

Influence of Teacher-Student Interpersonal Interactions on Students' Academic Performance in Public Secondary Schools in Machakos County

Rhoda W. Gachaga^{1*}, Dr. Johnson Ikiugu², Dr. Esther Thuba³

¹²³Department of Education, Counselling and Humanities, Kenya Methodist University

*Corresponding Author's E-mail: rhodamwei@gmail.com

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Abstract

The purpose was to establish the influence of teacher-student interpersonal interactions on students' academic performance in public secondary schools in Machakos County. This study used a survey research design. The target population was 14,894, comprised of 19 school principals, 483 teachers, and 14392 students. Schools were selected by stratified sampling, while random sampling was used to select individual participants. The sample size was 10 school principals, 30 teachers, and 275 students, hence 315 respondents. Data was collected using self-administered questionnaires and an observation chart. Two schools were selected for piloting research instruments. A questionnaire was administered to 2 school principals, 6 teachers, and 20 students. Data analysis was done using both descriptive and inferential techniques. The data was then presented in the form of frequency tables and charts. The findings on teacher-student interpersonal interactions, using descriptive analysis techniques, the study found that there was a strong agreement (87%) of respondents (students/teachers/school principals) that healthy teacher-student interpersonal interactions influence students' academic performance. This was also the case for inferential analysis, where the null hypothesis was rejected because the results showed that the influence of teacher-student interactions on academic performance was statistically significant with a p-value of 0.000, which is less than 0.05, the researcher's preselected alpha level (p-value). The study concluded that school social environment elements, especially healthy interpersonal relations between teachers and students, greatly influenced students' academic performance. The study recommends that the Ministry of Education, school principals, and other education stakeholders should pay more attention to the school social environment by promoting these attributes, such as teacher-student interpersonal interactions. Sensitize the school principals, teachers, and students on a conducive school social learning environment. In addition, similar studies in relation to other categories of secondary and primary schools should be carried out.

Keywords: *Teacher-Student Interpersonal Interactions, Students' Academic Performance, Public Secondary Schools, Machakos County*

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1. Introduction

What constitutes good academic performance has been the subject of various studies across the developed and developing world. Students' academic performance has been defined variously by researchers, who acknowledge that the meaning of the concept has changed over time.

Arifin et al. (2024) and Kumar et al. (2021) agree that it encompasses all learning actions aimed at securing and inculcating meaningful psychological, affective, cognitive, and behavioral changes in the students. They further add that it is an interplay of factors beyond traditional assessments to encompass other various elements such as demographic data, learning strategies, teacher interactions, and parental involvement to predict and understand academic outcomes. In this study, therefore, students' academic performance is defined as their ability to achieve the established academic expectations. These include attaining good grades, actively participating in class, and demonstrating a solid understanding of the concepts being taught. This requires developing effective study skills, maintaining motivation, and managing time efficiently, which results are directly associated with various factors, key among them the school learning environment, according to Kumar et al. (2021).

Kumar (2021) stated that factors affecting academic performance are majorly of three categories, namely: the environmental factors about the institutions as well as those of the home; interactions with instructors paving the way for the prospects of effective teaching; and student-centric factors, including motivation level, study habits, and learning abilities of the students. Thus, the interest of the researcher lies in these factors that determine students' academic performance. School learning environment is a major determinant of student learning as it stimulates learners' engagement in the learning process, influences behavior, and assists in the development of skills and cognitive abilities (Kimeu, 2015). The school learning environment comprises the school's physical environment as well as the social environment. The physical component includes all physical aspects such as classrooms, laboratories, teaching-learning materials, sanitation facilities, and playgrounds. The school social environment is concerned with cultivating positive social interactions and developing the right cultural setup, since learning originates from social and cultural interactions over a period of time (Bates, 2019). Bates further highlighted that the school social environment is defined by factors such as the school's interpersonal interactions between teachers and students.

In Malawi, poor quality and inadequacy of school infrastructure have been found to contribute to poor academic performance (Muthoni, 2015). In Kenya, many researchers shared the same view. Murunga (2017) in his study on Kenya's education system reported that the physical aspects of the learning environment influence the quality of teacher preparation for teaching and learning. Musyoka (2018) and Wanyama (2013), in their studies in Machakos and Narok Counties, respectively, also affirmed that the availability of physical facilities enables smooth operation of the school and thereby enhances effective teaching and learning activities, leading to higher educational attainments by students.

Even though some schools have adequate physical facilities, they have, in the past decade, recorded declining performance. In Kenya, this has become more evident, especially in National and Extra-County schools (Kirui et al., 2016). Many of the schools in this category are several decades old, having been established before or immediately after independence, and are well endowed with physical facilities. They have enjoyed better resourcing from government and development partners, learning infrastructure, and favored elevation to National and Extra-County schools' categories, as Eshiwani (1993) and Kirui et al. (2016) posit. The schools in these categories have, over time, continued to rank high in students' academic performance (Kirui et al., 2016). In the case of Machakos County, data on schools' academic performance, however, indicates that most of the schools in the national and extra-county categories have, in the recent past, had declining performance in national examinations (County Education Office, Machakos, 2021).

Table 1: The academic (KCSE) performance of some of the national and extra-county schools in the years 2014 to 2020 in Machakos County

Category of School/Exam Year	2014	2015	2016	2017	2018	2019	2020
2 Selected National Schools	6.661	8.668	7.446	6.828	7.065	7.628	8.395
8 Selected Extra-County Schools	3.729	6.550	6.307	5.494	5.896	6.209	6.354
Average for the 10 Selected Schools	5.195	7.608	6.877	6.161	6.481	6.918	7.374
County Mean Score	4.799	4.726	3.725	3.11	3.580	3.930	3.730

Source: County Education Office, Machakos (2021)

As observed in Table 1, national schools, though they remained top performers within the county, faced a general decline in performance. Performance for the schools under the extra-county category had also been dismal, with the KCSE mean score for the county declining to below the average mean score of 6 (Machakos County Director of Education, 2021). The declining performance by the schools that had historically been the bedrock of the County's academic performance was below stakeholders' expectations.

This decline in academic performance begged the question whether this was attributed to the social component of the learning environment, and in what way? Various studies, among them Bates (2019) and Geleta (2017), highlighted that the development of positive attributes within the school nurtures cordial interpersonal interactions, allowing the student to easily associate with peers and other more knowledgeable persons, mainly teachers.

1.1 Problem Statement

Across the globe, education is termed a basic human right that is crucial for successful social development and economic growth for any country. Students' academic performance is the prime focus as it is the measure of the extent to which projected learning outcomes have been achieved, as well as an indicator of the quality of education offered (Wakaraka & Mugwe, 2023). This has led to a growing concern about students' academic performance amongst the education stakeholders. Various studies carried out pointed out that there are several factors that influence students' academic performance, among them the learning environment, which comprises the physical and social aspects of the environment. Studies that focused on the effects of the physical environment demonstrated that it had a positive influence on students' academic performance.

However, in Kenya, trends in academic performance show a contrary development where schools that are well-endowed with physical facilities and have a history of reputable academic performance registered academic performance that was below stakeholders' expectations in national examinations. This has become more evident, especially in National and Extra-County

schools, previously known as provincial schools. This category of schools is generally well endowed with physical facilities, many of them several decades old, having been established before or immediately after independence. Some of these schools had A-level streams, a reputation of academic excellence, especially in the 1970s and 80s, under the 7-4-2-3 system of education, which was replaced in 1985 by the 8-4-4 system.

Kirui et al. (2016) stated that over time, these schools have continued to enjoy better resourcing from government and development partners, including infrastructure upgrading and prioritized elevation to the National and Extra-County schools' category, under the MOE. They further affirm that a categorization criterion considered adequacy of physical facilities and good academic performance of the school over time, geographical access, and location. Concern among the stakeholders on the decline in academic performance has necessitated the researcher to carry out a study to establish the apparent influence of socio-socio-aspects of the learning environment on students' academic performance.

There is limited research on the declining performance of this specific cadre of schools, reputed for their past academic performance and satisfactory physical facilities, more so, those within Machakos County. Available literature on the influence of schools' social environment is scanty and consists mostly of case studies of specific geographical and social settings. Further, these studies have only focused on the influence exerted by individual variables of the school social environment, resulting in a knowledge gap. Therefore, the study intended to close this gap by determining the influence of the combined elements of school social environment on students' academic performance in public secondary schools in Machakos County, Kenya.

1.2 Purpose of the Study

To establish the influence of teacher-student interpersonal interactions on students' academic performance in public secondary schools in Machakos County.

1.3 Research Hypothesis

H₀₁: There is no statistically significant influence of student-teacher interpersonal interactions on students' academic performance in public secondary schools in Machakos County.

2. Literature Review

2.1 Social Learning Theory

The study was based on social learning theory advanced by Albert Bandura in 1977. In theory, Bandura stated that when people interact with others in a social context, they absorb behavior from others, assimilate, imitate, and model (Bandura, 1977). One then forms an idea of new ways of behaving or doing things. Thereafter, this new information or 'knowledge' serves as a guide for the individual to act in like manner. Bandura highlighted that consequences in the form of reward or sanction that accompany the behavior being observed often determine whether individuals adopt the behavior themselves or not. He outlined four specific conditions for social learning theory to apply, namely: (i) the individual paying attention and remaining focused on the task of learning; (ii) retention of what was learnt by remembering through internalizing information (iii) reproduction ability to perform the behavior that the role model demonstrated; and (iv) remaining motivated towards ambitious and challenging goals (Bandura, 1977).

Based on this theory, the study argued that a school social environment is composed of attributes such as teacher-student interpersonal interactions. These nurture cordial interactions between students themselves and with their teachers, as well as provide opportunities for the

student to develop self-drive in learning. In this regard, a student's academic performance is noted to come from what they learnt by perceiving, reflection, assimilation, imitation, and modeling from others. This is achieved through interacting with peers and teachers in and out of class.

2.2 Empirical Review

In China, Xu and Qi (2019) found that the teacher-student relationship had a positive and significant effect on students' academic achievement. Styron (2008), in his study of American schools, observed that healthy teacher-student interactions create an environment of sincerity, open communication, and risk-taking in challenging academic pursuits. Styron further explained that good relationships enhance students' self-esteem and desire to achieve higher.

A study conducted by Ogbuanya, Attahim, and Momngu (2017) in Nigeria concurred that caring and helpful interactions between teachers and students formed the foundation of a learning environment essential for the academic progress of a learner. Further, they stated that healthy relationships helped sustain students' attention in their academic work.

Makewa, Jesse, and Yegoh (2011) in a Kenyan study asserted that a healthy teacher-student relation made students feel safe, cared for, appropriately supported, and lovingly pushed them to learn. Their study also revealed that a healthy teacher-student relationship created an excellent learning environment that promoted the students' ability to learn, thereby improving their academic achievement. They further highlighted that students were generally satisfied with the schools where they felt justly treated and supported by the teachers, which in turn enabled them to work harder and enhance their academic performance. This was in line with findings by Nyamosi (2013) in her study in Machakos county, who stated that students who felt liked and well regarded by their teachers performed better. Nyamosi further reported that such students were more active and productive in class as opposed to those who feel their teachers have a lower regard for them.

The studies outlined multiple ways in which the interactions occurred and the emotions they evoked, which gave impetus to student learning. In spite of this, there was inadequate information on the influence of teacher-student interpersonal interactions on students' academic performance in public secondary schools in Machakos County. Thus, there is a need for further investigation in different localities and social settings to fill the gap. Hence, there is a need to establish the influence of teacher-student interpersonal interactions on students' academic performance in public secondary schools in Machakos County.

3. Methodology

This study used a survey research design. The target population was 14,894, comprised of 19 school principals, 483 teachers, and 14392 students. Schools were selected by stratified sampling, while random sampling was used to select individual participants. The sample size was 10 school principals, 30 teachers, and 275 students, hence 315 respondents. Data was collected using self-administered questionnaires and an observation chart. Two schools were selected for piloting research instruments. A questionnaire was administered to 2 school principals, 6 teachers, and 20 students. Data analysis was done using both descriptive and inferential techniques. The data was then presented in the form of frequency tables and charts.

4. Results

4.1 Response Rate

It is necessary to ascertain the response rate to questionnaires in research as this affects the validity and reliability of results obtained, especially if the rate is low. Response rate is defined as the percentage of participants in relation to the sampled eligible participants (Mugenda and Mugenda, 2012). Jordan, Walker, Kent & Inoue (2011) averred that an 85 % response ought to be achieved to ensure validity and reliability of the results are not compromised by non-response. Table 2 shows the response rate across the respondent categories.

Table 2: Response Rate

Category of respondents	No. sampled	Type of instrument	No. completed	Percentage
Schools' principals	10	Self-administered questionnaire	10	100
Teachers	30	Self-administered questionnaire	30	100
Students	275	Self-administered questionnaire	266	96.7

The data in Table 2 shows that all ten (10) targeted principals responded using self-administered questionnaires, recording a 100 % response rate. Similarly, of the thirty (30) questionnaires issued to teachers in the sample, all 30 were returned, meaning a 100% return rate. Questionnaires for the students were distributed to a total of 275 students targeted in the sample from across the ten schools, and 266 (96.7 %) completed the questionnaires.

4.2 Reliability Results

In this study, the researcher pre-tested the research tools using a selected sample of two (2) extra-county secondary schools in Machakos County. The study examined the reliability of the data instruments before they were administered in the main study. The results are provided in Table 3.

Table 3: Reliability Results

Instrument	Cronbach's Alpha
Teacher-student Interpersonal interactions	0.74

Table 3 reveals that the Cronbach Alpha coefficient for teacher-student interpersonal interactions is 0.74. The coefficients were above the threshold of 0.7. The questionnaires were reliable for use in data collection (Mugenda, 2003).

4.3 Descriptive Statistics of Teacher-Student Interpersonal Interactions

The descriptive results of the influence of teacher-student interpersonal interactions and students' academic performance are provided in Table 4.

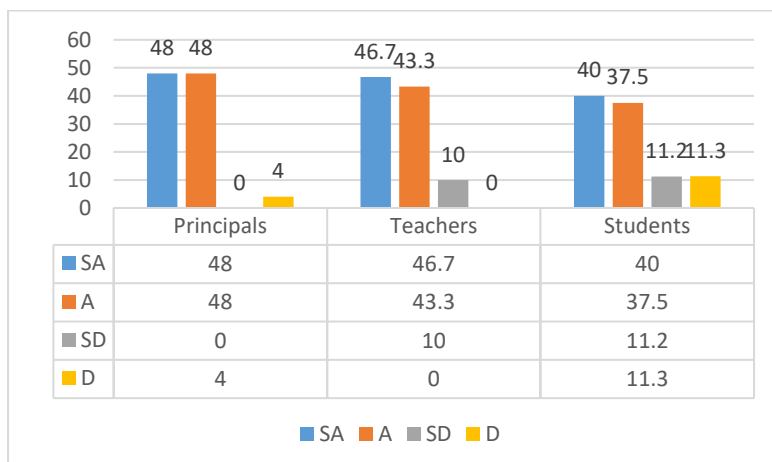
Table 4: Teacher-student interpersonal interactions and students' academic performance

Stated behaviour sub-indicator	Frequency			
	SD	D	A	SA
Teachers in this school are friendly to learners.	29	51	139	85
Teachers in this school are approachable by students when the student has an individual personal or academic problem.	31	37	133	105
Teachers in this school are available for consultation during or after class hours	28	47	103	128
Learners in this school respect and obey teachers	41	13	153	97
Overall average response for the teacher-student interpersonal interactions (n=306)	33	37	132	104

According to Table 4, Data collected on teacher-student interpersonal interactions focused on behavior sub-indicators that included whether teachers were friendly to the students, approachable by the students, available for consultation, and respected and obeyed by the students.

The two most acknowledged as being highly influential on students' academic performance were where learners respected and obeyed teachers (82%) and where teachers were approachable by students when the student had a personal or academic problem (78%). From Table 4, it has been shown that an overwhelming majority of the respondents viewed positive teacher-student interactions as influencing students' academic performance.

Figure 1: Teacher-student interpersonal interactions on academic performance



School principals and teachers registered the strongest view of influence brought about by good teacher-student interpersonal interactions on students' academic performance. A contrary view, though in the minority, was noted to be mainly held by students. It was further noted that

school principals and teachers had similar views on the positive influence of teacher-student interpersonal interactions on students' academic performance.

4.4 Hypothesis Testing

Data collected to determine the influence of teacher-student interpersonal interactions on students' academic performance was analyzed using the study hypothesis.

H01- There is no significant relationship between teacher-student interpersonal interactions and students' academic performance in public secondary schools in Machakos County.

Simple linear regression was carried out to ascertain the extent to which teacher-student interpersonal interactions could influence students' academic performance in Machakos County. The regression model for teacher-student interpersonal interactions specified was $P = \beta_0 + \beta_1 \text{TSR}$;

Where;

P Students' Academic Performance

β_0 =Constant (Intercept of the model)

β_1 =Coefficient of the independent variable

TSR=Teacher-Student interpersonal interactions

A strong positive correlation was found between TSR and P ($R = .65$), and the regression model predicted 42% of the proportion of variance (R^2).

The model was a good fit for the data ($F = 224.850$, $p < .000$). Table 5 shows that there is an influence of the independent variable, teacher-student interpersonal interactions, on students' academic performance.

Table 5: Model Summary

Model	R	R Square	Adjusted Square	R Std. Error of the Estimate
1	.651 ^a	.424	.422	.362

a. Predictors: (Constant), Teacher-student interpersonal interactions

Table 5 shows a positive R-Square of 42.4%. This implies that students' academic performance (dependent variable) is positively influenced and improves when the teacher-student interpersonal interactions improve. The coefficient also indicates that teacher-student interpersonal interactions accounted for a minimal proportion of 42.4%. Of the variation in students' academic performance. This means that students' academic performance will experience an average change of 42.4%. Given a one-unit increase in the teacher-student interpersonal interactions.

Table 6 shows the analysis of variance (ANOVA) test result, usually reported as an F -statistic and its associated degrees of freedom and p -value. The one-way ANOVA analysis found there was a statistically significant effect of teacher-student interpersonal interactions on students' academic performance, $F(1, 305) = 224.85$, $p = .000$.

This means that the regression model explains a statistically significant proportion of the variance (a larger F value means that the variation associated with the independent variable is

real and not due to chance). Therefore, the explanatory variable, teacher-student interpersonal interactions, influences students' academic performance.

Table 6: Analysis of Variance (ANOVA)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	29.508	1	29.508	224.850	.000 ^a
	Residual	40.027	305	.131		
	Total	69.535	306			

a. Predictors: (Constant), Teacher -Student interpersonal interactions

b. Dependent Variable: Students' academic performance

Table 7 shows the regression of coefficients results.

Table 7: Regression of Coefficients

Model	Unstandardized Coefficients	Standardized Coefficients	T	Sig.
	B	Std. Error	Beta	
1 (Constant)	4.026	.071	56.351	.000
Teacher-Student Interpersonal Interactions	.345	.023	.651	.000

a. Dependent Variable: Students' academic performance

From the output in Table 7, it has been shown that the influence of teacher-student interpersonal interactions on students' academic performance was positive and statistically significant ($B=0.345$, $P=0.000<0.05$). The null hypothesis was rejected. The alternative one, that is, teacher-student interpersonal interactions influence students' academic performance, was accepted.

In other words, there was strong evidence to say that teacher-student interpersonal interactions influence students' academic performance. This showed that there existed a statistically significant influence of teacher-student interpersonal interactions on students' academic performance. The study confirmed that positive teacher-student interpersonal interactions, where teachers are friendly and approachable by students and are respected by the students, enhance students' academic performance. These findings were in concurrence with earlier studies by Ogbuanya, Attahim, and Momngu (2017) in Nigeria and Chebet (2018) in Uganda. This study, therefore, found that positive teacher-student interpersonal interactions influence students' academic performance in public secondary schools in Machakos County.

5. Conclusion

The study has found that school social environment elements, especially healthy interpersonal relations between teachers and students, greatly influenced students' academic performance. The specific behavior sub-indicators of the attributes with the greatest influence are: availability of teachers to students for consultations and approachability of teachers by students.

6. Recommendations

The study recommends that the Ministry of Education, school principals, and other education stakeholders should pay more attention to the school social environment by promoting these attributes, such as teacher-student interpersonal interactions. Sensitize the school principals, teachers, and students on a conducive school social learning environment. In addition, similar studies in relation to other categories of secondary and primary schools should be carried out.

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