EFFECT OF CLASSROOM ENVIRONMENT ON THE ACADEMIC ACHIEVEMENT OF SECONDARY SCHOOL STUDENTS IN MOMBASA COUNTY, KENYA

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ABSTRACT

In the 2022 KCSE examination in Kenya, the pass rate was 61.96%, signaling a poor performance influenced by factors such as poverty, overcrowded classrooms, and insufficient teaching quality. The objective of this study was to investigate the impact of the classroom environment on academic performance in public secondary schools within Mombasa County, Kenya. To fulfill this objective, the study concentrated on three key research inquiries: The effect of class size on student academic performance, the effect of teacher-student ratio on academic achievement, and the influence of teaching style on students' academic outcomes. Additionally, the study examined the book-student ratio. Employing a descriptive research design, data were collected to examine the correlation between the classroom environment and academic achievement. The study targeted 1000 participants from four public secondary schools in Mombasa County, with a sample size distributed among principals (0.4%), teachers (9.6%), and students (90%). A descriptive research technique was employed to define the situation, problem, and phenomena without establishing causal relationships. Python was used for comprehensive data analysis and visualizations. The results investigated the influence of class size, teacher-student ratio, teaching style, and resource allocation on the academic success of secondary students in Mombasa County. The findings, systematically depicted through bar charts, underscored the effects of these variables on students' academic performance. The study emphasized the significant role of specific factors in shaping academic achievement. Both educators and students supported the positive impact of smaller class sizes and a lower Teacher-Student Ratio (TSR) on academic performance and engagement. Effective teaching styles, especially pedagogical approaches and individualized instruction, received strong endorsement from students. Educators acknowledged the positive influence of resource distribution, particularly subject-specific books, on academic achievement.

Key terms: Classroom Environment, Class size, teacher-student ratio and Academic Achievement

INTRODUCTION

Every person, regardless of their social, political, or economic circumstances, has the entitlement to receive a basic level of education (Sumr& Lutz, 2017). Moreover, at the 1990 World Conference on Education for All (EFA), education was reaffirmed as an essential human right (Kamau, 2021).It was declared that every child possesses the right to access a free, high-quality, and compulsory basic education as an essential human entitlement. This commitment to education as a human right has been echoed in international agreements such as the 1990 Jomtien Declaration and the 2000 Dakar Declaration, both of which Kenya, among other

nations, has upheld (MOEST, 2004). Numerous governments have made educational access a primary focus in their national development policies, highlighting the global commitment to ensuring that education is accessible to all. Kenya has achieved notable advancements in the campaign for Universal Primary Education (UPE), which is essential to reaching the global objective of EFA. The NARC government's 2003 adoption of Free Primary Education, which has been lauded as an African success story, is among the significant turning moments in this respect. Another is to increase enrolment by 18%, from 6.06 million to 7.16 million students in 2003, and to democratize educational administration through decentralized management and 100% transfer.

These practices, in particular, might lead to overcrowded classrooms hence the need to examine classroom aspects like class size and discover how they affect the academic achievement of students. The class environment, as defined by Fredricks and McColskey (2018), is the social, emotional, and intellectual climate in a classroom, influenced by interactions between students and teachers, physical and organizational features. On the other hand, Durlak (2015) defined class environment as the combination of physical, social, emotional, and instructional factors that influence students' learning and development in a classroom, including the physical setting, social climate, and instructional practices. In a meta-analysis of 109 studies examining the influence of class size on student achievement across Asian nations, Lei and Liu (2020) discovered that smaller class sizes yielded a positive effect on student performance, particularly noticeable among younger students and in mathematics and science courses. The effect was most significant among students in smaller classes. Additionally, a study involving 15,000 students in China revealed that those in smaller classes attained higher scores on national standardized tests compared to their counterparts in larger classes. Similarly, an investigation involving 8,000 students in Japan indicated that students in smaller classes exhibited higher attendance rates and lower dropout rates than those in larger classes. The smaller class sizes demonstrated a beneficial effect on student achievement across Asian countries.

Ajiboye and Oke (2014) explored the effect of class environment and focused on impact of class size on student achievement in Nigerian secondary schools. The average class size is 45 students, significantly higher than the recommended 30-40 students per class. A study of 500 secondary schools in Nigeria found that 60% had class sizes over 50. Another study found that smaller classes scored higher on standardized tests. A survey of 100 secondary school teachers in Nigeria revealed that 80% believe large class sizes negatively impact student achievement. The research conducted by Kwach and Ong'ondo (2018) unveiled that Kenyan primary schools are witnessing a rise in class sizes, averaging 42 students per class, surpassing the recommended range of 35-40 students per class. A survey of 200 primary schools in Kenya indicated that 70% had class sizes exceeding 45 students per class. Moreover, another investigation revealed that students in smaller classes outperformed their counterparts in larger classes on standardized tests.An examination of 50 primary school teachers in Kenya unveiled that 90% perceive large class sizes as having a detrimental effect on student achievement. The findings suggest that governmental interventions should be implemented to decrease class sizes and enhance student outcomes. The objective of this study was to investigate the effect of

classroom environment on the academic performance of secondary students in Mombasa County.

Academic Achievement

Houtman and Lent (2023) define academic achievement as the attainment of a student's short- or long-term educational goals, typically measured through grades, standardized tests, and other assessments. Conversely, Wendler and Koller (2022) characterized academic achievement as the culmination of a learning journey resulting in the acquisition of knowledge, skills, and competencies within a particular academic field, often evaluated through assessments such as tests and exams.Hattie (2021) defined academic achievement refers to a student's understanding and application of school content and skills, often assessed through grades and standardized tests. Hammond (2020) opined that academic achievement refers to the development of students' knowledge, skills, and abilities across various academic domains, indicating their learning and educational success. Boaler (2019) stated that academic achievement involves students' profound comprehension of academic content, the capacity to use knowledge to solve issues, and the development of a passion for learning, beyond just achieving good grades.

Heckman and Murphy (2022) Stated that overall, student achievement has increased significantly over time, but there are significant differences by race/ethnicity and socioeconomic status. For example, white students' average reading score increased by 0.16 standard deviations per decade, while black students' average score increased by 0.23 standard deviations per decade. However, the gap between white and black students remains significant, with white students scoring about 0.5 standard deviations higher on average. Students from high-SES families outperformed those from low-SES families by about 1.0 standard deviations on average. Cheng (2022) examined the educational achievement of Grade 5-10 East Asian schoolchildren in Japan, China, South Korea, Taiwan, and Singapore from 1967 to 2020. They identified seven main themes: cultural and educational quantity variables, non-cognitive abilities, cognitive ability levels, curriculum rigor, school factors, socioeconomic factors, and individual factors. The study found that East Asian countries outperformed the OECD average in all three subjects in the 2018 PISA assessment, with Singapore ranking first in all three subjects, Japan second in mathematics and science, and South Korea third in mathematics. However, significant disparities exist within East Asian countries, such as a large gap between urban and rural students in China.

In a research conducted by Oladokun and Adeyinka (2017) in Nigeria, a significant divergence in academic performance was noted among secondary school students in educational institutions located in both urban and rural areas.Urban schools achieved higher means scores, while rural schools had lower scores. Their study also revealed a significant gender difference, with male students outperforming female students in all subjects except English Language. This highlights the need for improved educational planning and policy in Nigeria. According to Nantambi (2018) parents' education levels significantly influenced the academic achievement of Ugandan sixth-grade students. Academic achievement was superior among students with higher education levels compared to those with lower education levels. This

effect was consistent across different discipline areas, including reading, numeracy, and health sciences. Mbwana and Mbiti (2019) identified several factors encouraging failure in Tanzanian community secondary schools, including the lack of qualified teachers, inadequate teaching materials, poor infrastructure, high student-teacher ratio, lack of parental involvement, and poverty.

In 2022, Opiyo conducted a study focusing on the academic performance of secondary schools in Kenya. The average KCSE exam score was 4.33, showing a slight increase compared to the results from 2021.However, the percentage of students with a C+ or higher, required for admission to public universities, remained at 12.2%. The study found significant variation in academic achievement across different regions and school types, with public national schools outperforming Public County and private schools in terms of KCSE achievement. Nyambura (2021) unveiled that educational institutions that adopted the seven associations of the Effective Schools Model, encompassing instructional leadership, concentration on the school's mission, safety measures, expectations for achievement, home-school connections, supervision of students' advancement, and provision of learning opportunities, experienced notably elevated final form four exams scores compared to those lacking these associations. Additionally, the investigation discovered a favorable relationship between the quantity of associations implemented and KCSE achievement.

Mwavu (2022) opines that high-performing schools have a positive, supportive environment with high expectations, clear academic goals, and a strong sense of community. 75% of high-performing schools achieved a C+ or above grade compared to only 25% of low-performing schools. High-performing schools also have a strong motto, vision, mission, clear academic goals, a supportive environment, and strong community sense. According to Njeri (2021) large class sizes, inadequate teaching and learning resources, student discipline, and lack of parental support. The average class size is 50 students per teacher, with only 60% having adequate resources. Additionally, 25% of students have been involved in disciplinary cases, and 40% lack adequate parental support.

Class Environment

According to Levin and Nolan (2014), classroom environment refers to the physical, social, and emotional context where teaching and learning occur. It includes factors like the classroom layout, student-teacher relationships, classroom climate, and teacher instructional practices. On the other hand, Bullard defines class environment as a complex interplay of physical, social, and instructional factors that influences student engagement, motivation, and learning outcomes. It is influenced by teacher actions, student interactions, and school culture. A global perspective on class environment considers the diverse educational settings and pedagogical approaches across different regions, considering cultural, socioeconomic, and historical factors that influence classroom dynamics and student learning outcomes. European classrooms focus on teacher-led instruction, academic rigor, and standardized testing, with classroom sizes ranging from 20 to 30 students. American classrooms exhibit a more diverse range of teaching styles, with a growing emphasis on differentiated instruction and individualized learning plans.

Technology integration and project-based learning are increasingly common, with classroom sizes in the United States tending to be larger than in Europe (Cobin, 2015).

Asian classrooms are known for their emphasis on rote memorization, discipline, and respect for authority, but there is a growing movement towards more active learning strategies and student engagement. Classrooms typically share common constituents, such as teachers, students, curriculum, and resources. According to Bollin and Kurtz (2019), there are approximately 1.5 billion students enrolled in primary and secondary education worldwide, with an average student-teacher ratio of 21:1, varying significantly by region. The global average class size is 28 students, but this can range from 10 to 50 students depending on the region and school setting. Global education spending is estimated at $5 trillion, with developing countries spending an average of 15.2% of their GDP on education. The class environment in Africa is characterized by challenges such as large class sizes, lack of resources, and poor infrastructure. In spite of these challenges, considerable strides have been made in the classroom environment in recent years, including enhancements such as rising enrollment rates and an increase in the availability of qualified teachers.

North Africa has generally better class environments, but still faces high dropout rates, gender inequality, and violence. South Africa has a more varied class environment, with some schools having excellent facilities but many being overcrowded and understaffed. Sub-Saharan Africa faces the most challenging class environment due to factors like poverty, conflict, and disease (Facundo, 2019).

The class environment comprises physical, social, and academic factors. Enrollment rates in Africa are high, with primary education at 76% and secondary education at 38%. The average teacher-student ratio is 27:1, and Africa spends an average of 5.2% of its GDP on education. A positive class environment can help students develop positive attitudes, be more engaged in learning, and achieve higher academic outcomes. Conversely, a negative class environment may lead to dropout, behavioral problems, and stress and anxiety (Kamau, 2017). Different scholars have used different measures of class environment; Baek and Choi (2002) discovered that students' perceptions of the classroom environment greatly influence their academic success in Korea. They employed the Classroom Environment Scale (CES) to gauge these perceptions, revealing that favorable classroom environments correlated with enhanced academic achievement.Kuang (2019) also found that students who perceived their classroom environment as open had higher levels of civic knowledge and self-efficacy. They also found that good student-teacher relationships and participation experiences predicted an open classroom climate. Both studies highlight the importance of individual and school-level factors in creating democratic classrooms in Asian contexts.

In a research by Nworgu (2016), an investigation into the relationship between school type (public versus private), classroom environment, and the academic performance of junior high school students in Ghana was conducted. The researchers utilized WIHIC questionnaire to evaluate students' perceptions of their classroom environment. The results revealed that students who held positive perceptions of their classroom learning environment exhibited

higher levels of achievement in mathematics. Notably, students attending private schools reported more favorable perceptions of their classroom environment compared to those attending public schools. Furthermore, the study found that students in smaller classes achieved higher levels of success in mathematics compared to those in larger classes.

Chepkonga (2017) investigated the influence of classroom environment on the learning of social studies in public pre-primary schools situated in West Pokot County, Kenya. Findings revealed that students in smaller classes (20-25 students) experienced a more favorable learning environment compared to those in larger classes (30-35 students). Furthermore, the study indicated that the physical aspects of the classroom environment, such as layout, lighting, and temperature, significantly affected students' learning outcomes. Students who perceived their classroom environment as supportive, engaging, and conducive to learning demonstrated higher academic achievement in social studies. In a separate study, Githini (2016) conducted research in Kenya to explore the connection between classroom climate and students' goal structures within high-school biology classrooms. The research found that a supportive classroom climate, characterized by teacher support, cooperation, and a focus on mastery learning, was positively associated with students' mastery and performance goals. Students who perceived their classroom climate as more supportive and focused on mastery learning were more likely to set mastery goals and achieve higher academic performance in biology.

This study will focus on class size and teacher-student ratio. According to Ali (2022), the quantity of pupils in a certain class, taught by a single teacher. Adeywmi (2021) defined class size as a measure of the quantity of pupils occupying a certain classroom, usually only one teacher teaching the class. Boozer and Rouse (2020) provided a definition of class size as the count of students in a specific classroom, taught either by a single instructor or a group of teachers. Similarly, Modlin (2018) described it as the number of students in a particular classroom being instructed by a single teacher or a team of teachers. The teacher-student ratio, on the other hand, signifies the number of students per teacher within a school, often expressed as a ratio such as 10:1. A lower ratio enables teachers to offer personalized attention, thereby fostering improved academic outcomes. However, the ideal ratio varies depending on factors such as grade level, subject area, and student learning requirements. Advantages of a low ratio include enhanced individualized attention, increased opportunities for feedback, better classroom management, and reduced stress for teachers. Nevertheless, determining the optimal ratio is not universally applicable and hinges on factors like grade level, subject area, and student learning needs (Solheim, 2017). Teaching style refers to the distinctive methods employed by educators to convey knowledge and skills to their students.

These styles can be categorized into three main types: teacher-centered, student-centered, and hybrid. Teacher-centered teaching involves the teacher actively directing instruction and providing information, often through lectures, demonstrations, and direct explanations. Student-centered teaching emphasizes active student participation and engagement, often incorporating activities, discussions, and student-led projects. Hybrid teaching combines elements of both styles, creating a flexible learning environment. The choice of teaching style depends on factors such as the teacher's personality, subject matter, students' learning styles,

and overall learning objectives. Effective teaching often involves a blend of styles to cater to diverse student needs and create a dynamic learning environment (Howe, 2019).

Statement of the Problem

The 2022 KCSE examination administered by the Kenya National Examinations Council unveiled an average pass rate of 61.96%, with 40% of students falling short of meeting the necessary academic benchmarks. Factors contributing to this underperformance include overcrowded classrooms, scarcity of resources, inadequate teaching quality, poverty, and student indiscipline. The Ministry of Education reported an average student-teacher ratio of 1:35, higher than the recommended ratio of 1:25. This highlights the need for further investigation and effective measures to address the situation. Research shows that academic achievement is influenced by various factors, including motivation, educational quality, family support, and societal importance.

Nevertheless, there is a scarcity of adequate research regarding the influence of the classroom environment on academic achievement. This study sought to address this gap by examining the effects of the classroom environment on the academic performance of students attending public secondary schools in Mombasa County, Kenya.

Objectives of the Study

The study was based on the following specific objectives;
a) To explore how class size affects the academic performance of secondary students in Mombasa County, Kenya.
b) To assess how the ratio of teachers to students influences the academic success of secondary students in Mombasa County, Kenya.

LITERATURE REVIEW

Empirical Literature Review

This body of work investigated the link between student academic achievement and classroom size. A literature review also includes a methodical process for locating, identifying, and analyzing materials that have information helpful to the research problem.

Class Size and Student's Academic achievement

In their study, Glass and Smith (1978) conducted a meta-analysis of 75 research papers examining the correlation between class size and student success. They found a slight but statistically significant positive relationship. Pupils' achievement test scores increased in a class that had fewer students. However, the study did not control for confounding factors like teacher quality and student motivation. It also did not investigate the mechanisms through which class size affects student achievement, and did not explicitly define or theorize about the mechanisms through which class size affects student achievement.

The STAR Study, conducted by Krueger (1999), utilized a randomized controlled trial in Tennessee. It revealed that students in smaller classrooms achieved significantly higher scores

on achievement tests compared to those in larger classes. This effect was particularly pronounced among kindergarten and first-grade students, as well as those from low-income backgrounds. However, the study was only conducted in Tennessee, and it is unclear whether the results would generalize to other states or countries. Additionally, he failed to investigate the long-term effects of class size reduction, which could be a research gap in the context and methodological aspects of the study.

Atta, Riley and Cavanagh (2011) found that students in smaller classes (less than 20 students) outperformed those in larger classes (more than 20 students) on standardized tests in mathematics and English. However, the study's limitations include its country of study, not controlling for other factors influencing student achievement, and not exploring the mechanisms through which class size influences student achievement. The results may not be generalizable to other Asian countries.

Tomoyuki (2012) discovered that a decrease in class size correlated with a slight yet statistically noteworthy enhancement in mathematics performance among eighth-grade students in Japan, South Korea, Taiwan, Hong Kong, and Singapore. However, the study left a gap in research by not investigating potential variations in the connection between class size and student achievement across diverse East Asian nations. Despite these constraints, the study offers indications suggesting that reduced class sizes might enhance student achievement in Asia. Subsequent research should delve deeper into this matter and take into account contextual elements that influence the correlation between class size and student performance in various Asian regions.

PPSMB (2015) evaluated the impact of classroom size on academic achievement. The results demonstrated that classroom size had a significant effect on academic performance, indicating that smaller classes outperformed larger ones. However, the study was limited to a single local government area in Nigeria and did not consider other factors influencing student achievement, such as teacher quality and student motivation. The methodological research gap was due to the descriptive survey design, which does not allow for causal inferences. Additionally, the study did not address the contextual and conceptual research gaps on the relationship between study variables, such as the role of cultural factors or the effect of different teaching methods on student achievement in different class sizes.

Mwita (2019) ascertained the presence of an inverse relationship amidst the amount of work undertaken by teachers and the academic achievement exhibited by students. The research was carried out within a limited sample of schools, potentially limiting its applicability to the broader spectrum of Tanzanian secondary schools. Moreover, the study failed to account for additional variables influencing student achievement, such as socioeconomic status or teacher competence. The conceptual research gap is that it does not provide a clear explanation for the positive correlation between class size and student achievement.

Kanyamwenge (2017) studied how class size affected secondary school pupils' academic achievement in Tanzania's Karagwe District. The mixed-methods research found that large

classes negatively affected student achievement, particularly in lower-ability students. Teachers struggled to manage large classes and provide personalized attention, leading to less engagement and motivation among students. The study's limitations include its focus on a single district, not considering other factors like socioeconomic status or teacher quality, and its contextual research gap, which does not address the challenges of reducing class size in Tanzania, such as shortages of teachers and classrooms.

A sample of 1,240 secondary school pupils from Maurice (2019) study found a notable unfavorable link between class size and academic achievement. The outcomes propose that students in smaller class settings exhibit superior achievement compared to their counterparts in larger class settings. However, the study's limitations include its focus on one county, not considering other factors like student ability, teacher quality, and school resources, and not investigating the mechanisms through which class size affects achievement. Additionally, the study identified a conceptual and contextual research gap in understanding how class size affects student achievement in Kenya.

Barasa, Wambui, and Kinyanjui (2012) identified the correlation between class size and the academic performance of students with learning difficulties in secondary schools situated in Kakamega. However, the study, confined to one county, failed to control for various factors influencing student achievement, such as student aptitude, teacher competence, and school resources. Furthermore, it did not delve into the mechanisms through which class size influences academic outcomes. The deficiencies in the research encompass conceptual, contextual, and methodological aspects. Employing a correlational research design, the study lacked the capacity to establish causality, and its findings may not be broadly applicable to the entire nation.

The ratio of teachers to students and academic performance of students

Chang and Chen (2014) explored the correlation between teacher-student ratio (TSR) and student academic performance in elementary schools across Taiwan. This study, encompassing 3,200 elementary schools, adopted a correlational research approach, employing both descriptive and inferential statistical analyses. The results revealed a noteworthy inverse relationship between TSR and academic achievement, suggesting that as TSR rises, student academic performance tends to decline.

Adeyemo and Ajayi (2020) examined the influence of teacher-student ratio (TSR) on academic achievement among students in public secondary schools located in Oyo State, Nigeria. Employing a quasi-experimental design, the study encompassed 100 schools, equally divided into low and high TSR categories. The findings unveiled a substantial contrast in average student achievement scores between schools with low and high TSR, suggesting that students in low TSR schools exhibit superior academic performance. The research proposes that TSR might exert a negative impact on student achievement.

Similarly, Agyapong and Okyere (2021) delved into the association between teacher-student ratio (TSR) and academic performance among students in public secondary schools within the

Ashanti Region of Ghana. This investigation, comprising 200 schools, utilized a correlational research framework alongside statistical analyses. The outcomes showcased a noteworthy adverse correlation between TSR and student performance, with $r = -0.62$, $p < 0.001$, indicating that as TSR escalates, students' academic performance diminishes.

Kyambi (2019) examined the influence of pupil-teacher ratio (PTR) on curriculum implementation practices within public primary schools situated in Mwingi North Sub-County, Kenya. This mixed-methods study encompassed 20 schools and employed purposive sampling techniques. The outcomes revealed a notable adverse association between PTR and the efficacy of curriculum implementation ($t = -4.56$, $p < 0.001$). Additionally, the research identified challenges faced by teachers in schools with elevated PTRs, particularly in providing individualized attention to students, consequently impeding effective curriculum implementation. These findings underscore the significance of PTR in shaping curriculum implementation practices.

Nyiwa and Moet (2017) examined the influence of pupil-teacher ratio (PTR) on student performance in the Kenya Certificate of Primary Education (KCPE) within Makueni County, Kenya. This research utilized a correlational approach involving 150 public primary schools. The findings unveiled a substantial negative correlation between PTR and student performance ($r = -0.56$, $p < 0.001$), indicating that as PTR rises, student performance in the KCPE declines.

RESEARCH DESIGN AND METHODOLOGY

Employing a descriptive research technique, this study aimed to delineate the prevailing situation, issues, and phenomena. According to Kothari (2014), obtaining social and personal facts, beliefs, and attitudes is best accomplished through the use of a descriptive survey design. Such an approach was indispensable for examining the effect of the classroom environment on the academic performance of secondary students in Mombasa County, Kenya. The study was conducted in Mombasa County, Kenya. The selection of Mombasa County was justified by its diverse cultural and historical background, which contributes to a variety of classroom settings. The region's economic and educational hub, Mombasa, hosts a variety of schools with diverse infrastructural set ups, teaching methodologies, and resources, allowing researchers to explore a broad spectrum of classroom environments.

The study included a target population of 1000 participants sourced from public secondary schools located in the three wards of the Jomvu sub-county. This selection was intended to ensure representation from diverse geographical areas within the sub-county.By including 500 respondents from Mikindani and 500 from Miritini, the study sought to capture diverse perspectives from different regions. The inclusion of teachers, principals, and students from each stratum ensured a comprehensive understanding of the educational landscape. The calculation of the proportion of each stratum to the entire population helped maintain balance and fairness in the sampling process, ensuring equitable representation of all stakeholders. Furthermore, with 225 pupils, 24 instructors, and a principal in each of the four schools from the two wards, the sample size was structured to provide sufficient data for robust analysis while maintaining consistency and comparability across the selected schools and wards. This

thorough method of selecting the target population ensures that the study's results accurately represent the wider educational landscape within the Jomvu sub-county.

The research utilized a random sampling methodology to select three categories: Principals (0.4% of the target population), Teachers (9.6% of the target population), and Students (90% of the target population). Principals were randomly chosen from the total population of 4% to provide a representative and unbiased view of the effect of the classroom environment on academic achievement. Teachers were selected from the 96% of the target population, aiming to capture diverse teaching experiences, instructional methods, and perceptions regarding the classroom environment. Students were randomly chosen from the 90% of the target population to ensure a diverse representation considering factors such as academic performance, socio-economic background, and individual learning preferences. This method guarantees a diverse and impartial perspective on the influence of the classroom environment on academic achievement. In a descriptive study, a sample size of 10% to 50% is acceptable (Mugenda & Mugenda, 2013). A sample of 128 respondents was reached upon. Data was collected utilizing semi-structured questionnaires and interview schedules. These questionnaires were distributed to respondents and subsequently gathered by the researcher along with a trained research assistant. The questions were meticulously designed to meet the objectives of the study and provide ample data for drawing conclusions.

The research investigating the influence of classroom environment on the academic performance of secondary students in Mombasa County, Kenya, utilized Python for thorough data analysis. Regarding the examination of class size's impact, the analysis encompassed descriptive statistics, correlation, regression, and visualizations such as scatter plots. Similarly, the evaluation of teacher-student ratio adopted a similar approach. In assessing teaching style's effect, Python facilitated frequency analysis, mean comparisons, and statistical tests, presented through visual aids like bar charts. The analysis of books-students ratio followed a methodology akin to that of class size, employing Python for statistical analysis and visualization. The study's findings were methodically presented, allowing for a nuanced comprehension of the influence of these variables on the academic performance of secondary students in Mombasa County.

RESULTS AND FINDINGS

All respondents received 100 questionnaires and 28 interview schedules, and all research instruments were returned, resulting in a noteworthy 100% response rate. It's essential to highlight that this response rate is deemed appropriate for the current social research endeavor. This observation aligns with the findings of Mugenda and Mugenda (2013), who suggest that a response rate of 60% is commendable in social research. Moreover, it's worth noting that a response rate of 70% or higher is even more desirable in this context, emphasizing the importance and relevance of the obtained response rate.

Data on gender showed that Among the principals, there were two males and two females, each representing 50% of the total. Among the students, 60% were male, while 40% were female. Regarding the teaching staff, there were 15 male teachers, accounting for 62.5% of the total,

and nine female teachers, comprising 37.5%. The researcher determined that gender did not have an impact on student academic achievement. This finding is consistent with Akiri's (2008) conclusion that there was no significant correlation between teachers' gender and academic achievement.

Data on working experience showed that that there were four principals and 24 teachers, each classified according to their years of experience. None of the principals had less than one year of experience, whereas the majority of teachers, specifically 8.33%, fell into this category. In the 1-2 years range, none of the principals had experience, but 16.67% of teachers did. Similarly, in the 3-4 years range, none of the principals had experience, while 25% of teachers did. Notably, in the 4-5 years range, 25% of principals and 29.17% of teachers were included. Regarding those with over 5 years of experience, 75% of principals and 20.83% of teachers were categorized accordingly.

Data on Education levels of teachers and principals showed that the educational makeup of both school leadership and teaching personnel exhibited significant predominance of degree holders among principals, constituting 90% of the total. Masters degree holders comprised 10% of the principal cohort, while those with a PhD constituted a smaller yet notable 25%. On the other hand, the teaching staff exhibited a more diversified educational background, with the majority holding degrees (75%), followed by 10% with Masters degrees and 15% with PhDs. This distribution underscores the varied academic qualifications within the teaching and administrative roles.

Effect of Classroom Environment on Secondary Students' Academic Performance

This study aimed to investigate the influence of classroom environment on the academic performance of secondary students in Mombasa County, Kenya. It explored the effect of class size on academic achievement, the relationship between class size and student engagement, and the effects of larger class sizes on personalized attention.

Responses from Teachers and Principals Regarding the Effects of Class Size on Student Academic Achievement

The researcher aimed to determine the effect of class size on students' academic performance.

Figure 1: Teacher responses regarding the Effects of class size on student academic achievement.
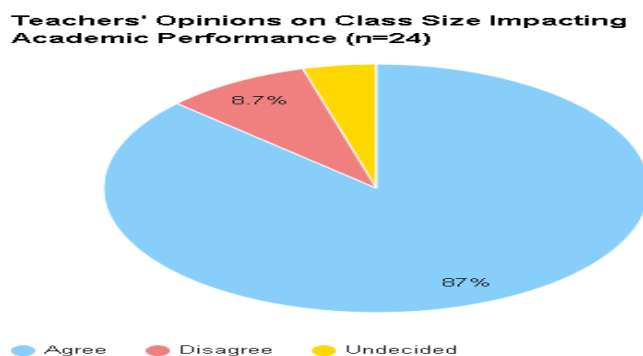
Teachers' Opinions on Class Size affecting   Academic performance

The diagram above illustrates findings from interviews conducted with 24 teachers regarding the relationship between class size and academic performance in secondary schools. The results indicated a strong consensus among participants. Specifically, 20 out of the 24 teachers firmly concurred that class size significantly affects students' academic achievement. These educators underscored the importance of smaller class sizes, noting their positive association with improved academic outcomes. Conversely, two teachers expressed dissenting views, indicating their disagreement with the idea that class size affects academic performance. Their perspectives may stem from different experiences or considerations within the teaching context. Moreover, one teacher remained undecided on the issue, suggesting a level of uncertainty or a lack of definitive opinion based on their teaching experience.

The responses of principals regarding the Effect of class size on student academic achievement

The outcomes of interviews conducted with four principals concerning the influence of class size on academic performance in secondary schools. The responses unveiled a noticeable pattern. The majority of principals, precisely three out of four, strongly concurred that class size significantly affects students' academic performance. These educational leaders stressed the positive connection between smaller class sizes and improved academic results, echoing the viewpoint commonly shared among teachers. Conversely, one principal expressed a dissenting opinion, indicating disagreement with the idea that class size affects academic performance. This distinct perspective could be rooted in specific contextual factors or alternative considerations within the role of school leadership.

Responses from students regarding effect of class size on student academic achievement

A notable portion of students (46%) acknowledge the influence of class size on academic achievement, with an additional 54% expressing agreement. This collective awareness suggests a perceived link between class size and academic success. Furthermore, the significant preference for smaller classes, highlighted by 28% of students who perceive greater engagement in smaller settings, along with a substantial 72% supporting this notion, underscores the positive effect of smaller class sizes on student involvement and participation.

However, concerns raised by 7% of students, echoed by 78%, regarding the detrimental effects of larger classes on personalized attention, indicate a potential drawback associated with increased class sizes. This implies that larger class sizes may impede the provision of individualized attention, a factor deemed crucial by students for their learning experience. Ultimately, the study concludes that smaller class sizes positively affects students' academic performance.

Responses from teachers and principals regarding the effect of teacher-student ratio on students' academic achievement

The study aimed to investigate the effect of the Teacher-Student Ratio on students' academic achievement by analyzing its influence on the quality of education, interactions between students and teachers, and whether high teacher workload and stress adversely affect the learning and teaching experience.

Table 1: Responses from teachers regarding the effect of the Teacher-Student Ratio on students' academic achievement.

Variable	Perspective	Agreed	Dissented	Undecided
Overall Quality of Education	Teacher-Student Ratio	17	4	3
Improved Interaction	Lower Teacher-Student Ratio	18	5	1
Teacher Workload and Stress effects	High Workload and Stress	16	6	2

Table 1 above represents teacher perspectives on the teacher-student ratio in secondary schools through interviews with a diverse group of 24 educators; the findings illuminated a range of viewpoints. A notable majority, comprising 17 out of the 24 teachers, concurred that the teacher-student ratio holds significant sway over the overall quality of education, emphasizing the positive influence of a balanced ratio. Conversely, four teachers voiced dissent, emphasizing the role of other variables, while three teachers remained undecided, signaling the intricate nature of their experiences and perspectives. When delving into the relationship between a lower teacher-student ratio and improved interaction, a prevailing 18 out of 24 teachers endorsed the notion that a reduced ratio positively contributes to heightened student-teacher interaction. However, five teachers voiced concerns, attributing them to contextual factors, while one teacher remained undecided. Transitioning to the effects of elevated teacher workload and stress on students' learning experiences, 16 teachers concurred on the detrimental effects, highlighting potential spillover consequences. Meanwhile, six teachers took a dissenting stance, attributing effective management, and two teachers remained undecided, acknowledging the nuanced nature of this intricate relationship. These nuanced findings underscore the intricate and varied perspectives within the teacher community, highlighting the multifaceted nature of the teacher-student ratio and its potential implications for education quality, student-teacher interaction, and the effects of teacher workload and stress on students' learning experiences.

Table 2: Responses from principals regarding the effects of the Teacher-Student Ratio on students' academic achievement.

Variable	Perspective	Agreed	Dissented	Undecided
Overall Quality of Education	Teacher-Student Ratio	3	1	0
Improved Interaction	Lower Teacher-Student Ratio	2	2	0
Teacher Workload and Stress effects	High Workload and Stress	3	1	0

The table 2 shows examination of principal perspectives regarding the teacher-student ratio in secondary schools, findings from interviews with four school principals unveiled a spectrum of viewpoints. In terms of the overall quality of education, all four principals concurred that the teacher-student ratio holds significant sway, emphasizing its pivotal role in shaping educational outcomes. Similarly, when discussing the relationship between a lower teacher-student ratio and improved interaction, two principals expressed agreement on the positive impact, while two others held dissenting views, indicating a more nuanced perspective within the group. In relation to the influence of elevated teacher workload and stress on students' learning experiences, three principals concurred on the adverse impact, emphasizing potential

spillover effects, whereas one principal disagreed. These observations highlight the diverse viewpoints among school principals regarding the complex dynamics of the teacher-student ratio and its ramifications for education quality, student-teacher interaction, and teacher workload.

Table 4.7: Responses from students regarding the effect of the Teacher-Student Ratio on students' academic achievement.

Teacher-Student Ratio	SA (n)	(%)	A (n)	(%)	SD (n)	(%)	D (n)	(%)	UD (n)	(%)
Teacher-Student Ratio affects quality of education positively	2	7.1	15	53.6	0	0.0	2	7.1	9	32.1
lower teacher-student ratio allows for better interaction between students and teachers	2	7.1	10	35.7	2	7.1	5	17.9	1	3.6
teacher workload and stress levels affects your learning experience	2	7.1	9	32.1	1	3.6	7	25.0	0	0.0

The student feedback presented in Table 4.8 underscores a uniform perspective regarding the influence of teacher-student ratios on academic achievement and the learning process. A significant majority, accounting for 60.7% of participants, expressed consensus that a lower teacher-student ratio contributes positively to the quality of education. This sentiment aligns with the belief that smaller class sizes correlate with improved educational outcomes. Likewise, 42.8% of students acknowledged that a reduced teacher-student ratio allows for better interaction between students and teachers. This viewpoint echoes the idea that smaller classes foster more engaging and personalized interactions, potentially enhancing the learning process. Interestingly, concerning the effects of teacher workload and stress levels on the learning experience, a significant 39.3% of students agreed that these factors influence their learning experience. This insight sheds light on the indirect influence of teacher well-being on student education, implying that reduced stress and manageable workloads could positively impact student learning environments.

CONCLUSIONS AND RECOMMENDATIONS
Conclusions

In conclusion, the research findings resoundingly highlight the pivotal role of specific factors in shaping academic achievement. The effect of class size emerges as a critical determinant, with a consensus among educators and students that smaller classes positively influence academic performance and student engagement. The Teacher-Student Ratio (TSR) is identified as a key consideration, with overwhelming support for the positive effects of a lower TSR on educational quality and interactions, emphasizing the need to address teacher workload and stress for an optimal learning environment. Teaching styles, particularly effective pedagogical approaches, assessment practices, and individualized instruction, receive strong endorsement from students, contrasting somewhat with diverse educator opinions. The study also underscores the importance of resource distribution, as educators recognize the positive impact of subject-specific books on academic achievement, despite acknowledging disparities. The unanimity among educators and students on the influential role of the learning environment in shaping academic success emphasizes the imperative of fostering a conducive, supportive, and enriching atmosphere.

Recommendations of the Study

Drawing from the thorough insights garnered in the study, the subsequent focused suggestions are offered to improve academic performance and optimize the broader educational setting.
Class Size Optimization:

- Advocate for policies and strategies aimed at reducing class sizes, as the research consistently underscores the positive effect of smaller classes on academic achievement and student engagement.
- Encourage educational institutions to explore innovative methods to manage class sizes effectively, fostering an environment conducive to personalized attention.
Teacher-Student Ratio Enhancement:
- Implement measures to achieve a lower Teacher-Student Ratio (TSR) to positively influence the quality of education and interactions between students and teachers.
- Prioritize interventions to address teacher workload and stress, recognizing their direct effects on the teaching experience and, consequently, on students' academic success.

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