low-income neighborhoods, especially in rural areas,

are often inaccessible to children due of the poor condition of the facilities. According to Eleweke and Rodda (2002), most schools in Uganda's low socioeconomic communities are not prepared to accommodate students with special needs. They go on to say that a lack of specialized resources is a significant barrier to providing high-quality inclusive education.

According to Anderson and Mundy (2014), many schools in underdeveloped nations lack essential amenities including broad entrances and hallways, steps, ramps, and recreational areas. Learners with special needs and disabilities in Kenya face barriers to access in many areas of the educational experience, including but not limited to: school location; school facility; school facilities; and school equipment (Chabbott, 2008). There shouldn't be any barriers to learning in the school grounds for students who have special needs, as per recommendations from the Ministry of Education (MOE, 2009; ROK, 2005). The LFS works to make schools accessible for students with disabilities by ensuring that they accept them.

Academic achievement is influenced by both personal and school-based factors. Tuitock et al. (2015) revealed that state-of-the-art labs and textbooks are the most important school factors influencing student academic achievement in Kenya's public schools. Nambuya (2013) found that within the same country, pupils' academic achievement is influenced by the accessibility of physical resources like a library, textbooks, enough classrooms, and a large playing field.

Tety (2016) found that textbooks can affect students' grades in Tanzania. Teachers in Nigeria who use instructional resources see improved student outcomes, according to studies by Awolaju (2016), Olayinka (2016), and Adipo (2015). Similarly, Krukru (2015)

discovered that educational materials in Nigeria significantly affect student achievement. According to his claims, using instructional materials improves both education and student retention. Students benefit from instructional materials because they help them better grasp the subject's fundamental ideas. So, it follows that the academic outcomes of students who are educated with instructional materials are superior to those of those who are not (Adalikwu & Lorkpilgh, 2013).

Students' academic success has also been shown to be strongly influenced by a school's physical location. Mhiliwa (2015) believed that the distance between a school and its pupils influences their academic achievement. He underlined that a student's academic achievement would suffer if their school was located too far from their home because they would be too weary and hungry to concentrate. He stated that if community schools are not available in a certain area, the academic achievement of pupils attending those schools will remain low. Ellah and Ita (2017) found that students' English language proficiency was higher in urban settings compared to those in rural settings. This suggested that pupils' English Language skills are affected by the school's geographical location. Yusuf and Adigun (2010), however, discovered that there is no statistically significant connection between a school's geographic location and student achievement.

Once again, it was discovered that schools with more appropriate rules and regulations, more equitable punishment, and better execution of students' rules and regulations had higher test scores (Mussa, 2015). Since students' behavior has a direct impact on their academic achievement, Ehiane (2014) also suggested using effective school discipline to rein it in. Simba, Agak, and Kabuka (2016) found a positive correlation between self-

control and academic success. They argued that raising students' levels of discipline would lead to better academic results.

Class size or the ratio of students to teachers is another school aspect that has been shown to affect kids' success in school. Ajani and Akinyele (2014) claim that the ratio of teachers to pupils has a major impact on students' ability to comprehend and apply mathematical concepts in the classroom. Zyngier (2014) stated that decreasing class sizes would have a positive influence on academic achievement if accompanied with good teaching. Similarly, Bakasa (2011) discovered that school elements including good teaching and manageable class sizes positively affect students' academic outcomes. Owoeye and Olatunde (2011) discovered that there is no statistically significant difference in academic achievement between schools in urban and rural locations based on class size. Class size has no appreciable effect on student achievement, as shown by Vandenberg (2012).

Sabitu, Babatunde, and Oluwole (2012) reveals that although private and public schools differ significantly in terms of school facilities, there is no statistically significant disparity in terms of academic performance. Nevertheless, Owoye and Yara (2011) contended that the school infrastructure is the primary factor that significantly impacts kids' academic achievement.

Lawrence and Vimala (2012) did not find any linkage between a favorable school climate and student achievement, despite previous studies indicating such a relationship. The study conducted by Odeh et al. (2015) revealed that the school environment has a substantial impact on academic performance. The study conducted by Duruji et al. (2014) revealed a statistically significant correlation between the school environment and academic

performance.

The literature presented above demonstrates that the dimension of school characteristics significantly impacts academic achievement. However, research has demonstrated that instructional materials, discipline, effective teaching, class size, and the school environment are the key elements that directly impact academic achievement.

2.5 The relationship between student welfare and student academic achievement

Student welfare encompasses the dimensions of health and safety, student rights, emotional, and social wellbeing (WHO, 1999)

Hoover et al. (2018) concluded in a study titled "Statewide adoption of an evidence-based trauma intervention in schools" that there was a need to establish and expand school-based therapies for kids with posttraumatic stress. The purpose of this research was to document how an original strategy for disseminating the effective trauma intervention across the state was put into action and what effects it had.

Learners' PTSD symptoms decreased by an average of 42%, while problem severity decreased by an average of 42%, and learner functioning improved by an average of 42%.

Xiang et al. (2019) investigated the "Longitudinal Impacts of Examination Stress on Psychological Well-Being and a Potential Mediating Role of Self-Esteem in Chinese High School Students." This study used a latent growth curve model (LGCM) to look at how exam anxiety, self-esteem, and mental health changed over time among Chinese high school students. The studies found that students' initial levels of psychological well-being

were negatively predicted by their levels of examination stress. Xiang et al. (2019) did not directly evaluate the association between student well-being and academic achievement in national assessments, therefore its findings cannot be extended to apply to the proposed study. Furthermore, while Xiang et al. (2019) employed LGCM in their research, the suggested study will rely on correlational analysis.

Olweus et al. (2019) conducted an evaluation of their bullying prevention program on a large scale and focused on specific types of bullying. The researchers wanted to see if the Olweus Bullying Prevention Program (OBPP) was successful in reducing several types of bullying, such as verbal, physical, indirect/relational, and cyberbullying, as well as bullying that involved sexually charged language or gestures.

Olweus (2019) looked into students' happiness, although the consequences on test scores weren't a primary concern. This rules out extrapolating the results to the proposed study. Also, unlike in Kakamega County, Kenya, the review study was place in Pennsylvania (USA), a very different geographical, cultural, and social environment. This is a void that the proposed research hopes to address.

Another research team, Bajaj and Suresh (2018), looked at the methods used by Oakland International High School in California, a public high school for international students. According to the results, new immigrant kids benefited from a more mutually beneficial relationship between school and family when they were provided with a holistic wrap-around strategy. Students' academic, emotional, and material needs are better met as a result of the practice's emphasis on peer instruction and community involvement. The article describes how Oakland International High School caters to the requirements of its

immigrant and refugee students through community collaborations and the adaptable design of their courses, support structures, and family involvement techniques. The reviewed research was not necessarily applicable to the proposed research because it focused on students who had recently arrived in the United States as refugees or immigrants.

Maitra and Guo (2019) explored the opinions of Syrian refugee students on school integration in Canada. According to the findings, students from Syrian refugee families not only have trouble making friends with local pupils, but they are also frequently targeted by bullying and prejudice, which has a negative effect on their feeling of community. Focus groups and other qualitative research techniques were used for this investigation. Since the reviewed study was conducted in Canada and focused on Syrian refugee students in Canada, its findings cannot be extrapolated to the proposed study. Also, this paper proposes a new approach to research, one that relies on correlations rather than causal explanations.

As Michaela et al. (2020) observed, students in secondary and higher education settings confront a wide variety of ongoing normative stressors, which can be defined as routine day-to-day inconveniences such persistent academic obligations. Thus, students in both secondary and higher education indicated persistent anxiety over financial and academic issues. For instance, the OECD just finished a survey with responses from 540,000 students between the ages of 15 and 16 from 72 different nations. Sixty-six percent of OECD students said they worry about getting bad grades, and 59 percent said they worry about tests being too hard on a regular basis. The OECD also discovered that even well-

prepared students (55% of the sample) still experience significant exam anxiety. Around a third of students have reported feeling extremely stressed when studying, with girls routinely reporting higher levels of stress in this area than boys (OECD, 2017). The results of this study show that educational requirements and academic success place a heavy burden on today's youth. There has not been a thorough examination of how this persistent academic pressure affects students' learning and health. Consequently, the purpose of this research is to investigate whether or not there is any correlation between these factors and students' achievement on standardized tests.

Osborn et al. (2020) conducted a cross-sectional study with a community sample of Kenyan high school students to evaluate the incidence of depressive and anxious symptoms among adolescents. They also looked for links between the symptoms and demographic and social characteristics. Six hundred and fifty-eight students (51.37 percent female) between the ages of 13 and 19 were given self-report assessments of depressive and anxious symptoms, social support, gratitude, growth mindsets, and life satisfaction. Adolescents in Kenya showed alarmingly high rates of depressive and anxious symptoms, according to the study's findings. Compared to younger adolescents, older adolescents reported more severe symptoms of depression and anxiety, as well as less social support. Anxiety was more common among women than men, and among those from underrepresented groups in society, too. Adolescent internalizing symptoms were shown to be quite prevalent in this study of Kenyan high school pupils. Important associations of these symptoms were also identified, and the necessity for culturally sensitive assessment instruments was highlighted. The current suggested study aims to fill in the gaps left by the

evaluated study by investigating the connection between student anxiety and depression and academic progress.

Tobia et al(2019) .'s study, Learners' Wellbeing at School: A Multi-dimensional and Multi-informant Approach, set out to examine, among other things, whether or not there were significant gender and grade-level differences in students' self-reported levels of school wellbeing when taking into account such factors as academic achievement and behavioral issues. Students in grades three through eight were included, and they all filled out the Questionnaire on School Wellbeing, which looks into things like how happy people are when they succeed academically, how close they are with their teachers and peers, how they feel about school generally, and how confident they feel in their own abilities. Middle school pupils scored lower on measures of school wellbeing than their primary school counterparts, and there were clear gender variations in the data (girls had better relationships with teachers but a worse emotional attitude towards school). In elementary school, students' happiness was positively influenced by their ability to study, whereas in middle school, students' happiness was positively influenced by their academic achievement and adversely influenced by behavioral issues. Finally, both parents and educators reported feeling more worried, guilty, and tense when dealing with a student who was struggling academically. Teachers observed less self-awareness, whereas parents reported more learning and emotional challenges in these students. These findings may provide useful information for informing policies and activities at schools with the goal of enhancing the well-being of their students. Similar to the vast majority of the literature we reviewed, this one did not investigate how students' mental health might affect their

achievement on standardized tests. This is the gap that we hope to address with this research.

Konold et al., (2018) examined the authoritative school climate idea that schools with high structure and student support have higher levels of student involvement and that these qualities are connected with higher academic achievement, as evidenced by school graduation rates and school achievement on state-mandated testing, in a study conducted in the United States. A total of 298 high schools across the state provided data from 60,441 students and 11,442 teachers to test the model. Higher levels of student engagement were linked to both school structure and student assistance, which is consistent with the authoritative school environment model. Furthermore, student engagement was significantly linked to academic success and served as a moderating variable. The findings add to the growing body of data linking a formal and authoritative school climate to higher levels of academic success among high school students. While the reviewed study did find a link between student happiness and test scores, such results cannot be extrapolated to all of Kakamega County. Konold et al(2018) research was done in the USA, which has a very different socioeconomic and geographic environment than Kenya. This is the rationale behind this. The suggested study will use a correlational research method, whereas Konold et al. (2018) employed a multilevel multi-informant structural model.

The government of Kenya has ratified numerous treaties and protocols that guarantee all people the chance to receive a good education. Among these are the International Conference on Education for Everyone, the Convention on the Rights of the Child (CRC), and the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW). Many policies and strategies have been devised to tackle the problems of

education, training, and research in the 21st century, and they demonstrate the Government's dedication and seriousness in implementing the recommendations of international agreements and treaties. The Sessional Paper No.1of 2005 on Education, Training, and Research and its Implementation Programme through the Kenya Education Sector Support Programme (KESSP) is one of the most important policy documents of this century. According to Sessional Document No. 1 of 2005, the government's primary goal in the realm of primary education is to increase the availability, fairness, usefulness, and quality of schooling. The policy framework's specific goals are to realize Education For All (EFA) by 2015, to protect students' access to basic education as guaranteed by the Learner's Act (2001), to improve basic education's access, equity, and relevance, and to provide consistent, high-quality service at all times and across all levels.

The government has created a number of intervention measures aimed at making schools safer in order to achieve the desired results (RoK, 2008)

It is clear from the examined literature that there is a vast amount of study devoted to the topic of the value of students' emotional and mental health in the classroom. Yet, psychological and bodily health are given more attention. Health and physical safety, acts of violence among learners, ethnic clashes, cattle rustling, cultural practices, and female circumcision are just some of the other aspects of student wellbeing that have not received much attention in the literature but may have an impact on achievement in national examinations. In addition, research on the mental health of students in Kakamega County has shown no significant impact on their academic achievement. This is a gap that the researcher hopes to close.

2.6 ICT integration programmes within learner school environment and student academic achievement

One potential aspect of CFSE is the degree to which information and communication technology (ICT) is included into the delivery and management of educational content. It makes certain that the conditions for learning are optimal and that instructional methods are user-friendly (UNICEF, 2006). Better educational outcomes can be attained thanks to the positive effects that ICT has on both the learning and teaching processes. The use of technological resources in the classroom is also on the rise globally. Studies show that children learn more when they are given opportunities to actively participate in their own education (Alenezi, 2019). The worldwide push to include ICTs (information and communication technologies) into the classroom is also picking up steam (Chisango, 2020).

Female students in rural India were studied by Sheshadri et al. (2020) to see what effect the use of mobile apps for teaching and learning has on their education. The findings indicate that the usage of ICT has an important effect on the education of female students, among other things. The findings also suggest that technology has pedagogical affordances that can be used to improve mathematics teaching for students who are struggling. Perienen (2020) looked into what influenced Mathematics educators to use technology in their classrooms. The majority of the 155 educators polled utilize computers in their classrooms on a regular basis, and they have a favorable view of technology's potential in the classroom. Yet, only a small percentage of classrooms were actually incorporating technology into their lessons. Teachers stressed the need of receiving proper training in the

pedagogical integration of ICT, demanded improved computer services in schools (including Internet connection), and asked parents to help assist their students at home.

Researchers Berger and Wolling (2019) observed that instructors in German schools tended to be in favor of using ICT. The study did identify other things, though, such as how heavy digital media use among students and teenagers increases security worries. Associations between school type, taught subject, and age of teachers were found in the analysis. However, the regression model did not find any statistically significant effects from the people and technology resources components. The final model accounted for 48% of the variation in how classroom instructors promoted safety-related competencies.

Kim and Lee (2020) looked at how schools are incorporating ICT, but they zeroed in on how teachers feel about using it in the classroom. The study found substantial effects of teachers' achievement expectancy, effort expectancy, social influence, and education policy on their behavioral intention to utilize ICTs in the classrooms where they work with 305 secondary school teachers in the Philippines. Notwithstanding its relevance, the aforementioned study cannot be extrapolated to the proposed study since Kim and Lee studied educators' attitudes toward ICTs rather than the impact of ICT adoption on students' achievement on standardized tests.

Alenezi (2019) argues that technology tools are essential for creating a learning environment in which students actively participate. The successful application of ICT in Saudi schools is affected by a wide variety of enablers and barriers. Supporting a constructivist approach to education is crucial to the effective use of ICT in the classroom. Teachers' perspectives were sought out using a mixed-methods approach in order to determine what factors influence the successful adoption of ICT in Saudi secondary

schools. There is a lack of defined policies and strategies on ICT adoption in learning institutions; there is resistance to change; there are insufficient technological resources; and there is a lack of managerial and technical support for the implementation of educational technology. Since there is no one factor that can ensure the success of ICT implementation in schools, a holistic strategy is required.

Scholars Jurkowski et al. (2018), for example, investigated the effects of the widespread adoption of ICT by Saudi Arabian universities on the academic success of their students. The impact of gender, grade point average, and field of study on the correlation between ICT use and academic achievement was also analyzed. Quantitative research methods were used to collect data on the rate of ICT adoption in universities and the relative achievement of students from four different Saudi universities, with a sample size of one thousand. To test the reliability of the theoretical framework, we used structure equation modeling. Specifically designed for structural equation modeling and path analysis, the Analysis of Moment Structures (AMOS) was employed for this study. Despite the conservative setting, the results showed a correlation between ICT use and student achievement. Female students benefited more from the adoption of ICT than male pupils, according to another finding. The study was conducted at universities, but the planned study will be conducted at high schools, therefore while the results are applicable to the current study, they are not generalizable.

Arkorful et al. (2021) focused on how high schools use ICT to improve education. The Kumasi Girls Senior High School in Ghana was the site of the research. There were two goals of the research. The first goal looked at how much teacher mindset affects how they use technology in the classroom. The gender gap in senior high school ICT implementation

was the focus of the second aim. The study used a descriptive survey design and a quantitative approach, with mean statistics used for descriptive purposes and standard regression for inferential purposes. The hypothesis building process made use of the theory of the spread of innovations. The participants in the study filled out questionnaires at their own leisure to provide the necessary data. Structured equation modeling allowed for the verification of hypotheses to be tested. The results showed that a positive attitude among educators significantly correlated with the use of technology in the classroom. The research also found no significant variation in how either gender perceived the use of ICT in the classroom. Academic achievement was not a primary emphasis of the study under consideration. Second, the study was conducted at only one secondary school for girls in Ghana. Hence, it can't be extrapolated to affect the planned research. This planned study is an attempt to address that gap.

Chisango (2020) claims that the government of South Africa has implemented the e-education program because of how important ICTs have become. The relevance of information and communication technologies (ICTs) in education cannot be overstated. Teachers were found to have an optimistic outlook on technology adoption and to be open to using ICTs in the classroom, although they lacked the necessary ICT skills to do so effectively. Based on its findings, the study advocates for educating both educators and students on how to effectively utilize ICT in the classroom. The study did not look at the connection between ICT adoption and student academic achievement on national assessments, but rather looked at teachers' perspectives on adopting ICTs in teaching and learning at several secondary schools in Eastern Cape, South Africa. The proposed

research is focused on determining whether or not these two factors are related in Kakamega County, Kenya. So, the purpose of this research.

Supriyanto et al., (2020), conducted a study on an intriguing and burgeoning area of academic interest. Researchers hoped to learn more about the ways in which school counselors incorporated technology into their practice of providing counseling services during the Covid-19 outbreak by conducting a case study. According to the findings, the most popular forms of online counseling assistance provided by professionals during the Covid-19 pandemic were asynchronous media and technology-based synchronous media. Problems can be solved and student potential can be developed through the use of both asynchronous media, such as WhatsApp, Facebook, Instagram, and social media, and synchronous media, such as Zoom, Webex, Google Meeting, and Hangout. Advice for school counselors on how to incorporate new technologies and respond to disruptions in the field.

As has been emphasized multiple times in this review of the literature, few studies have been found that directly link the adoption of ICT in school management and curriculum delivery to student academic achievement on national tests. This suggested study, entitled "learner school environment and student academic achievement in Kakamega County, Kenya," seeks to fill this informational void.

2.7. Research Gaps

Enu *et al.* (2015) set out to determine whether group size had any bearing on the Mathematical proficiency of pupils in Ghana's Central Region when they worked in small groups. The study focused specifically on the academic achievement of pupils in the

subject of Mathematics. Wamalwa, Mugasia, and Sugut (2019) aimed to identify the factors that contribute to low academic achievement in national tests at the primary school level. The investigation was carried out in specific schools within the Kakamega North Sub-county. The study aimed to identify the variables contributing to low academic achievement in Primary Schools in Kakamega North Sub County. This study aims to investigate the impact of institutional resources on student academic achievement in Kakamega County, Kenya.

Multiple studies have shown the importance of teacher-student interaction in connection to the quality of education and academic performance. Hamre et al. (2007) and La Paro et al. (2004) argue that analyzing the social and academic interaction between teachers and students is a crucial determinant of academic accomplishment. The objective of this study is to investigate the impact of the ratio between teachers and students on the academic achievement of pupils in Kakamega County, Kenya.

Much research has been undertaken on the correlation between student welfare and academic achievement. For example, according to Olaleye (2009), Nigerian students face a learning environment that lacks essential elements such as adequate physical space, sufficient teaching and learning equipment, proper health and sanitation facilities, and effective instructional strategies and teacher motivation. In a study conducted by Chepkonga (2017), the focus was on the public Early Learner Hood Development Education facilities in West Pokot County. According to a study conducted by Tuitock et al. (2015), the primary determinants of pupil achievement in public schools in Kenya are modern laboratories and textbooks. In a study conducted by Nambuya (2013), it was

discovered that the academic achievement of students within a certain country is affected by the availability of physical resources such as a library, textbooks, sufficient classrooms, and a spacious playing field. The present study aimed to investigate the impact of student welfare on student academic achievement in Kakamega County, Kenya.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter focused mostly on the description of the research design, the study area, the target population, sampling procedures, sample size, data collection instruments, validity and reliability of data collection instruments, data collection procedure, data analysis explanation, and ethical issues.

3.2 Research design

When conducting a study, it is crucial for the researcher to choose an acceptable conceptual framework that includes the method of data collecting, measurement, and data analysis (Kothari, 2014). Research questions should be the determining factor in every study's design (Kerlinger & Lee, 2000). This study employed a correlational research design because it is the most suitable for testing the hypotheses. In correlational research, the researcher evaluated the degree of association between two or more variables. In addition, it examines the relationship between two or more factors (Orodho, 2013).

In addition to the collection of data on two or more variables for the same group of respondents and the computation of coefficients, correlational research examines the relationships between the variables. Determining the strength and direction of the relationship between two variables is crucial for selecting the variables for additional statistical analysis, such as regression analysis (Mugenda & Mugenda, 2012).

Correlation research design was appropriate for this study since it enabled the researcher to evaluate the links between institutional resources, teacher – student ratio, student welfare,

and integration of ICT programming, as components of an LFS, and student academic achievement in exams in Kakamega, Kenya. In addition, it served as the foundation for selecting variables for subsequent statistical analyses, such as regression analysis. The Linear Regression Model was also utilized to determine the strength and direction of the variables' association.

3.3 The Study Area

This research was undertaken in Kakamega County, Kenya, which is made up of thirteen sub-counties: Likuyani, Matete, Navakholo, Lugari, Khwisero, Butere, Matungu, Mumias West, Mumias East, Kakamega Central, Kakamega East, Kakamega South, and Kakamega North. The county's latitude is 0.2842200 degrees and its longitude is 34.7522900 degrees. It encompasses 3,033.8 km2 and is bordered by Trans Nzoia County in the north-east, Bungoma County in the north, Busia County in the west, Siaya County in the south-west, Vihiga County in the south, Nandi County in the south-east, and Uasin Gishu County in the east (RoK 2010).

According to the 2019 census, Kakamega County had 1,867,579 inhabitants, of which 897,133 were men and 970,406 were females. Age cohorts between 6 and 34 years old constitute the majority of the population. Due to ample rainfall and excellent soils, agriculture is the primary economic activity, with the cultivation of cash crops such as corn and sugar cane (KNBS, 2019).

Kenya has 8,609 secondary public schools. Secondary schools are classified into national, extra-county, county, and sub-county schools. 126 secondary schools are national secondary schools, whereas 330 are secondary schools outside of county boundaries. The

remaining schools are county and sub county secondary schools (RoK 2016). Secondary schools are further classified as boarding, day , mixed, boys-only, and girls-only schools. In 2019, about 3,000,000 pupils were enrolled in secondary schools in Kenya (Kenya National Bureau of Statics, 2020). Ministry of Education Sessional Document No. 1 of 2019 (RoK, 2019) stipulates that all students who complete elementary school will transition to secondary school.

The researcher selected to examine secondary education in Kakamega County. The secondary school level is fundamental education with promising future possibilities for both the Big Four Agenda and Vision 2030. The county of Kakamega, where data was collected, is an appropriate location. This is because it not only has a diverse mix of secondary schools, but also a large young population.

Kakamega County is cosmopolitan, easily accessible, and features a diverse landscape that includes urban, suburban, and rural areas, as well as a fully developed information and communications technology infrastructure. Thus, the region is largely indicative of the national situation. Also, the researcher's expertise, knowledge of the area, and familiarity with the culture of the locals are advantages that will save the study time and scarce resources (Maiyo, 2016).

Moreover, Kakamega County's KCSE data show that, from 2016 to 2019, 55841 applicants had a grade of D or lower (State Department of Education Kakamega). By comparison, the adjacent counties of Vihiga and Busia have a smaller number of candidates and a lower incidence of low grades. In contrast, Bungoma County has a nearly equivalent number of applicants and a distribution of low-grade students. Nevertheless, Kakamega County, being

the administrative center of the Western area, is prioritized to serve as the driver of progress. Therefore, analyzing the impact of the school environment on student academic performance in Kakamega County, Kenya can help develop strategies to decrease the majority of poor scores in national exams in Kakamega County and surrounding Counties.

3.4. Target Population

This study focused on 423 secondary school administrators, 423 secondary school teachers, and 182,893 secondary school students in Kakamega County, totaling to 188,830 as indicated in Table 3.1.

Table 3. 1: Distribution of Target Population in Kakamega County

Type of Institution	No. of institutions	No. of Principals	No. of Teachers	No. of Students	Total population
National Secondary Schools	**2**	2	124	4,181	4309
National Special secondary Schools	**2**	2	35	308	347
Extra County Secondary Schools	**28**	28	897	28,251	29204
County Secondary Schools	**45**	45	766	24,261	25,117
Sub County Secondary Schools	**346**	346	3,692	125,892	130276
Total	**423**	**423**	**5514**	**182,893**	**188,830**

Source: Kakamega County Education Office, 2021

Table 3.1 indicates that there are 423 secondary schools in Kakamega County. There are 2 national schools, 2 national special schools, 28 extra county schools, 45 county schools,

and 346 sub county schools. There are 423 principals, 5514 teachers, and 182,893 students giving a total sum of 188,830 respondents in Kakamega County secondary schools.

3.5. Sample and Sampling Procedure

A sample is a subset of the study population from which generalizations about the population can be made (Kisilu and Tromp, 2006). In contrast, sampling is a deliberate strategy for collecting a representative sample from a specific population (Kothari and Garg, 2014). For the current study, samples were drawn from the categories of secondary schools, principals, teachers and students of secondary schools in Kakamega County. Each of the respondent categories was carefully selected depending on their role, influence and potentiality of involvement as stakeholders. The government makes huge investments in secondary schools. Principals have information on all aspects of the schools including resourcing, enrolment, academic achievement, and student welfare. Teachers interact with students all the time and have firsthand experience of most of the issues that the study focused on. Lastly the students have a critical input in the study because they are not only the consumers of education services but the key subjects around whom the system rotates

This study utilized stratified random sampling. According to Mugenda and Mugenda (2012), stratified random sampling is a situation in which the population is separated into two or more groups using a predetermined criterion, followed by a random selection of a number from each sub-population. For this study, stratified random sampling was utilized to pick secondary schools other than national and national special schools thus extra county, county, and sub county secondary schools. In addition, samples of students were taken from boys', girls', mixed, day, and boarding institutions. The respondents, including

secondary school principals, teachers, and secondary school students, were also be sampled. This technique was deemed appropriate since it was used to obtain a representative sample of the study population, which is not homogeneous in terms of its features. The population is divided into non-overlapping subpopulations or strata, and random samples were taken from each stratum (Kothari and Garg 2014).

In addition, purposive sampling was utilized to select more respondents. Purposive sampling is an example of a non-probability sampling technique that aims to obtain representative samples by including typical subsets of a population. Purposive sampling is warranted because it allows for the selection of data-rich examples for in-depth analysis, hence illuminating the research questions at hand (Paton, 1990). The researcher selected two national school principals and two national special school principals using a purposive sampling method.

The investigator first determined the sample size using the Yamane formula. When the number of people to be studied is known to be finite, the formula can be employed (Yamane 1967). The equation is displayed below.

$$n = \frac{N}{1 + N(e)2}$$

Where n is the sample size

N is the population size

e is the desired precision level of 0.05 with desired confidence level of 95%.

$$N = \frac{188{,}830}{1 + 188{,}830(0.05^2)}$$

$$N = \frac{188{,}830}{} = 399.2 = 399$$

,

473.14.

Lavrakas (2008), there is a 20% non-response rate probability hence addition of 20% of 400=40

N = 189,253 = 399.9=400+40= 440

473.14.

Therefore, out of a target population of 189, 253 the sample size was 440 respondents.

Table 3.2 shows the sample sizes for respondents who were interviewed for this study.

Table 3. 2: Sample of size of respondents in Kakamega County

Respondent	Sample size	Sampling Technique
Principals of national schools	2	Purposive sampling
Principals of national special schools	2	Purposive sampling
Other Secondary school principals	18	Stratified random Sampling
Secondary school teachers	25	Stratified random Sampling
Secondary school students	393	Stratified random Sampling
TOTAL	**440**	

Table 3.2 above, shows the distribution of respondents according to strata. The table indicates that purposive sampling was used to pick 2 principals of national schools and 2 principals of national special schools. Stratified random sampling selected 18 principals from other categories of secondary schools, 25 teachers and 393 students. The total sampled respondents were 440.

3.6 Instruments of Data Collection

The study used primary data based on questionnaires and interviews as instruments of data collection.

3.6.1 Questionnaires

The study used questionnaires as data collection instruments to get primary data from principals, teachers and Form Four students in secondary schools. The questionnaires required the participants to respond to questions which sought to answer questions arising from the hypotheses on the effect of learner school environment and student academic achievement in Kakamega County.

A questionnaire is a form or collection of forms with questions typed or printed in a specific order. It is administered to the sample who fill up the appropriate places on the questionnaire. These instruments were used to collect quantitative data because the results of these instruments were generalizable to the entire population (Kothari & Garg, 2014).

Given the substantial size of the sampled population, questionnaires were the preferred method of data collection for this set of respondents. The primary advantage of questionnaires is their ability to gather objective and consistent data. They also allow respondents the opportunity to review files and provide a consistent measure, therefore enabling a systematic and orderly data collection process (White, 2000).

The questionnaires sought to get information on demographic data of respondents and the research objectives provided guidance in designing of these questionnaires. Closed ended questions were used to limit the number of responses to help the researcher get straight

forward and uncomplicated information. Responses to the objectives were rated using a 6-point multi-item Likert scale with anchors labeled SA = Strongly Agree, A= Agree, D =Disagree, SD= Strongly Disagree, DK= Don't Know, and NA= Not applicable, where the respondents were to indicate by ticking appropriately the extent to which they agree with the statements given.

3.6.2 Interview guides

Principals were interviewed during semi-structured sessions ranging from 40 to 60 minutes in duration. In order to ascertain their expertise in the practical integration process, principals were interviewed. A study by Kothari (2011) argues that interviews provide more accurate, dependable, and conceptually strong results than surveys. He further asserts that conducting an interview yields enhanced collaboration and more profound and informative answers compared to using a questionnaire. The interview schedules included open-ended questions to facilitate in-depth exploration of the responses and to extract significant information.

3.7 Quality Controls

For the instruments to be used for this study, the researcher confirmed their validity and reliability. The validity of a measuring tool and the veracity of the results are two aspects of research instrument validity (Venkatesh et al., 2013). The reliability analysis verifies the dependability of the study's measuring devices (Sekaran & Bougie 2013). Two secondary schools in Bungoma County served as the sites for the study's pilot testing of its research tools. The pilot study used questionnaires to collect data from 10% of the sample as per the rule of thumb (Cooper & Schneider, 2014).

3.7.1. Pilot Study

Kothari (2011) proposes that conducting a pilot study can be advantageous in order to evaluate the research design on a small scale before implementing it in the field. This is known as a pilot survey or pretest, carried out to gain a more thorough grasp of the practical obstacles that the researcher may face during the data collecting procedure.

To evaluate the effectiveness of research tools, a pilot study was carried out at four public schools located in Bungoma County. A random selection of schools was made from four distinct categories: National, Extra-County, County, and Sub-County. The pilot evaluation included a cohort of 40 children, accompanied by 4 principals and 4 teachers. A sample size of 48 participants was employed in the pilot study.

Forty surveys were disseminated to students with the aid of school personnel. Among the 40 questionnaires issued in the field, 37 were returned, indicating a response rate of 93%. The return rate for questionnaires among teachers was 4 (100%). The interview procedure included the involvement of all four principals from the chosen schools, comprising both face-to-face interviews and telephone interviews.

After careful analysis of the completed surveys, it was determined that certain questions displayed vagueness, ambiguity, and grammatical issues. Assistance from language specialists was provided to aid the correction of grammatical errors. A number of questions were determined to be inconsistent with the declared research objectives. In order to improve clarity, the interview guide was modified by rearranging specific questions. It was essential to evaluate the items' clarity, ambiguity, and correctness through the pilot research. These items were modified to improve the efficacy of the study tools.

3.7.2 Validity of the study Instruments

A content validity assessment was conducted in this study to determine the degree to which the test items effectively reflect the material that the test aims to evaluate (Kothari, 2011). As to Kothari (2011), the traditional method for assessing content validity entails using a professional or expert who has specialized knowledge in a certain field. The current study aimed to validate the instrument, namely a questionnaire, to verify that its content and structure aligned with the variables being studied. In this case, the questionnaires were subjected to content and face validation with the oversight of supervisors. Prior to its deployment in the field, the device underwent modifications in response to input received from researchers. A content validity assessment was conducted in this study to determine the degree to which the test items effectively reflect the material that the test aims to evaluate (Kothari, 2011). As to Kothari (2011), the traditional method for assessing content validity entails using a professional or expert who has specialized knowledge in a certain field. The current study aimed to validate the instrument, namely a questionnaire, to verify that its content and structure aligned with the variables being studied. In this case, the questionnaires were subjected to content and face validation with the oversight of supervisors. Prior to its deployment in the field, the instrument underwent modifications in response to responses obtained from experts.

3.7.3 Reliability of the Research Instruments

Instrument reliability refers to the capacity of a measurement instrument to produce consistent results whether used repeatedly or administered to different individuals within a certain population. Kothari (2011) defines reliability as the extent to which a measurement

instrument exhibits repeatability and consistency. One often used approach for evaluating the consistency of a measurement is the test-retest method. This methodology involves conducting a test or measurement on a subset of individuals once, and then repeating the same test or measurement on the same subset on a further occasion. Kothari (2011).

Table 3. 2:Reliability Table for Overall Questionnaire

Scale	No. of Items	A	Lower Bound	Upper Bound
Overall Questionnaire	28	0.70	0.56	0.64

Note. The lower and upper bounds of Cronbach's α were calculated using a 95% confidence interval.

An estimation of the Cronbach alpha coefficient was performed for the Overall Questionnaire scale. The evaluation of the Cronbach's alpha coefficient was conducted according to the criteria established by George and Eshiwani (1993). A coefficient of >.9 is considered exceptional, >.8 is considered good, >.7 is considered acceptable, >.6 is uncertain, >.5 is considered bad, and >.5 is considered unsatisfactory. The obtained Cronbach's Alpha value of 0.70 in this study suggests that the items being tested have a satisfactory level of internal consistency.

3.8. Data Collection Procedure

Prior to commencing data collecting, the researcher acquired a letter of approval of project from MMUST, for the purpose of applying for a research permission from the National

Council for Science and Technology (NACOSTI). To gather data from secondary school students, a letter of introduction was provided. 'Drop and pick' methodology was employed by the researcher and study assistants to gather data. Each responder was given a maximum of one week to complete the questionnaire before it was collected. Consideration of the questionnaire length, respondent accessibility, and geographical distribution of secondary schools in the sample, this method was sufficient.

3.9 Data Analysis

Descriptive and inferential statistics were employed to gather and examine data of both qualitative and quantitative nature. Prior to data processing, coding was performed based on the nature of the data, with quantitative data being encoded using numerical values. The qualitative data was structured in a narrative style and examined based on major themes. An analysis of variance (ANOVA) was employed to ascertain the presence of statistically significant variations in means between the school environment and the learner achievement. The opinions of respondents were described and summarized using descriptive statistics, including frequency, percentages, mean values, and standard deviation, in accordance with the study's objectives. Software version 20 of SPSS facilitated data analysis. The hypothesis was tested at a significance level of 5%.

3.9.1 Analysis of Qualitative Data

In order to facilitate the study, the qualitative data collected from interviews and open-ended questions was analyzed by classifying it into thematic categories. This research tool is used to determine the presence of particular words or concepts within textual resources or collections of texts. A comprehensive transcription of all interview responses has been

finalised. Subsequently, the data was categorized according to the objectives, and then a comparison of replies across different participants was conducted to detect shared characteristics and patterns within specific population groupings. The results were ultimately consolidated into narrative reports for the purpose of summarizing the analysis. A coding procedure was applied to the transcriptions, whereby they were systematically arranged into different categories according to different themes. The purpose of these categories was to emphasize particular word patterns that were considered pertinent to the research issue.

3.9.2 Analysis of Quantitative Data

The data analysis was carried out precisely in line with the research questions that were developed for the study. Analysis of quantitative data involved the application of statistical procedures. The responses to the questionnaire were methodically organized, categorized, quantified, and then analyzed statistically. Next, the data was compressed into frequencies and percentages, and then presented using frequency tables and graphical depictions.

Table 3. 3: Data Analysis Techniques

Objectives	Independent Variable	Dependent Variable	Statistical test
i. To determine the effect of institutional resources on student academic achievement in Kakamega County Kenya	Institutional Resources	Students' academic achievement	Descriptive statistics, computation of frequencies, percentages, correlation
ii. Determine the effect of teacher: students' ratio on student academic achievement in Kakamega County Kenya	Teacher-student ratio	Students' academic achievement	Descriptive statistics, computation of frequencies, percentages,
iii. Examine the effect of student welfare on student academic achievement in Kakamega County, Kenya	Student welfare	Students' academic achievement	Descriptive statistics, computation of frequencies, percentages,
iv. Establish the effect of ICT integration in school programmes on student academic achievement in Kakamega County, Kenya	ICT integration in school programmes	Students' academic achievement	Descriptive statistics, computation of frequencies, percentages,

3.10 Ethical Considerations

According to Cacciattolo (2015), it is important that when planning for research, ethical considerations are given special attention. During this study, participants received assurance that they were under no compulsion to participate and that they had the option to

decline to answer the questions or even refuse to submit the questionnaire (Judkis-Cohn *et al.,* 2014). Respondents were not under any influence either by way of promised incentives, benefits, or coercion in a bid to make them answer questions. Furthermore, respondents were not obligated to disclose their identities by way of personal names, names of institutions or where they worked.

The aim is to keep the information given, confidential and also to protect the identities of respondents safe (Dodo *et al.,* 2014). Anonymity of the respondents was maintained throughout the process as a way of avoiding legal pitfalls that may affect the outcome of the research. Due to assurance of confidentiality, the respondents were given honest answers to questions in the questionnaire. In line with advice by Keough and Tanabe (2011) which states that a researcher must get consent from relevant authorities before moving to the field for data collection, permits were sought and supplied by National Commission for Science and Technology (NACOSTI), the Office of the Directorate of Post -Graduate Studies at MMUST.

The recommendation by American Psychological Association (APA, 2010) was taken into account, thus the researcher acknowledged all referenced documents. Additionally, the researcher refrained from the utilization of false data as well as presentation of false research methodology and/ or results. Consequently, all interested stakeholders had access to results of this study when they need them. The study was also subjected to an anti-plagiarism test for originality.

CHAPTER FOUR

ANALYSIS AND PRESENTATION OF DATA

4.1 Introduction

This chapter presents the results, the analysis, discussion, and interpretation of data gathered from the answers to the questionnaires distributed in the field as well as respondents' responses from the interview guide. The data collected was presented in a tabular form in accordance with the specific objectives, research questions and hypothesis.

4.2 Questionnaire Return Rate

The research study sampled a total of 433 respondents. 386 students, 25 secondary school teachers, 2 National school Principals, 2 Special school principals and 18 principals from other categories of secondary schools. Table 4.1 illustrates the results.

Table 4. 1: Questionnaire Return Rate

Respondents	Expected	Returned	%
Principals of national schools	**2**	**2**	**100%**
Principals of national special schools	**2**	**2**	**100%**
Other Secondary school principals	**18**	**18**	**100%**
Secondary school teachers	**25**	**25**	**100%**
Secondary school students	**386**	**364**	**94%**
TOTAL	**433**	**411**	**94.9%**

Source: Researcher, 2023

From Table 4.1, from the total of 440 participants who were specifically targeted for participation, a significant proportion of 411 respondents actively engaged in the survey, resulting in a response rate of 93.4%. The significant response rate can be attributed to the

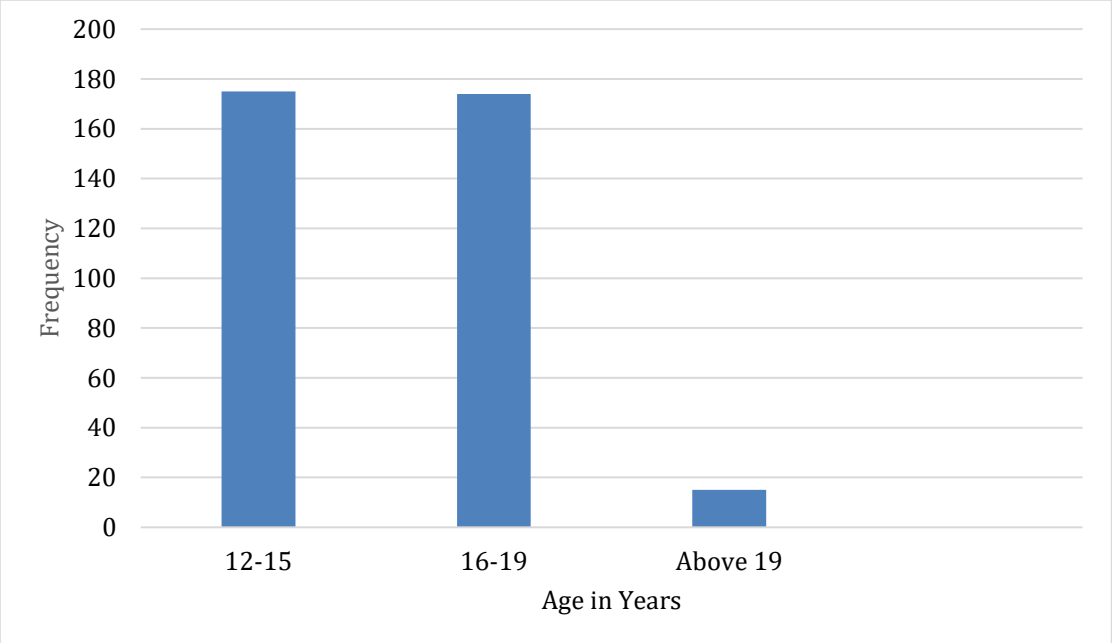
prompt administration and collection of questionnaires on the same day, facilitated by the assistance of research personnel. Saunders et al. (2007) posit that a response rate of 50% can be considered as satisfactory, while a response rate of 60% is deemed as favorable, and a response rate above 70% is regarded as highly commendable. Therefore, the response rate seen in this study was highly satisfactory.

4.3 Demographic Characteristics of Respondents

The study's primary respondents were teachers and learners. Subsequent subsections address the background information accordingly.

4.3.1 Age of student respondents

The study sought to the gender of respondents. The data is tabulated in Figure 4.1.



Source: Researcher, 2023

Figure 4. 1: Age of students

Source: Researcher, 2023

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Source: Researcher, 2023

According to the statistics in Figure 4.1., students aged 12 to 15 had the highest frequency of 175 (48.1%) respondents, followed by students aged 16 to 19, who had 174 (47.8%). 15 (4.1%) respondents were over the age of 19.

4.3.2 Class of the Respondents

The study sought to the class of the student respondents. The data is shown in Figure 4.2.

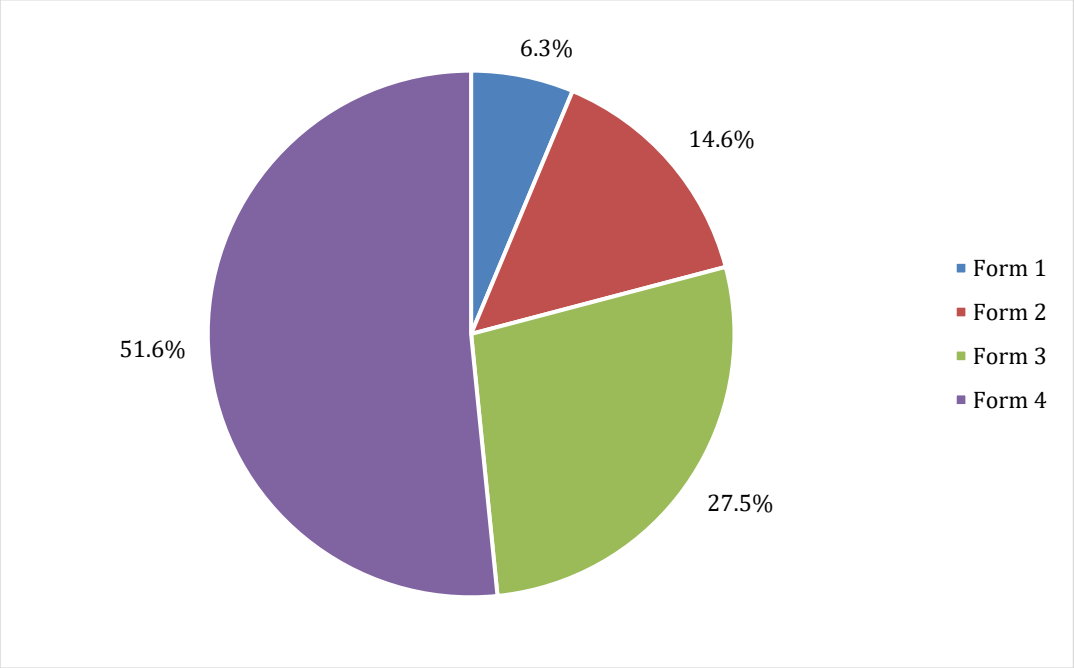


Figure 4. 2: Class of the respondents

Source: Researcher, 2023

According to the results in Figure 4.2, Form four class respondents had the highest frequency of 188 (51.6%), followed by 100 (27.5%) Form three class respondents. Respondents in Forms 1 and 2 recorded 23 (6.3%) and 53 (14.6%), respectively.

4.3.3 School Type

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The study sought to establish the school of type of the respondents. In this the researcher classified the schools under day mixed, Girls boarding, boys boarding, mixed day and boarding schools. The results are summarized in Table 4.2.

Table 4. 2: School Type

	Frequency	Percent	Valid Percent
Day mixed	76	20.9	20.9
Girls Boarding	111	30.5	30.5
Boys Boarding	98	26.9	26.9
Mixed Day and Boarding	79	21.7	21.7
Total	**364**	**100.0**	**100.0**

Source: Researcher (2023)

Results in Table 4.2 show that 111 (30.5%) respondents were from girls' boarding schools, 98 (26.9%) from boys' boarding schools, 79 (21.7%) from mixed day and boarding schools, and 76 (20.9%) from day mixed schools. The results indicate that the study encompassed all the types of schools in the study area.

4.3.4 Student's academic achievement

The study additionally determined the individual scores achieved by the students who took part in the study in their prior examinations. The results are presented in Table 4.3.

Table 4. 3: Scores attained in previous End-Term exams

Scores attained	Frequency	Expected M.S	Percent	Deviation
B+	44	A-	12	-6.4
B	55	B+	15	-2.7
B-	66	B	18	-7.7
C+	50	B-	14	4.6
C	47	C+	13	7.3
C-	60	C	16.5	8.8
D+	42	C-	12	-3.8
Total	**364**		**100.0**	

Source: Researcher, 2023

Table 4.3 records that 44 respondents achieved a B+ grade in their previous exams, 55 achieved a B grade, 66 achieved a B- grade, 50 achieved a C+ grade, 47 achieved a C plain grade, 60 achieved a C- grade, and the remaining 42 achieved a D+ grade. In their previous exam, the majority of the respondents achieved a score of B-. The survey also determined the average score that participants anticipated achieving in upcoming tests and the variations from their expectations.

Table 4. 4: Overall schools mean score

Overall school mean scores	Frequency	Percent
C+ to B	6	27
C to B-	10	46
D- to C-	6	27
Total	**22**	**100.0**

Source: Researcher, 2023

With a mean score ranging from C+ to B in 6 schools, C to B- in 10 schools, and D- to C- in the remaining schools, Table 4.4 displays the results. The data indicate commendable performance in the majority of the schools.

4.4. Effect of institutional resources on academic achievement

The first objective of the study sought to establish the effect of institutional resources on academic achievement in Kakamega County. The attainment of educational objectives and goals depends heavily on institutional resources.

The respondents were asked to rate the statements on institutional resources on students' achievement. The scale used was as follows: Don't know (DK) Strongly disagree (SD), Disagree (D), Agree (A), and strongly agree (SA). Descriptive statistics results are captured in Table 4.5.

Table 4. 5: Effect of institutional resources on academic achievement

Statement	SA		A		D		SD		DK		Total	
	F	%	F	%	F	%	F	%	F	%	Mean	SD
The school has enough, spacious classrooms	182	50.0%	137	37.6%	19	5.2%	26	7.4%	0	0%	2	1
There are enough science laboratories	143	39.3%	100	27.5%	75	18.1%	46	12.6%	0	0%	2	1
School has Computer laboratory	182	50.0%	103	28.3%	55	15.1%	24	6.6%	11	3%	2	1
Our school has a library for reading and for study	216	59.3%	81	22.3%	48	13.2%	16	4.4%	3	0.8%	2	1
There is electricity for proper lighting and backup lighting in case of blackouts	195	53.6%	117	32.1%	36	9.9%	16	4.4%	0	0%	2	1
Every student has his/her own desk	221	60.7%	127	34.9%	11	3.0%	5	1.4%	0	0%	2	1
(For borders) Every student has his/her own bed- no sharing	209	57.4%	111	30.4%	13	3.6%	31	8.5%	0	0%	2	1
School Kitchen and dining area are spacious and clean	141	38.7%	114	31.3%	45	12.4%	52	14.3%	12	3.3%	2	1
The school has a reliable source of water	183	50.4%	98	27.0%	17	4.7%	48	13.2%	17	4.7%	2	1
Our school has facilities and equipment for recreation and sports	140	38.5%	78	21.4%	39	10.7%	76	20.9%	31	8.5%	2	1
Our school has duly assigned personnel in charge of securing its premises, its properties, and those of its students and teachers.	100	27.4%	82	22.5%	31	8.5%	124	34%	0	0%	2	1
School has CCTV for security and surveillance	99	27%	86	23.6%	47	12.9%	103	28%	29	8%	2	1

There are enough latrines available	137	37.6%	108	29.7%	41	11.3%	66	18.1%	12	3.3%	2	1
There are enough bathrooms in the school for students	171	47.0%	89	24.5%	31	8.5%	39	10.7%	34	9.3%	2	1
There are ramps and hand rails for Students with Disabilities	100	42.0%	51	14.0%	94	25.8%	83	22.8%	36	0%	2	1
There are enough textbooks and exercise books for all students	187	51.4%	96	26.4%	31	8.5%	34	9.3%	16	4.4%	2	1
There are enough teachers for all subjects	221	60.7%	97	26.6%	17	4.7%	16	4.4%	13	3.6%	2	1
There are enough dormitories (for boarding schools)	175	48.2%	92	25.3%	34	9.4%	38	10.5%	24	6.6%	2	1

Source: Researcher, 2023

From the results in Table 4.5, 182 (50%) strongly agreed with the statement that the school has enough spacious classrooms, 137 (37.6%) agreed, 19 (5.2%) disagreed while 26 (7.4%) strongly disagreed. This indicates that most of the schools had enough spacious classrooms since a cumulative of 319 (88%) respondents agreed while 45 (12%) disagreed. This implies that most schools had conducive spaces for their students in classrooms. That teachers had easy time organizing their students in class in terms of sitting arrangement and even being able to reach every student while teaching. Organized classroom promotes a sense of calmness and organization, allowing students to focus better and concentrate on their tasks. Akomolafe & Adesua (2015) concur that insufficient and unsuitable classroom conditions can provide challenges for teachers in delivering effective instruction and efficiently managing the class. Consequently, students have a tendency to forgo attending

classes. Students may lack active listening skills, occasionally fail to accurately transcribe or revise their notes, and some may not successfully complete their academic assignments. All of these factors may inevitably lead to diminished academic performance of students.

On whether the school has enough laboratories, 143 (39.3%) strongly agreed, 100 (27.5%) agreed, 75 (18.1%)disagreed while 46 (12.6%) strongly disagreed. From these findings it is notable that 243 (67%) respondents were in agreement with the statement while 121 (33%) disagreed. The findings suggest that the majority of schools included in the survey possess laboratories for their academic disciplines. This aligns with Yadar's (2011) assertion that no science course can be deemed comprehensive without include practical work conducted in the laboratory. Inadequate availability of laboratories exacerbates academic underperformance, particularly in scientific disciplines. Consistent with the perspectives of Konstantopoulos and Borman (2011) and Zhao and Glewwe (2010), these results indicate that the presence of scientific laboratory facilities in industrialized nations enhances student learning and time.

However, some of Principals had contrary views when asked on the adequacy of classrooms, laboratories, dormitories and libraries spaces, one of the principals said this:

> *"There are never enough classrooms, laboratories, libraries and general infrastructure which is a result of the transitional 100 policy being implemented. The number of students enrolling in classes and lockers must always be raised due to this increase. Form Two students are living in those tents, which is why you can see them there. We are eagerly awaiting CDF's*

support, which we have already asked, in order to build additional (Principal -x).”

According to Oduro (2009), controlling class sizes, coping with poor motivation, dealing with inadequate resources, and managing with fewer budgets are some of the issues principals face when providing laboratory facilities. Principals have significant challenges due to a lack of funding for laboratory equipment; as a result, they must collaborate with other stakeholders to find funding for laboratory equipment.

Regarding the presence of a computer laboratory at the school, 182 individuals (50%) highly agreed, 103 individuals (28.3%) agreed, 55 individuals (15.1%) disagreed, and 24 individuals (6.6%) severely disagreed. The majority of the responders, 285 (78%), agreed, while 79 (22%) disagreed. Most schools own computers for various purposes, primarily for curriculum-related activities.

Regarding the presence of a library for reading and study in the school, 216 individuals (59.3%) strongly agreed, 81 individuals (22.3%) agreed, 48 individuals (13.2%) had a neutral opinion, while 16 individuals (4.4%) strongly opposed. These statistics indicate that 297 (82%) of the respondents agreed with the statement, while 64 (18%) disagreed. The findings additionally demonstrated that 195 individuals (53.6%) expressed a strong agreement with the availability of electricity for enough illumination, as well as backup lighting in the event of power outages. 117 individuals, constituting 32.1% of the total, expressed agreement. On the other hand, 36 individuals, accounting for 9.9%, expressed disagreement, while a further 16 individuals, representing 4.4%, severely disagreed. The majority of the respondents, specifically 221 individuals (60.7%), expressed significant agreement on the presence of individual desks for every student. A total of 127

individuals, accounting for 34.9% of the respondents, agreed with the statement. On the other hand, 11 individuals, representing 3% of the respondents, disagreed, while 5 individuals, constituting 1.4% of the respondents, severely disagreed. This shows that a total of 348 individuals agreed with the statement, while 16 individuals disagreed.

Regarding the presence of designated staff responsible for ensuring the safety of the school grounds, its assets, and those of its pupils and teachers, 100 individuals (27.4%) highly agreed, 82 individuals (22.5%) agreed, 31 individuals (8.5%) disagreed, and 24 individuals (34%) severely disagreed. Inquiring about the presence of closed-circuit television (CCTV) at the school for the purpose of security and surveillance. Out of the total respondents, 99 individuals (27%) expressed strong agreement, 86 individuals (23%) expressed agreement, 47 individuals (12.9%) expressed disagreement, and 103 individuals (28%) strongly disagreed. It is worth mentioning that 29 individuals, accounting for 8% of the total, expressed uncertainty on whether the school premises were equipped with CCTV facilities. Based on the results, 51.4% of the respondents strongly agreed that there were sufficient textbooks and exercise books for all pupils. Additionally, 26.4% agreed, 8.5% disagreed, and 9.3% strongly disagreed with this statement.

Regarding the claim that there were sufficient teachers for all subjects, 221 (60.7%) respondents highly agreed, 97 (26.6%) agreed, 17 (4.7%) disagreed, and 16 (4.4%) strongly disagreed. The principals have differing opinions regarding the extent of teacher adequacy. Teachers should possess the necessary skills and resources to effectively fulfill their responsibilities and make use of the available institutional resources. This guarantees the punctual fulfillment of the coursework, thorough review, and enhanced student

performance. The present student-to-teacher ratio in public secondary schools is 29:1. According to the Basic Educational Booklet 2019 from the Ministry of Education (GoK, 2019). The Principal concurred that the school suffers from an insufficient number of teachers, stating:

> *"When teachers are the primary implementers of the curriculum, it becomes extremely critical because how can effective teaching take place in such a situation? In addition, there are a lot of learners in classrooms because of the 100% policy on transition. I've asked the Teachers Service Commission for more teachers on multiple occasions, but to no avail. Sometimes we are compelled to hire former form four leavers who excelled but lacked teaching methodology. I employ BoM teachers, some of them are not qualified. I'm truly confused as a school manager because the parents always complain when their kids don't perform well. (Source: Principal ii)."*

These opinions illustrate the lack of effectiveness of the teachers in these institutions, resulting in an increase in the student-teacher ratio and a decrease in the amount of time that teachers and pupils interact. Therefore, this factor would explain the underperformance of students in county secondary schools. The findings align with those of Qasim and Arif (2014), who discovered that the academic settings, including the teachers, at Pakistani secondary schools, whether private or public, were generally inadequate. The findings validated the assertions made by Caygill, Lang, and Cowles (2010), which attributed the institution's inability to provide adequate education to all students in a class to a scarcity of teachers.

4.4.1. Hypothesis testing on effect of institutional resources on student academic achievement

The study tested **$H_{0}1$** which states that there is no statistically significant effect of institutional resources on student academic achievement in Kakamega County, Kenya. The results are summarized below.

Table 4. 6: Regression between institutional resources and academic achievement

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.336[a]	.113	.111	1.176	.113	46.095	1	362	.000

a. Predictors: (Constant), Institutional Resources on academic achievement

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	63.803	1	63.803	46.095	.000[b]
	Residual	501.062	362	1.384		
	Total	564.865	363			

a. Dependent Variable: Academic Achievement

b. Predictors: (Constant), Institutional Resources on academic achievement

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.638	.213		3.003	.003
	Institutional Resources on academic achievement	.693	.102	.336	6.789	.000

a. Dependent Variable: Academic Achievement

Source: Researcher, 2023

According to the model summary in Table 4.4, institutional resources account for R2 = 11.3% of the variation in student academic achievement. ANOVA results show that the regression model is a strong predictor of academic achievement (F (1.176) r=46.095, p<0.005). The ANOVA results affirm that the regression model effectively predicts academic achievement among students in Kakamega County, Kenya, with a significant F-value of (1.176) F=46.095, p<0.005. This indicates that the included variables, including institutional resources, collectively contribute to the variability in academic achievement scores. Specifically, when institutional resources are absent (zero), the average student academic achievement score experiences a significant increase, as evidenced by the unstandardized coefficient of B=.638. This implies that a unit change in institutional resources leads to a substantial 6.93% improvement in student academic achievement.

Furthermore, the individual impact of institutional resources on academic achievement is statistically significant, as indicated by the t-value of 3.003 at p<0.005. The coefficient of .638 reflects the magnitude of this effect, suggesting that institutional resources contribute significantly to the variability in academic achievement scores among students. Consequently, the null hypothesis positing no statistically significant effect of institutional resources on student academic achievement in Kakamega County, Kenya, is rejected.

This implies that institutional resources influence student academic attainment. When the school has up-to-date resources such as textbooks, classrooms, dorms, and electricity, students benefit from the positive communication of skills. The environment provides them with all they need to acquire the knowledge, resulting in academic achievement for the vast majority of pupils in secondary schools in Kakamega County, Kenya. Conversely, the reverse could be true.

4.5. Effect of Teacher-students' ratio on academic achievement

The second objective of the study sought to establish the effect of teacher-student ration on student achievement. The teacher-student ratio represents the number of students assigned to a single teacher. It has a significant impact on the amount of time teachers have to spend with each student, the degree of individualized attention they receive, and the atmosphere in the classroom, making it a crucial indicator of the quality of education. The results are tabulated in Table 4.7.

Table 4. 7: Effect of Teacher-students ratio on academic achievement

Statement	SA		A		D		SD	
	F	%	F	%	F	%	F	%
The student-teacher ratio influences students' academic achievement.	226	62%	80	22%	38	10%	20	6%
During the session, teachers can glance through each student's notes.	190	52%	100	28%	45	12%	29	8.0%
Each student's individual learning needs are easily met by teachers in the classroom.	68	19%	100	27%	102	28%	94	26
During instruction, slow learners are given special attention.	101	28%	86	24%	64	18%	112	31%
There is no important relationship between student teacher ratio and student achievement	60	16%	110	30%	103	28%	91	25%
Having fewer students per teacher allows for more engaging and effective learning.	152	42%	117	32%	42	12%	52	14%
The class size has some effect on teachers and students achievement	190	52%	100	27%	45	12%	29	8%
Class size affects teacher's use of materials.	234	64%	85	23%	28	8%	17	5%

Source: Researcher, 2023

The majority of the respondents, 306 (84%), concurred that the student-teacher ratio influences students' academic achievement, as indicated by the results in Table 4.5. Conversely, 58 (16%) disagreed with the statement. 290 (80%) cumulatively agreed with the assertion that instructors have a cursory look at each student's books during class sessions, while 74 (20%) disagreed. The results suggest that the majority of the schools have an adequate number of teachers, while a significant number are still experiencing a shortage of instructors. The results also showed that 168 (46%) of the respondents agreed that teachers are able to easily meet the individual learning requirements of each student in the classroom, while 196 (54%) disagreed.

Johnson (2011) observed that instructors are able to devote more time to each student, monitor their progress, and deliver more tailored instruction that better suits the needs of each individual student in schools with a lower student-to-teacher ratio. This is consistent with Johnson's observation.

187 (51%) respondents concurred with the assertion that slow learners are given special attention during instruction, while 176 (48%) disagreed. There is a small margin between those who concurred and disagreed, as indicated by the results. This suggests that the rate of those who receive attention and those who do not is nearly identical.

4.5.1. Hypothesis testing on teacher – student ratio on student academic achievement

The study's second objective sought to test **H_o2**: There is no statistically significant effect of teacher – student ratio on student academic achievement in Kakamega County Kenya. The results are summarized in Table 4.8.

Table 4. 8: Regression between teacher – student ratio and academic achievement

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.423[a]	.179	.170	.78210	.179	19.829	1	362	.000

a. Predictors: (Constant), The school has enough classrooms

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.380	1	5.380	19.829	.000[b]
	Residual	559.485	362	1.546		
	Total	564.865	363			

a. Dependent Variable: Academic Achievement

b. Predictors: (Constant), Teacher – student ratio

Table 4.13 showed the F-statistics was recorded as 19.829 at p = 0.000, implying the model fit two variables. The t-test results of the two variables was summarized in Table 4.14

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.798	.135		13.304	.000

Teacher – student ratio	.476	.107	.423	4.453	.000

a. Dependent Variable: Academic Achievement

From table 4.8, the R-value was 0.423 representing correlation coefficient. It indicated a relatively strong degree of correlation. The adjusted R Square value of 0.179 indicated how much of the dependent variable, students' achievement, could be explained by teacher – student. In this case, 42.3% of students' achievement variability could be explained to be a result of teacher – student ratio. The R square and adjusted R squared had a minimal difference, implying that adequacy of teacher – student ratio is predicated on students' achievement. That meant that 57.7% of the variation in student academic achievement could not be explained by teacher – student ratio. This can be deduced that there may be other factors other than teacher – student ratio that are affecting students' academic achievement in the county. To check how well the sample data fitted in the regression model, F value was obtained.

The results show a constant t-value of 4.453 at p=0.000. The effect of teacher – student ratio on academic achievement was significant. Hence, the null hypothesis **$H0_2$** that there exists no significant effect between teacher – student ratio and academic achievement was rejected.

The study aimed to investigate the effect of teacher-student ratio on academic achievement. Initially, the t-value for the teacher-student ratio was 4.453, with a p-value of 0.000, indicating a significant relationship between the teacher-student ratio and academic achievement.

4.6. Effect of Student welfare on academic achievement

The third objective of the study was to examine the effect of student welfare on student academic achievement. According to Bethell et al. (2017), when we talk about student welfare services, we're talking about the ways in which schools provide essential programs and services to make sure that all students are properly supported and taken care of.

The respondents were asked to rate the statements on student welfare on students' academic achievement. The scale used was as follows: Don't Know (1) Strongly disagree (2), Disagree (3), Agree (4), and strongly agree (5). Descriptive statistics results are captured in Table 4.9.

Table 4. 9: Student welfare on academic achievement

	SA		A		D		SD		DK		Total		
	F	%	F	%	F	%	F	%	F	%	F	Mean	SD
I feel safe at my school.	205	56.3%	93	25.5%	11	3.0%	30	8.2%	25	6.9%	364	2	1
Students at this school treat each other with respect.	190	52.2%	100	27.5%	45	35%	29	8.0%	0	0%	364	2	1
Bullying is not allowed in this school	211	58.0%	84	23.1%	46	13%	23	6.3%	0	0%	364	2	1
Teachers treat students with respect	226	62.1%	80	22.0%	38	29%	20	5.5%	0	0%	364	2	1
Students at my school have opportunities to serve in leadership roles, such as a member of the student council, prefect.	248	68.1%	83	22.8%	16	4.4%	7	1.9%	10	2.7%	364	1	1
Drug and alcohol abuse is not rampant in our school	198	54.8%	60	16.4%	80	22%	23	6%	0	0%	361	2	1
Sexual abuse is not common in our school	234	64.3%	85	23.4%	28	7.7%	17	10.5%	0	0%	364	2	1
Parents provide for the basic needs of their children while at school	150	41%	70	19.3%	131	36%	11	3.0%	0	0%	362	2	1
The school has a policy of peer partnering	100	27%	86	23.6%	103	28%	75	20%	0	0%	364	2	1
School facilities are generally clean	175	48.2%	112	30.9%	42	57%	35	9.4%	0	0%	363	2	1
Our school has a program for learners with special needs	150	41.2%	61	16.8%	105	64%	48	13.2%	0	0%	364	2	2

Source: Researcher, 2023

The results of Table 4.9 suggest that a total of 298 respondents (82%) expressed agreement with the statement "feeling safe at my school," while 36 (10%) disagreed with it. The remaining respondents were uncertain about the statement. Students may develop

symptoms of depression and become involved in conflicts when they lack a sense of security at school. Research has demonstrated that students' academic performance is significantly affected when they experience feelings of insecurity at school. According to the Safety and Standards Manual (2008), schools should foster an environment that is conducive to teaching and learning by fostering quality interpersonal relationships that are cordial, cooperative, and respectful. When this is upheld, the incidence of student misconduct, including bullying, sexual harassment, substance abuse, and disruptive behavior, may be reduced.

290 students (80%) concurred with the assertion that students at this institution regard one another with respect, while 74 students (20%) disagreed. Students demonstrating reverence for one another. This suggests that the school environment is conducive to academic success because students treat one another with respect. The statement that abuse is prohibited in this school was endorsed by 295 respondents (81%) and rejected by 69 (19%). In schools, bullying is synonymous with the exclusion of learners, which can result in anxiety and even dropout rates. A school environment that is free of abuse provides students with an abundance of opportunities to study, which in turn leads to academic success.

When asked whether teachers treat students with respect, 306 (84%) of the respondents agreed, while 58 (10%) disagreed. The margin suggests that educators demonstrate esteem for their students. The response suggests that the relationship between teachers and students is amicable.

The results indicated that 331 (90%) students concurred that they have the opportunity to serve in leadership roles at school, such as a prefect or member of the student council, while 23 (6%) disagreed. It is intriguing that 10 individuals (3%) reported that they were unaware of whether this occurred at their institution.

According to the assertion that drug and alcohol abuse is not prevalent in our institution, 258 respondents (71%) concurred, while 103 respondents (29%) disagreed. The results suggest that there may be instances of substance abuse, as a significant number of respondents disagreed with the statement. It is widely recognized that drug abuse can result in poor academic performance by fostering a culture of indiscipline in educational institutions. Alcohol and drug abuse is not only a hazardous behavior, but also a risk factor for a variety of other risky behaviors, including suicide, high-risk sexual activities, sexual violence, and disruptive behaviors in schools, including student unrest, school burnings, significant school dropout rates, and poor academic performance (Cheloti & Gathumbi, 2016).

When asked whether sexual abuse is prevalent in the school, 319 individuals (88%) expressed agreement, while 45 individuals (12.3%) disagreed. When asked whether parents provide for their children's basic necessities while they are at school, 220 respondents (61%) confirmed that they do, while 142 respondents (39%) disagreed. Students' academic success is contingent upon the involvement of their parents. They fulfill a variety of responsibilities, such as ensuring that their offspring have the necessities. This provides students with an abundance of time to focus on their academic studies, thereby enhancing their academic performance. Despite the fact that the majority of respondents are in accord, there appears to be a growing percentage of those who

disagree with the statement. This implies that not all parents are performing this role to the fullest extent.

The objective of the investigation was to determine whether the institution maintains a peer partnership policy. The statement was endorsed by a slender majority of 186 (51%), while 178 (49%) disagreed. This suggests that certain educational institutions have implemented this initiative, while others have yet to do so. Peer partnering provides students with the opportunity to communicate and open up to other students, both within and outside of their schools, which ultimately enables them to develop academically.

There was a consensus among 287 respondents (79%) that the school facilities are generally tidy, while 76 respondents (21%) disagreed. This suggests that the majority of the schools in the area were sanitary, which was conducive to academic success and learning. Conversely, some schools did not have a clean learning environment. In addition to fostering a tranquil environment that facilitates academic success, cleanliness is important for the health of students.

The study aimed to determine whether schools have a program for learners with special needs. A slight majority of 211 (58%) respondents concurred, while 153 (42%) disagreed. This suggests that the majority of schools have a program for students with special needs, while a slightly smaller percentage do not. Stakeholders in educational institutions possess distinct requirements. This implies that it is necessary to include provisions for them to ensure that the institutions do not discriminate while providing service, in addition to ensuring that the service is delivered properly. This program will guarantee that learners with special needs are on par with their peers in all facets of academia, thereby facilitating

academic success. A significant number of institutions lack the program, as indicated by the results. Gatua (2015) observed that in order to optimize the teaching and learning process, schools must establish a secure and nurturing learning environment that accommodates the needs of children with special needs.

4.6.1. Hypothesis testing on effect of student welfare on student academic achievement

The study's first objective sought to test **Ho3**: There is no statistically significant effect of student welfare on student academic achievements in Kakamega County, Kenya. The hypothesis was tested by establishing a linear relationship between the two variables, self-efficacy and achievement evaluation, and doing simple regression analysis to model this relationship. The statistical findings are succinctly shown in Table 4.10.

Table 4. 10: Regression between student welfare on student academic achievement

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.321[a]	.103	.101	1.183	.103	41.713	1	362	.000

a. Predictors: (Constant), Student Welfare on academic Achievement

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	58.363	1	58.363	41.713	.000[b]

	Residual	506.502	362	1.399	
	Total	564.865	363		

a. Dependent Variable: Academic Achievement

b. Predictors: (Constant), Student Welfare on academic Achievement

Table 4.13 showed the F-statistics was recorded as 41.713 at p = 0.000, implying the model fit two variables. The t-test results of the two variables was summarized as below

Coefficients [a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.889	.186		4.787	.000
	Student Welfare on academic Achievement	.620	.096	.321	6.459	.000

a. Dependent Variable: Academic Achievement

Source: Researcher, 2023

The R value from the model summary of the regression between student welfare and student academic achievement, as calculated from the data in Table 4.10, was 0.321. A coefficient of determination (R square) of 0.103 indicates that 10.3% of the variation in student academic achievement can be attributable to student wellbeing. Student welfare exerted a statistically significant impact on student academic performance.

Additional analysis of ANOVA was conducted to determine if the model adequately accounts for the independent variable in explaining the dependent variable. The results indicate a consistent t-value of 4.787 with a significance level of p=0.000. Introducing student welfare into the equation resulted in a coefficient rise to 6.459 at a significance level of p=0.000. This inferred student welfare resulted in a 1.679 unit increase in academic achievement. The impact of student well-being on academic performance is

substantial. Hence, **Ho3**: There is no statistically significant effect of student welfare on student academic achievements in Kakamega County, Kenya was rejected.

The statistical analysis revealed a significant positive impact of student welfare on academic achievement among students in Kakamega County, Kenya. Initially, the t-value was 4.787 at a p-value of 0.000, indicating a strong and statistically significant relationship between the variables under consideration. Upon introducing student welfare into the regression equation, the t-value increased to 6.459 at a p-value of 0.000. This further underscores the substantial influence of student welfare on academic performance.

The increase in the t-value from 4.787 to 6.459 and the corresponding unit change of 1.679 in academic achievement due to student welfare highlights the crucial role of welfare initiatives in enhancing students' academic outcomes. These findings suggest that improvements in student welfare directly contribute to better academic performance, reinforcing the importance of comprehensive welfare programs in educational institutions.

4.7. Effect of ICT adoption on academic achievement

The third objective of the study was to establish the effect of ICT integration on student academic achievement. The respondents were asked to rate the statements on ICT adoption on students' academic achievement. The scale used was as follows: Don't Know (DK) Strongly disagree (SD), Disagree (D), Agree (A), and strongly agree (SA). Descriptive statistics results are captured in Table 4.11

Table 4. 11: Effect of ICT adoption on academic achievement

Statement	SA		A		D		SD		DK			
	F	%	F	%	F	%	F	%	F	%	Mean	SD
School uses email to communicate with students	69	19%	56	15%	83	23%	150	41%	6	2%	2	1
Students use computers, printers and photocopiers in the computer lab during lessons	90	25%	99	27%	84	23%	77	21.2%	14	3.8%	2	1
Teachers use TV,DVD/VHS player, LCD projector, radio during lessons	50	14%	110	30%	93	26%	91	25%	20	5.5%	2	1
Students have access to internet	120	33.0 %	67	18.4 %	33	9.1%	122	33.5%	22	6.0%	3	1
The school has online programmes for students	113	31.0 %	76	20.9 %	33	9.1%	127	34.9%	15	4.1%	3	1
Students play Online games	129	35.4 %	65	17.9 %	53	14.6 %	101	27.7%	16	4.4%	2	1
Students do assignments online	101	27.8 %	74	20.4 %	54	14.9 %	112	30.9%	22	6.1%	3	1
Use of ICT can improve academic achievement in the school	181	49.7 %	81	22.3 %	28	7.7%	62	17.0%	12	3.3%	2	1
The following apps are used for learning activities in the school - WhatsApp , Facebook, Instagram, Youtube, Zoom, Google meet, Hangout	97	26.6 %	68	18.7 %	46	12.6 %	113	31.0%	40	11.0 %	3	1

Source: Researcher, 2023

The data in Table 4.11 indicates that 125 (34 The data in Table 4.11 indicates that 125 (34%) respondents concurred that the school employs email to communicate with pupils, 233 (64) disagreed, and 6 (2%) were unaware. This may suggest that the majority of educational institutions do not employ email as a means of communicating with their students. These findings are consistent with the findings of Gartmeir et al. (2018), who contend that educators are inadequately trained to effectively implement it with students. The statement was endorsed by 189 (60%) respondents, while 161 (44%) disagreed and 14 (4%) were uncertain about whether students utilize computers, printers, and photocopiers in the computer lab during lessons. A majority of 160 (44%) respondents concurred with the statement that teachers use a TV, DVD/VHS player, LCD projector, or radio during lessons. 184 (51%) respondents disagreed, and 20 (5.5%) were undecided.

The majority of 187 respondents (51%) reported that pupils have access to the internet. 155 respondents (43%) disagreed, and 22 respondents (6%) were unaware. The findings contradict Samual (2010), who disclosed that senior high school pupils lack sufficient internet access. It is disheartening to discover that certain pupils are unable to operate a computer, despite having completed years of formal education. Osunnade (2003) has suggested that instructors or lecturers may direct students to the internet for more in-depth information if they have constant access to it.

In terms of whether the institution provides online programs for students, 189 (60%) expressed agreement, 160 (44%) disagreed, and 15 (4%) were uncertain. The assertion that students complete duties online was endorsed by 175 respondents (48%), rejected by 166 respondents (46%), and uncertain by 22 respondents (6%). The majority of the

respondents, 262 (72%), concurred that the use of ICT can increase academic achievement in the school. However, 89 (24%) disagreed, and 12 (3%) were unaware.

The majority of the respondents, 165 (45%), concurred that the following applications are utilized for educational purposes in schools: WhatsApp, Facebook, Instagram, YouTube, Zoom, Google Meet, and Hangout. However, 159 (44%) disagreed, and 40 (11%) were unaware. The results agre with those of Thompson et al. (2015) who indicated that teachers can now establish online connections with parents through a variety of platforms, such as email, talking points, Skype, Facetime, Messenger, messaging, numerous LMS, Facebook, Twitter, and more. Gartmeier et al. (2016) anticipate that educators will acquire effective communication skills either independently or through assistance from their colleagues. Inconsistent and ineffectual outcomes may result from a lack of training in online communication, literacy, and email use.

4.7.1. Hypothesis testing on ICT adoption on student academic achievement

The study's first objective sought to test **$H_0$4:** There is no statistically significant effect of ICT integration in curriculum implementation on student academic achievement in Kakamega County, Kenya. The results are summarized in Table 4.12.

Table 4. 12: Regression between ICT adoptions in curriculum on student academic achievement

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2	Sig. F Change
1	.424[a]	.180	.178	1.131	.180	79.541	1	362	.000

a. Predictors: (Constant), ICT integration in Curriculum

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	101.757	1	101.757	79.541	.000[b]
	Residual	463.108	362	1.279		
	Total	564.865	363			

a. Dependent Variable: Academic Achievement

b. Predictors: (Constant), ICT integration in Curriculum

Results showed the F-statistics was recorded as 79.541 at p = 0.000, implying the model fit two variables.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.740	.155		4.772	.000
	ICT integration in Curriculum	.524	.059	.424	8.919	.000

a. Dependent Variable: Academic Achievement

Source: Researcher, 2023

The R value obtained from the model summary of the relationship between ICT adoption in the curriculum and student academic progress, as shown in Table 4.12, was quantified as 0.424. A coefficient of determination (R square) of 0.180 indicates that 18% of the variation in student academic achievement may be attributable to the use of ICT in the curriculum. Summarizing, the integration of ICT in the curriculum has a statistically significant impact on the academic performance of students. Additional analysis of ANOVA was conducted to determine if the model adequately accounts for the independent variable in explaining the dependent variable. The results indicate a consistent t-value of 4.772 with a significance level of p=0.000. Once ICT integration in Curriculum was included into the equation, the result rose to 8.919 with a significance level of p=0.000. The student wellbeing indicated a statistically significant change of 4.763 units in academic achievement. ICT integration in curriculum has a statistically significant impact on academic achievement. Hence, **$H_0$4:** There is no statistically significant effect of ICT integration in curriculum implementation on student academic achievement in Kakamega County, Kenya was rejected.

The results indicate a significant relationship between ICT integration in the curriculum and academic achievement. Initially, the constant t-value was 4.772 at p=0.000, suggesting a strong baseline effect on academic achievement. When ICT integration was introduced into the equation, the t-value increased to 8.919 at p=0.000. This substantial increase demonstrates the significant positive impact of ICT integration on academic performance. Specifically, the introduction of ICT integration resulted in a 4.763 unit change in academic achievement, indicating a substantial improvement.

The findings align with existing literature which posits that ICT integration can enhance educational outcomes by providing more engaging, interactive, and personalized learning experiences. ICT tools facilitate access to a vast array of resources and information, support collaboration and communication among students and teachers, and promote critical thinking and problem-solving skills. Consequently, the integration of ICT in the curriculum appears to be a powerful lever for improving student academic performance in Kakamega County, Kenya.

Table 4. 13: Summary of the hypotheses

Objectives	Hypotheses	Results
Determine the effect of institutional resources on student academic achievement in Kakamega County, Kenya	**$H_0$1:** There is no statistically significant effect of institutional resources on student academic achievement in Kakamega County, Kenya	The null hypothesis was rejected
Determine the effect of teacher – students' ratio on student academic achievement in Kakamega County, Kenya	**H_o2**: There is no statistically significant effect of teacher – students ratio on student academic achievement in Kakamega County Kenya	The null hypothesis was rejected
Examine the effect of student welfare on student academic achievement in Kakamega County, Kenya	**Ho3**: There is no statistically significant effect of student welfare on student academic achievements in Kakamega County, Kenya	The null hypothesis was rejected
Establish the effect of ICT integration in school programmes on student academic achievement in Kakamega County, Kenya.	**$H_0$4:** There is no statistically significant effect of ICT integration in curriculum implementation on student academic achievement in Kakamega County, Kenya	The null hypothesis was rejected

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION.

5.0 Introduction

This chapter presents the summary of the main research findings, conclusion, recommendation and suggestions for further research as discussed under the research objectives.

5.1 Summary of Research Findings

This section provides a summary of the study findings based on the objectives of the study. The purpose of this study was to investigate the effect of learner school environment on student academic achievement in the Kenya Certificate of Secondary Examinations in Kakamega County, Kenya. The specific objectives of this study were to determine the effect of institutional resources on student academic achievement, examine the effect of student welfare on student academic achievement and to establish the effect of ICT integration in school programmes on student academic achievement in Kakamega County, Kenya.

5.2. Effect of institutional resources on student academic achievement.

The primary objective of the study was to establish the effect of institutional resources on student academic achievement. The results indicated that most of the respondents indicated to have institutional resources that included classrooms, laboratories, libraries and others. For instance, majority of the respondents indicated that they had enough spacious

classrooms. A majority agreed to have laboratories in their schools. However, the Principals interviewed had contrary opinion that these facilities are never enough.

The study analyzed the relationship between institutional resources and student academic achievement in Kakamega County, Kenya. The results indicated that when institutional resources are absent (zero), the average student academic achievement score has an unstandardized coefficient (B) of 0.638. This coefficient implies that each unit increase in institutional resources results in a 6.93% improvement in student academic achievement.

The analysis further revealed a statistically significant relationship between institutional resources and academic achievement, with a t-value of 3.003 and a p-value less than 0.005. The variability coefficient of 0.638 highlights the considerable effect of institutional resources on academic achievement.

Consequently, the null hypothesis (H01), which posited that there is no statistically significant effect of institutional resources on student academic achievement in Kakamega County, Kenya, was rejected. The findings affirm that enhancing institutional resources significantly boosts academic achievement among students in the region.

5.2. Effect of Teacher-student ratio on academic achievement.

The results revealed that teacher - student ratio influences students' academic achievements. The results further revealed that most of the schools have adequate number of teachers while a sizeable were still struggling with fewer teachers. The results further indicated that majority of the respondents agreed that each student's individual learning needs are easily met by teachers in the classroom. However, the Principal in the study

indicated that he has a thin number of teachers to handle the large student population which was hurting curriculum implementation hence straining academic achievement.

The study investigated the effect of the teacher-student ratio on academic achievement in Kakamega County, Kenya. Initially, the analysis showed a constant t-value of 4.453 at a p-value of 0.000, indicating a strong baseline relationship. However, when self-efficacy was introduced into the regression equation, the t-value decreased significantly to 1.866 at a p-value of 0.063. This change indicated that the teacher-student ratio had an -11.438 unit effect on academic achievement, reflecting a negative effect.

Despite this negative effect, the effect of the teacher-student ratio on academic achievement was found to be statistically insignificant, given the p-value of 0.063, which is above the standard threshold of 0.05 for significance. Therefore, the null hypothesis (H02) stating that there is no significant effect of the teacher-student ratio on student academic achievement in Kakamega County, Kenya, was not rejected.

In summary, the findings suggest that the teacher-student ratio does not have a statistically significant effect on academic achievement in this context, indicating that other factors may play a more crucial role in influencing student achievement.

5.3. Effect of Student welfare on academic achievement

From the findings, most learners were comfortable with their welfare status at schools. A majority reported that there was no bullying in their schools, that they were given equal opportunity to serve in student roles, that teachers treated students with respect. However, the results revealed some cases of drug abuse in schools based on the response from respondents.

The results further showed that some schools did not have peer partnering programmes, a fact that came clear with some learners indicating that they don't even know about it.

On (H03), the effect of student welfare on academic Achievement is significant. The study investigated the effect of student welfare on academic achievement among students in Kakamega County, Kenya. Initial analysis revealed a constant t-value of 4.787 at a p-value of 0.000, indicating a strong and statistically significant correlation between the variables. Upon introducing student welfare into the regression model, the t-value increased to 6.459 at a p-value of 0.000, underscoring the significant positive effect of student welfare on academic performance.

Specifically, the introduction of student welfare led to a 1.679unit increase in academic achievement. This significant change highlights the crucial role that student welfare plays in enhancing educational outcomes. Consequently, the null hypothesis (Ho3) that there is no statistically significant effect of student welfare on student academic achievements in Kakamega County, Kenya, was rejected.

In summary, the findings demonstrate a substantial and statistically significant relationship between student welfare and academic achievement, suggesting that improvements in student welfare directly contribute to better academic performance among students in the region.

5.4. Effect of ICT adoption on academic achievement

According to the results, ICT adoption had an effect on student achievement, hence, (**Ho3)** that stated that there is no statistically significant effect of student welfare on student academic achievements in Kakamega County, Kenya was rejected. Majority of the

students indicated that their schools do not utilize emails to communicate to the students. Further there was an indication that some schools used computers, printers and photocopies in the lab while an almost similar percent indicated that they don't. A majority of the respondents agreed that the following apps are used for learning activities in the school - *WhatsApp* , *Facebook*, Instagram, Youtube, Zoom, Google meet, Hangout. This may imply that schools are yet to fully uptake ICT in their operations with students despite ICT being a game changer in academic achievement of students.

The study examined the effect of ICT (Information and Communication Technology) integration in curriculum implementation on student academic achievement in Kakamega County, Kenya. The initial analysis showed a constant t-value of 4.772 at a p-value of 0.000, indicating a significant baseline relationship between the variables under study. When ICT integration in the curriculum was introduced into the regression equation, the t-value increased markedly to 8.919 at a p-value of 0.000. This substantial rise implies that ICT integration in the curriculum led to a 4.763 unit change in academic achievement.

The significant increase in the t-value underscores the critical role of ICT integration in enhancing academic performance. The results indicate that the integration of ICT in curriculum implementation significantly boosts student academic achievement. Consequently, the null hypothesis (H04) that there is no statistically significant effect of ICT integration in curriculum implementation on student academic achievement in Kakamega County, Kenya, was decisively rejected.

In summary, the findings clearly demonstrate that ICT integration in curriculum implementation has a profound and statistically significant positive effect on academic

achievement among students in Kakamega County. This highlights the importance of incorporating ICT into educational strategies to enhance learning outcomes.

5.3 Conclusion

The study on objective one (1) concludes that there is a significant positive relationship between institutional resources and student academic achievement in Kakamega County, Kenya. The null hypothesis H01, which states that there is no statistically significant effect of institutional resources on student academic achievement, is rejected based on the evidence provided by the regression analysis and ANOVA results. The findings highlight the critical role that institutional resources play in enhancing academic outcomes. A unit increase in institutional resources leads to a notable improvement in student achievement, demonstrating that investments in educational infrastructure, materials, and facilities can significantly boost academic achievement. Overall, this study underscores the necessity of providing adequate institutional resources to foster better educational outcomes and support student success in academic endeavors.

On Objective two (2) of the study, the findings of this study reveal that while the teacher-student ratio initially appears to have a significant effect on academic achievement, this effect is not robust when other variables, such as self-efficacy, are considered. The null hypothesis H02, which posits that there is no significant effect between teacher-student ratio and academic achievement, is rejected. This indicates that the direct influence of teacher-student ratio on academic achievement is significant when accounting for self-efficacy. These results underscore the complexity of factors influencing academic achievement. While teacher-student ratio is an important variable, its effect may be

mediated by other factors such as students' self-efficacy. Educational policies and interventions should therefore consider a multifaceted approach that includes enhancing student self-efficacy alongside optimizing teacher-student ratios to improve academic outcomes.

The study objective three concludes that the analysis unequivocally establishes a significant positive relationship between student welfare and academic achievement in Kakamega County, Kenya. Initially, the constant t-value of 4.787 at p=0.000 indicated a strong correlation between variables. However, upon introducing student welfare into the equation, the t-value increased to 6.459 at p=0.000, signifying a substantial enhancement in the relationship. This implies that for every unit increase in student welfare, academic achievement increased by 1.679 units. Consequently, the null hypothesis (Ho3) suggesting no statistically significant effect of student welfare on academic achievement is decisively rejected.

On objective four (4) the study concludes that ICT integration in the curriculum has a statistically significant and positive effect on student academic achievement in Kakamega County, Kenya. The rejection of the null hypothesis (H04: There is no statistically significant effect of ICT integration in curriculum implementation on student academic achievement in Kakamega County, Kenya) confirms that ICT integration is a critical factor in enhancing academic outcomes. The observed increase in t-value from 4.772 to 8.919 and the unit change of 4.763 in academic achievement underscore the importance of incorporating ICT in educational practices.

5.4 Recommendations

1. These findings have several important implications for educational policy and practice in Kakamega County; given the positive effect of institutional resources on student achievement, there is a clear rationale for increasing investment in educational resources. This could include better funding for school infrastructure, learning materials, and teacher training programs. Policymakers should consider the evidence from this study to prioritize resource allocation in areas that are likely to yield the most significant improvements in student outcomes. Strategic planning should focus on ensuring that schools have the necessary resources to support effective teaching and learning.
2. The study recommends that to improve academic performance, educational policies and interventions should adopt a comprehensive strategy that focuses on boosting student self-efficacy and maximizing teacher-student ratios.
3. Educational institutions should invest in robust welfare programs that address the diverse needs of students. This includes nutritional support, mental health services, financial assistance, and Cocurricular activities, which collectively contribute to a conducive learning environment. Policymakers should formulate and implement policies that prioritize student welfare. This includes allocating adequate resources and funding to schools to develop and maintain comprehensive welfare programs. Schools should regularly assess the effectiveness of their welfare programs through feedback from students and academic achievement metrics. Continuous improvement of these programs based on assessment results will ensure that they

meet the evolving needs of students. Teachers and school administrators should receive training on the importance of student welfare and how to effectively implement and manage welfare initiatives. Support systems for educators can also enhance their ability to contribute positively to student welfare. Engaging the community and parents in student welfare programs can provide additional support and resources. Collaborative efforts can create a holistic support system for students, enhancing their overall well-being and academic success

4. Based on the findings in Objective four, the study recommends that education policymakers in Kakamega County and beyond should prioritize the integration of ICT in the curriculum. This includes investing in necessary infrastructure, such as reliable internet access, computers, and other digital tools. Continuous professional development programs should be implemented to equip teachers with the skills and knowledge required to effectively integrate ICT into their teaching practices. This includes training in the use of educational software, digital resources, and innovative teaching methods that leverage ICT. Adequate funding should be allocated to schools to support the purchase and maintenance of ICT equipment and resources. This will ensure that all students have equal access to the benefits of ICT-enhanced education. Curriculum developers should incorporate ICT competencies and digital literacy skills into the curriculum to ensure that students are well-prepared for the digital age. This includes integrating ICT across various subjects and creating opportunities for students to engage in technology-driven projects and activities. Regular monitoring and evaluation should be conducted to assess the effectiveness of ICT integration in the curriculum. This will help identify

best practices, address challenges, and continuously improve the implementation process. Engage parents and the wider community in the process of ICT integration to foster a supportive environment for students. This can be achieved through awareness campaigns, workshops, and collaborative projects that highlight the benefits of ICT in education.

5.5 Suggestions for further research

1. While this study provides valuable insights, further research could explore the specific types of institutional resources that have the most significant impact on academic achievement. Additionally, longitudinal studies could examine how changes in resource allocation over time affect student achievement.
2. Future research should explore other potential mediating factors and further investigate the interplay between different variables affecting academic performance.
3. Conduct further research to explore specific components of student welfare that have the most significant impact on academic achievement can help in refining and targeting welfare programs more effectively. Additionally, similar studies in different regions can provide comparative insights and best practices.

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APPENDICES

APPENDIX A: QUESTIONNAIRE FOR SECONDARY SCHOOL STUDENTS

Dear respondent,

You have been identified as an important person in this study. The objective of the study is: **'Effect of Learner School Environment on student Academic Achievement in Kakamega County, Kenya.'** Kindly answer all the questions as honestly as is possible. The information will be treated with confidentiality and for the purpose of this study only.

SECTION A:

PERSONAL INFORMATION

Please indicate by ticking in the space allocated the appropriate answer for 1-5 below

1. Your gender
   - Male
   - Female
2. In which age bracket are you?
   - 12-15
   - 16-19
   - Above -19
3. In which class are you?
   - Form 1
   - Form 2
   - Form 3
   - Form 4
4. What is the type of your school?
   - Day Mixed
   - Girls Boarding
   - Boys Boarding
   - Mixed Day and Boarding
5. What type of student are you?

- Border
- Day scholar

SECTION B:

Objective 1: To determine the effect of institutional resources on academic achievement Kakamega County Kenya

1. Please indicate by ticking appropriately the extent of your agreement with the statement given in the space in the table below.
   (SA- Strongly agree, A- Agree, DK- Don't know, DA- Disagree, SD- Strongly disagree)

S/N		SA	A	D	SD	DK
1)	The school has enough classrooms					
2)	Classrooms are spacious enough					
3)	Classroom has proper ventilation					
4)	There are enough science laboratories					
5)	School has Computer laboratory					
6)	Our school has a library for reading and for study					
7)	Electric lamps in the classrooms, library, laboratories and dormitories provide enough lighting for study and security					
8)	Every student has his/her own desk					
9)	(For borders) Every student has his/her own bed- no sharing					
10)	School Kitchen and dining area are spacious and clean					
11)	There is a well-furnished and spacious staffroom					
12)	There is enough accommodation for					

	teachers within the school compound					
13)	School buildings are in good physical condition (e.g., no peeling paint, broken windows, etc.)					
14)	School has a medical sick room					
15)	School has a multi-purpose hall?					
16)	There are blinds on the windows to keep off the sun and heat					
17)	The school has electricity					
18)	The school has a reliable source of water for food preparation, drinking and cleaning					
19)	There are enough water points for handwashing					
20)	Our school has facilities and equipment for recreation and sports					
21)	Our school has duly assigned personnel in charge of securing its premises, its properties, and those of its pupils and teachers.					
22)	School has CCTV for security and survaillance					
23)	The school has a fence					
24)	Sufficient drainage to avoid flooding or stagnant water.					
25)	There are enough latrines available so that students do not have to wait an excessive amount of time to use them.					
26)	Latrines are safe and in good repair.					
27)	There is Ventilation in the toilets					
28)	There are enough bathrooms in the school for students to bathe without waiting in the queue for too long					

29)	For mixed schools, toilets are located separately from girls and boys					
30)	There are fire extinguishers					
31)	There are ramps and hand rails for Students with Disabilities					
32)	Electricity sockets and switches are well protected					
33)	The school has thunder and lightning arrestors					
34)	There is an Emergency Exit Evacuation Plan					
35)	Fire drills are carried out regularly					
36)	There are enough textbooks for all students					
37)	There are enough exercise books for all students					
38)	There are enough teachers for all subjects					
39)	There are enough dormitories (for boarding schools)					

SECTION C: Effect of Teacher-students ratio on academic achievement

Please indicate by ticking appropriately the extent of your agreement with the statement given in the space in the table below.
(SA- Strongly agree, A- Agree, DK- Don't know, DA- Disagree, SD- Strongly disagree)

S/N	Teacher – Student Ratio	SA	A	DK	DA	SD
1)	High students-teacher ratio affects students' academic achievement					
2)	teachers are able to look through every student's note books during the lesson					
3)	Teachers are able to address each student's learning needs in the school					
4)	Slow learners are attended to during the teaching/learning in UPE schools					
5)	There is no important relationship between student teacher ratio and					

	student achievement					
6)	fewer students per teacher gives more opportunity for interactive and effective learning					
7)	The class size has some effect on teachers and students achievement					

SECTION D: The effect of Student welfare on academic achievement

Please indicate by ticking appropriately the extent of your agreement with the statement given in the space in the table below.

(SA- Strongly agree, A- Agree, DK- Don't know, DA- Disagree, SD- Strongly disagree)

S/N	Student Welfare	SA	A	DK	DA	SD
8)	I feel safe at my school.					
9)	(For Day scholars) I feel safe walking both to and from school.					
10)	I sometimes stay home from school because I am worried about my safety					
11)	Students at this school treat each other with respect.					
12)	Bullying is not allowed in this school					
13)	Students don't like to fight each other					
14)	Teachers treat students with respect					
15)	This school places a high value on understanding and respecting children's rights					
16)	All students are treated equally					
17)	Students at my school have opportunities to serve in leadership roles, such s a member of the student council, governing board, or prefect.					
18)	This school encourages other forms of punishment other than corporal punishment					
19)	Drug and alcohol abuse is not rampant in our school					
20)	Sexual abuse is not common in our					

	school					
21)	Parents provide for the basic needs of their children while at school					
22)	Emotional abuse is not common in our school					
23)	The school has a policy of peer partnering					
24)	The school has low incidences of indiscipline					
25)	Classrooms are generally clean					
26)	Toilets are generally clean					
27)	School workers are clean and hygienic					
28)	The school has enough garbage bins					
29)	There are no foul smells in the school					
30)	All students use Toilet Paper, Hand Soap, Paper Towel					
31)	Floors in the school are not slippery so students do not often fall accidentally and sustain injuries					
32)	Our school has a program for learners with special needs					

SECTION E: To investigate the effect of ICT adoption on academic achievement

Please indicate by ticking appropriately the extent of your agreement with the statement given in the table below in as far as ICT adoption an affect academic achievement

S/N		SA	A	D	SD	DK
1)	There is Online registration					
2)	School has a Website					
3)	School uses email to communicate with students					
4)	School has a computer lab - The computer lab has has computers Printers, and photocopier					
5)	Students use computers, printers and photocopiers in the computer lab during lessons					

6)	Teachers use TV,DVD/VHS player, LCD projector, radio during lessons					
7)	Students have access to internet					
8)	The school has online programmes for students					
9)	Students play Online games					
10)	Students do assignments online					
11)	Students use the following applications for academic work					
12)	Use of ICT can improve academic achievement in the school					
13)	The following apps are used for learning activities in the school - WhatsApp , Facebook, Instagram, Youtube, Zoom, Google meet, Hangout					

THANK YOU

APPENDIX B: QUESTIONNAIRE FOR SECONDARY SCHOOL TEACHERS

Dear respondent,

You have been identified as an important person in this study. The objective of the study is: **"effect of learner school environment on student academic achievement in Kakamega County, Kenya"**

Kindly answer the question as honestly as is possible. The information will be treated with confidentiality and for the purpose of this study only.

SECTION A:

PERSONAL INFORMATION

Please indicate by ticking in the space allocated the appropriate answer for 1-5 below

1. Your gender
   - Male
   - Female
2. In which age bracket are you ?
   - 20-30
   - 31=40
   - 41-50
   - Above 50
3. Your work experience
   - Below 5 years
   - 5-10 years
   - 11-20 years
   - Above 20 years
4. What is the type of your school?
   - Day Mixed
   - Girls Boarding
   - Boys Boarding
   - Mixed Day and Boarding
5. What position do you hold in the school?
   - Class teacher
   - Head of Subjects
   - Head of Department
   - Deputy Principal

6. Academic qualification
   - Certificate
   - Diploma
   - Bachelors
   - Masters
   - PhD
   - Other (Specify)

SECTION B:

Objective 1: To determine the effect of institutional resources on academic achievement Kakamega County Kenya

2. Please indicate by ticking appropriately the extent of your agreement with the statement given in the space in the table below.
   (SA- Strongly agree, A- Agree, DK- Don't know, DA- Disagree, SD- Strongly disagree)

S/N		SA	A	DK	SD	D
a	The school has enough classrooms					
b	Classrooms are spacious enough					
c	Classroom has proper ventilation					
d	There are enough science laboratories					
e	School has Computer laboratory					
f	Our school has a library for reading and for study					
g	Electric lamps in the classrooms, library, laboratories and dormitories provide enough lighting for study and security					
h	Every student has his/her own desk					
i	(For borders) Every student has his/her own bed- no sharing					
j	School Kitchen and dining area are					

	spacious and clean					
k	There is a well furnished and spacious staffroom					
l	There is enough accommodation for teachers within the school compound					
m	School buildings are in good physical condition (e.g., no peeling paint, broken windows, etc.)					
n	School has a medical sick room					
o	School has an assembly, dinning, achievement hall (multi-purpose hall).					
p	There are blinds on the windows to keep off the sun and heat					
q	The school has electricity					
r	The school has a reliable source of water for food preparation, drinking and cleaning					
s	There are enough water points for handwashing					
t	Our school has facilities and equipment for recreation and sports					
u	Our school has duly assigned personnel in charge of securing its premises, its properties, and those of its pupils and teachers.					
v	school has CCTV for security and surveillance					
w	The school has a fence					
x	Sufficient drainage to avoid flooding or stagnant water.					
y	There are enough latrines available so that students do not have to wait an					

	excessive amount of time to use them.					
z	Latrines are safe and in good repair.					
	There is Ventilation in the toilets					
aa	There are enough bathrooms in the school for students to bathe without waiting in the queue for too long					
bb	For mixed schools, toilets are located separately as girls and boys					
cc	There are fire extinguishers					
dd	There are ramps and hand rails for Students with Disabilities					
ee	Electricity sockets and switches are well protected					
ff	The school has thunder and lightening arrestors					
gg	There is an Emergency Exit Evacuation Plan					
hh	Fire drills are carried out regularly					
ii	There are enough textbooks for all students					
jj	There are enough exercise books for all students					
kk	There are enough teachers for all subjects					
ll	There are enough Security guards in the school					

SECTION C: The effect of Student welfare on academic achievement

Please indicate by ticking appropriately the extent of your agreement with the statement given in the space in the table below.
(SA- Strongly agree, A- Agree, DK- Don't know, DA- Disagree, SD- Strongly disagree)

S/N	Student Welfare	SA	A	DK	DA	SD
a.	Students at this school help each other, even if they're not friends.					
b.	If students see another student being picked on, they try to stop it.					
c.	Students at this school treat each other					

	with respect.					
d.	Bullying is not allowed in this school					
e	Students don't like to fight each other					
f.	Teachers treat students with respect					
g.	This school places a high value on understanding and respecting children's rights					
h	All students are treated equally					
i	Students have opportunities to serve in leadership roles, such s a member of the student council, governing board, or prefect.					
j	This school encourages other forms of punishment other than corporal punishment					
k	Drug and alcohol abuse is not rampant					
l	Sexual abuse is not common					
m	Both boys and girls have equal opportunities to succeed at this school.					
n	Parents provide for the basic needs of their children while at school					
o	Emotional abuse is not common in our school					
p	The school has a policy of peer partnering					
q	The school has low incidences of indiscipline					
r	Classrooms are generally clean					
s	Toilets are generally clean					
t	School workers are clean and hygienic					
u	The school has enough garbage bins					
v	There are no foul smells in the school					
w	All students use Toilet Paper, Hand Soap, Paper Towel					
x	Floors in the school are not slippery so students do not often fall accidentally and fall and sustain injuries					
y	Our school has a program for children with special needs					

z	The school community makes contributions to support the needy					

SECTION D: To investigate the effect of ICT adoption on academic achievement

Please indicate by ticking appropriately the extent of your agreement with the statement given in the table below in as far as ICT adoption an affect academic achievement

a.	There is Online registration					
b.	School has a Website					
c.	School uses email to communicate with students					
d.	School has a computer lab The computer lab has has computers Printers, and photocopier					
e	Students use computers, printers and photocopiers in the computer lab during lessons					
f	Teachers use TV,DVD/VHS player, LCD projector, radio during lessons					
g	Students have access to internet					
h	The school has online programmes for students					
i	Students play Online games					
j	Students do assignments online					
k	Students use the following applications for academic work					
l	Use of ICT can improve academic achievement in the school					
m	The following apps are used for learning activities in the school ● WhatsApp ● Facebook ● Instagram ● Youtube ● Zoom ● Google meet ● Hangout					

n	There is a planned curriculum that includes lessons on safety while using the Internet.					
o	There is regular reviews of a child's online history					
p	Learners not allowed to take photos and uploaded online without consent of teachers.					
q	Learners encouraged not to give out any personal information online					
r	Communication to parents and stakeholders receive communication through ICT					

APPENDIX C: INTERVIEW SCHEDULE FOR PRINCIPALS

SECTION A:

PERSONAL INFORMATION

1. For how many years have worked as a teacher? _____
2. What are your academic and professional qualifications? _____

SECTION B:

Learners Academic achievement in last examinations

SECTION C

Objective 1: To determine the effect of institutional resources on academic achievement Kakamega County Kenya

3. Does your school have sufficient infrastructural facilities?
4. If not what facilities are missing?
5. Are the classrooms, laboratories, dormitories and libraries spacious enough?
6. Are all rooms used by students well lit ?
7. Are school building well maintained ?
8. What security measures are in place to safe guard students ?

SECTION D: The effect of Student welfare on academic achievement

1. How would you describe student welfare in your school?
2. How often is bullying reported in your school?
3. How does the school value learners' rights?
4. Do parents provide for their children satisfactorily?
5. How clean are school facilities?
6. Are school facilities safe for student use?
7. Do you have a programme for learners with disabilities?

SECTION E: To investigate the relationship between ICT adoption and academic achievement

1. How does the school use ICT for school administration and learning

2. Do you have an internet safety programme for students?

3. Is there a planned curriculum that includes lessons on safety while using the Internet?

4. Does the school have online programmes for students

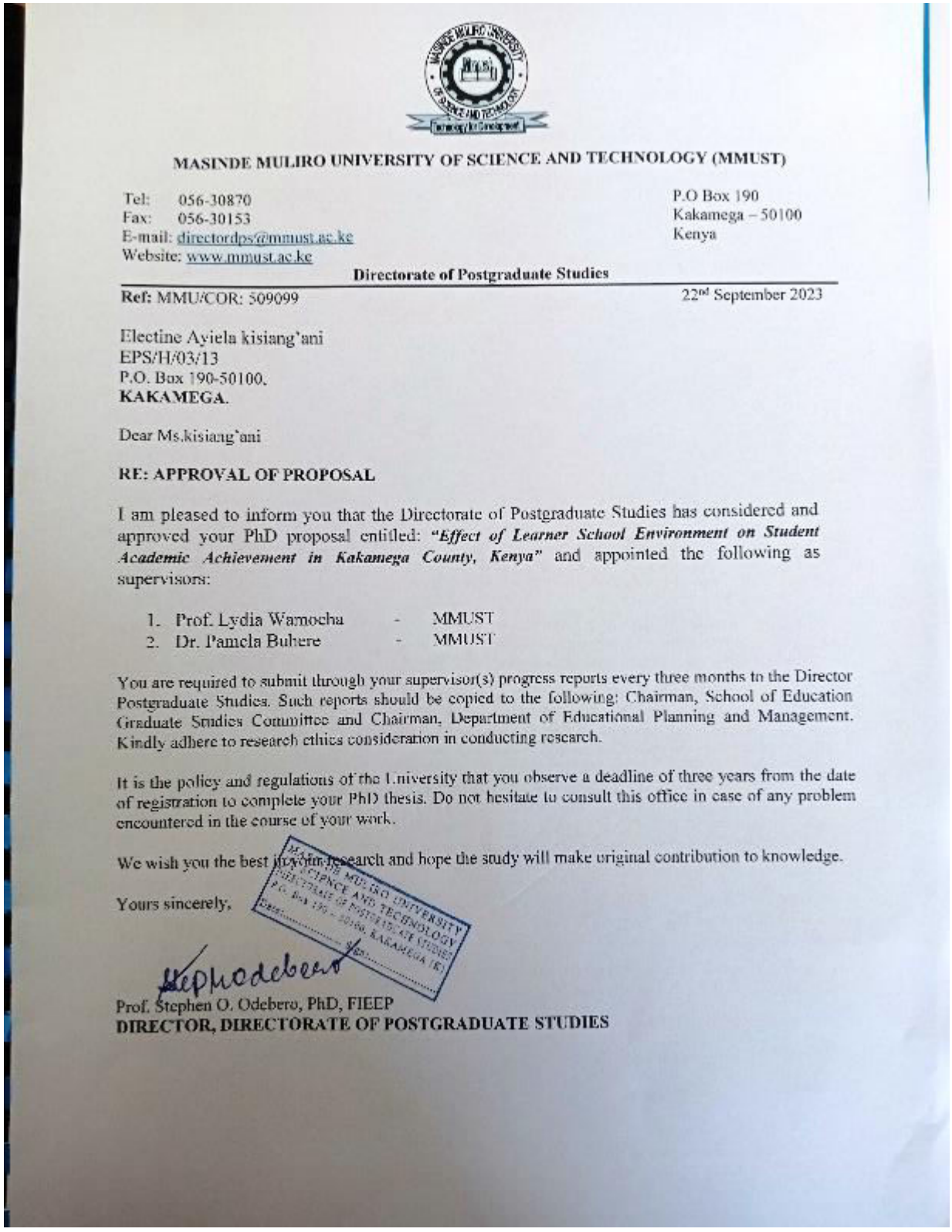
5. Does the school communication to parents and stakeholders receive communication through ICT

6. Does the school use ICT in management?

7. If the answer to question 6 is yes, please explain how?

Thank you

APPENDIX D: RESEARCH APPROVAL



MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

Tel: 056-30870
Fax: 056-30153
E-mail: directordps@mmust.ac.ke
Website: www.mmust.ac.ke

P.O Box 190
Kakamega – 50100
Kenya

Directorate of Postgraduate Studies

Ref: MMU/COR: 509099

22nd September 2023

Electine Ayiela kisiang'ani
EPS/H/03/13
P.O. Box 190-50100,
KAKAMEGA.

Dear Ms.kisiang'ani

RE: APPROVAL OF PROPOSAL

I am pleased to inform you that the Directorate of Postgraduate Studies has considered and approved your PhD proposal entitled: ***"Effect of Learner School Environment on Student Academic Achievement in Kakamega County, Kenya"*** and appointed the following as supervisors:

1. Prof. Lydia Wamocha - MMUST
2. Dr. Pamela Buhere - MMUST

You are required to submit through your supervisor(s) progress reports every three months to the Director Postgraduate Studies. Such reports should be copied to the following: Chairman, School of Education Graduate Studies Committee and Chairman, Department of Educational Planning and Management. Kindly adhere to research ethics consideration in conducting research.

It is the policy and regulations of the University that you observe a deadline of three years from the date of registration to complete your PhD thesis. Do not hesitate to consult this office in case of any problem encountered in the course of your work.

We wish you the best in your research and hope the study will make original contribution to knowledge.

Yours sincerely,

Prof. Stephen O. Odebero, PhD, FIEEP
DIRECTOR, DIRECTORATE OF POSTGRADUATE STUDIES

APPENDIX E: RESEARCH PERMIT



REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: 261122

Date of Issue: 12/October/2023

RESEARCH LICENSE

This is to Certify that Ms.. Electine Ayiela of Masinde Muliro University of Science and Technology, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Kakamega on the topic: EFFECT OF LEARNER SCHOOL ENVIRONMENT ONSTUDENT ACADEMIC ACHIEVEMENT IN KAKAMEGA COUNTY, KENYA for the period ending : 12/October/2024.

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