Effects of Mentorship Program on Academic Performance of Students in the Department of Medical Engineering at Kenya Medical Training College (KMTC), Nairobi Campus

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Abstract

Purpose: This study investigates the effects of mentorship on the academic performance of students in the Department of Medical Engineering at Kenya Medical Training Centre, Nairobi Campus.

Methodology: The study applied a descriptive cross-sectional survey that used quantitative methods of data collection. The primary data collection method was through interviews. The target population was drawn from Kenya Medical Training College (KMTC), Nairobi Campus as the unit of analysis while all the medical engineering students were the unit of observation. Stratified sampling was employed to categorize students by their year of study (years 1, 2 and 3), ensuring balanced representation across levels. From a total population of 530 students, 229 respondents were proportionally sampled from each subgroup using simple random sampling, with a random number generator assigning numbers to ensure unbiased selection. Data was collected using a questionnaire and analyzed through both descriptive and inferential analysis.

Findings: Results revealed a β of 0.937 and a p-value of 0.001 between mentorship and the academic performance of students in the Department of Medical Engineering. This study reinforces the importance of mentorship in academic success, aligning with educational theories that emphasize student support systems as a critical factor in performance. The findings highlight the need for institutional frameworks to integrate mentorship programs more effectively into academic curricula, encouraging Kenya Medical Training Centre to formalize mentor training in communication, academic advising, and career development.

Unique Contribution to Theory, Policy and Practice: The study highlights the value of group mentoring and peer-led initiatives, offering actionable insights to enhance mentoring effectiveness. Additionally, the study recommends allocating resources such as academic materials and counseling tools to mentors, promoting sustainable mentoring practices that maximize student outcomes. The contributions provide a foundation for future research on mentorship programs and support policies that foster academic excellence in technical training institutions.

Keywords: *Mentorship Program, Academic Performance, Students, Medical Engineering, Kenya Medical Training Centre, Nairobi Campus*

INTRODUCTION

Mentorship is a relationship that can take place between different individuals to share knowledge, skills, or even experiences (Ersin & Atay, 2021). Mentorship can take place between the following individuals, student-student, staff-student, or even faculty-student. Traditionally, mentorship was viewed as a relationship where a long-term relationship existed one face-to-face where the mentees' academic, professional, or personal development was nurtured (Law, Hales & Busenbark, 2020). To navigate complex and dynamic challenges students are usually paired with adult volunteers or even older students who offer friendship guidance and support in pursuit of better performance (Bonifacino et al., 2021).

The history of mentorship dates back to ancient times during the Greek methodology Odysseus entrusted his son Telemachus to his friend Mentor, this scenario illustrated the enduring focus of mentorship in developmental relationships (Soltovets, Chigisheva & Dmitrova, 2020). Socrates and Plato, Aristotle and Alexander the Great, and Plato and Aristotle exemplify another success story of mentorship. These scenarios of relationship highlight knowledge transfer where legacies are documented through mentorships, in this case, Socrates mentored Plato who helped in spreading the teaching of Socrates on philosophy. In turn, Plato mentored Aristotle and Aristotle mentored Alexander the Great in that sequence of knowledge transfer. The chain of the transfer of knowledge illustrates the importance of keeping traditions of mentoring alive to date (Holmes, 2020). As mentorship research gained ground it expanded in other areas including workplace, academic, and community contexts as a result of Kram's studies in 1983 which are associated with mentorship in academia and the professional world (Bonifacino et al., 2021).

Mentorship plays a crucial role in ensuring knowledge succession and the transfer of values and beliefs. According to Masehela and Mabika (2017), mentorship is the process by which trained individuals offer guidance and advice to selected people who become mentees. The main goal of mentorship is to prepare individuals to improve their performance and achieve better performance. Mentorship can also entail the use of tutors, teachers, and coaches to impart knowledge to the selected students. Consequently, the mentors have a very strong influence on the student's life as they shape the student's thinking and beliefs. Venegas-Muggli et al. (2023) explain that mentorship involves more than just advising the mentees on how they should operate. It entails building a rapport between the mentor and the mentee to impart the skills, values, expertise, and attitudes needed to succeed.

Mentorship benefits both the mentor and the mentees whereby, it improves the self-confidence of the mentors while the mentees acquire the skills and expertise in a particular area. Mentors gain a sense of personal empowerment whereby the mentorship program gains a sense of personal empowerment (Miske & Sogunro, 2024). The use of mentorship has gained widespread acceptance with organizations using mentorship to train junior employees in their firms. For instance, the use of mentorship programs in the US is aimed at maintaining the organizational culture and beliefs in

the workplace. Such mentorship ensures that firms can create a competitive edge in the workplace by maintaining the right culture. Mentorship programs in the academic sector aim at enhancing the student's career planning and strengthening the relationships between the students and the mentors. In the UK, mentorship plays a crucial role in the student's performance whereby students who receive mentorship can perform better than their peers (Guhan et al., 2020). Academic mentorship in the UK entails academic support to students which leads to improved confidence in the students and increased enjoyment in the learning process.

Academic mentorship in Africa plays a crucial role in determining the student's performance in both private and public schools. However, there are glaring differences between the mentorship programs in the private and the public institutions of learning. In Nigeria, private and public universities use mentorship programs to improve student's performance (Idubor & Adekunle, 2021). These mentorship programs are done at the department and the faculty level to improve the student's performance. In South Africa, Universities and colleges use peer mentorship to help students improve their performance (Masehela & Mabika, 2017). Peer mentorship entails the use of fellow students and alumni members to mentor the younger students. The use of peer mentorship has proved to be very critical in enabling the students to engage in academic activities thus improving their performances.

Mentorship programs in Kenya entail the use of peer mentorship to help students in different universities transition into campus life. The use of peer mentorship in academics has proved to improve the student's performance and improve their engagement in the course activities. A study conducted on the role of mentorship on the student's performances in five universities in Kenya revealed that there is a positive relationship between mentorship and performance (Musyoka et al., 2023). The study noted that mentorship helps students to cope with stress and obstacles in their academic journey. Besides, mentorship helps the students to overcome the obstacles in learning thus improving the overall student's performance. The most important results of mentorship, according to this study include goal setting, presence of mentors, and identification of a career path. Importantly, the study noted that most first-year students experience stress during their first years on campus, thus affecting their performances. As such, the use of mentors in academic institutions helps students to apply the knowledge learned in schools to real-life problem-solving techniques (Okanga et al., 2023).

The Kenya Medical Training Center is a training institution that is mandated with training students in various healthcare sectors in Kenya. This institution plays a crucial role in meeting the country's need for healthcare professionals (Onyango & Wanyoike, 2020). Student mentorship is thus critical in enabling the institution to meet its vision of producing globally competitive human resources for the advancement of health. The school depends on mentorship to ensure that its graduates are fit for purpose through the use of mentors in the medical field. Importantly, the use of peer mentorship is an effective tool in promoting the academic performances of students in the

medical training center (Kibore et al., 2024). As such, nurturing the mentor-mentee relationship is critical in impacting the academic and cultural capital required by the graduates of medical schools to succeed in their goals. Mentoring students in the Kenya Medical Training Centre ensures that these students can attain good grades while at the same time meeting the high standards required in the medical field. The students are also able to acquire improved personal and academic outcomes regardless of their backgrounds, thus contributing to the quality of healthcare in the country.

Despite the huge benefits accrued with mentorship programs in Kenya Medical Training Centre, it faces several challenges. Firstly, most of the mentors are either practicing or are working in various fields (Austin et al., 2020). As such, these individuals are bound by time, thus hindering their ability to engage in effective mentorship. The lecturers in the universities usually have several roles and responsibilities that affect their ability for the mentorship programs. Several studies have highlighted the impacts of time constraints on the mentorship programs. For instance, Davey Jackson and Henshall (2020) explain that lack of time commitment affects peer mentorship in medical schools in five universities in Kenya. Lack of punctuality among students also influences the relationship between the mentor and the mentees thus impacting the overall performance of the students.

Despite the huge played by mentorship in helping students improve their performances in various universities, there are few studies on the effects of mentorship on medical students. Most of the existing studies focus on high school and primary school students while few have focused on on-campus students (Azman et al., 2021; Jalal, 2021). Few studies that focused on mentorship in campus studies were done in developing nations or outside Kenya. The lack of studies on how mentorship affects medical students in KMTC offers a research gap that this study seeks to fill. It is against the backdrop of this observation that this study was conducted on the effects of the mentorship program on the academic performance of students in the Department of Medical Engineering at KMTC, Nairobi Campus.

EMPIRICAL LITERATURE AND THEORY

Bloom's Taxonomy Educational Objectives

Bloom's Taxonomy of Educational Objectives, developed by Benjamin Bloom and his colleagues in 1956, provides a comprehensive framework for categorizing educational goals that are highly applicable to understanding the effects of mentorship programs on academic performance. This taxonomy, divided into six hierarchical levels within the cognitive domain—knowledge, comprehension, application, analysis, synthesis, and evaluation—offers a structured approach to assessing how mentorship can impact students' learning and academic outcomes. By mapping the mentorship program to these levels, educators can design interventions that enhance various aspects of students' cognitive development, thereby improving their overall academic performance (Arievitch, 2020).

The first level, knowledge, involves the recall of facts and basic concepts. In this study, mentors can provide students with foundational knowledge crucial to their field. This includes understanding core medical engineering principles, terminologies, and procedures. Ensuring that students have a solid grasp of these basics forms the bedrock upon which higher-order thinking skills can be developed. Regular assessments and feedback from mentors can help ensure that students retain this essential knowledge, setting the stage for more advanced learning (Masapanta-Carrión & Velázquez-Iturbide, 2018).

Moving up the taxonomy, comprehension, and application are the next critical stages. Comprehension requires students to understand information, such as explaining concepts in their own words, and application involves using knowledge in new situations. Mentors can facilitate these stages by engaging students in discussions that encourage them to interpret and elaborate on what they have learned. Practical assignments and real-world problem-solving tasks allow students to apply theoretical knowledge, thus bridging the gap between classroom learning and practical application. This hands-on approach not only reinforces learning but also builds confidence in their ability to perform tasks related to medical engineering (Mitchell & Manzo, 2018).

The higher levels of Bloom's Taxonomy analysis, synthesis, and evaluation are where students develop critical thinking and advanced problem-solving skills. Analysis involves breaking down information into components to understand its structure, while synthesis requires combining elements to form a coherent whole. Evaluation is about making judgments based on criteria and standards. Mentorship programs can support these stages by encouraging students to engage in research projects, case studies, and collaborative work that require critical analysis and creative thinking. Through these activities, mentors can guide students in developing innovative solutions to complex medical engineering problems, thereby enhancing their evaluative skills and overall academic performance (Meda & Swart, 2018).

Finally, the mentorship program's alignment with Bloom's Taxonomy can be evaluated through regular feedback and assessment mechanisms. This includes assessing the quality of students' work, their engagement in learning activities, and their ability to meet learning objectives at each level of the taxonomy. By systematically applying Bloom's framework, mentors can identify areas where students excel and areas needing improvement, thus tailoring their support to individual needs. This personalized approach ensures that the mentorship program effectively contributes to the academic success of students in the Department of Medical Engineering, ultimately leading to improved educational outcomes and professional readiness (Barari et al., 2022).

Empirical Literature

A study by Guhan et al. (2020) was conducted at Al Azhar Medical College to evaluate the impact of a mentorship program initiated in January 2018 on the academic performance of 148 first-year students. Following six months of mentorship, marked by students being evenly distributed among six mentors, a significant improvement in academic performance was observed, as evidenced by

post-program exam scores compared to pre-program assessments (p<0.001). Particularly noteworthy was the program's positive effect on students who initially scored below 50%, with strong support from student feedback indicating its effectiveness in enhancing learning outcomes and providing essential guidance.

Another study by Sripad et al. (2021) was carried out involving 50 students and 28 faculty members, where each student was assigned a mentor through a lottery system, maintaining a mentor-to-mentee ratio of 1:2. The program aimed to identify and support areas of improvement for students, particularly those identified as low performers, through focused mentoring sessions. Results indicated significant improvements in exam scores across Anatomy, Physiology, and Biochemistry, with notable increases ranging from 5% to 18% (p<0.001). Student feedback underscored the program's effectiveness, with a majority agreeing that it positively impacted their academic progress. These findings highlight the importance of integrating mentorship into academic frameworks across medical colleges to nurture competent healthcare professionals and mitigate dropout rates, ultimately contributing to the development of proficient doctors.

Additionally, Fallatah et al. (2018) explored academic mentoring and its impact on academic performance, research productivity, career development, and overall satisfaction of undergraduate medical students. The research focused on fourth-year students at King Abdulaziz University Faculty of Medicine participating in the clinical skills module rotation. Mentors, consisting of senior and junior faculty members from relevant departments, engaged with students in both group and individual settings. While the majority of students perceived mentoring as crucial, actual participation rates varied, with group meetings and one-on-one sessions attended by 60% and 49% of students, respectively. The study highlighted mentor characteristics such as seniority and motivation significantly influencing the likelihood of students needing specialized support, particularly psychological assistance. Despite no significant impact on academic performance observed directly, the findings underscore the pivotal role of mentor and mentee motivation in fostering a successful mentoring environment.

In a study by, Moghaddam, Esmaillzadeh & Azadbakht (2019) on the influence of mentoring postgraduate students through their academic theses at the Universities of Medical Sciences. Since 2015, the Research Mentorship Program (RMP) has been implemented to address this issue by aiming to enhance research knowledge, thesis quality, and the quantity and caliber of papers emerging from postgraduate research. This prospective cohort study, conducted between 2015 and 2018, involved 28 postgraduate students who were paired with mentors, including supervisors and more experienced peers. Data collection utilized open-ended questionnaires and checklists, with statistical analysis employing Chi-square tests. Results indicated high satisfaction rates among both mentors and mentees, with 93% of mentees and all mentors reporting satisfaction with the RMP. Furthermore, participation in the program correlated with reduced research duration for master's students and increased productivity in terms of quantity and quality of academic papers

derived from their theses. The RMP not only enhances research skills and project outcomes but also fosters personal and professional growth through effective mentorship and interpersonal communication, underscoring its potential to significantly benefit postgraduate education.

Moreover, Zarei Hajiabadi & Gandomkar (2021) undertook a study on peer mentoring and the role it played in the early stages of medical school by supporting the academic success of undergraduate preclinical students. Specifically, this study aimed to systematically review research examining the impact of peer mentoring on academic performance among these students. Conducted in July 2021, the review utilized databases like SCOPUS, OVID, Eric, Embase, PubMed, and Web of Science, identifying 294 records initially. Following screening and elimination of duplicates and irrelevant articles, nine studies from 2007 to 2019 met the inclusion criteria. Most studies employed a post-only design or ex-post facto methods and various peer mentoring models, often emphasizing the supportive role of mentors. Several studies also incorporated electronic tools for mentoring interactions. Findings consistently showed that peer mentoring programs contributed to improved academic success indicators and positive perceptions among participants regarding program effectiveness. However, the overall quality of the studies varied from low to moderate, underscoring the need for more robust research in this area. These results suggest that peer mentoring can enhance academic performance in medical education contexts, particularly relevant in settings where faculty resources are constrained and motivation for mentoring may be limited.

DATA AND METHODS

Research Design: This study applied a descriptive cross-sectional survey that used quantitative methods of data collection to gather information from the study population. A positivism philosophy is typically associated with quantitative research. Positivism philosophy was adopted because it allowed the researcher to develop a theory that explains a specific phenomenon. The target population was drawn from all the medical engineering students.

Sample and Sampling Methods: This study applied the stratified sampling method to divide the population into subgroups (called strata) based on the relevant characteristic (year of study), which is years 1, 2, and 3. Based on the overall proportions of the population, the number of students was sampled from each subgroup and then calculated. Simple random sampling which is a probability sample was then used because the population is highly homogenous and each student has a known probability of being selected. The number of students was determined using a random number generator whereby a number was assigned to every individual, then the subset was randomly picked from the population.

Using the formula to calculate the sample size, 229 students were selected.

Formula; $n = \dfrac{Z^2 pq}{d^2}$

Where n is the desired sample size.

Z is the standard normal deviate from the required confidence level value, a 96% confidence level (1.96) was used by the researcher

p is the prevalence of mentorship (50 % was used in this study),

$q = 1 - p$

d is the level of precision (in this study 0.05 was used).

Therefore; $n = \dfrac{(1.96)^2 * (0.5)(1 - 0.5)}{(0.5)^2}$

$= 384.16 \sim 384$

Since the target population was less than 10,000, an estimated final sample size was calculated.

Thus;

$nf = n/1 + (n - 1)/N$

Where: nf = the desired sample size when the population is less than 10,000

n = the desired sample size when the population is more than 10,000

N = the estimate of the population size

Hence; $nf = 384/1 + (383)/530$

$= 229$ students.

Data Collection Instruments and Methods: Data was collected through the use of structured questionnaires for the students. The questionnaire was developed based on elements of effective practice that reflect the latest in quality mentoring among engineering students at the department to determine their general views on mentorship. Pretesting of the study tools was done with KMTC Nursing Nairobi students to eliminate biases from the students' answers and maintain the integrity of the results. The researcher used students from a different department (Nursing) to test out the data collection tools to ensure the validity and reliability of the study tool. Data quality control was done by use of a structured questionnaire and supervision of data collection to ensure the completeness of the questionnaire.

Data Analysis: The quantitative data was coded, entered and analyzed using the statistical package for social sciences (SPSS). The presentation of data was done through both descriptive and inferential statistics, frequency distribution and graphs. Descriptive statistics encompassed measures such as standard deviation, means, frequencies, and percentages. Inferential statistics encompassed several key measures, including correlation, coefficient of determination, analysis of variance, and regression analyses to determine the effect of mentorship programs on the

academic performance of students in the Department of Medical Engineering at KMTC, Nairobi campus.
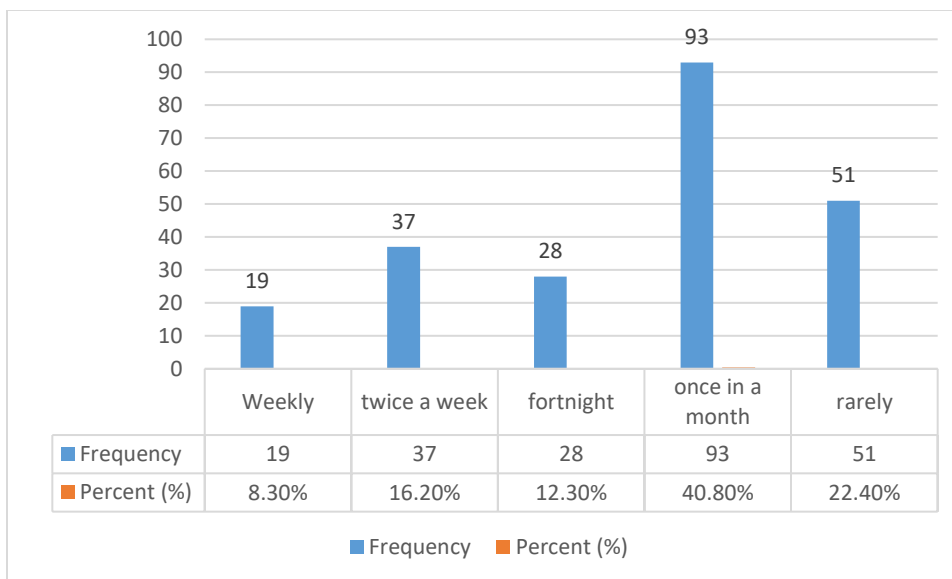
RESULTS AND DISCUSSIONS

Response Rate: The study gathered primary data from overwhelmingly 228 participants out of the total 229 participants selected representing a response rate of 99.6%, which according to Chen (2019), a response rate above 80% is adequate for actual data analysis.

Descriptive Statistics

Frequency of Meeting with Mentors

Figure 1 illustrates the frequency with which students in the Department of Medical Engineering at Kenya Medical Training Centre, Nairobi Campus, meet with their mentors. Results revealed that the majority of students (40.8%) meet their mentors once a month, followed by 22.4% who rarely meet their mentors. 16.2% of students have bi-weekly meetings with their mentors, while 12.3% meet fortnightly. Only a small fraction, 8.3%, engage in weekly mentoring sessions. This distribution suggests that while monthly mentorship is common, a significant portion of students experience infrequent mentorship interactions, which could impact the overall effectiveness of the mentorship program on their academic performance. The findings concur with studies by (Idubor & Adekunle, 2021; Masehela & Mabika, 2017) who established that private and public universities use mentorship programs to improve student performance with these mentorship programs being done at the department and faculty level to improve the student's performance. The studies highlighted that it's important to have more intensive and frequent mentorship sessions to impart crucial skills and abilities.
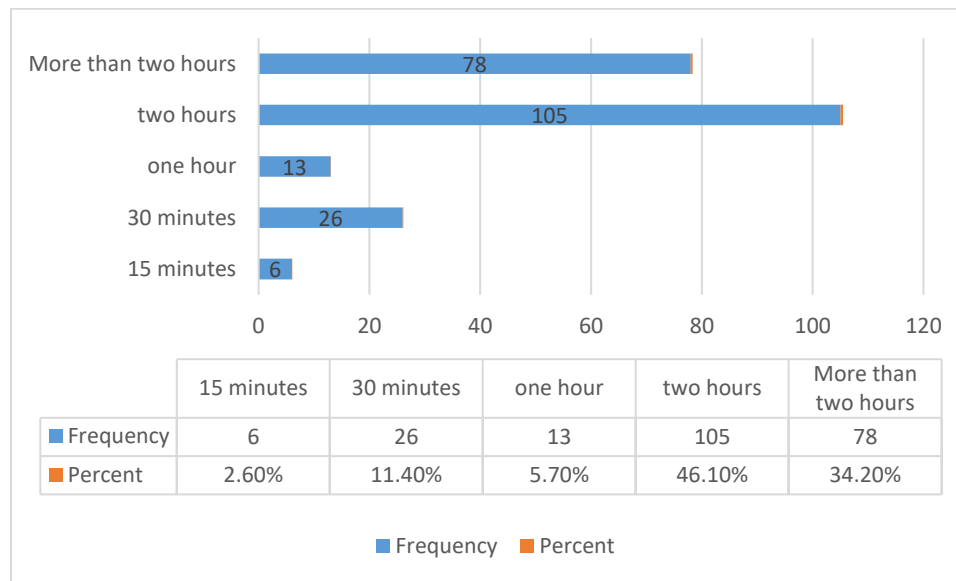
Figure 1: Frequency of meeting mentor

	Weekly	twice a week	fortnight	once in a month	rarely
Frequency	19	37	28	93	51
Percent (%)	8.30%	16.20%	12.30%	40.80%	22.40%

Duration of the Sessions

Figure 2 illustrates the duration of mentorship sessions for students in the Department of Medical Engineering at Kenya Medical Training Centre, Nairobi Campus. Results revealed that the majority of mentorship sessions last for two hours, with 105 students (46.10%) reporting this duration. The next most common duration is more than two hours, experienced by 78 students (34.20%). Sessions lasting 30 minutes are reported by 26 students (11.40%), while one-hour sessions are reported by 13 students (5.70%). The least common duration is 15 minutes, experienced by 6 students (2.60%). This distribution suggests that most mentorship interactions are substantial in length, typically lasting two hours or more, indicating a significant investment of time in mentoring activities. The results align with the study by Davey Jackson and Henshall (2020) who explain that lack of time commitment affects peer mentorship in medical schools in five universities in Kenya. They noted that lack of punctuality among students also influences the relationship between the mentor and the mentees thus impacting the overall performance of the students.
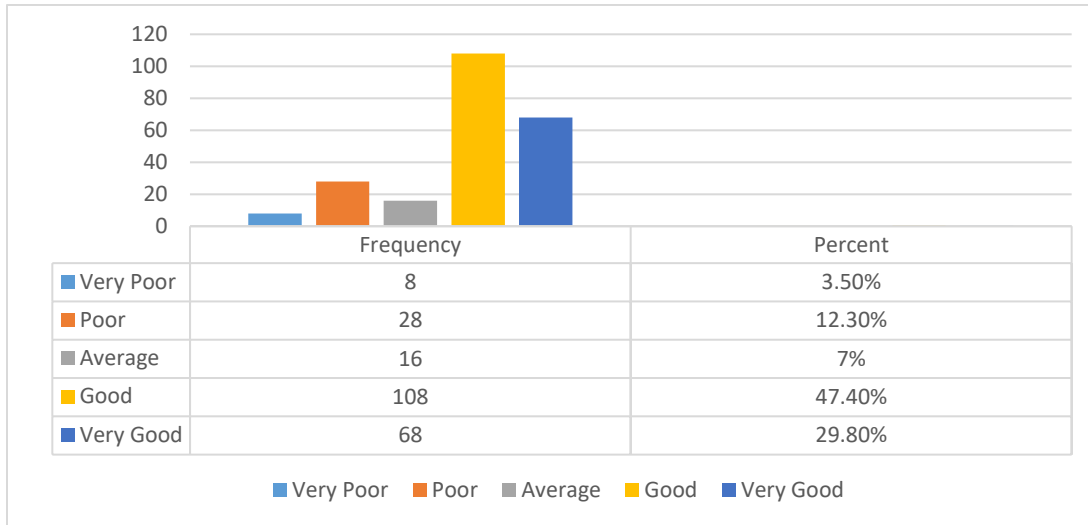
Figure 2: Time Taken During Mentorship

	15 minutes	30 minutes	one hour	two hours	More than two hours
■ Frequency	6	26	13	105	78
■ Percent	2.60%	11.40%	5.70%	46.10%	34.20%

■ Frequency ■ Percent

Quality of the Interaction with Mentor

Figure 3 illustrates the perceived quality of interactions between students and their mentors. The majority of the students rated the quality of their mentorship interactions as "Good," with 108 students (47.40%) expressing this sentiment. Following this, 68 students (29.80%) rated the interactions as "Very Good." A smaller proportion of students rated the interactions as "Poor," with 28 students (12.30%), while 16 students (7%) considered the interactions "Average." Only a minimal number of students, 8 (3.50%), rated the interactions as "Very Poor." These results suggest that the majority of students have a positive view of their mentorship interactions,

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indicating a generally effective mentorship program, though there is still room for improvement, particularly for the small percentage who rated their experiences poorly.

Figure 3: Quality of the Interaction with Mentor

	Frequency	Percent
■ Very Poor	8	3.50%
■ Poor	28	12.30%
■ Average	16	7%
■ Good	108	47.40%
■ Very Good	68	29.80%

■ Very Poor ■ Poor ■ Average ■ Good ■ Very Good

Descriptive Statistics on Mentorship Program

Table 1 revealed that participants agreed with the statement "My mentor is approachable" as indicated by a mean of 3.84. Also, the participants agreed with the statement "My mentor has provided me with adequate supportive guidance" as indicated by a mean of 3.98. Additionally, participants agreed with the statement "The guidance and advice given to me by my mentor is relevant to my academic and career goals" indicated by a mean of 4.00. Moreover, participants agreed with the statement "The mentorship I have received has been crucial to my personal development" as indicated by a mean of 3.98. Besides, participants agreed with the statement "My academic development has improved as a result of mentorship" as shown by a mean of 4.00. Further, participants agreed with the statement "I have improved my interaction with coursemates and peers through my mentorship" as indicated by a mean of 3.86. Lastly, participants agreed with the statement "Overall I am satisfied with the mentorship program" as indicated by a mean of 3.95.

Table 1: Descriptive Statistics on Mentorship

Statement	SD	D	N	A	SA	M	Std. Dev.
My mentor is approachable	3.5%	9.6%	10.1%	53.1%	23.7%	3.84	1.009
My mentor has provided me with adequate supportive guidance	3.9%	5.3%	9.2%	51.8%	29.8%	3.98	0.980
The guidance and advice given to me by my mentor is relevant to my academic and career goals	4.4%	4.4%	12.7%	44.3%	34.2%	4.00	1.022
The mentorship I have received has been crucial to my personal development	1.3%	7.5%	11.0%	52.6%	27.6%	3.98	0.898
My academic development has improved as a result of mentorship	4.4%	5.7%	11.0%	43.9%	35.1%	4.00	1.043
I have improved my interaction with coursemates and peers through my mentorship	2.2%	11.8%	14.0%	41.7%	30.3%	3.86	1.048
Overall I am satisfied with the mentorship program	3.9%	3.9%	12.7%	51.8%	27.6%	3.95	0.958

Overall Academic Performance

Table 2 revealed that overall academic performance had a substantial positive impact. Out of 228 students, none reported a decline in their academic performance. Specifically, 120 students (52.6%) rated their performance as "Better," and 91 students (39.9%) rated it as "Much Better." Only 17 students (7.5%) indicated that their academic performance remained the same. These findings suggest that the mentorship program has been highly effective in enhancing the academic outcomes for the majority of participants, with over 92% of students experiencing noticeable improvements in their academic performance.

Table 2: Overall Academic Performance

Overall academic performance	Frequency	Percent
Much Worse	0	0%
Worse	0	0%
Same	17	7.5
Better	120	52.6
Much Better	91	39.9
Total	**228**	**100.0**

Descriptive Statistics on Academic Performance

Table 3 revealed that participants agreed with the statement "My confidence in my academic abilities has increased due to the mentorship program" as shown by a mean of 3.44. Furthermore, participants agreed with the statement "I am more likely to complete my assignments on time because of the mentorship program" as shown by a mean of 4.03. Lastly, participants agreed with the statement "My class participation has improved since joining the mentorship program" as indicated by a mean of 3.80.

Table 3: Descriptive Statistics on Academic Performance

Statement	SD	D	N	A	SA	Mean Score	Std. Deviation
My confidence in my academic abilities has increased due to the mentorship program.	17.5	7.5	8.8	45.6	20.6	3.44	1.367
I am more likely to complete my assignments on time because of the mentorship program.	2.6	9.6	8.3	40.8	38.6	4.03	1.047
My class participation has improved since joining the mentorship program.	3.5	9.2	14.9	48.2	24.1	3.80	1.020

Inferential Analysis

Correlation Analysis

Table 4 revealed a Correlation (r) value score of 0.746 and a p-value of 0.001 between mentorship and academic performance implying that mentorship and academic performance had a positive and statistically significant relationship at 0.001 significant level. Similar opinions were echoed

Sripad, et al. (2021) who studied the effect of mentorship sessions on students' performance and found that a close mentorship ratio of 1:2 resulted in significantly better grade scores in science subjects, Anatomy, Physiology, and Biochemistry and also resulted in a reduction in drop-out among students pursuing these subjects.

Table 4: Correlation Matrix

		Mentorship	Academic Performance
Mentorship	Pearson Correlation	1	.746[**]
	Sig. (2-tailed)		.000
	N	228	228
Academic Performance	Pearson Correlation	.746[**]	1
	Sig. (2-tailed)	.000	
	N	228	

**. Correlation is significant at the 0.001 level (2-tailed).

Regression Analysis

Table 5 revealed that 55.6% of the changes in the academic performance of students of Medical Engineering at Kenya Medical Training Center were explained by mentorship as indicated by an r-square of 0.556. Other variables that were not included in the study constituted 44.4% of the changes in the academic performance of students of Medical Engineering at Kenya Medical Training Center, Nairobi Campus.

Table 5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.746[a]	.556	.554	.58750

a. Predictors: (Constant), Mentorship

Table 6 revealed an F-statistic value of 283.189 with an associated p-value of 0.001, which suggests that the linear regression model applied by the study was a significant fit in predicting the academic performance of students of Medical Engineering at Kenya Medical Training Center.

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Table 6: ANOVAᵃ

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	97.727	1	97.727	283.139	.000ᵇ
	Residual	78.005	226	.345		
	Total	**175.732**	**227**			

a. Dependent Variable: Academic Performance

b. Predictors: (Constant), Mentorship

Further results from Table 7 revealed a beta coefficient of 0.062 and a p-value of 0.780 which indicates that the constant in the model was statistically significant in the prediction of the academic performance of students of Medical Engineering at Kenya Medical Training Center. Moreover, results indicated a beta value of 0.937 and a p-value of 0.001 between mentorship and academic performance of students of Medical Engineering at KMTC, Nairobi Campus which implied that mentorship significantly influenced the academic performance of students of Medical Engineering at Kenya Medical Training Center, Nairobi campus because the calculated p-value of 0.001 was less than the critically chosen value of 0.05 aligning with the study by Moghaddam, Esmaillzadeh and Azadbakht (2019) who sought to establish the influence of mentoring postgraduate students through their academic theses at Universities of Medical Sciences. This prospective cohort study, conducted between 2015 and 2018, involved 28 postgraduate students who were paired with mentors, including supervisors and more experienced peers. Results indicated high satisfaction rates among both mentors and mentees, with 93% of mentees and all mentors reporting satisfaction with the RMP. Furthermore, participation in the program correlated with reduced research duration for master's students and increased productivity in terms of quantity and quality of academic papers derived from their theses. Moreover, the study established that the RMP not only enhances research skills and project outcomes but also fosters personal and professional growth through effective mentorship and interpersonal communication, underscoring its potential to significantly benefit postgraduate education.

Table 7: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.062	.223		.279	.780
	mentorship	.937	.056	.746	16.827	.000

a. Dependent Variable: Academic Performance

CONCLUSIONS AND RECOMMENDATIONS

The study concluded that students in the Department of Medical Engineering at Kenya Medical Training Centre, Nairobi Campus mentors were approachable. Additionally, the study concluded that students in the Department of Medical Engineering at Kenya Medical Training Centre mentors provided them with adequate supportive guidance. Moreover, the study concluded that students in the Department of Medical Engineering at Kenya Medical Training Centre guidance and advice given to them by their mentors were relevant to their academic and career goals. Besides the study concluded that students in the Department of Medical Engineering at Kenya Medical Training Centre mentorship they had received has been crucial to their personal development.

Further, the study concluded that students in the Department of Medical Engineering at Kenya Medical Training Centre had their academic development improved as a result of mentorship. Also, the study concluded that students in the Department of Medical Engineering at Kenya Medical Training Centre had improved their interaction with course mates and peers through their mentorship. Overall, the study concluded that students in the Department of Medical Engineering at Kenya Medical Training Centre were satisfied with the mentorship program. Lastly, the study concluded that mentorship significantly and positively influenced the academic performance of students in the Department of Medical Engineering at Kenya Medical Training Center, Nairobi Campus.

The conclusions of the study are therefore in support of Bloom's Taxonomy of Educational Objectives which provides a comprehensive framework for categorizing educational goals that are highly applicable to understanding the effects of mentorship programs on academic performance. This taxonomy, divided into six hierarchical levels within the cognitive domain knowledge, comprehension, application, analysis, synthesis, and evaluation offers a structured approach to assessing how mentorship can impact students' learning and academic outcomes. By mapping the mentorship program to these levels, educators can design interventions that enhance various aspects of students' cognitive development, thereby improving their overall academic performance.

Theoretical Recommendations

This study contributes to educational theories by reinforcing the value of mentorship programs in enhancing academic performance. It highlights how mentorship promotes personal and academic development through structured support, aligning with theories of student engagement and retention. The findings suggest that mentorship should be recognized as a core factor in students' academic success, especially in technical education like medical engineering. This emphasizes that strong mentor-student relationships facilitate not only skill acquisition but also emotional well-being, making mentorship a necessary component of educational frameworks for personal and professional growth. Future research can expand on these findings to refine models of mentorship specifically tailored to technical disciplines.

Policy Recommendations

The study recommends integrating mentorship programs into the national education framework to formalize their implementation within technical institutions. Institutions like KMTC should develop policies requiring structured mentorship programs that focus on communication, career guidance, and academic advising. Additionally, policies can introduce mandatory mentor training and ensure that faculty members and mentors receive continuous professional development. The findings also advocate for policies that encourage collaborative mentoring through group sessions and peer-led initiatives to foster a supportive learning environment. To sustain these programs, educational policies should allocate specific budgets for mentorship resources and ensure mentorship programs align with academic curricula.

Practice Recommendations

The study encourages KMTC to implement mentorship programs that align closely with students' academic schedules and career needs. The institution should train mentors to enhance their communication skills, career advisory abilities, and capacity to provide academic support. Integrating mentorship into coursework can ensure students receive ongoing guidance relevant to their studies. The study also emphasizes the value of peer mentoring, recommending that KMTC create spaces for group mentoring and encourage students to lead collaborative projects. Furthermore, ensuring mentors have access to tools such as career counseling materials and academic resources will enhance the effectiveness of the program and foster continuous improvement in student performance.
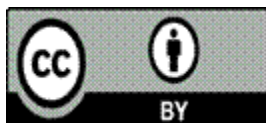
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