Influence of Working Environment of Mathematics Teachers on Students' Academic Performance in Mathematics in Kenya. A Study across Public Secondary Schools in Suba South Sub-County

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ABSTRACT

Mathematics is a core subject in the primary and secondary School curriculum and is essential in the lives of people in society. Mathematics sharpens human mind, develops their logical thinking; enhances their reasoning ability and build spatial power. However, the Kenya Certificate of Secondary School Education (KCSE) examination mean score for Mathematics in Suba South Sub-County had been below average with 3.034 in 2019, 3.52 in 2020, 4.25 in 2021 and 4.258 in 2022. This necessitated the current investigation whose objective was to establish the influence of Working Environment of Mathematics Teachers on Students' Academic Performance in Mathematics in Kenya. The study was guided by a conceptual framework that consisted of showed the influence of selected factors and learners' performance in Mathematics and consisted of the independent variable, working environment of mathematics teachers, dependent variable, students' academic achievement in mathematics as signified by students performance in KCSE mean score. The study was anchored on the theory of performance by Elger (2007). The findings of this study revealed that mathematics teacher working environment influenced students' academic performance moderately as was indicated by a mean rating of 3.33. This finding concurred with qualitative findings. The study concluded that mathematics teachers' working environment moderately influenced students' academic achievement in mathematics. The study recommended that the school administrators should provide a conducive working environment by ensuring that teachers are housed appropriately, interpersonal relationships are promoted and appropriate community participation in learning activities encouraged besides enhancement of student entry behavior, management style of Headss of departments and principals leadership styles.

Keywords: Influence, Working Environment, Mathematics Teachers, Students' Academic Performance, Mathematics, Kenya. Public Secondary Schools, Suba South Sub-County

INTRODUCTION

According to the Ministry of Education (2019), education is a platform for national socio-economic and cultural transformation. It influences an individual's personal development and contributes to the wealth of the country. This is mainly because it is at the heart of many successful careers and lives. This is supported by Park, Brombacher and Brocardo, (2021) who stated that Mathematical comprehension plays a key role in the processing the content of other courses such as science, social studies, music and art. Therefore, the importance of mathematics cannot be discounted as it furnishes an effective avenue for building discipline, logical reasoning and rigor of mind which are fundamental in understanding the world and its people.

Danya, Adem and Richard (2018) found that principals still played a role in the degree of teachers' enjoyment and interest in teaching mathematics and controlling work environment that may constrain teachers' ability to make independent decisions in work places. This was supported by Smith (2023) who contends that leadership is a social relationship between two or more persons who depend on each other to attain certain mutual goal. Different leaders have different styles of leadership which they employ to achieve their goals. Mshelia (2021), stated that leaders who uses Laissez-Faire leadership style, the leader have zero concern in attaining school objectives and stakeholders demand. Teachers are not self- motivated, there is low self-esteem, low morale and have poor attitude to work. This gives room for unethical behavior of teachers, moral delinquency of students, staff degradation and poor education quality. However, transactional leadership emphasizes positive and

negative reinforcement in realization of goals. It is reactive in nature, appeals to self- interest, focuses on result and depends on self-motivated people (Mshelia, 2021). This study will find out how good leadership in secondary schools will enhance good performance on students in Mathematics.

In their study on the influence of working relationship between principals and teachers on students' activities in Nigeria Ikenga and Ogbaga (2021), found that good working relation between a principal and a teacher enhance students' preparation for examination, enables students to handle anxiety during examination, encourage stress free examination conditions and create conducive environment for examination. They further say that good relationship between principal and teachers ensures adequate provision of textbooks for lessons, good use of continuous assessment, and application of good teaching methods by teachers leading to effectiveness of the students during lessons. Previous studies identified a gap in relationship between teachers and administration and inadequacy of text books to students therefore filling the gap of in adequate books. This study will establish the influence of interpersonal relationships among teachers on students' performance in mathematics.

Synthesis of Literature on Influence of Mathematics Teachers' Working Environment and Students' Academic Performance in Mathematics

From the global perspective, many related research has been carried out on the influence of teacher working environment on students' academic performance. Global Monitoring Report (Burcu, Yeliz, Didem & Ertugrul, 2017) shows that Sub-Saharan Africa investment in education has not fully translated to development of functional skills and knowledge that transform economies. A good school climate promotes safety, healthy relationships, engaged learning and increased quality work. This agreed with World Bank Report (2018), UNESCO (2019) and Asiimwe and Zuena (2023) that indicates that environmental factors motivate teachers to perform in several activities.

A research done in Pakistan by Awan and Tahir (2018) noted that conducive working environment can be generated by developing good relationship with coworkers. They further observed that the level of productivity can be improved through developing a conducive working environment. Conducive environment is important because problems faced by teachers are related to work environment and this is noted by Jepketer (2017) who opines that the skills that will confront today's world challenges will depend on the improvement of students' performance with the teacher being part of the process or pathway to learning. The teacher can only play this role adequately if the school climate is appropriate and promotes student learning. The reviews confirm that conducive environment will support productivity and quality work. This study would establish how the conducive environment in terms of good interpersonal relationship would influence students' academic performance.

A study consisting of 605 students from 14 different educational institutions in Japan which found that teachers who motivate students in mathematics learning, achieve high GPA on average compared to teachers who do not motivate learners (Ullah, Badshah & Qamar, 2018). Teacher motivation encourages students to open their minds to learn the subject. The studies of Ullah et al. (2018) used different educational institutions to establish the influence of teacher motivation on student performance in Mathematics, their finding might be true and applicable, but this study will use secondary school students in Suba South Sub-County to establish the influence of teacher motivation on students' in Mathematics.

Bahtilla (2017), found that poor working environment and bad principal leadership style contribute greatly to teacher attrition. Although teacher attrition was not a major concern of this study, but teacher attrition may reduce consistency in syllabus coverage which in turn may affect students' performance. Therefore, good leadership would encourage teachers to work hard and achieve their educational goals. This is in agreement with the findings of Mshelia (2021) that transformational leadership focuses on corporate progress and motivates staff for mastery in taking future roles. It gives room for commitment, efficient production, team spirit and timely realization of school goals because it has higher concern for staff and work. The current research would find out how good principal leadership styles motivate both teachers and learners to perform well in Mathematics.

A study in Nigeria on influence of work environment on teacher commitment, revealed that to ensure high

commitment level of teachers, adequate attention must be paid to the work environment like interpersonal relationship, work load and physical working condition as these are important factors that trigger the commitment level of the teacher, and by so doing the overall organizational performance is guaranteed (Marcus, 2018). A study in Rwanda realized that in order to raise students' mathematics performance at a higher level, efforts must be made to improve the school environment so that it foster students' social skills, physical wellbeing and moral standard (Ephrem & Celestin, 2023). The reviewed studies recommended the implementation of interventions to boost students' self-efficacy and reduce mathematic anxiety. The current study would look at the learning environment that reduces anxiety associated with mathematics as to improve performance.

Mbozi (2018) found out that teacher work load was assessed in terms of number of lessons they have per week and the number of students in their respective classes. This teaching load will not give the teacher adequate time to prepare, interact with learners adequately, gives assignment and mark. High load may affect teacher's effectiveness in teaching. Nuwaha, Atukunnda and Kyayemagye (2023), studied the relationship between workload and teacher's effectiveness in Secondary Schools in Uganda. The findings revealed that excessive workload negatively impacts teachers' effectiveness, leading to issues like failure to prepare lesson plans and poor classroom management. He further noted that heavy workload decreases students' performance. Kyayemagye (2023) recommended that teachers should not be given excessive additional responsibilities beyond their teaching duties. This is in consistent to Edison (2023) study done in Uganda which found that school environment and working conditions have a correlation with teacher motivation. The previous study was carried out in Uganda and looked at other responsibilities given to teachers as workload causing ineffectiveness of teachers. This study will focus on the influence of such teachers' workload on students' performance Mathematics in Suba Sub County.

According to Ogari (2021), conducive environment motivates teachers to give their best ability in terms of preparation and performance and it encourages teachers to work effectively. In addition, conducive working environment motivate teachers and learners to achieve their set goals and targets. Conducive environment encourages teachers in their work and help them feel motivated, create peace of mind hence motivating them to work harder with a sense of ownership and commitment. This is consistent with a study in Kitui on effect teaching work load on teacher performance which revealed that when teaching load is high then teacher performance may be adversely affected (Ndambo, Maithya & Mwaura, 2021).

A study by Rose and Sika (2019) on determining influence of teacher workload on academic performance in Secondary School in Suba Sub County, Kenya, revealed that influence of teacher's workload on academic performance leads to inadequate time for proper classroom preparation, effective lesson planning and giving individualized attention to students. Rose et al., (2019) suggested that all stakeholders in the education sector work together to enhance student academic performance. This study would look at the influence of stakeholders' involvement in education and impact on students' performance in mathematics.

Conceptual Framework

Conceptual framework of the study was grounded on Elger (2007) theory of performance. The theory states that an individual performance is determined by holistic interaction of six key components. The six key components were the independent variables and they were; level of identity (shared identity within a community and elevation of individual uniqueness); level of skills (actions relevant in various contexts); level of knowledge (facts, concepts and principals acquired through education); context of performance (variables in the performance situation like classroom environment); personal factors (individual personal situation such as motivation and social-emotional attributes); and fixed factors (unalterable individual characteristics like height and genetics). Elger (2007) emphasized three axioms for effective performance improvement; growth mind set (positive emotions like dedication and hard work); immersion in an enriching environment (creating quality learning environment); and engaging in reflective practices (actions that help learners pay attention and learn from experience). Elger (2007 theory of performance provided a framework for understanding performance and improvement in any setting where valued results are produced including academics. The theory was important in carrying out this study where the independent variables are the selected factors and dependent variable was students' performance in KCSE. The independent variable was the influence of mathematics teachers' working environment on students' academic performance in mathematics.
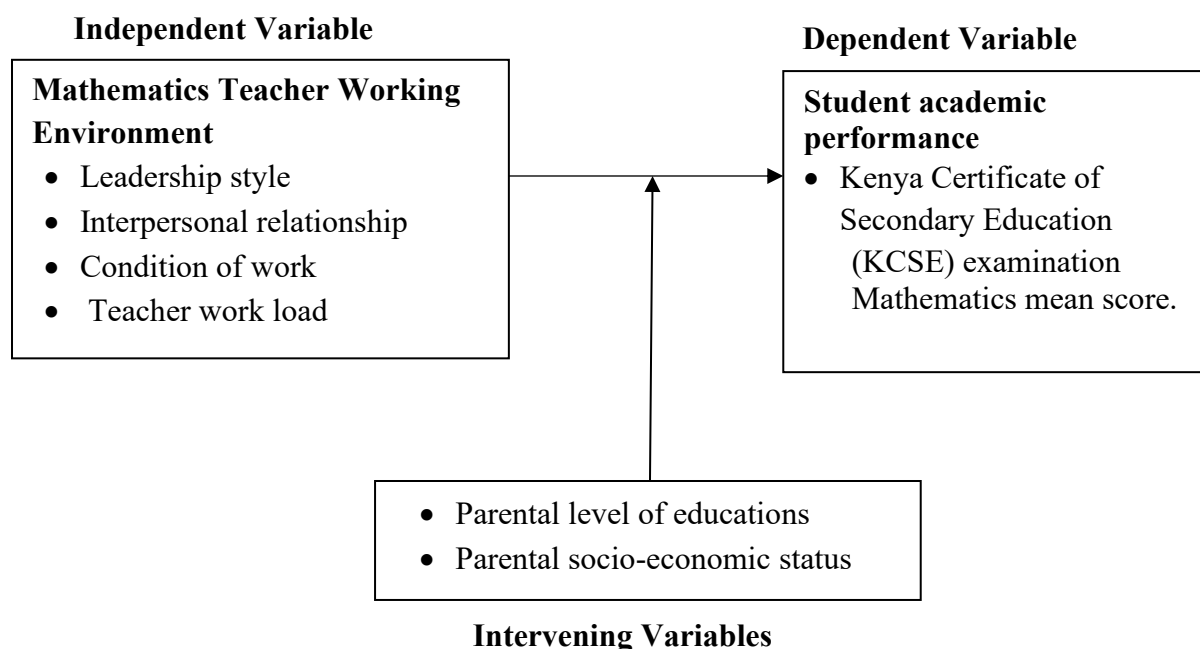
Independent Variable

Dependent Variable

Mathematics Teacher Working Environment
• Leadership style
• Interpersonal relationship
• Condition of work
• Teacher work load

Student academic performance
• Kenya Certificate of Secondary Education (KCSE) examination Mathematics mean score.

• Parental level of educations
• Parental socio-economic status

Intervening Variables

Figure 1: Conceptual Framework showing influence of Working Environment of Mathematics Teachers on Students' Academic Performance in Mathematics.

In the conceptual framework independent variables would include mathematics teacher working environment (leadership styles, interpersonal relationship, teacher condition of work, teacher work load), teaching and Learning resources (printed media, physical resources, human resources teaching models and use of Information Commination Technology (ICT) in teaching and learning) and teacher attitude while the dependent variable would be the student KCSE mean grade. However, students' performance in mathematics might be influenced by several factors but the key factors are the teacher working environment, teaching and learning resources and teacher attitude.

Conducive environment encourages teachers in their work, create peace of mind hence motivate them to work harder which would translate to better performance on students. This is supported by Thapliyal, Joshi, and Purohit (2022) who noted that a positive work environment characterized by supportive leadership, collaborative colleagues and adequate resources enhance teacher job satisfaction by creating a conducive atmosphere for teaching. A teacher with adequate teaching and learning resources encourages student's participation and involvement which would improve student memory and mastery of the content. Taylor and Robison (2019) found that availability of instructional resources such as Information And Communication Technology (ICT) has contributed to quality education and better students' performance.

Research Objective

The research objective was to establish the influence of mathematics teachers' working environment on students' academic performance in mathematics in public secondary schools.

RESEARCH METHODOLOGY

Descriptive survey and correlational research designs were used. The target population was 38 Headss of Department, 100 Mathematics teachers, 38 school principals, and 1 Sub County Quality Assurance Standard Officer totaling to 177. Simple random sampling was used to select 35 principals, 35 Heads of Department, and 79 mathematics teachers. Saturated sampling was used to select 1 Sub County Quality Assurance Standard Officer making a sample of 168 respondents. Questionnaires, interview guides and document analysis were used to collect data. Validity of the instruments was determined by experts from the department of education administration who examined the instruments and the recommended adjustments were done in the final instruments. Reliability of the instruments was determined by piloting in 3 schools. The reliability coefficient for Headss of Department was 0.718 and for teachers was 0.836. Quantitative data was analyzed using

descriptive and inferential statistics and presented in frequency counts, percentages and means while qualitative data was transcribed and analyzed for content and categorized into themes and sub themes.

RESULTS

Respondent by Gender

The demographic characteristics of Headss of Department and mathematics teachers categorized in terms of gender and the results were summarized in Table 1.

Table 1 Respondents by Gender

Respondent category	Male		Female	
	Frequency	Percentage	Frequency	Percentage
Headss of Department	27	70.3	8	24.3
Mathematics Teacher	57	81.4	11	15.7

Source: Field Data 2025

Table 1 show that more male respondents than female respondents participated in this study. This ensured research equity, identifying biases and preventing perpetuation of stereotypes by providing complete picture of different population in data collection. Leila and Joriah (2019) found that women participate in research after developing friendship with the researcher for a long time while male participants' friendship does not play a significant role.

Table 2 Respondent by Age

Age Group	Heads of Department		Mathematics teacher	
	Frequency	Percentage	Frequency	Percentage
25-29	5	13	24	34.3
30-34	19	51.4	27	38.6
35-39	5	16.2	10	14.3
40-49	4	13.5	7	10.0
50-59	1	2.7	1	1.4

Source: Field Data 2025

From Table 2 it can be observed that most of the respondents lie in the age group 30-34 which translate to 51.4% for Heads of Department and 38.6% for mathematics teachers. This provided the detailed profile of the study participants.

Table 3 Respondent by Qualification

Qualification	Heads of Department		Mathematics teachers	
	Frequency	Percentage	Frequency	Percentage
Diploma	0	0	3	4.3
Bachelor's Degree	33	94.6	66	94.3
Master's Degree	2	5.4	0	0

Source: Field Data 2025

Table 3 shows level of qualification of the Heads of Department and Mathematics teachers who were the main respondents in this study. From the Table 2(5.4%) Heads of Departments had masters, 35(94.6%) Heads of Department and 66(94.3%) Mathematics teachers are Bachelor's degree holders and only 3(4.3%) are diploma teachers. This showed that the teachers are qualified to teach mathematics in the schools. The high

qualification of Heads of Department and Mathematics teachers indicates that the data collected from the respondents are good for this research analysis and reporting.

Table 4 Respondents Level of Experience

Years of Experience	Heads of Department		Mathematics Teacher	
	Frequency	Percentage	Frequency	Percentage
0-4	3	8.1	18	25.7
5-9	14	40.5	35	50.0
10-14	13	35.1	8	11.4
15-19	5	16.2	3	4.3
20-24	0	0	3	4.3
25+	0	0	1	1.4

Source: Field Data 2025

Table 4 shows the level of experience of Heads of Department and Mathematic teachers. Most respondents were in the year bracket of 5-9 which translated to 40.5% for Heads of Department and 50.0% for mathematics teachers. The Table indicates that the percentages decreased as the years of experience increases because the teachers approach retirement age. This is supported by Seebruck (2015) who found that students who were taught by highly effective teachers for 3years showed a gain of 35 and 50 percent points in mathematics. Therefore, the level of experience influenced data quality and insight.

School Data

Data was collected from public secondary schools in Suba South Sub County. The summary was as shown in Table 5.

Table 5 Summary of School Data

School Population Size	Frequency	Percentage
50-100	3	**7.89**
101-200	5	13.16
201-300	10	7.89
301-400	8	26.32
401-500	5	13.16
501 and above	7	18.42

Source: Field Data 2025

Table 5 indicates that schools were in the population range of 201-300 implying low population size. This indicated that most schools had few mathematics teachers, employed by Teachers Service Commission leading to inconsistency teaching since most teachers were board of management employees who were temporarily engaged and exceeded any time in better payment in other schools in the country causing teacher burn-out hence low performance.

Students' performance in Mathematics in 2023-2024 in Suba South Sub County

Students' performance in Mathematics in the year 2023-2024 was analyzed and the mean per school was determined in Suba South Sub County. The results were shown in Table 6.

Table 6 School Mean Scores in KCSE Mathematics for 2023 and 2024

Mean Scores	Number of Schools	Percentage
1.00-2.44	16	42.11
2.45-3.44	10	26.32
3.45-4.44	5	13.16

4.45-5.44	3	7.89
5.45-6.44	3	7.89
6.45-7.44	1	2.63

Source: Field Data 2025

From Table 6 the KCSE school mean score in Mathematics in Suba South Sub County in 2023-2024 ranged from 1.472 to 6.820. This indicated a low performance since most schools fall in the mean score below 3.500 which is below average of 5.00. Most schools in the Sub County fall in the mean score of 1.00-2.44 translating to 42.11% and only few were in the mean score range of 6.45-7.44. The percentage of schools decreases as the mean score increases indicating the influence of the selected factors in mathematics performance.

Research Objective

The research objective was to establish the influence of mathematics teachers' working environment on students' academic performance in mathematics in public secondary schools in Suba South Sub County.

To respond to this research objective, Heads of Mathematics Department and mathematics Teachers were asked to rate the influence of teacher working environment on students' performance. Data was collected and computed and the results were as shown in Table 7.

Table 7 Influence of Mathematics Teachers' Working Environment on Students' Academic Performance in Mathematics

Aspect of Teachers of Mathematics Working Environment	RESP		RATINGS					NR	T	MR	OMR
			1	2	3	4	5				
Principal leadership Style	HoD	F	0	0	24	8	0	0	32		
		%	0	0	64.9	13.5	21	0	100	3.57	
	MT	F	1	0	47	11	11	0	70		**3.51**
		%	1.4	0	67.1	15.7	15.7	0	100	3.44	
Management style of Heads of Department	HoD	F	0	3	22	6	6	0	37		
		%	0	8.1	59.5	16.2	16.2	0	100	3.41	
	MT	F	0	3	45	13	9	0	70		**3.41**
		%	0	4.3	64.3	18.6	12.9		100	3.40	
Provision for housing of teachers in school	HoD	F	0	0	22	13	0	0	35		
		%	0	0	62.7	37.8	0	0	100	3.38	
	MT	F	2	0	47	18	2	1	70		**3.33**
		%	2.9	0	67.1	25.7	2.9	1.4	98.6	3.26	
Furnished and spacious offices	HoD	F	0	5	22	1	3		31		
		%	0	13.5	59.5	2.7	8.1	0	100	3.06	
	MT	F	0	3	48	6	6	7	70		**3.15**
		%	0	4.3	68.6	8.6	8.6	10	90	3.24	
Provision of lunch and Breakfast for teachers	HoD	F	3	0	11	7	16	0	35		
		%	8.1	0	29.7	18.9	43.2	0	100	3.90	
	MT	F	4	0	11	11	44	0	70		**4.10**
		%	5.7	0	15.7	15.7	62.9	0	100	4.30	
Interpersonal relationship in school	HoD	F	0	0	8	29	0	0	35		
		%	0	0	21.6	78.4	0	0	100	3.78	
	MT	F	0	0	6	61	3	0	70		**3.89**
		%	0	0	3.6	87.1	4.3	0	100	4.00	
Stakeholders involvement	HoD	F	0	7	20	10	0	0	35		
		%	0	18.9	54.1	27.0	0	0	100	3.08	
	MT	F	0	19	32	19	0	0	70		**3.04**
		%	0	27.1	45.7	27.1	0	0	100	3.00	
Student entry behavior	HoD	F	0	19	11	1	6	0	35		

										MR	OMR
		%	0	51.4	29.7	2.7	16.2	0	100	2.84	
	MT	F	0	47	0	13	9	0	70		**2.77**
		%	0	67.1	0	18.6	12.9		100	2.70	
School community Involvement	HoD	F	0	24	0	7	6	0	35		
		%	0	64.9	0	18.9	16.2	0	100	2.86	
	MT	F	0	47	0	13	9	1	70		**2.82**
		%	0	67.1	0	18.6	12.9	1.4	100	2.77	
Overall Rating	**HoD**									3.32	
	MT									**3.34**	**3.33**

Source: Field Data 2025

Key: **HoD**=Heads of Department, **MT**= Mathematics Teachers, **NR**=Nil Response,
MR=Mean Rating,
OMR= Overall Mean Rating,   F= Frequency,   %= Percentage, T –Total

Interpretation of Mean Rating
1.00-1.44   No Influence
1.45-2.44   Low Influence
2.45-3.44   Moderate Influence
3.45-4.44   High Influence
4.45-5.00   Very High Influence

Table 7 shows that the influence of Mathematics teachers' working environment has an overall mean rating of 3.33 (out of 5.00 possible outcome) indicating moderate influence on students' performance in mathematics. The overall mean rating of the thirty seven (37) Heads of Departments was 3.32 and Mathematic teachers was 3.34. Although the mean rating for mathematic teachers is higher than the Heads of Departments, they all show that teachers of mathematics working environment influence students' performance in mathematics. Provision of lunch and breakfast has the highest overall rating of 4.10 (out of 5.00 possible outcome), followed by interpersonal relationship in school (3.89), then principal leadership style (3.51). The aspect of provision of breakfast and lunch to teachers is a motivating factor that makes the teachers to give their best leading to high performance. Although student entry behavior had a mean rating of 2.77 and school community involvement mean rating of 2.82 indicating low influence, however, they still show influence on students' performance in mathematics.

To determine the influence of teachers of Mathematics teachers working environment on students' academic performance in mathematics, Linear Regression analysis was computed using data on students' academic performance and mathematics teachers working environment. The results were as shown in Table 8.

Table 8 Regression Analysis for Influence of Mathematics Teachers' Working Environment on Students' Academic Performance in Mathematics

Model	R	R Square	Adjusted R Square	Std Error of the Estimate	Change Statistics				
					R Square Change	F Change	df_1	df_2	Sig. F Change
1	.238	.057	.031	1.01283	.057	.648	9	97	.753

a. Predictors: (Constant), School Community Involvement, Interpersonal Relationship, Provision of Teachers' Houses, HoD Management, Provision of Breakfast and Lunch, Stakeholders Involvement, Spacious and Furnished Offices, Principal Leadership, Student Behavior

From Table 8, it can be observed that mathematics teachers working environment had a weak positive influence of 0.238 as signified by coefficient r= 0.238. However, the influence was not statistically significant

as p-value was 0.753 greater than 0.05. Therefore, the null hypothesis (H_{01}), "Mathematics teachers' working environment does not significantly influence students' academic performance" was accepted.

To confirm as to whether Mathematics teachers' working environment was a significant predictor of students' academic performance ANOVA was computed and the results were as shown in Table 9.

Table 9 ANOVA on Mathematics Teachers' Working Environment on Students' Academic Performance in Mathematics

	Model	Sum of Squares	df1	Mean square	f	Sig.
1	Regression	5.987	9	.665	.648	.753[b]
	Residual	99.505	97	1.026		
	Total	**105.493**	**106**			

a. Dependent Variable: KCSE Mean scores

b. Predictors: (Constant), School Community Involvement, Interpersonal Relationship, Provision of Teachers' Houses, Heads of Departments Management, Provision of Breakfast and Lunch, Stakeholders Involvement, Spacious and Furnished Offices, Principal Leadership, Students Behavior

From Table 9, it can be observed that Mathematics teachers' working environment was not a predictor of students' academic performance in mathematics ($F_{(9, 97)} = 0.648$, $P = 0.753$). This means that Mathematics teachers' working environment cannot be relied upon in explaining students' academic performance in mathematics in Suba South Sub County.

To establish as to whether any of the aspects of mathematics teachers' working environment influenced students' academic performance, multiple regression analysis was computed and the results were as shown in Table 10.

Table 10 Multiple Regression Analysis on Aspects of Mathematics Teachers' Working Environment on Students' Academic Performance in Mathematics

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence interval	
		B	**Std. Error**	**Beta**			**Lower Bound**	**Upper Bound**
	(Constant)	2.902	1.251		2.320	0.22	.419	5.385
	Principal leadership	-.067	.394	-.055	-.169	.866	-.848	.717
	HOD Management	-.181	.371	-.145	-.489	.626	-.917	.554
	Provision of houses	.354	.368	.213	.961	.339	-.377	1.085
	Spacious and furnished office	.101	.387	-.068	.260	.795	.869	.667
	Provision of breakfast and lunch	0.52	.181	0.61	.288	.774	-.308	.412
	Interpersonal relationship	.616	.560	.062	.288	.774	-.950	1.272
	Stakeholders involvement	-.063	.259	-.045	-.242	.809	-.577	.451
	Student behavior	-.109	.411	-.117	-.264	.792	.924	.707
	School community Involvement	.156	.328	.184	.475	.636	-.495	.806

a. Dependent Variables: Kenya Certificate of Secondary Examination Mean Scores

From Table 10, it can be noted that the different elements of Mathematics teachers' working environment had

influence on students' academic performance in mathematics. The influence was negative for some environmental working conditions while others had positive influence. However, none of these aspects was statistically significant as their p-values were greater than 0.05. The coefficients varied from -0.063 to 0.616. This means that principal leadership influenced students' academic performance negatively as signified by the coefficient -0.067 with p-value of 0.866. Heads of department, management leadership styles, stakeholders involvement and student behavior had negative influence on students' academic performance in mathematic as signified by the co-efficient -.181, -0.63 and -.109 respectively with p-value of .339, .809 and .792 respectively. Provision of residential houses to teachers, provision of breakfast and lunch, interpersonal relationship and school community involvement had positive influence on students' academic performance as signified by the co-efficient .354, .52, .616 and .156 respectively with p-values of 0.339, .774 and .636 respectively.

DISCUSSION

Factors that were perceived to enhance students' academic performance included provision of teachers houses and provision of breakfast and lunch to teacher. This was supported by qualitative data from Sub County Quality Assurance and Standards officer and principals that there is increase the contact hours between the students and the teachers, reduce the long distance walk to school leading to adequate lesson preparation and delivery, and also motivate teachers to work hard and give their best improving students' performance in mathematics. Never the less, since the p-values were greater than 0.05 for all the aspects of Mathematics teachers' working environment, the influence was not statistically significant and therefore these factors cannot be used to explain the students' performance in mathematics in public schools in Suba South Sub County. Therefore, a prediction model could not be generated.

The findings disagreed with Hernandez-Martinez and Vos, (2018), Toropova, Myrberg and Johansson (2021), and Budhathoki (2021), who found that creating a supportive environment and demonstrating enthusiasm are especially critical as they help students overcome any intimidation they may feel towards mathematical concept. They also found that classroom and working conditions impacts teacher attitude and in turn students' performance. Poor working conditions are common stressors for teachers leading to decreased job satisfaction and burnout. They further pointed out that improved physical environment and adequate resources positively affects teachers' outlook and instructional effectiveness. Well-equipped schools foster better teaching experience which are crucial for boosting both teacher job satisfaction and students' academic performance, although they did not provide the degree of influence.

However, the positive perception by some mathematics teachers' working environment aspects were supported by interviews from principals that good leadership style promotes unity among teachers and students which motivate both teachers and students to carry out their activities well and with little supervision leading to high performance. In this respect one principal stated "Positive principal leadership style support teachers and students in their academic work. Good leadership style ensures that the school has adequate teachers, the students are ever present in school to undertake their learning activity, teachers and students are positively motivated through giving incentives to ensure better performance in mathematics". Another Principal emphasized "Provision of teachers houses in school ensures teachers do not walk long distances leading to time wastage, teachers are able to get enough time with the learners for further consultations, enough time for marking the assignments and giving feedback to the learners at the right time and revising for the next lesson. He further said that for boarding schools, it is an added advantage as this increases contact hours between the teachers and students. Teachers are making maximum use of evening, morning and weekend hour to offer tuition and tests to the students.

Interview with the Sub County Quality Assurance officer concurred with the principals' views that teachers' working environment influence students' academic performance in mathematics. He said Provision of teachers' houses increases contact hours between teachers and students. When teachers stay away from school, they always hurry up their activities to leave school in time and avoid inconvenience and delay due to poor roads in Suba South especially during rainy seasons. The teachers who are not provided with breakfast and lunch always waste a lot of time looking and preparing lunch, time that they could use to attend to learners if breakfast and lunch was being provided in school. Although the findings are contradicting, the conditions at that time were not significantly influencing students' academic performance in mathematics. However, as

interview findings revealed, when the principal leadership style is positive and supportive to teachers and students, the performance positively improves. When the leader ensures there are adequate mathematics teacher in school to reduce the workload per teacher, students are provided with enough food to ensure better concentration in class, teachers are motivated through provision of breakfast and lunch, taken for bench marking, capacity building through on going in trainings and other incentives, performance positively improves. Nevertheless, when learners' entry behavior is good, the community actively involved in the academic sector by providing the students with the required teaching and learning resources and motivates teachers and students during open academic days, performance improves because of the positive working environmental conditions. However, when teachers do not have good offices to work in, and the HoD are not concerned with the lesson observations, leads to poor lesson study. When the administration does not provide adequate teaching and learning resources and there is poor interpersonal relationship that do not support team work, mathematics teacher working environment has negative influence on students' academic performance in mathematics.

CONCLUSION

The study concluded that Mathematics teachers' working environment positively influenced students' academic performance in mathematics Suba South Sub County. However, a model could not be generated because the influence of working environment of mathematics teachers was not statistically significant.

RECOMMENDATIONS

i) School principals should endeavor to adopt leadership styles that motivate teachers and learners so as to enhance their performance.

ii) Heads of Departments management approaches should be endearing to teachers.

iii) School Boards of Management should endeavor to construct residential houses for teachers on school compounds to motivate teachers in their work.

iv) Furnished modern offices be constructed for teachers to enhance consultation with students in enhancement of their academic achievement.

v) Stakeholder's engagement should be encouraged so as to provide the required teaching resources besides sponsorship of learners.

vi) School administration should enhance school discipline so as to promote academic achievement.

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