

**EFFECTIVENESS OF A MENTORSHIP PROGRAMME AT THE
DEPARTMENT OF MEDICAL ENGINEERING IN KMTCC NAIROBI
CAMPUS, KENYA**

AGATHA AKINYI OMONDI

SHS/MSHPE/498-2/2020

**A RESEARCH THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE AWARD OF DEGREE OF MASTERS IN
SCIENCE IN HEALTH PROFESSION EDUCATION IN THE DEPARTMENT
OF HEALTH SYSTEMS MANAGEMENT IN THE SCHOOL OF PUBLIC
HEALTH OF THE AMREF INTERNATIONAL UNIVERSITY**

JULY 2024

DECLARATION AND APPROVAL

Declaration by Candidate:

This thesis is my original work and has not been presented for a degree in any other university or any other award.

Signature:



Agatha Akinyi Omondi

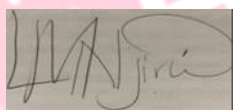
SHS/MSHPE/498-2/2020

Date: 11th July 2024

Approval by Supervisors:

This thesis has been submitted with our approval as university supervisors.

Signature:



Name: Dr. Lucy Njiru

Dean School of Medical Sciences

Amref Internationaional University

Date: 11th July 2024

Signature:



Name: Dr. June Madete

Kenyatta University

Date: 11th July 2024

DEDICATION

To my spouse Bernard and my children Ann and Frank, who have shown me continued unconditional support throughout my academics, and especially during this thesis, thank you. My love for you all can never be quantified. God bless you.



ACKNOWLEDGMENT

I appreciate all who have enabled me to complete this report through their dedication and support. I am grateful to my thesis supervisor, Dr. Lucy Njiru of Amref International University, and Dr. June Madete of Kenyatta University, who have offered valuable support and encouragement to enable me to complete my thesis on time.



TABLE OF CONTENTS

DECLARATION AND APPROVAL	ii
DEDICATION	iii
ACKNOWLEDGMENT	iv
TABLE OF CONTENTS	v
LIST OF TABLES	x
LIST OF FIGURES	xi
ABBREVIATIONS AND ACRONYMS	xii
OPERATIONAL DEFINITION OF TERMS	xiii
ABSTRACT	xiv
CHAPTER I: INTRODUCTION	1
1.1 Background Information.....	1
1.1.1 Global Perspective of Mentorship Programmes	3
1.1.2 The African Perspective of Mentorship Programmes.....	6
1.1.3 The Local Perspective of Mentorship Programmes.....	8
1.1.4 Mentorship Programmes in KMTCC	9
1.2 Statement of the Problem	11
1.3 Research Questions.....	12
1.4 Study Objectives.....	13
1.4.1 Broad Objective	13
1.4.2 Specific Objectives	13

1.5 Justification of the Study	13
1.6 Significance of the Study.....	14
1.7 Study Scope	15
1.8 Limitations of the Study	15
1.8.1 Delimitations of the Study	15
1.9 Assumptions of the Study.....	16
CHAPTER 2: LITERATURE REVIEW.....	17
2.1 Introduction	17
2.2 Theoretical Framework.....	17
2.3 Review of the Related Literature.....	18
2.3.1 Successful Mentorship Programme	19
2.3.2 Level of Awareness of Mentorship Programme	25
2.3.3 Impact of Mentorship Programme on Academic Performance.....	30
2.4 Identification of Knowledge Gaps.....	42
2.5 Conceptual Framework.....	43
CHAPTER 3: METHODOLOGY	46
3.1 Introduction	46
3.2 Research Design	46
3.3 Study Area	47
3.4 Target Population	47
3.5 Sample and Sampling Procedure.....	48

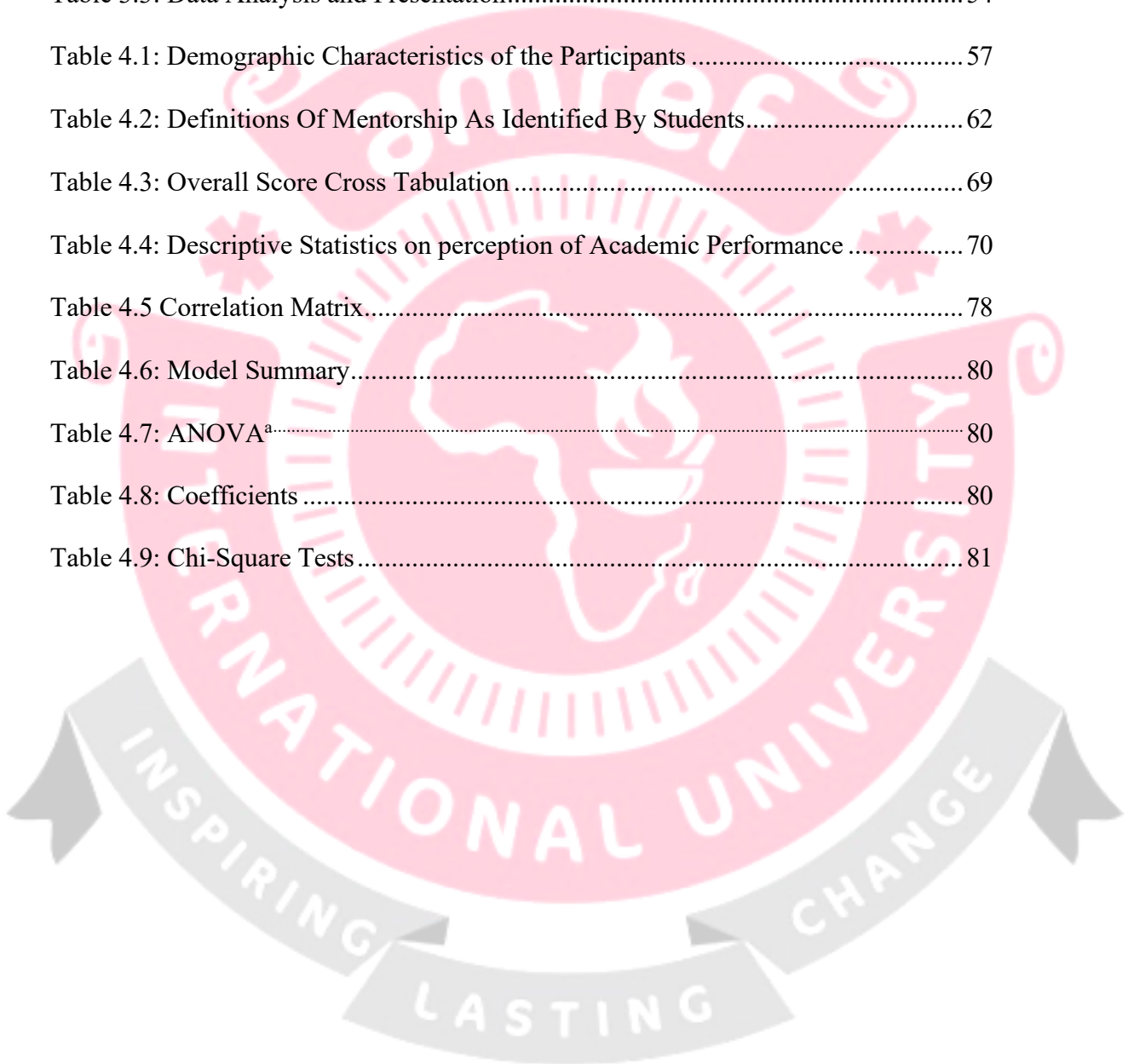
3.5.1 Sample Size Determination.....	48
3.6 Data Collection Instruments	49
3.7 Validity and Reliability.....	50
3.8 Data Collection Procedures	51
3.8.1 Qualitative Data Collection.....	51
3.8.2 Quantitative Data Collection.....	52
3.9 Data Analysis and Presentation	53
3.10 Ethical Considerations	54
3.11 Study Constraints and Limitations.....	55
CHAPTER 4: RESULTS.....	57
4.1 Introduction	57
4.2 Response Rate of Participants	57
4.3 Mentorship Supporting a Learning Culture.....	58
4.4 Awareness of Mentorship.....	60
4.4.1 Awareness of Mentorship among Students.....	60
4.4.2. Awareness of Mentorship among Faculty Members	67
4.5 Descriptive Statistics on Academic Performance.....	69
4.5.1 Cross Tabulation on Mentorship and Academic Performance	69
4.5.2 Descriptive Statistics on the Perception of Academic Performance.....	70
4.6 Impact of Mentorship on Academic Performance.....	70
4.6.1 Motivation.....	73

4.6.2 Inter-relationship	75
4.6.3 Informal Mentorship	75
4.6.4 Mentor- Centered	76
4.6.5 Attitude	76
4.6.6 Time	77
4.6.7 Policy	77
4.7 Inferential Statistics	78
4.7.1 Correlation Analysis	78
4.7.2 Regression Analysis	79
4.7.3 Analysis of Variance	81
CHAPTER 5: DISCUSSIONS	82
5.1 Introduction	82
5.2 Socio-demographic Information	82
5.3 Successful Mentorship Supports a Learning Culture	82
5.4 Level of Awareness among Medical Engineering Students	83
5.5 Impact of Mentorship on Academic Performance.....	85
5.6 Relationship between Mentorship and Academic Performance	86
CHAPTER 6: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS ...	88
6.1 Introduction	88
6.2 Conclusion	88
6.2.1 Successful Mentorship	88

6.2.2 Awareness of Mentorship Programme.....	89
6.2.3 Impact on Academic Performance.....	89
6.3 Recommendations.....	89
6.3.1 Successful Mentorship Supports a Learning Culture.....	89
6.3.2 Level of Awareness among Medical Engineering Students	89
6.3.3 Impact of Mentorship on Academic Performance	90
6.4 Suggestions for Further Research.....	90
REFERENCES	91
APPENDICES	103
Appendix I: Map of The Study Area.....	103
Appendix II: NACOSTI Research Permit.....	104
Appendix III: AMREF Research Approval Letter	105
Appendix IV: Consent Form	107
Appendix V: Questionnaire	110
Appendix VI: Interview Guide for The Programme Coordinators.....	116
Appendix VII: Similarity Report.....	117

LIST OF TABLES

Table 3.1: Target Population	47
Table 3.2: Sample Distribution	49
Table 3.3: Data Analysis and Presentation.....	54
Table 4.1: Demographic Characteristics of the Participants	57
Table 4.2: Definitions Of Mentorship As Identified By Students.....	62
Table 4.3: Overall Score Cross Tabulation	69
Table 4.4: Descriptive Statistics on perception of Academic Performance	70
Table 4.5 Correlation Matrix.....	78
Table 4.6: Model Summary.....	80
Table 4.7: ANOVA ^a	80
Table 4.8: Coefficients	80
Table 4.9: Chi-Square Tests.....	81



LIST OF FIGURES

- Figure 2.1: Conceptual Framework..... 45
- Figure 4.1: Shows Mentorship Status Among the Students..... 61
- Figure 4.2: A Bar Graph of the Frequency of Barriers to Mentorship..... 66



ABBREVIATIONS AND ACRONYMS

AMREF: African Medical Research Foundation

FGD: Focused Group Discussions

HOD: Head of Department

KEMU: Kenya Methodist University

KMTC: Kenya Medical Training College

MET: Medical Engineering Technologists

UON: University of Nairobi

ERIC: Education Resources Information Center

BBC: British Broadcasting Corporation

SPSS: Statistical Package for Social Sciences

IDI: In-Depth Interview

KIIs: Key Informant Interviews



OPERATIONAL DEFINITION OF TERMS

Effectiveness: Refers to the extent to which the programme successfully enhances the mentees' academic performance, personal development, and overall satisfaction with their educational experience.

Knowledge: The skills and the expertise in an individual that enables them to perform their roles and responsibilities. Knowledge is acquired through education, experience, or theoretical understanding of the subject matter

Programme: Refers to a structured and organized system designed to provide guidance, support, and development opportunities for mentees through regular interactions and activities with experienced mentors.

Mentee: The person receiving the guidance to improve their skills

Mentor: The individual who offers guidance and support by showcasing their skills that are relevant to the interested person.

Mentorship: The relationship between two individuals to pass on knowledge, skills, and experiences that are important for improvement.

Practice: The act of performing something.

Protégé: The individual who submits themselves for the sake of mentorship purposes.

ABSTRACT

Background to the Study: The quality of medical engineering students is a concern globally, largely due to the lack of supportive structures for transitioning into the industry. Mentorship programmes can address this by providing necessary support. This research at Kenya Medical Training College (KMTC), Nairobi campus, aimed to assess the mentorship programme's effectiveness in the Medical Engineering department. It specifically evaluated whether mentorship supports a learning culture, the level of student awareness about mentorship programmes, and the impact on academic performance.

Methodology: The study utilized the action-reflection and andragogy hypothesis models, applying a heuristic approach. It employed a descriptive cross-sectional design, integrating quantitative and qualitative methods. Participants included 530 students and 7 faculty members, sampled through stratified random sampling and Cochran's formula. Data collection methods included questionnaires, interviews, and focus group discussions. Descriptive and inferential statistical analyses were performed, encompassing frequencies, percentages, means, Chi-square, regression, and correlation analysis.

Results: Findings revealed low awareness of the mentorship programme, with only 28% (n=62) of students aware of it, while 49% (n=112) had mentors, primarily lecturers or peers. Despite informal mentorship, 55% of participants in interviews and discussions reported academic improvement due to mentorship. However, only 20.7% of 163 respondents were satisfied with their mentors' professional activity facilitation, and 72.3% (n=86) felt the mentorship did not meet expectations. A significant positive relationship between mentorship and academic performance was found, with a β score of 0.935 and a p-value of 0.001.

Conclusion: The study concluded that the mentorship programme positively impacts academic performance at KMTC Nairobi campus.

Recommendations: It recommended increasing student awareness, establishing a formal mentorship programme, forming a professional mentors' committee, and implementing effective monitoring and evaluation by the Ministry of Education. Recognizing and rewarding mentors and mentees was also suggested to encourage participation.

CHAPTER I: INTRODUCTION

1.1 Background Information

Mentorship programmes are formalized activities whereby knowledge and expertise transfer between the mentor, who is usually more experienced, and the relatively inexperienced mentee. These programmes promote learning and growth experiences, improve skills, and guide mentees through their curricular and career journeys. Through establishing a positive relationship between the parties concerned, the mentorship programmes provide information flow, capacity enhancement, and the accomplishment of stipulated objectives. In mentoring systems, the role of mentors is crucial because they are the people who can help students and offer them the needed support (Nimmons et al., 2019). These programmes are generally intended to guide learners in their academic processes and cultivate personal and career growth. These relationships within the mentorship programme create a conducive environment whereby senior cores, for instance, have a faculty member or a more senior student, to guide them by offering words of advice, encouragement, and constructive feedback. This relationship also improves academic achievement and personal and professional development as the students are poised to set and achieve their working career objectives. By closing the gap between learning and practice, the programmes equip students to handle the realities of professional practice and become competent professionals (Hamilton et al., 2019).

For institutions, there is no better tool than the practical experience obtained through participation in a mentorship programme. It denotes an enhancement of a positive

academic culture besides contributing to increased student retention. Students who receive support and guidance are more likely to continue with their programmes and complete them than those who do not. Mentorship also contributes to the positive image of the institution by graduating articulate and competent professionals in society. Also, such programmes can create a stronger sense of community, which is important for the relationship between students and the university. Results found that institutions with mentorship programmes consistently achieve improved academic results, student satisfaction, and higher graduation institutional endorsement (Raposa et al., 2019).

Mentorship also benefits the learners by enabling them to enrich their experiences. These programmes offer them a venue to share their academic and personal problems with other members of society. Mentors can offer insights into effective study strategies, time management, and career planning, which are critical for academic success. Moreover, mentorship helps learners build a professional network, opening doors to internships, research opportunities, and job placements. Students participating in mentorship programmes often report increased motivation, improved academic performance, and greater confidence in their abilities. This personalized support can be particularly beneficial for students who may struggle with the demands of higher education (Chong et al., 2020).

In developing countries, the implementation of mentorship programmes faces several challenges, including limited resources, insufficient training for mentors, and cultural barriers. However, where they are effectively implemented, mentorship programmes have shown promising results. For example, in some African universities, mentorship initiatives have helped reduce dropout rates and improve academic performance among

students from disadvantaged backgrounds. These programmes are often supported by international organizations and NGOs, which provide the necessary resources and training. Despite the challenges, there is a growing recognition of the importance of mentorship in enhancing educational outcomes in developing countries. These programmes have been instrumental in supporting students, particularly in demanding fields like medical training. By providing structured guidance and support, mentorship programmes have helped students navigate their academic journeys more effectively, leading to higher academic achievement and professional readiness (Jordan et al., 2019).

1.1.1 Global Perspective of Mentorship Programmes

Medical engineering mentorship programmes are recognized worldwide as necessary steps toward producing the future generation of medical engineering professionals. For instance, learning institutions in the United States, such as the Massachusetts Institute of Technology (MIT), have developed extensive mentorship programmes that help connect students with experienced professionals and researchers. One of the remarkable programmes at MIT for undergraduate students is the Undergraduate Research Opportunities Programme (UROP), where students are allowed to work under faculty member supervision on research projects. It is aimed at students' academic and personal success, providing workshops, networking platforms, and scheduled meetings of a mentor and a mentee that guarantees constant support and skill enhancement (Henry-Noel et al., 2019). Furthermore, MIT's focus on the interconnectivity of different fields enables mentees to work with mentors and students from other disciplines, enhancing their competencies and expanding their knowledge. In this way, MIT helps students to

complement theoretical knowledge with real-world experience that prepares them for the challenges of the medical engineering profession (Barabino et al., 2020).

Among European universities, the Technical University of Munich in Germany has a long-term positive experience with a well-developed student mentorship scheme focused on medical engineering students. At TUM, students are matched with alumni currently practicing in their respective fields; through this programme, graduates assist current learners. Career guidance, an essential aspect of this programme, enables the mentee to know the existing trends and general employment outlook and the opportunity to learn how to build their professional skills. Seminars, one-to-one sessions, and interactions are an important part of TUM's strategy to provide students with organizational orientations, strong alumni networks, and realistic insights from the tutor's professions and experiences. TUM also has an evaluation and review model through which the mentee can share his/her experience and make remarks on the programme. Such a cyclical approach guarantees that the programme for the mentorship of the staff updates and becomes more efficient in serving the interests of both mentors and mentees (Santos et al., 2020).

In Asia, the University of Tokyo in Japan has an excellent example of how to offer mentorship in medical engineering through the Global Leadership Programme. This initiative ensures that students receive mentorship and learning from professionals and leaders in the medical engineering field from across the globe, giving them an international perspective on the opportunities and challenges in the field. To achieve the above goals, the following activities are implemented in the programme; group mentorship meetings, research, and internships in other countries. To help students

develop the required abilities to function as competent medical engineers globally, the University of Tokyo launched a unique mentorship programme where learners are exposed to diverse professional opinions and cultural backgrounds. It also offers ample focus on culturally sensitive communication and leadership, which will equip the students to thrive in the international realm of medical engineering. The significance of international internships supplements the students' practical experience in different contexts, which enhances the learning experience (Nakao et al., 2022).

In Australia specifically, the University of Sydney has a unique approach to mentorship within the Faculty of Engineering, which is focused on biomedical engineering. The Industry Mentoring Programme at the university involves identifying and pairing students with industry professionals to provide them with practical experience in their areas of study. By participating in this programme, students are taught about career planning, the development of technical skills, and etiquette. Programme components include consistent meetings with a professional mentor, industrial site visits, and networking opportunities, which provide the students with an industrial outlook and real-life experience. The University of Sydney also has a long-term approach to professional relationships, as it is required for the mentees to stay connected with the mentors even during and after the programme. Through this consistent interaction, the students sharpen their careers and adequately prepare for the biomedical engineering profession (Vassallo et al., 2021).

In Canada, the University of Toronto's Institute of Biomedical Engineering has established a robust mentorship programme emphasizing interdisciplinary collaboration. The programme pairs students with mentors from various fields,

including engineering, medicine, and business, to provide a holistic learning experience. Mentees benefit from regular interactions with their mentors, participation in interdisciplinary research projects, and access to professional development workshops (Birhan & Merso, 2021). This approach ensures that students receive comprehensive guidance encompassing technical expertise and soft skills, preparing them for diverse career paths in medical engineering. The University of Toronto also facilitates peer mentoring, where advanced students mentor their juniors, fostering a supportive academic community. This multi-tiered mentorship structure enhances learning and encourages a culture of collaboration and continuous improvement within the institution (Murry et al., 2022).

1.1.2 The African Perspective of Mentorship Programmes

In Africa, it is notable that medical engineering mentorship programmes are critical since they help produce experts in the medical field who will help improve the continent's health standards. For example, the University of Cape Town (UCT) in South Africa has well-established mentorship programmes. To ensure that students get the necessary training to work within biomedical engineering, the UCT Biomedical Engineering Research Centre offers a mentorship that orients students to experienced professionals within the same discipline. Most programmes provide students with the necessary research mentorship, career guidance, and skills to excel in academics and their chosen professions. The focus of the mentorship programmes at UCT is on partnerships with companies, which ensure that the students get practical experience and connect with the stakeholders that are crucial for their professional growth (Feyissa et al., 2019).

In Nigeria, the University of Lagos (UNILAG) has also embarked on a mentorship programme within the faculty of engineering, specifically in the biomedical Engineering department. This programme allocates every learner a faculty adviser and working professional who will help them navigate through their college and career paths. The UNILAG mentorship involves training on practical exercises, group/individual discussions, and consultations with professional trainers, covering new trends, available research, and possible career choices. This hands-on approach supports students in developing well-grounded medical engineering skills and prepares them to stand a better chance of being hired within the competitive job market. The programme also supports innovation through research projects undertaken by students to solve local health care problems (Okunade et al., 2023).

In Egypt, Cairo University excels in its diverse mentorship options for medical engineering. The Faculty of Engineering at the university has adopted a systematic, structured mentorship system with three levels: mentor peer, faculty mentor, and industrial mentor. Peer mentoring entails one or several seniors guiding and assisting one or several fresh men to cope with the university environment and their courses. Faculty advisers give students academic advice about programme requirements and potential job opportunities, while industry advisers offer advice about internships and job openings. This multi-tiered mentorship approach ensures that students receive holistic support, from academic advice to career planning, enhancing their overall educational experience and professional readiness (Atalla et al., 2022).

1.1.3 The Local Perspective of Mentorship Programmes

In particular, medical engineering has become especially important in Kenya as a part of the recognition of mentorship programmes as valuable attributes of higher education that should help students achieve better academic performance and prepare them for future professions. Such programmes offer a formal framework through which experienced professionals, faculty members, and senior students offer direction and assistance to the mentees as they navigate the challenging and sometimes convoluted academic and career trajectories of medical engineering. Through positive interactions, a mentorship programme proves vital when identifying with scholars, how they approach their learning process, and putting into practice the theoretical knowledge gained while studying medical engineering. The personalized care provided through the mentorship systems can assist students in surmounting academic barriers, gaining confidence in problem-solving, and discovering analytical thinking skills that will be instrumental in pursuing medical engineering (Mbogo, 2019).

Technical University of Mombasa particularly has a dedicated mentorship programme under the Department of Medical Engineering. This programme involves pairing students with experienced professors and specialists in their field of study who mentor the students on academic projects, research activities, and career pathways. The results of the programme have positively impacted the learning abilities and performance of the students when solving problems that require the application of engineering principles. Moreover, the project exposes the mentees to real-life healthcare engineering problems and solutions they can benefit from after graduation. The formal interaction sessions include weekly or bi-weekly check-ins, training that will be

conducted in groups or classes, including the observation of or participation in seminars where the students can ask the mentors questions and also get updated with the latest developments in the medical engineering discipline (Nanjala et al., 2023).

Another exceptional mentorship programme is provided by Kenyatta University's School of Engineering and Technology in consideration of students aspiring to become medical engineers. This programme is designed to enable students to get academic assistance, counseling on career paths, and placement in internship programmes. The university assists students with mentors, including faculty members and industrialists, for project work, internships, and research collaborations. The programme has improved academic outcomes, with students demonstrating higher competency levels and innovation in their coursework and research projects. By fostering a supportive environment, Kenyatta University ensures that students are well-equipped to tackle both theoretical and practical aspects of medical engineering, which is critical for their academic and professional success (Feyissa et al., 2019).

1.1.4 Mentorship Programmes in KMTC

Mentorship programmes are a cornerstone in educational institutions worldwide, aiming to enhance students' academic and professional development. In Kenya Medical Training College (KMTC) context, mentorship programmes are designed to provide guidance, support, and resources to students, especially in the demanding medical training field (Wachira, 2019). These programmes pair students with experienced mentors, faculty members, or senior students to help them navigate academic challenges, develop clinical skills, and prepare for their careers. The mentorship initiative at KMTC is crucial, given the rigorous nature of medical education and the

need for continuous support to ensure student success and well-being (Noormahomed et al., 2019).

Despite the implementation of mentorship programmes, there is limited research on their direct impact on academic performance at KMTC. Available data suggests that students involved in mentorship programmes perform better academically than those who do not participate. For instance, a preliminary internal report indicated that mentees had a 15% higher pass rate in their end-of-year exams than non-mentees. Additionally, students who regularly attended mentoring sessions reported higher satisfaction and confidence in their academic abilities, which correlates with improved performance in clinical assessments and theoretical exams. However, these findings are primarily anecdotal and lack comprehensive empirical analysis, highlighting a significant research gap in understanding the full impact of mentorship on academic outcomes at KMTC (Nyikuri, 2020).

The need for a detailed study on mentorship programmes and academic performance at KMTC is evident. Comprehensive research could provide valuable insights into how these programmes can be optimized to support student success better. By collecting and analyzing data on various aspects, such as attendance, mentor-mentee interactions, and specific academic outcomes, KMTC can develop more effective mentorship strategies. Moreover, addressing this research gap could help identify best practices and potential areas of improvement, ultimately contributing to higher academic achievement, reduced dropout rates, and enhanced overall student satisfaction. Such a study would benefit KMTC and serve as a model for other regional medical training institutions (Shikuku et al., 2019).

1.2 Statement of the Problem

Globally, many higher learning institutions appreciate the value of mentorship programmes for students. The United Kingdom Aston University Voluntary Peer Mentoring programme brings together students of various year groups to establish one-to-one mentoring relationships (Coppola, 2021). A South African study by Sandelands and Hall (2009) showed the engineering graduates' capacity to apply theoretical knowledge from class in practice and how it arose to be a challenge during the transition of graduates into the professional industry. Medical engineering graduates require the proficient ability to apply theoretical knowledge through experiential learning and with an experienced professional acting as a guide or mentor (Akerele et al., 2019).

Although research seems to document the effectiveness of mentorship programmes on a student's academic success in Kenya, especially for at-risk students, there has not been much research dedicated to the examination of mentorship programmes at KMTC among medical engineering students. The ramification of mismatches between desire and capacity, usually related to a student's arrangements at high school, results in failures and debilitation in the first year of the programme. At the Department of Medical Engineering Nairobi, there is a high failure rate in both the formative assessments done in both the Certificate and Diploma programmes and this has now escalated to summative assessments, as evident in the 2021 final qualifying examination with a pass rate of 45% and 55% respectively (HOD Medical Engineering, 2022). The department also faces increasing costs in training students in today's high technology. Furthermore, no research has been done to examine mentorship programmes on their academic performance. The current trends in the global

distribution and organization of biomedical engineering work require graduates with a mix of strong technical and professional skills. With a lack of effective mentorship, students would proceed to scuffle with social and academic issues coming from graduates who are not completely enabled in their personal and professional lives. This research looks to survey viable mentorship programmes within the Department of Medical Engineering at KMTC Nairobi Campus.

The setting in KMTC's student support has been eroded over time due to the high number of students enrolled in the college. There is, therefore, a need to improve student advancement programmes in this institution. There is also a need to evaluate the mentorship programmes and their usefulness to the students. Although the students in KMTC are chosen on merit to undergo training, the researcher saw the need to evaluate how mentoring programmes contribute to restorative building. The inquiries in this study helped the researcher to uncover the effects of mentoring programmes on the student's performance. The research will also serve as a reflective mirror for the lecturer and the institution. The students in KMTC support activities in the institution, such as new measures and reflexive practices that enable the students to acquire the right skills and knowledge.

1.3 Research Questions

- i. How does a successful mentorship programme affect students' performance in the department of medical engineering at KMTC Nairobi campus?
- ii. What is the level of awareness about mentorship programmes existence in the department of Medical Engineering at KMTC Nairobi campus?

- iii. What impact does the mentorship programme have on the academic performance of students in the department of Medical Engineering at KMTC Nairobi campus?

1.4 Study Objectives

1.4.1 Broad Objective

To assess the effectiveness of the mentorship programme at the department of Medical Engineering at KMTC Nairobi campus

1.4.2 Specific Objectives

- i. To determine if a successful mentorship programme supports a learning culture among medical engineering students at KMTC Nairobi campus.
- ii. To determine the level of awareness on mentorship programmes among medical engineering students at the department at KMTC Nairobi campus.
- iii. To establish the impact of mentorship programme on academic performance of medical engineering students at KMTC Nairobi campus.

1.5 Justification of the Study

Numerous nursing and midwifery teachers have seen mentor-led clinical training as a solution driving the progressed acquisition of clinical abilities and developing students' sense of strengthening. Mentoring makes students more dynamic within the learning process, progresses the retention of clinical information, develops clinical aptitudes, and shows mentees ways to memorize and oversee time successfully (Stefaniak & Gajzlerska, 2020). Moreover, viable mentoring may improve training quality by focusing on advancing competencies and presenting students with real-world health

care. A secure and steady clinical learning environment contributes to the viable use of obtained practical abilities and informed choice-making, whereas positive fortification of the students' endeavors and accomplishments by experienced staff who act as mentors play a critical part in planning newly qualified to work as independent professionals.

Little information is known on mentorship within the medical engineering division. No past studies on mentorship among medical engineering students are accessible. This research has obtained information on the current state of mentorship programmes in the college and how the departments can help in improving the student's performance. The institution can utilize mentors to help the students acquire the right skills that are needed to succeed in the job market. Strengthening the mentorship programme in the college will help bridge the gap between theory and practice, which is important for healthcare professionals. Besides, the use of transformational administration in the college can ensure that the departmental heads and the deans of faculties support the mentors. Effective mentorship in KMTC will ensure that the students are better prepared to serve society through engineering technologies while at the same time acting as role models for future generations. The results of this study can be used as a guide for further studies on mentorship in other institutions in Kenya and beyond.

1.6 Significance of the Study

This study's discoveries may direct the administration at KMTC, Nairobi Campus, in moving forward with its mentorship programmes. Understanding the appreciation learners have for mentorship can help make the desired changes. In extension, the discoveries might coordinate KMTC's approach to mentorship and help the institution

improve the quality of its graduates. The results of this research will also offer foundations for future researchers.

1.7 Study Scope

To examine how successful mentorship supports students learning culture and its impact on academic performance among medical engineering students, I conducted a review of the literature on issues related to effective mentorship programmes in the field of engineering. To locate relevant materials, search strings such as “mentorship relationships” “benefits of mentorship,” and “awareness of mentorship programmes,” were entered into the Education Resources Information Center (ERIC), and Google Scholar

1.8 Limitations of the Study

Few studies have been conducted on the role of mentorship in developing nations, with even fewer studies focusing on mentorship in medical engineering in Kenyan universities and colleges. The study was limited to the KMTC Nairobi Department of Medical Engineering.

1.8.1 Delimitations of the Study

Since the study was conducted at KMTC - Nairobi campus, the respondents of the study were students at the department of medical engineering who attested to mentoring activities in the department of Medical Engineering, thus the expenses for traveling for data collection were not incurred, and the information was obtained directly from the target population.

1.9 Assumptions of the Study

This study assumed that the respondents gave a true reflection of what was on the ground as far as uptake and mentoring practices are concerned. The researcher also assumed that the target students would be in session during the data collection time, ensuring a 100% questionnaire return rate.



CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

In this chapter, a review of the related and empirical literature on successful mentorship programmes, awareness of mentorship programmes, and the impact of mentorship programmes was discussed. The researcher observed that efficient mentoring programmes are built on communication and support. Successful mentorship programmes require transparent communications and dialogue on the tasks and the tasks that must be performed. Besides. Effective mentorship requires clarifications from both parties on their perceived roles and how the actions of each member contribute towards mutual growth. Essentially, support, on the other hand, is critical for the student's mentorship since it makes a difference for them in securing new information, aptitudes, and states of mind that are vital in accomplishing high grades and prevalent performance in their scholarly work

2.2 Theoretical Framework

While few models and hypotheses can be applied in this research, the action-reflection and the andragogy hypothesis can be applied with a heuristic approach to evaluate the central issues in this study. The action-reflection model is a humanistic and dialect model introduced by Handal and Luvas in 1983. This approach drew strength from the action-reflection framework on how mentorship makes a difference for the mentees. This framework will help us understand how mentorship influences the students' performances in KMTC. Importantly, the frameworks center on the mentorship programmes, their objectives, the center values, and information that coordinates the

mentorship activities. The hone theory is critically linked to the action-reflection model, which emphasizes formalized mentor-mentee programmes (Peretomode & Ikoya, 2019). This model is built on four main tenets: introduction to staff, socialization of the parties, advancement of the instruction, investigating and benefits abilities, and the development of future pioneers (Scratch et al., 2012). Conversely, the andragogy hypothesis considers mentorship as the “art and science of making a difference grown-ups learn” (Merriam, 2001, p. 5). The hypothesis contends that “the assignment of the guide is to encourage learning, make an instructive programme setting in which grown-up students can create their ability, and self-coordinated learning” (Brookfield, 1986, p.92).

Handal and Lauvas (1983) accepted that as the mentee makes a difference in memorizing, he/she will develop self-directed learning without the tutor to instill the values, the proper demeanor, aptitudes, procure the pertinent information, encounters, and gotten to be more compelling in society (Peretomode & Ikoya, 2019). Within the last examination, the importance of the activity-reflection show and the hypothesis of andragogy were based on their capacity to legitimize how mentorship contrasted to improve scholarly brilliance. In line with the writing survey, the taking after destinations were defined for consideration as examined below.

2.3 Review of the Related Literature

This section will cover the literature on successful mentorship programmes, the level of awareness, the impact of the mentorship programme on academic performance, and the identification of the knowledge gap.

2.3.1 Successful Mentorship Programme

Cullingford (2016) undertook a study to assess the impact of a mentorship programme on the academic achievement of 1st MBBS students. The interventional study was conducted on 148 first MBBS students admitted to Al Azhar Medical College for the AI 2017-18 academic year. The findings of the study indicated a significant increase in students' mean scores in an examination conducted after the implementation of the designed mentorship programme compared to an examination conducted before the implementation of the programme. Also, the programme considerably ($p < 0.001$) enhanced the academic achievement of the below-average performers, the students scoring $< 50\%$ in the pre-mentorship assessment. The remnants of the students were sought to support the findings on the effectiveness of the developed mentorship programme. 40.5% of the students agreed, while the rest, 56. Among them, 8% of the respondents strongly agreed that the self-organized mentorship was helpful and useful to them. According to the study, the realization of a sound mentorship programme enhances the performance of the students, more especially the low performers who require special attention.

According to Illies (2018), mentorships are connections that give direction, support, a role model, and a confidante (mentor) for junior organizational individuals (mentees or protégés). The researcher examined how successful mentor programmes influence the academic performance of mentees, with a particular focus on identifying students needing special support. A cross-sectional study including 123 fourth-year medical students of King Abdulaziz University Faculty of Medicine in Jeddah, KSA, who attended the CSM rotation were recruited for the study. Senior and junior members

from the Departments of Internal Medicine and Family Medicine were assigned to each of the ten medical students as mentors. The planned use of the ‘Big Brother/Sister’ mentorship method involved a group presentation and individual counseling. Mentor description data, student academic achievement, satisfaction, and the special support referral rate were obtained. Of 184 students, 90 completed a preprogramme survey, with 83% valuing mentoring, 60% and 49% of students attended group meetings and individual sessions, respectively. Psychological support was the most common type of assistance needed, affecting 12% of mentees. The research did not show any correlation between enhancement in student success and effective mentoring but also noted that the seniority of the mentor and related motivation were positively associated with an increased likelihood of referral to additional academics. The findings suggest that academic mentoring can benefit student support and highlight the importance of mentor and mentee motivation in successful mentorship programmes.

Masekela (2017), in a study, analyzed the nature of matching and consideration of effective and competent mentorship programmes on learners’ performance at Cairo University. Thus, not missing these significant points, the schemes could be successful in universities, including medical faculty, and separate a direction of developmental-educational initiatives as mentoring programmes. The research identified that using the SMART criteria – specific, measurable, achievable, relevant, and time-bound is crucial for structuring the ‘match up’ process of the mentor-mentee relationship. This research also established that considering the rule of etiquette and ethical issues is relevant and useful in mentor-mentee relationships. Teaching practices that support clinical mentoring were discovered to facilitate students’ clinical training and boost their

passion in less popular fields. Promotive mentoring was developed to play a role in the course correction of the decline in academic medicine by inspiring early research career experiences.

Ng'oda et al. (2011) also adopted a cross-sectional descriptive parallel mixed-methods sequential study design at Makerere University College of Health Sciences (MAKCHS) to assess the status of mentoring practices among the FOAG alumni to act as mentors and the USHS postgraduate students as the mentees. For the study, the researcher emailed pre-tested structured questionnaires, and the results of which have been used qualitatively for this study were obtained from 22 out of 100 mentors and merged with the responses of the mentees. Among the drawbacks, it is possible to distinguish the following ones concerning the state of the art of the active sign: The current approach to the management of the relationships between the members of the learning and teaching process is not institutionalized, the current state of the existing relationships does not provide sufficient ad hoc level of the manifestation of active sign, and the roles and responsibilities of the members of the learning and teaching process are not fully clarified. Mentors and mentees also demonstrated a proactive interest in improving the state of mentorship at MAKCHS; the respondents pointed to the need for continued institutional support, courses in mentoring competencies, and better guidelines for improving mentorship programmes in the light of African healthcare education.

Development Stage

Frame a centralized committee to develop and supervise the mentoring programme. Issues to be tended to by the organization may incorporate Selecting target groups for the mentoring programme, both guides and protégés; Allotting duties and

responsibilities to organization individuals; Tying mentoring to progression arranging: Creating an ongoing communication technique, e.g., distributions and addresses and securing the commitment of best administration to the programme and utilizing both an in-house and an external expert for the finest results in using an in-house expert for the groundwork and bringing in an outside specialist for training, monitoring, and evaluation support. As an agency/committee, decide the boundaries that must be overcome for mentoring within the organization. Two approaches may be utilizing center bunches to overview the target bunches and brainstorming with top administration: Develop commitment and responsibility instruments to legitimize organizational work within the mentoring preparation. Issues that will influence commitment and responsibility incorporate The remuneration structure (how are mentors and protégés compensated for partaking?): Work plan (how will mentor assignments be organized, e.g., work teams, committees?): Plan a determination and mentoring process. Issues to be tended to may incorporate: Is this an agency/committee's obligation? Should the choice be on a voluntary premise? Does the method recognize protégés' needs, recognize and select appropriate mentors, and coordinate protégés with coaches on the premise of needs and identity characteristics? (Engle, 2016).

Implementation Stage

Create and actualize starting data sessions, where mentors and protégés meet one another and socialize openly. Mentoring is characterized: Expectations/objectives of the programme are characterized: A time outline is set, with the alternative to proceed casually after the formal programme: Formal gatherings are planned where such issues as work stack, commitment, and responsibility can be tended to. Create and execute

initial training. Inquire the mentor and protégé to meet and create an activity arranged for advancement. Bring in exterior speakers. 'Testimonials' from past mentor-protégé sets are fitting at this stage: Offer ongoing training. This may include utilizing an outside expert: Presenting and introducing synonyms of new issues at each session and bringing in agents from other companies to talk about their formal mentoring programmes and the headway of their target bunches.

Evaluation

Utilize the following components. Critical in this preparation is the taking after Have the agency/committee and outside expert manage the method: Utilize intermittent assessment with center bunches and phone calls, ensure secrecy: Survey the usefulness of the programme within the organization's progression arranging (i.e., are protégés being considered for higher-level positions?): Create subjective and quantitative reports to guarantee responsibility. Vital in this handle is the taking after: Utilize the outside specialist and the agency/committee to get ready the reports: Tie the assessment into the objectives set out at the usage arrange and evaluate in case the destinations of the programme have been achieved (i.e., make a nonstop criticism loop): Yield the reports to beat administration to assess the programme's victory: Utilize the reports in official assessment and stipend.

The programme ought to give a gathering for practicing organizers, arranging understudies and later arranging graduates to create an ongoing relationship by assembly routinely and talking about things relating to arranging and proficient career advancement inside an organized and strong system (Li & Vincin, 2011). For purposes of qualification of the programme, all members, coaches, and mentees must be

individuals of the institution within the mentoring programme and throughout the length of the mentoring programme. In a perfect world, a mentor ought to have at least 5 long time graduate encounters in an assortment of arranging areas in private and/or open practice. Mentors ought to have great communication abilities, especially tuning in, a desire to contribute to long-term arranging calling, and the time to commit to at slightest one 1hour assembly month to month for the length of the 1-year programme. Mentees may be last year's undergrad understudies, postgraduate understudies, or graduates of arranging with less than 5 years of graduate arranging involvement.

Inquire about formal mentoring programmes has appeared blended comes about, but there is proof that fruitful formal mentoring programmes include esteem to the organizations and the participating individuals. A fruitful mentorship helps organizations build a good culture to set themselves apart in an industry (Samier, 2000). A good mentorship programme should have a plan and a clear method of administration to ensure it is executed effectively. As such, a few issues need to be considered when designing a formal mentoring model; firstly, there is a need to identify the people who need the actual mentoring. Secondly, there is a need to design a good coordination strategy that guarantees the mentors' intentional support. Thirdly, mentorship should minimize the rules, increasing the freedom between the parties to participate in the programme more freely (Parise & Forret, 2008). If successfully executed, formal mentoring programmes will ensure that ability is distinguished, fruitful behaviors are strengthened, societies and standards are ingraining inside protégés, and alter gets to be arranged (Jackson, 2002).

Components of the viable hone model are rules that show the impact of mentoring on the target individuals (Coach, 2003). These rules are based on strong investigations that certify the significance of responsibility in the assembly of youthful needs. These rules can also be adjusted to facilitate the interactions between the mentor and the mentees. A study in Mexico to evaluate the parameters of mentorship showed that there are diverse interpretations of rules and programme parameters. The study revealed that there were no frameworks for programme assessments in mentorship. Importantly, what was considered an effective mentorship programme in one group may not necessarily be effective in another group (Synergy Group, 2003).

2.3.2 Level of Awareness of Mentorship Programme

Tengah (2016) conducted a study to assess the awareness of medical students concerning the functions that operate within the mold of a mentoring programme at Kyung Hee University as well as offer recommendations. These awareness levels were measured using a 29-item Scale given to 347 medical students, though 25 of the students' responses were not used since they were partially filled out. A 5-Likert scale programme was used to assess the programme and analyzed with the help of SPSS version 22.0. Causal analysis of multiple regression focused on the level and the extent of satisfaction towards the mentoring programme as influenced by the programme's characteristics and the participants. Open interviews were also done. As for the gender factor as a source of variation, the results failed to show a noticeable variation in the level of satisfaction between the male and female participants, while there was a significant variation along the lines of the grade level factor explored in the study. The number of times and the nature of the discussions were critical in the organization, but the duration and venue of the meetings were not. Thus, it was found that improvement

of mentoring programmes should include increasing meeting frequency, extending the scope of discussion issues, and the importance of using psychosocial advice by the students.

Another study by Wachira (2019) on mentorship practices and their impacts on students in Kabarnet KMTC revealed that a quarter of the respondents believed the college had a formal mentorship programme. On the other hand, about 48% of the students believed there was no formal mentorship in the institution. As such, Wachira (2019) concluded that the institution has not effectively explained its mentorship programme to the students. Mwaniki (2021) conducted an inquiry at KMTC Kabarnet, and the reactions showed a need to understand what mentorship is. This suggests that a few students have no thought on what mentorship is all approximately despite the reality that 63.6% of them concur that the college includes a formal mentorship programme, 27.3% oppose this idea, whereas 9.1% are not beyond any doubt. This shows that a few respondents lack point-by-point mindfulness of the mentorship programme within the college.

In an inquiry by Lunsford (2020), the research was conducted to determine the extent of the availability of formal mentor programmes and lay down the basic framework for formal mentorship within the colleges of medicine in Khyber Pakhtunkhwa. The current research was conducted in two medical colleges in Khyber Pakhtunkhwa province. It used a descriptive cross-sectional research design that included 300 male and female students using a convenient sampling technique. The sample size was determined according to Cochran's formula at a 95% confidence level. A combination of closed-ended questionnaires in English was used in the study, which was devised from similar past existing questionnaires, and the analysis was done by MS Excel and

SPSS version 22. Findings indicated that 42. 2% of the students indicated no previous exposure to mentoring in medical education, 96. 8% thought that mentoring would facilitate their academic to professional transition, and 96. Only 2% expressed a strong desire to have a formal mentorship programme in the particular medical college. It was established that student's general awareness of the existing mentorship programmes was low but there was a positive disposition in terms of starting a programme.

Another study by Larose and Colleagues (2009) aimed to develop and ascertain a mentorship programme for the MBBS First Professional students in the United Kingdom on the perception of the mentors and the mentees. The programme started after a faculty sensitization workshop with 17 volunteer mentors from different faculties. These 150 students were then randomly divided into these mentors, and appointments were set for constant meetings for the entire programme. Qualitative data was obtained from the completed, self-administered, semi-structured questionnaire filled in by the mentors and the mentees and a focus group discussion with the students. From 112 students and 16 teaching staff faculty who filled in the questionnaire, it can be stated that the programme was helpful for the mentors, and they mentioned increased awareness of this issue. Students indicated some positive outcomes they got from the programme, which touched on issues such as emotional support and academic support. In summary, both the mentor and the mentee described themselves as very satisfied with the mentorship programme; they perceived the whole exercise as a success story that empowered most participants.

Tyson (2014) examined the prevalence and impact of mentorship programmes in medical schools throughout Nepal while gauging the nationwide perceived need for

such initiatives. Using a descriptive cross-sectional methodology, data was gathered from medical students across various institutions in Nepal, following ethical approval from the Nepal Health Research Council (NHRC). Analysis of nationwide data, conducted using Microsoft Excel and SPSS 16.0, revealed that the Patan Academy of Health Sciences (PAHS) had the highest prevalence of mentorship programmes, with over half of the respondents acknowledging their existence. Among the surveyed students, a significant portion expressed awareness of mentorship programmes and recognized their benefits in fostering relationships with faculty, developing professional skills, and promoting evidence-based medicine. The overwhelming consensus (98.8%) among participants underscored the urgent need for expanding mentorship programmes across all medical schools in Nepal, highlighting their perceived importance in enhancing educational quality and supporting student development.

Knowledge and Attitude on Mentorship.

Mentoring students is a complex process that requires a methodical approach to instruct and direct the students (Gümüş, 2019). Mentors can gain information from the mentorship programmes by reading books, internet searches, or attending conferences. All these strategies enable the mentor to be prepared with the right information to communicate value to the intended people. However, several studies have shown that there is a lack of orderly training of mentors, which affects the impartation of knowledge and skills. Consequently, the value of the mentorship programmes can be affected by the lack of standardized training for the mentors. A study by Dubois et al. (2011) on the effectiveness of staff mentoring programmes noted that most tutors were

not trained on how to mentor the staff. In another study, Sobia et al. (2008) revealed that people have different views on mentorship. Some view mentors as therapists, while others view therapists as advisors and administrators. This diversity in the perception of mentorship implies that the concept of mentorship is not well understood among people. Studies have not found any significant differences between mentorship in developing countries and mentorship in developed countries. Kraus (1995), as cited by Pavlon (2007), watched that a few researchers anticipate states of mind to relate with information; there's a more noteworthy understanding that attitudes connect with behavior. Subsequently, the student's demeanor has a huge impact on mentorship because it affects how they relate to mentors. In a study to evaluate the students' perceptions of mentorship, it was exposed that students view mentorship as a critical means of support in the early stages of training. The demeanor of the students can significantly impact the mentoring relationship. In a study on students' sense of mentorship, information analysis proposed that the students found mentorship to be a substantial means of support, especially within the early stages of their training (Wagner & Seymour, 2007).

In a comparable study by Dubois et al. (2011), about 74% of students feel that mentorship is a critical part of their studies. In another study that examined the students' performance in a year-long mentorship programme, they revealed that mentorship is profitable for their improvement and stay in school (Val, 2003). However, another study revealed blended sentiments on the student's perceptions of mentorship. For instance, a study on how mentorship affected their learning revealed that 44% of the students believed it had very effects, 26% believed it had no effect, and 15% believed that the

mentorship was questionable. Another 15% did not offer any sentiments whatsoever. Other sentiments raised were insufficient information on mentorship and the role it tried to achieve. Other respondents felt that it was too early (3 years) to examine the role of a mentorship programme despite being in the programme for more than a year (Synergy Group, 2003).

2.3.3 Impact of Mentorship Programme on Academic Performance

Qahtani (2015) investigated the perceptions and effectiveness of a mentorship programme among undergraduate medical students at a tertiary care teaching hospital in India, where such initiatives are not widely implemented. Conducted through two focused group discussions with students who had at least three years of experience in the programme, the study aimed to uncover insights into its current functioning and suggestions for improvement. Using thematic analysis of transcribed discussions, the research identified two main themes: the existing operational dynamics of the programme and recommendations for its enhancement. Despite recognizing the programme's importance, participants expressed reservations about its efficacy, citing concerns such as biases and misinformation. The study highlighted a pressing need for a structured mentorship curriculum in undergraduate medical education, advocating practical skill development in ethical practice and effective communication. It concluded that active student engagement is crucial to tailor mentorship initiatives to meet specific educational and professional needs to optimize the programme's impact.

A study conducted by Chege (2009) on the role of mentorship programmes on KEMU and UON students revealed divergent results. For instance, about 72% of the students in KEMU believed that mentorship programmes positively impacted their school

performances compared to 21% in UON. This difference can be attributed to the difference in approaches in the two schools. In another analysis by Wachira (2019) in Kabarnet Kenya Restorative Preparing College, students had positive and negative feelings about mentorship. About 81% of the students believed that mentorship positively impacted their studies, while 67% felt that mentorship induced a positive commitment to studies. The study also showed that about 83% of the students believed that mentorship helps them improve their thinking, leading to scholarly victory in school. On the other hand, about 22% of the respondents opposed the need for mentorship in school as they did not see any benefits. These findings further revealed that 81% of students believe in mentorship, although they do not engage in it directly.

Rodriquez (2015) conducted a study investigating the perceptions and impacts of mentoring medical students among faculty members at Bahria University Medical and Dental College in Karachi, Pakistan. Twenty-two trained mentors participated anonymously, providing data through a structured tool. Results showed that most mentors rated themselves as effective, dedicating adequate time and demonstrating comfort with diverse backgrounds. Many mentors reported sacrificing personal time to support their mentees, with 86% actively seeking feedback. A significant portion believed their mentees showed academic improvement and expressed personal satisfaction in observing their mentees' success. The study concluded that the structured mentoring programme is viewed positively by mentors and appears beneficial for the development of medical students, suggesting a need for objective assessment to validate these perceptions further.

Peretomode and Ikoya (2019) also examined the moderating role of motivation in a one-year peer mentoring programme designed for first-year university students, in terms of retention and academic performance. The participants included 983 first-year students, and the instruments used were the Academic Motivation Inventory plus informed consent to collect the students' final grades. Of the 1120 students, 537 were selected randomly to form the sample that received the mentoring programme; the other 583 were the control group. As for the findings revealed in this study, it was observed that the final scores obtained by the first group of mentored students who continued attending the class were higher than those obtained by the control group subjects. Moreover, there is no improving effect on the retention rate from the first to the second year of operation witnessed in the context. More importantly, the academic performance of students with high anxiety levels in the mentoring group was not different from the low anxiety students. In contrast, the high and low-anxiety students in the control group differed significantly. Further data collection is planned to assess retention and grades of all groups, beginning in the following years of undergraduate education, to show a possible positive impact of the mentoring programmes on performance and students' motivation and anxiety.

Research by Fresh and Cruz (2019) examines the effect of mentoring on the academic achievement of undergraduate students particularly at the University of Port Harcourt in the programme of Human Kinetics and Health Education. Through a descriptive survey research design, the study targeted 116 undergraduate students, proportionally selected from 581 students. Data was collected using the "Questionnaire on Impact of Mentoring on Academic Performance among Undergraduate Students" (QIMAPUS),

achieving a reliability coefficient of 0.73. The analysis focused on mean statistics, revealing that mentoring relationships not only provide students with emotional support and stress relief but also help correct negative perceptions and remove stigmas. The findings underscored the importance of mentors in understanding and addressing students' needs, recommending that university lecturers and mentors actively encourage students to participate in mentoring relationships and provide appropriate support tailored to individual student requirements.

Results from several empirical studies have shown that mentorship has a positive impact on the academic execution, involvement, and efficiency of students and, hence, improved academic greatness (Shcker & Palmer, 1993; Campbell & Campbell, 1997; Nagba et al., 1998; Thompson & Kelly, 2001; Dull et al., 2009; Bordes-Edgar et al., 2009). Even more specifically, Campbell and Campbell's quantitative research found that those students who had been mentored had better performance than the ones who had not embarked on the process. Also, Bordes-Edgar et al. (2011) discovered that concerns about mentoring advancement directly or indirectly affect the GPA and determination of college students. Thus, it was also seen that the mentored boys made over and over again higher academic choices than the non-mentored boys, as mentioned by Thompson and Kelly (2001).

Quality mentoring produces critical, enduring, positive results for youth. Mentoring fulfills the wants of the mentee, mentor, organization, and community. Compelling mentoring programmes incorporate positive connections with grown-ups, peers, and staff fittingly prepared for programme execution. In contrast, continuous support is basic to guarantee the victory of mentoring connections. Weak programme

infrastructures are one of the reasons that so numerous matches come up short. These programmes do not give adequate screening, training, or keen matching. Programmes with frail foundations frequently come up short of enough screen matches, particularly within the basic early stages of the mentoring relationship. New matches regularly experience miscommunication and other issues that, in the case recognized, can be suitably tended to. Programmes must utilize successful hones to screen and back matches and address issues that might emerge. Cross-race matches may require extra consideration to guarantee that social contrasts do not meddle with the coordinate relationship.

Programmes that offer the most serious case administration record more prominent normal lengths of mentoring connections. The investigation detailed that in working with exceptionally high-risk youth, steady back from extended staff, both sometime recently and after being coordinated with youth, is basic to direct mentors through the challenges that may emerge. Exceptionally clear plans managed by a named case specialist offer assistance in identifying family and individual issues and, in this way, better addressing them with the youth. In addition, building up belief takes time and persistence, and successful programmes endeavor to create positive connections with both grown-ups and peers by giving staff who are fittingly prepared (Bruce & Bridgeland, 2014).

Practices on Mentorship

The effectiveness of a mentorship programme is influenced by the practices and the rules set by the participants. A good relationship between the mentor and the mentee requires that both parties identify a common ground to ensure both parties benefit. The

relationships are defined by the practices that guide how the individuals go through the face-to-face interactions in the mentorship programme (Fong et al., 2021). Many institutions have set certain days and times for mentorship to progress effectively. In another study, Goldner and Eliyahu (2021), explain that the length of the mentorship programme is also critical in ensuring that it achieves the desired goals. In formal mentorship programmes, an organization designs the direction to be taken by the mentorship programme. As such, the organization already designed the practices, implying that the mentors and the mentees have to follow these prescribed orders. Noteworthy formal mentorship may take a specified period after which the mentee is executed to gain the required skills. On the other hand, informal mentorship programmes do not have a specific time and may take shorter periods. This short period in informal mentorship may make the process less effective than formal mentorship.

Garringer et al. (2015) revealed that each mentorship session should have a working proposition guiding the process. The mentorship proposition will direct how the mentorship will be conducted by exposing the administration, the exercises, and the role of the tutors and the mentees. The proposition outlines the training programme's curriculum and how the mentorship programme's effectiveness will be measured. Besides, a mentorship plan should offer provisions for adjusting the programme in case of any changes. For instance, the mentorship plan can explain how the individuals need to adjust to the environment and neighborhood if the mentorship is carried out in different areas. This study by Garringer et al. (2015) explains that a good mentorship programme should be well-framed to avoid any challenges that may arise in the future.

The core frame of the mentorship addresses any issue that may arise between the mentor and the mentee.

Recruitment

When enlisting potential mentors, mentoring programmes must set reasonable desires concerning what a mentoring relationship is and what it can accomplish by portraying the programme's points and anticipated results. The programme ought to lock in enrollment methodologies that practically depict the benefits of the mentorship programme and the challenges of mentoring within the programme and utilize enlistment methodologies that construct positive states of mind and feelings around mentoring. In expansion, the programme initiates mentors whose aptitudes, inspirations, and foundations best coordinate the objectives and structure of the programme while empowering tutors to help with enlistment endeavors and give them assets to inquire about people they know who are qualified to be mentors. The programme trains and energizes mentees to recognize and select fitting guides for them when pertinent. Strategies of Enrollment Programmes can empower other individuals to engage in the programme. Older people whose values and beliefs align with the programme can serve as programme envoys, mentees, and guardians. Moreover, they can serve in an enrollment part to help distinguish and pull in suitably planned mentees. Mentoring programmes must be constructed upon their positive notoriety and picture to advance mentoring as a compelling and beneficial volunteer action.

Screening

Screening is very important in determining whether individuals can engage in the mentorship programme. The idea of screening is built on the understanding that few people have the qualities and skills to mentor others. As such, the screening seeks to identify people who are more qualified than others. The screening process identifies the availability, the ability to meet commitments, and whether the individuals are secure enough to engage in the programme. The screening process can also gauge whether the mentees are willing to be mentored and whether they have the commitment needed. As such, mentorship programmes should have processes and systems that measure the mentors' ability to tolerate the programme. Planned coaches total a composed application incorporating questions outlined to assist in surveying their security and reasonableness for mentoring. Mentorship programmes should conduct face-to-face meetings with the desired candidates to ask questions and gauge their ability to participate in the programme.

Mentorship programmes should also conduct background checks on the mentors to ascertain their criminal records. The background check should also check whether the individual has a sex offense history or any other criminal activity. Besides, interviews should be done in the real world with people who know the mentors to ascertain whether the information given is true. A questionnaire on the desired answers should be prepared and conducted using a phone interview on the given reference lists. The mentors can then commit themselves based on their availability, such as short-term, mid-term, or long-term commitments.

Training

A good training guide is imperative in the mentorship programme as it helps the prospective mentors and mentees familiarize themselves with the programme. The training guide should identify essential information, attitudes, and aptitudes required to construct a successful and secure mentoring relationship utilizing socially fitting dialects and instruments. A training programme should dedicate at least two hours of pre-training for the mentors to ensure they are ready for the programme. The training can focus on the length of the programme, conventions for the training, and the methods for gauging the programme's success. Other issues that can be addressed in the training may include the mentoring relationship, communications with the guardians, and the commitments of the various parties.

Matching and Starting

A study on the effectiveness of allowing mentees to choose their mentors has shown that such activities will likely elicit positive reactions from the participants. It was also critical to consider the ages of the mentees and the mentors when allowing the mentees to choose their mentors. A good way for mentees to choose their mentors must be constructed to ensure that the programme is not sabotaged and delayed along the way. These guides are critical in ensuring mentors are not paired with their age mates in the programmes. Importantly, this is critical when dealing with teenagers who may demand to be paired with people in their age brackets. Such pairing makes it impossible for the mentorship programme to achieve its goal of improving educational outcomes. A good matching should have procedures that ensure the mentees meet the best fit for their academic needs. Issues such as accessibility, age, gender, and race can be important

variables in matching mentors and mentees. Other qualities, such as communication preferences and past encounters, are important considerations in this process. When making the matches, it is important to ensure that documents are used to ascertain that the information provided is correct. Such information helps to match the mentor with the most appropriate mentee and avoid incompatibility among the parties.

Benefits of Mentorship

As Fox (1998) pointed out in his study, the engineering profession is more like a graduate level than an undergraduate level programme since it plans students, in fact, and attitudinally, to enter the work constraints as experts. These students' mentoring encourages their victory in their undergrad degree programmes and plans them for the broader proficient parts related to designing careers. Mentored students are more included in the learning process since they have people who persuade them and give openings for extra learning inclusion, such as challenging assignments and support in inquiring about ventures (Atkins & Williams, 1995). Mentors, too, empower association in learning by giving input and proposals for enhancement of tasks and exams.

This evidence of the widespread usage of mentorship reveals its applicability in the education sector. As such, there is a wide acknowledgment that mentorship plays a huge role in education by helping students improve their performances. For instance, students who engage in mentorship programmes are more likely to spend more time in classes than those who do not. This increment in the time spent in class stems from the positive feeling that can only be associated with the mentorship programmes (Mains & Maclean, 2017). However, people who oppose mentorship indicate that mentorship is

meant to ensure that only a few individuals benefit from the programme. However, studies have shown that mentorship has an actual positive impact on an organization. For instance, Hansford et al. (2002) examined over 100 studies, which revealed that 67% of the respondents believed that mentorship is important for better performance in the organization. More than 90% of the studies reveal that mentorship increases employees' productivity, as well as that of the mentor and the mentees. As such, mentorship is very beneficial to the mentees and other parties. Mentorship creates a sense of new individual change which is critical for creating confidence in people.

Another study by Mains and Maclean (2017) revealed that mentorship enables an organization to have working structures, thus improving its performance. The mentorship programmes are an ideal place where the organizational culture can be passed from the older employees to the younger ones. The programmes contribute positively to organizational learning and can be used to initiate change and improve the general level of employee satisfaction. In Agreement with this Hansfor et al. (2002) explain that proteges have a better sense of career fulfillment after being mentored by people in the same career they are pursuing. While the study has shown that the benefits may be less for the mentor, they are also useful (Mutisya, 2015). The mentor can sharpen his skills and gain confidence during the mentorship process. The mentorship can impart their skills and clarify their way of thinking, thus leading to a sense of fulfillment (Cook, 2018). A mentor will take pride in his ability to mentor others as they feel their skills are transferred to people. Notably, the mentor gains a sense of accomplishment when taking the proteges through the mentorship programme (Katherine, 2003).

In assessing a yearlong mentorship programme, coaches see their part as profitable to students' instruction and improvement. Mentors revealed that the programme was beneficial to them, too, as it helped in individual and proficient development. These mentors revealed their commitment to nursing improved after engaging in the programme (Baffour, 2019). Students view mentorship as a very important part of preparing for their first healthcare career. The mentors revealed that they felt more social after the mentorship programmes as it helped them meet new people. Mentorship can also motivate change in the behaviors and attitudes of the mentors who may undertake more scholarly engagements. It can be a way of dealing with stress, depression, and other work-related issues for the mentors (Nerdyseal, 2021).

McBride et al. (2017) say that considering methods and the energy of learning processes may offer assistance to students adjusting more easily to the programme and classroom situations, which is why scholarly execution is the foremost as often as possible considered result of mentoring in investigating students. This is because it can be measured effortlessly by students' normal review points, and it is, for the most part, seen as a consistent and likely result of effective mentoring connections for students.

Ivey and Dupre (2022) watched in their study that social integration is another vital career improvement work of mentoring. It makes a difference that students create ties with individuals of their instructive and occupational communities since they share a common understanding of their regulation values. To encourage such integration, tutors present their mentees with vital social systems to begin shaping casualties among the workforce.

From these findings, it can be realized that a positive relationship exists between the level of mentorship offered and the student's performance. Previous investigations by Campbell and Campbell (1997), Thompson and Kelly (2001), Cho et al. (2011), Karanja and Gukingu (2014), and Pfund (2016) on the role of effective mentorship reveal that this is true. This is further supported by working with Crisp and Cruz (2009), pointing out that mentorship improves engagement in the coursework. These results are supported by Jekielek and Moore, who state that most mentoring initiatives enhance academic performance globally.

2.4 Identification of Knowledge Gaps

Despite the acknowledgment of the significance of mentorship, little is known about the current status of mentorship exercises within the medical engineering division by the students and the workforce. Student support /mentorship is a vital learning perspective; be that as it may, there has been no basic evaluation of writing on this. The main challenge is connecting the mentorship programme and its effects on everyone involved. Mentorship is very subjective, implying that it can impact different people differently. Lack of communication between the two parties may lead to dissatisfaction, which may not necessarily be from the mentorship itself. Many people who abhor mentorship could have done so because of negative interactions in the past, which affected their perceptions. Studies have shown that time constraints are another major issue in the mentorship programme, implying that many people may not be willing to engage in the programme because they feel it takes away their time. According to Baffor (2019), lack of time implies that many mentors may not turn up despite the mentees showing up. Such incidents lead to withdrawal from the programme by the

mentee. Such a mentee is also likely to form a negative attitude about the programme. The way of dealing with this challenge is by ensuring the programme is legitimized in the organization to encourage the mentees to take part. A deliberate effort by the organization can solve the issue. Certain institutions set specific days for mentorship programmes.

Mentoring healthcare engineers is a complex process requiring all stakeholders' support. Mentors must be supported by their peers and seniors on the job. Besides, some mentors may battle their battles after feeling like they have failed in their career paths (Nettleton & Bray, 2008). These sentiments are echoed by Turnbull and Roberts, who state that most mentors in healthcare institutions are already overburdened. As such, giving these people the mandate to mentor others will fail in the world (Turnbull, 2005). As such, the mentees will have more negative mentorship sessions, which may affect their zeal for their studies (Van et al., 2006).

2.5 Conceptual Framework

The conceptual framework is a tool that aids in outlining the researcher's understanding of a particular problem. It is often used to show how the elements come together to facilitate a clear understanding of the research and its results. The conceptual framework illustrated below shows the relationship between mentorship and its dependent variable. The monitoring programme is the independent variable being constant and only influenced by the intervening variable. A good example is that a student lacking the necessary support from home may be influenced to seek help from lectures through a mentoring programme, which can help improve their academic performance. The intervening variable, such as the student's age, gender, year of study,

student support, or socioeconomic status, can influence the student's overall academic performance. For instance, a final year (3rd year) student is focused and seeking guidance in mentorship to secure good grades for the final exams to graduate.

The following conceptual framework directed this study;



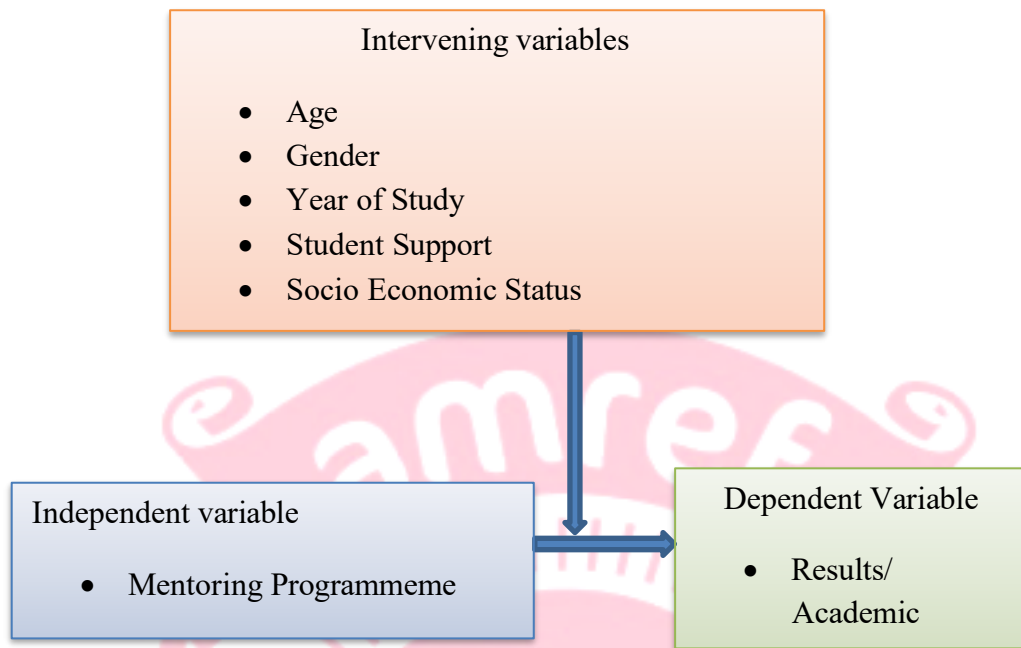
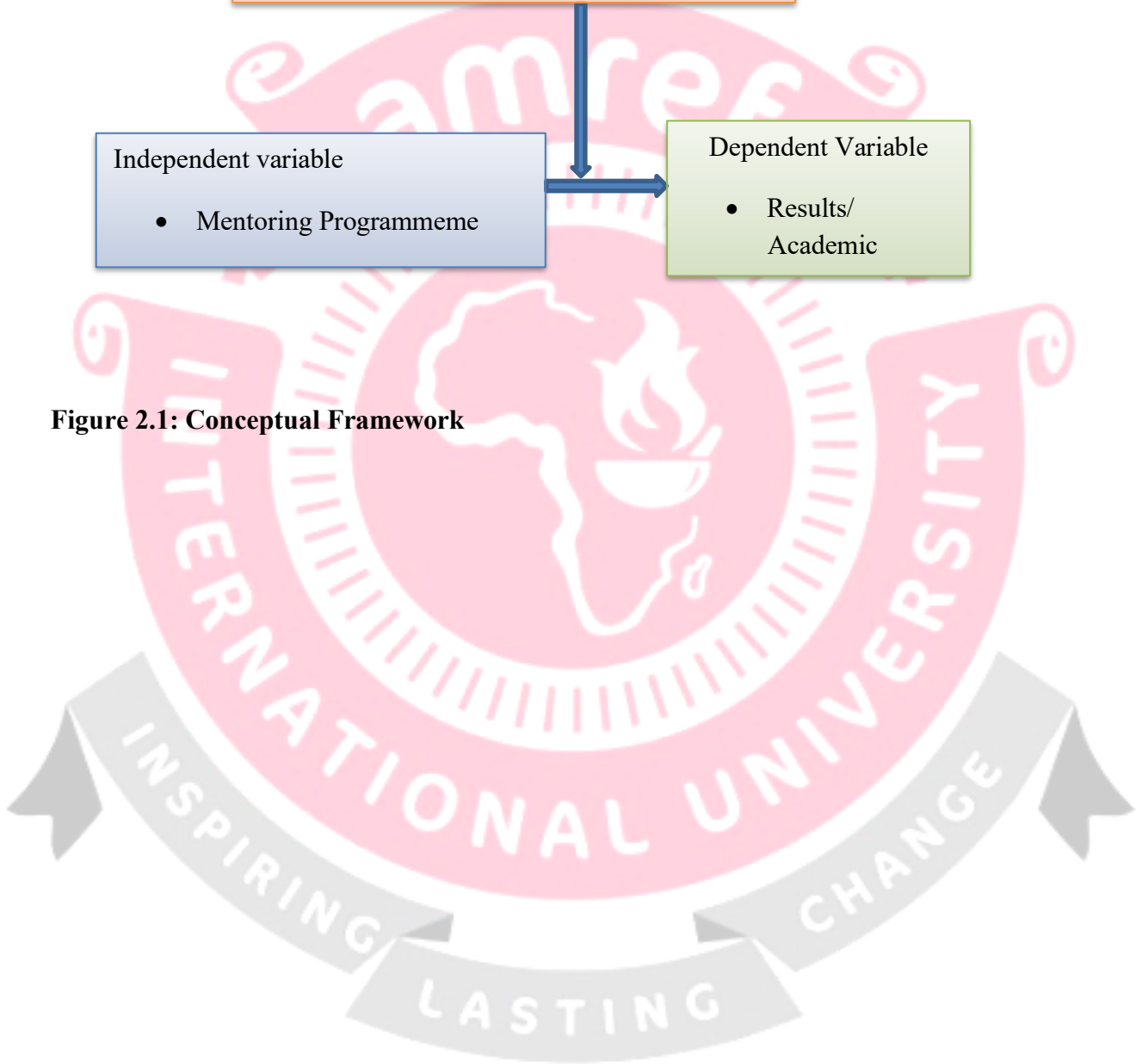


Figure 2.1: Conceptual Framework



CHAPTER 3: METHODOLOGY

3.1 Introduction

This chapter presents the technique of the consider and it comprises the research design, population study area, sampling procedure, data collection, analysis, and presentation. The chapter addresses the actual methodologies that were adopted in the research process from initiation to the conclusion. The role of both primary and secondary data in handling the various research questions was raised and how data was collected and thereafter analyzed to reach a solid conclusion

3.2 Research Design

The study was a descriptive cross-sectional survey that used quantitative methods of data collection to gather information from the population study. A cross-sectional design is a study design where participants are evaluated at one time in their lives. The study can be reflected as providing a "preview" of the recurrence and characteristics of mentorship activities within the population at a specific point in time. Therefore, a cross-sectional design was applied to the study to determine study time, variables, and relationships under study (Cherry, 2018). A grounded theory typically associated with qualitative research was adopted since it allowed the researchers to develop a theory that explains a specific phenomenon and the primary data collection method is through interviews. To evaluate the impact of the mentorship programme on students' academic performance, a more morphogenetic approach was adopted to assess the change that would occur (or lack of) as the department switches from a period before and after the mentoring programme.

3.3 Study Area

This research study was carried out in Nairobi at the Kenya Medial Training College and the Nairobi campus was chosen as the campus of study. The campus is located in Nairobi County and is situated 4km along Ngong Road from Nairobi's central business district. It is Opposite Kenyatta National Hospital. The department of Medical Engineering where data was collected is among the 18 academic departments in KMTC Nairobi Campus and is located in the Medical Engineering block within the college.

3.4 Target Population

The population for this study was all the medical students in the Department of Medical Engineering. The study populations were 560 medical engineering students at KMTC Nairobi campus (High diploma=30, diploma=235, and certificate=295) The target population was 530 participants (235 certificate students and 295 diploma students in year one, year two, and year three students) studying in the Nairobi campus and offering training in KMTC (HOD, KMTC, 2023). The third-year students and students who were out on the field practical attachment were excluded by the researcher.

Table 3.1: Target Population

Students year	Number of students
Year one	213
Year two	166
year three	151
Total	530

3.5 Sample and Sampling Procedure

A stratified sampling method was used to categorize the population into subgroups (strata) based on the noteworthy characteristic i.e., year of study which is years 1, 2, and 3. Based on the total percentage of the population, the number of student participants was sampled from each subgroup using purposive sampling 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. The faculty members were selected using quota sampling, a non-probability technique.

3.5.1 Sample Size Determination

The study applied simple random sampling in addition to Cochran's formula on all the students of medical engineering regularly attending classes at KMTC Nairobi. The number of students in the department at the time of study was 530. Using the formula to calculate sample size, 222 students and 7 faculty members were selected to form a total sample of 229 participants.

$$\text{Formula } n = \frac{Z^2 pq}{d^2}$$

Where n is the desired sample size.

z is the standard normal deviation at the required confidence level value, 95% 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).

$$\text{Therefore, } n = \frac{(1.96)^2 * (0.5) (1 - 0.5)}{(0.5)^2}$$

$$= 384.16 \quad 384$$

Since the target population is less than 10,000, an estimated final sample size is 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

$$\text{Hence; } nf = 384/ 1 + (383) /530$$

$$= 229 \text{ participants.}$$

The study proportionately allocated the sample of 222 participants in the three strata (year one, year two, and year three) according to their size as follows using a stratified sampling technique as follows,

Table 3.2: Sample Distribution

Students year	population	Ratio	Sample size
Year one	213	0.402	89
Year two	166	0.313	70
year three	151	0.285	63
Total	530	1	222

3.6 Data Collection Instruments

Data for the study was collected using structured questionnaires, interviews, and focus group discussions. The structured questionnaire, based on components of viable practice per Haradhan (2007), was divided into three main parts. The first part collected socio-demographic data such as age, gender, and year of study. The second part focused on defining mentorship, the roles of a mentor, and the benefits of mentorship in engineering. The third part assessed students' overall attitudes toward the mentorship

programme and their suggestions for improvement. Additionally, structured key informant interviews with lecturers and class representatives were conducted to gather information about the mentorship programme's support and the availability of guidelines within the institution. These interviews continued until data saturation was achieved, ensuring comprehensive insights from key sources.

A focus group discussion involving three groups of eight third-year engineering students was also conducted to gauge their general views on support and mentorship. To maintain the integrity of the results and eliminate biases, the study tools were pretested with students from the KMTC Nursing department, as departmental students often communicate closely on college-related issues. This pretesting helped to ensure the validity and reliability of the data collection methods. Throughout the data collection process, quality control measures included using structured questionnaires and supervision to ensure the completeness and accuracy of the collected data. This multi-faceted approach aimed to determine if a successful mentorship programme supports a learning culture, assess the level of awareness of mentorship programmes, and establish the impact of mentorship on the academic performance of medical engineering students at the KMTC Nairobi campus.

3.7 Validity and Reliability

Validity and reliability in research refer to how well a method measures something. They contribute highly to the trustworthy study. Reliability verifies whether the results can be duplicated beneath the same conditions. In contrast, validity alludes to the precision of a measure by whether the results truly speak to what they are gathered to measure. The cross-sectional study design was strategically chosen due to the

extensiveness of the data collected. The use of focused group discussion, interviews, and questionnaires ensured the coverage of all bases of the research questions. The pilot test conducted provided an opportunity to correct and adjust the questionnaire and interview questions to cover research objectives. In conclusion, the researcher is confident that given the same conditions, the data collected ensured accurate, consistent, and relevant results that reflect the true nature of the effectiveness of a mentorship programme at the Medical Engineering Department in KMTC.

3.8 Data Collection Procedures

Data was collected through a structured questionnaire for the first, second-year, and third-year students, focus group discussion with the third-year students (14), and interview guide for the departmental lecturers and the student representative in all the classes.

3.8.1 Qualitative Data Collection

Interviews: This study adopted in-depth interviews for primary data collection from department members who were selected for this study as students and staff. In-depth interviewing is a qualitative data collection tool that uses open-ended questions and inquiries to analyze details from the information-rich selected population. Interviews best rely on a small sample, sometimes as small as one, and the results obtained cannot be generalized beyond the selected sample for the research (Masehela et al., 2014). The interviewed participants comprised the Head of department (HOD), five departmental lecturers, and fourteen class representatives (seven males and seven females). All the interviews were conducted in English, though participants responded in their preferred language, mostly a mix of both English and Swahili, and their audio recorded. Students

were interviewed at the researcher's office for privacy and comfort, while the departmental lectures and HODs were interviewed in their respective offices. All participants were informed about the research before recording. Consent on recording and were reminded of the voluntary participation in the study. Participants could end the interview at any point or opt not to answer a particular question. All the necessary ethical considerations were fully taken and observed to ensure the integrity of the results.

Focus Group Discussion: A classroom was identified, and the class representatives who had earlier consented to the FGD were subdivided into two groups, i.e., 1 and 2. The first group, consisting of 7 participants, was ushered in by the researcher and the moderator, who welcomed them and gave them unique numbers of identification, i.e., P1 to P7, to avoid mentioning names. They were also informed that no correct was required in the discussion and were encouraged to give their views based on their understanding. The participants were also informed that all the discussions were going to be recorded, and the purpose was for the researcher to be able to capture all important information for the research. All the discussions were conducted in English and audio recorded. The discussions, which started at 2.30 p.m., ended at 4. 00 P.M, and the moderator thanked the participants for their willingness to participate. The second group was ushered in, and a repeat of the previous step was carried out. The discussions started at 4. 30 P.M and ended at 6.00 P.M.

3.8.2 Quantitative Data Collection

A structured questionnaire was handed to a total of two hundred and twenty-nine students who were mentees during the semester of 2023. The questionnaires were

distributed to willing student participants at each class during morning recess hour at 10.30 A.M. Students answered independently and unsupervised and later collected after completion. Two hundred and twenty-eight questionnaires were returned and analyzed for this study. One questionnaire was unanswered and unfilled, bringing the tally of quantitative data to 228 from the sample size of 229.

3.9 Data Analysis and Presentation

The quantitative data was collected, coded, recorded, and finally analyzed using a statistical package for social sciences (SPSS). Data presentation was then done through descriptive statistics, frequency distribution, and graphs.



Table 3.3: Data Analysis and Presentation

	Specific objectives	Type of data	Data instruments	Data analysis
1	To ascertain whether a successful mentorship programme supports a learning culture among medical engineering students	Quantitative Data	Structured questionnaire	Descriptive analysis and Thematic Analysis
2	To determine the level of awareness of mentorship programmes among medical engineering students	Quantitative	Structured questionnaire	Descriptive analysis and Thematic Analysis
3	To establish the impact of mentorship programmes on academic performance among medical engineering students	Qualitative data	Structured interviews FGD	Inferential analysis

The research findings will be disseminated to the Department of Medical Engineering, KMTC scientific conferences, and finally, through publication. Results dissemination will include posters for conferences, oral presentations, and publications.

The data was stored in a computer with a protected password. This will be maintained for five years after the data analysis, and after that, it will be deleted from the recycle bin and emptied. All written materials are similarly stored in a locked cabinet for one year and then destroyed through a shredder machine.

3.10 Ethical Considerations

This research thesis was presented to the AMREF Research and Ethics Committee for approval. Authority to conduct the study was sought. The KMTC Research and Ethics Committee permitted the study at the institution. A signed letter from the Deputy Registrar of Research was issued before the commencement of the study for approval to collect data at the Kenya Medical Training College - Nairobi campus. Informed

consent was sought from the participant. Participants signed the informed consent form before filling out the questionnaire, which was a prerequisite before the questionnaire opened. Participation was voluntary, and no coercion was used.

All the responses for this study were entirely anonymous. No name or identifier was used. The researcher made every effort to maintain confidentiality, including assigning a code for every response received. No names or numbers for participants were used on all research notes and documents. All notes, interview transcriptions, documentation, and any other participant information were then stored in a computer with a protected password, and all other written materials were in a locked file cabinet that was in the personal possession of the researcher.

Participation in this study was voluntary. Participants decided whether or not to take part in this study. When a study participant agreed to partake in this study, he/she was asked to sign a consent form. While filling out the questionnaire and interviewing, the participant was free to quit at any time without giving any reason. Withdrawing from this study did not affect the relationship with the researcher, if there was any.

There was no direct benefit to participation in this study. No monetary compensation whatsoever was issued for participation in the study. The results obtained from this study were used to improve the Mentorship programme for the betterment of students in gaining the required competencies in Medical Engineering.

3.11 Study Constraints and Limitations

The study was only carried out at KMTTC Nairobi campus; thus, it cannot be generalized since a limited number of participants was included. Very few studies have been

conducted on the issue of mentorship, especially in developing countries, let alone specific studies of the Medical Engineering students in the Kenyan colleges. As highlighted earlier, the reviewed literature in this study originated from the developed countries. The literature in the area proposed an informal evaluation model of mentorship practices. Therefore, one was carried out from the components of the mentorship-relevant practices of the International Mentoring Association. The questionnaires were structured following components tantamount to the efficient practicing of mentoring, and the Mentors Association of developed nations formulated these practices. This would pose serious challenges in applying the information obtained for our settings in developing countries since the study environments are significantly different. Nonetheless, alterations were made to best fit the questionnaire to the study population's features. The selection of the study area was purposive. The study findings can, therefore, not be generalized to all Kenya colleges that offer Medical Engineering courses.

CHAPTER 4: RESULTS

4.1 Introduction

This chapter outlines the results of data analysis of both quantitative and qualitative data. The results are organized based on the objective that they address. A summary of the demographic characteristics of the participants precedes the main results.

4.2 Response Rate of Participants

The response rates in the quantitative survey were varied by question; 200-228 participants answered the questions on demographic characteristics. Most participants were female, aged less than 25 years, pursuing a diploma programme, and residing on the campus (table 1). Fourteen students and six staff members of the Department of Engineering at KMTC participated in the interviews that generated the qualitative data, and another group of fourteen students also participated in the focus group discussion (FGD).

Table 4.1: Demographic Characteristics of the Participants

Characteristic	Number of respondents	Sub-category	Frequency (Percentage)
Gender	228	Male	103 (45.2)
		Female	125 (54.8)
Age	200	18-25	178 (89)
		26-36	21 (11)
Programmeme	225	Certificate	59 (26.2)
		Diploma	166 (73.8)
Study year	210	1	34 (16.2)
		2	85 (40.5)
		3	91 (43.3)
Residence	228	Resident	159 (69.7)
		Non-resident	68 (29.8)

4.3 Mentorship Supporting a Learning Culture

Mentors support a learning culture at KMTC Nairobi in the Department of Medical Engineering. 60% of respondents agreed that guidance and motivation obtained from mentorship consequently improved the students' performance. Participant 1 was inspired by the perceived mentor to network with colleagues in clinical practice for clarity in the practice modalities. They have always encouraged me so that I do not just sit there when I go out there. However, I spoke to people, and Participant 1 responded when asked how their mentor helped them understand their academic roots toward achieving academic goals. Similarly, participant 6 acknowledged that they find learning and grasping concepts easier with mentorship, which has also boosted their confidence. The improvements in communication, self-esteem, interactions, self-confidence, and networking that staff member 002 identified as occurring among mentees are crucial aspects of a learning culture.

P001 noted that mentorship is the way to advise a person and understand more details about what they intend to do, maybe in their life or their studies.

P002 mentioned that his mentor usually guides them about engineering, telling them that engineering is good, and they should focus and tell him that the marketplace is good, showing them that maybe if there is anything in a specific place, maybe if there is work, he can tell them. He can guide them in doing that work.

P004 noted that their mentor is experienced in what they do in an institution and guides them.

P006 said that one who guides can approach him or her, and he will guide you to the specific point you want to be.

The mentors monitor students' progress and advise them on improving, further supporting a learning culture. Participant 2 said, "Yes, he usually monitors me and sees when I am progressing well or not." Participant 3's mentor supported them in writing the research proposal and sorting out their school fees challenge. Notably, some students, such as participant 4, decried not having adequate mentorship support to facilitate learning.

Mentorship improves students' approach to studies (participant 1). Mentors promote a learning culture by congratulating students when they improve their performance. Participant 2 exclaims: "he says I will have a good future, and I should continue with the same spirit" when asked about the constructiveness of their mentor's feedback. Mentors are supporting students to achieve their objectives by instilling discipline. Participant 3 acknowledged that the greatest lesson from their mentor is that discipline is bound to result in positive outcomes. Participant 7 also appreciated that their discipline has improved courtesy of the mentorship. Okay, I have learned a lot from her, including being disciplined and responsible, they declared.

For mentorship to work and be impactful, both parties need to exhibit commitment to one another. Mentors following up with mentees' progress or adhering to their outlined mentoring sessions or meetings is one example of commitment. Mentees could also avail themselves of the meetings, applying the advice provided where necessary. The commitments build up to consistency, which is rather key to establishing lasting and effective mentorship. Participants, mainly the students, attested to their respective

mentees' commitment to mentoring. One In-depth participant, a female lecturer, shows a good example of a committed mentor. As a class coordinator, knowing her students, noticed the behavior of one of them as strange. She followed up and discovered that the students were using illegal substances, which had affected the performance of said students. She then took it upon herself to guide the students and mentor them despite the fact that there is no known formal mentorship programme in the department.

P003 said that she does. Every time they have their examinations or even cats, they will tell them that on this subject they have performed poorly, try, or this is what you should be doing, so she is very helpful.

IDI female Lecturer noted that apart from education, students were also mentored in terms of drugs for those already affected. Other mentorship can be one even where the lecturer is not teaching that subject.

P5 FGD highlighted that their lecturers are always concerned whenever they come to classes, maybe one day, and find that only a few students have shown up.

4.4 Awareness of Mentorship

4.4.1 Awareness of Mentorship among Students

Only 28% (n = 62) of the students were aware of a mentorship programme in the department. Nevertheless, 112 (49%) of the students had a mentor, whereas 73 (32%) were mentored by a lecturer, a fellow student, or a pastor (Figure 1).

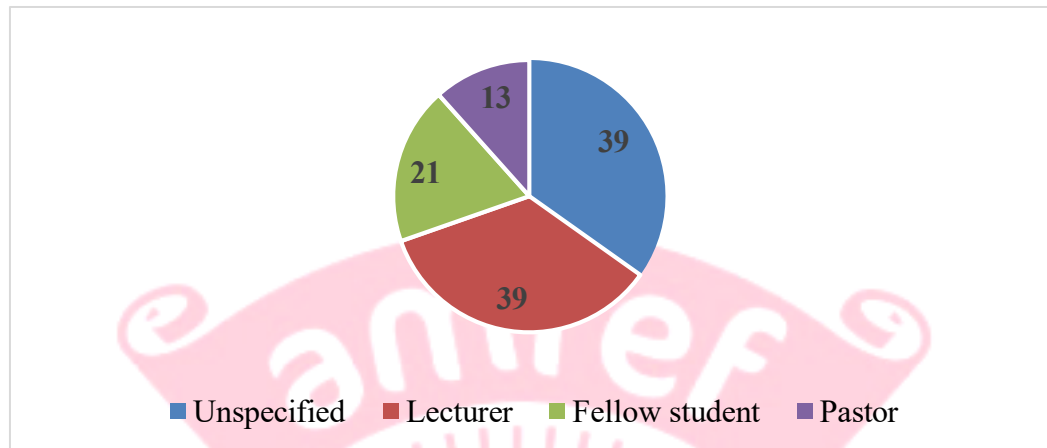


Figure 4.1: Shows Mentorship Status Among the Students

The most popular definition of mentorship is that it entails coaching, counseling, and sponsoring, and nearly 80% of the 148 students who responded to the question agreed with this definition. The least popular definition was that mentorship is a supportive relationship established between two individuals, but nearly two-thirds of the 145 students who responded to the question approved of this definition (Table 2).

Table 4.2: Definitions Of Mentorship As Identified By Students

Definition of mentorship	Yes (%)	No (%)
Pairing students with adult volunteers or older students who provide friendship, guidance, and support	108 (73.5)	39 (26.5)
A supportive relationship established between two individuals	95 (65.5)	50 (34.5)
Coaching, counseling, and sponsoring are included in mentorship	116 (78.4)	32 (21.5)
The provision of model performance by persons with wisdom	104 (73.2)	38 (26.8)

The 25 students who defined mentorship in other ways besides the four options in the questionnaire identified a mentor as a source of guidance (five respondents), advice, counsel, and awareness. Others defined a mentor as a role model (five respondents), a motivator (three respondents), and a source of inspiration and encouragement.

P002 perceived mentorship as all about guidance, guiding other people in terms of career, counseling, and the rest.

FGD P3 noted that they have mentors. What they can appreciate is that they guide them. For example, regarding the issue of our lectures, you find that certain people have not been attending classes or have not been seen around for quite some time. Try to follow up and ask where they have been and what the issues are if we can try and solve them.

Based on the key informant interviews, students in the department perceive mentorship as guidance and follow-up, especially career-wise. One participant from FGD (Participant#2) defined a mentor as someone who will be following you up and guiding

you. In the FGD, participant 3 deciphered the follow-up lecturers do when they determine that a student has been missing for some time as mentorship.

Some students confuse their role models for mentors. Participant 4 defined a mentor in the focus group discussion as someone they admire, and mentorship is “the process of looking or doing what the person does.” Participants 2 and 6 agreed with the participant 4’s definition. In the interview, participant 1 confuses a role model for a mentor when they say: “Yes, I can say I have a mentor in that they do not know that they are my mentor. However, I do have a mentor.” Similarly, participant 3 considers themselves a mentor, yet the mentor may be unaware of the mentorship relationship.

Although less than half of the respondents, several students have a mentor, some of whom have established written plans with the mentor on the aims to achieve. Out of the 34 students with a mentorship plan with a mentor, only ten have documented the mentorship programme. The number of active mentorship engagements dwindled during the implementation process since fewer students held mentorship sessions with their mentors and discussed how the mentorship should proceed (Table 3).

Out of the 44 students who met their mentors, only 47.7% (n = 21) met them weekly, while the other 52.3% (n=23) met them monthly. 8% of the 90 students who indicated their satisfaction with the frequency and duration of meetings with mentors were unsatisfied. Only 22 students stated that their mentors’ accessibility and availability were at least acceptable.

Based on the KIIs, most mentorships in the department are random. Although mentors do not have scheduled meetings with students, they meet regularly. Participants 1, 2, 4,

and 6 in the KIIs indicate that they do not have scheduled meetings with the mentors. Participant 6 expressed that their mentor is not available at specific times; hence, it is usually upon her to call me whenever she is free. On the other hand, participant 5 acknowledged that their mentorship sessions are structured. Similarly, participant 7 hinted that they had met “twice a month” with their mentor for the past six months as planned. Students who participated in the key informant interviews (KII) are unsure whether a mentorship programme exists in the department since the ongoing mentorship relationships are self-initiated and develop naturally. Some students have never heard of mentorship in the Department of Engineering, yet others claim it exists. Participant 4 indicated that they “do not know of any mentorship programme in the department,” while Participant 5 claimed that their lecturers told them about the existence of the mentorship programme. The following table shows the results in the frequency of mentorship status on the students concerning different mentorship aspects.

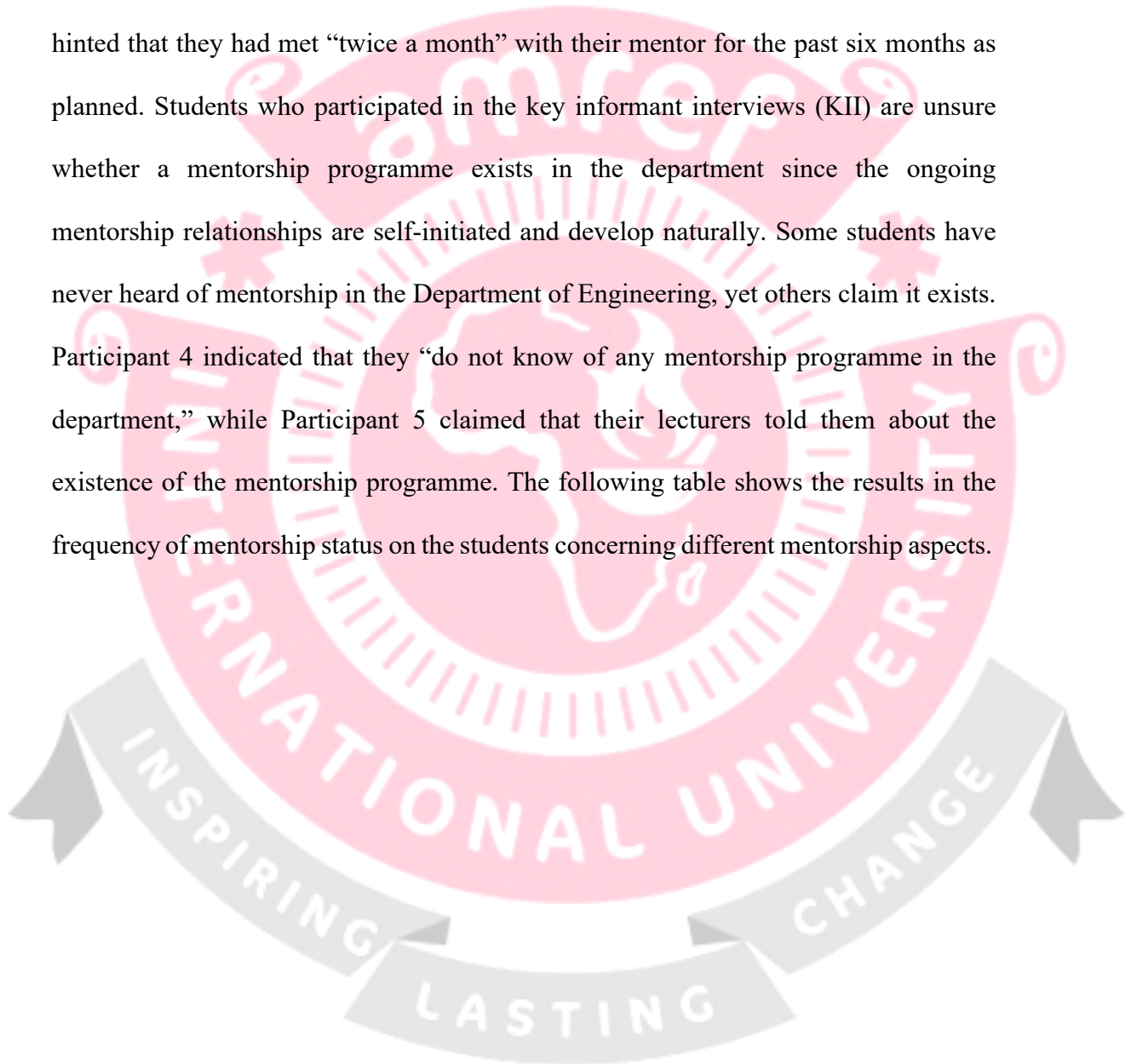


Table 4 1: Students' Mentorship Status

Mentorship aspect	Responses	Status	Frequency (%)
A mentor in the department	222		45 (18)
Mentoring sessions with the mentor	223		36 (16.1)
Discussion with the mentor on how mentorship should take place	220		22 (10.0)
Established written plans on goals to be met	211		39 (18.5)
Mentorship plan with mentor	179		34 (19)
Mentor facilitates participation in professional activities outside the institution	163	Never	112 (68.3)
		Seldom	17 (10.4)
		Acceptable	14 (8.5)
		Almost always	14 (8.5)
		Always	6 (3.7)
Connection to other mentors to fill gaps where the mentor is less skilled	164	Never	105 (64)
		Seldom	20 (12.2)
		Acceptable	17 (10.4)
		Almost always	12 (7.3)
		Always	10 (6.1)
Mentor provides constructive criticism	161	Never	104 (64.2)
		Rarely	10 (6.2)
		Acceptable	20 (12.3)
		Almost always	10 (6.2)
		Always	17 (10.5)

Students in the department are unaware of how to initiate and maintain a mentorship relationship. In the FGD, participant 1 says they consider it mentorship when a lecturer comes to their class to remind them of the importance of achieving a 90% attendance rate and passing exams. They acknowledge that their perceived mentors are approachable and respectful, yet they have never met them one-on-one for mentorship. Participant 1 says, “When you approach them, they will treat you in a manner that you will not feel vulnerable about it.” Participant 3 indicated this about their mentor: “Any

time you want something from her, she is approachable.” However, once the mentorship is initiated, some students actively maintain them.

Some students, such as participants 2 and 3, receive social support from their mentors. Participant 3 stated that she consulted the mentor about some personal educational issues. Other students are unaware that social problems can be discussed with a mentor. They consider it inappropriate to share their issues with their mentors. However, Participants 2 and 3 stated that they had not reached the point of sharing their social problems with their mentor. On the other hand, participant 6 said that in some instances, they can talk about social problems with their mentor.

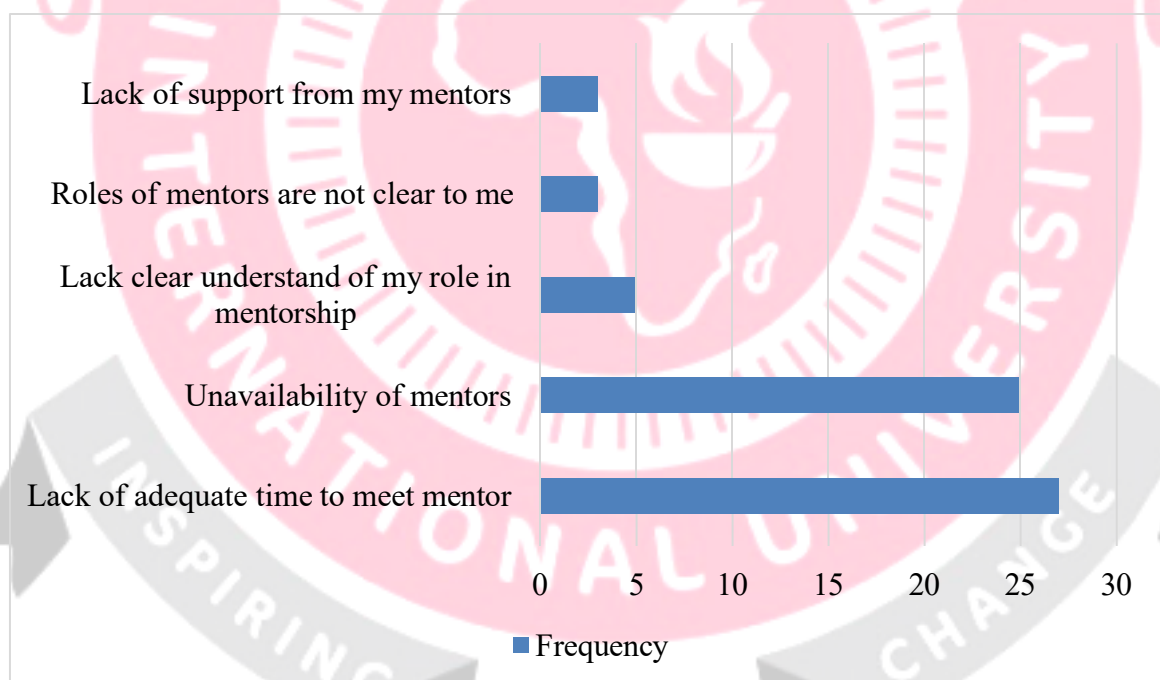


Figure 4.2: A Bar Graph of the Frequency of Barriers to Mentorship

A lack of facilitation by the mentor to participate in professional activities was prevalent since only 20.7% of 163 respondents viewed their mentors’ facilitation as at least acceptable. Additionally, mentors rarely connect students to other members since a

quarter of 164 respondents did not indicate that their mentors never or seldom connected them to another mentor to fill gaps where the mentor is less skilled. Besides, only 30% provide constructive criticism to students (table 3). Of the 118 respondents who rated their satisfaction with the mentorship relationship, 72.3% (n = 86) they indicated that it did not meet their expectations.

The respondents identified with the listed barriers in mentorship relationships to varying extents. The commonest barriers were the unavailability of mentors and the lack of adequate time to meet the mentor (Figure 2).

4.4.2. Awareness of Mentorship among Faculty Members

The key informant interviews show that faculty members perceive mentorship as guidance and follow-up, especially career-wise. A faculty member (staff 1) also identified the informal guidance that they give to their students as mentorship. They said that whatever you have been telling them, advising them, indeed, it was mentoring. Similarly, another staff member (staff 2) defined mentorship as guiding others regarding career, counseling, and the rest.

Most mentorships in the department are random based on the KIIs. Although mentors do not have scheduled meetings with students, they meet regularly. This is well supported by a 70% (n=20) report of respondents noting the lack of a formal mentorship programme in the institution. A faculty member 004 insinuated that mentorship occurs anytime when the mentor sees the need to correct a student's direction or channel them to a pathway of growth hence it is not structured. On the other hand, Staff Member 006 acknowledged that their mentorship sessions are structured every month. Faculty

member 002 in the KIIs recognizes that their unavailability could be why students rarely initiate one-on-one mentorship relationships with lecturers, which is consistent with staff 001's suggestion for recruiting more lecturers to ease the schedules of lecturers toward creating room for mentorship. Thus, students can transition from the awareness of mentorship as the indirect encouragement and emotional and mental support they get from an individual they perceive as their mentor to experiencing actual mentorship. However, the staff member's views indicate that the mentorship programme is not formal since they stated that I cannot say that I have some specific students I always mentor. Similarly, staff member 002 only identified with group mentorship, whereby they mentor all the students concurrently in the classroom.

Faculty member 002 in the KIIs recognizes that their unavailability could be why students rarely initiate one-on-one mentorship relationships with lecturers, which is consistent with staff 001's suggestion for recruiting more lecturers to ease the schedules of lecturers toward creating room for mentorship. Thus, students can transition from the awareness of mentorship as the indirect encouragement and emotional and mental support they get from an individual they perceive as their mentor to experiencing actual mentorship. For instance, participant 2 gets direct guidance and support from their mentor: My mentor usually guides me about engineering. Staff member 003 suggests that there could be a mentorship programme in the engineering department by stating I believe it is there. However, the staff member's views indicate that the mentorship programme is not formal since they stated that I cannot say that I have some specific students I always mentor. Similarly, staff member 002 only identified with group mentorship whereby they mentor all the students concurrently in the classroom. Staff

member 002 expressed that once a mentorship interaction has started, some students are eager for more information from mentors to drive their growth. Since even staff members are unaware of the existence of a policy on mentorship in the department, there is a need for more awareness about mentorship.

4.5 Descriptive Statistics on Academic Performance

4.5.1 Cross Tabulation on Mentorship and Academic Performance

Table 4.3: Overall Score Cross Tabulation

		overall score					Total
		Less than 40	Between 40 and 49	Between 50 and 59	Between 60 and 69	Higher than 70	
were you mentored?	weekly	3	1	6	92	48	150
	Monthly	15	20	20	9	6	70
Total		18	21	26	101	54	220

The cross-tabulation results in Table 4.2 highlight a significant difference in academic performance between mentored and non-mentored students. Among the 150 students who received mentoring, a notable majority achieved higher scores, with 92 students scoring between 60 and 69 and 48 students scoring above 70. In contrast, the 70 students who did not receive mentoring were more likely to score lower, with 15 students scoring less than 40 and 20 students scoring between 40 and 49. This distribution suggests mentoring positively influences academic outcomes, as mentored students are more concentrated in the upper score ranges, while non-mentored students tend to fall in the lower ranges. Overall, the data indicates a clear correlation between mentoring and improved academic performance, emphasizing the importance of mentorship programmes in fostering better academic results.

4.5.2 Descriptive Statistics on the Perception of Academic Performance

The study employed descriptive analysis to determine students' perceptions of academic performance. Responses were rated on a Likert scale of 1 to 5, whereby 5 strongly agreed and 1 strongly disagreed. Results are presented in Table 4.4.

Table 4.4: Descriptive Statistics on Perception of Academic Performance

Statement	SD	D	N	A	SA	Mean	Std. Dev
I have increased my confidence in class as a result of mentorship	14.1%	6.4%	8.6%	49.5%	21.4%	3.58	1.285
I normally complete all my assignments in class as a result of mentorship	2.7%	9.1%	7.3%	43.6%	37.3%	4.04	1.029
I participate more in class discussions as a result of mentorship	3.2%	9.1%	14.1%	49.5%	24.1%	3.82	1.002
My grades in class have improved due to mentorship classes	4.1%	10.0%	6.4%	51.8%	27.7%	3.89	1.050

Findings presented in Table 4.4 revealed that participants generally agreed that they had increased their confidence in class due to mentorship, as shown by a mean of 3.58. Further, participants agreed that they normally complete all their assignments in class due to mentorship, as shown by a mean of 4.04. Additionally, participants agreed that they participate more in class discussions due to mentorship, which was indicated by a mean of 3.82. Lastly, respondents agreed that their grades in class had improved due to mentorship, which was a mean of 3.89.

4.6 Impact of Mentorship on Academic Performance

Mentorship has improved the academic performance of students. Several interviewees reported that their mentors assisted them in improving their performance in different

curriculum units. 55% (n=20) of respondents in KII and FGDs reported that mentorship improved students' academic performance. Participant 1's performance fluctuated in year one, but once the perceived mentor talked to their group, they improved. Participant 1 states that they have greatly helped me improve my performance. Similarly, Participant 2 was an average performer before the mentorship initiative, but now, they consider their performance commendable. Participant 3 expressed that, in mathematics, I got something like around 50 percent, but now, in the current year, I have improved. Participant 5 was not only guided by their mentor to improve academic performance, including failed units but also inspired to further academics beyond the diploma. Staff member 001 also indicated that some of the students they mentored improved in performance and conduct. Staff member 002 held a similar view on the benefits their mentees are reaping from the mentorship: You realize, like some of them, maybe one had a supplementary last semester, and after that, there is a lot of improvement.

Despite the inexistence of one-on-one mentorship sessions, students have benefited from improving their progress toward career goals through guidance that they receive from their perceived mentors in groups. I think my greatest improvement has come from them participant 1. Participant 7 also recognized their academic gains from mentorship by noting that, when he joined this school, he was poor in most of the subjects, but recently, he had improved. Staff member 004 also commented that mentorship in the department, though informal, helps the students achieve their goals.

Additionally, mentors are demoralized when their intended aim of mentorship is not achieved. Staff member 001 commented that he does not feel good when a student they

have mentored does not achieve the intended results. Nevertheless, the failures trigger the mentors to identify new ways to mentor the students (staff member 002). Mentorship also benefits staff members who serve as mentors. According to staff member 001, when a mentor constantly addresses a certain issue in a mentee, their consciousness awakens to change the aspects of life that are inconsistent with the advice they give, putting that person on track. Staff member 002 explained that students' improvement satisfied mentors since it is the achievement of a goal: I think it is something good for me and will positively add value.

According to participants 3, 4, and 5, mentorship can have a greater impact if it can be formalized so that the mentor knows of the existence of the relationship. Participant 6 believes that if the mentorship's formalization would result in more contact time with the mentor, it would be complete. Staff member 004 also calls for establishing a structured mentorship programme to schedule and conduct the sessions at known time intervals. Staff member 002 opines that improving the mentorship system in the department can produce very good students professionally due to the contribution of the lecturers as mentors.

Improved performance can determine the effectiveness of any programme. Similarly, this is the case with mentorship. The effectiveness is measured by the outcome, in this case, which is academic performance. Students' academic performance is a significant indicator of the student wellbeing and overall health. When the mental health is imbalanced, it will reflect in the academic performance. When there are financial issues affecting the social life, it will reflect on the academic performance. Effective mentoring positively reflects on the student's performance. Students and lecturer

participants expressed their positive experience of improved academic and work performance influenced by mentoring.

P006 noted that he has improved in his studies and confidence, making it easier to catch up and learn. P004 said that her academics were going well, while P003 noted improvement in mathematics. P002 noted that since the start, the respondents had improved in academics because before meeting the mentor, she was performing not really well.

P001 said that she had improved a lot in the past years despite her improvement fluctuating in previous years. P007 articulated that when she joined this school, she was a bit poor in most of the subjects but had recently improved.

IDI female lecturer noted that stated, there was a time when she was so low at her workplace. There is a time when you get your HOD is so harsh on lecturers to the extent of not concentrating well on their career.

Participant P001 was optimistic about the improvement, both emotionally and academically. They believed that students studying under the programme would benefit significantly and that others would recognize the organization's positive aspects. Additionally, they felt that the institution would gain valuable knowledge about the programmes being implemented.

4.6.1 Motivation

It can be argued that a life best lived is one that's filled with a sense of satisfaction and accomplishment. Humans, throughout their lives, sought out this by trying to be the best in whatever they do. When guiding and training babies on walking, crawling, or

any new activity, cheering and applauding for the baby encourages them to do more. Ranking systems in schools and reward ceremonies such as prize giving, and graduations to celebrate students' achievement. End-year bonuses, rewards, and recognition of the best employees in corporate setups are all forms of encouragement and motivating systems. These motivational approaches have a huge impact on boosting morale and encouraging others to aim to improve and or excel in their fields. When asked about motivation, participants expressed the importance of a mere 'thank you' from the institution or department. Some synonymized motivation with encouragement they received from their mentor. All this works in synergy to boost morale and foster encouragement.

P003 expressed that in such a unit, one is expected to perform poorly compared to other units, but she encourages herself to try and believes she can succeed.

P002 noted that when he performs well, he is commended and told he has a good future, encouraging him to continue with the same spirit.

P001 shared that the encouragement they received has helped them be proactive in engaging with others and better understanding their field, ensuring their practical sessions do not negatively impact their relationships with colleagues.

An IDI female lecturer mentioned feeling good about her students' progress, humorously noting that even her parents planned a surprise for her after the exams.

An IDI male lecturer stated that students often express their appreciation for the mentorship they have received, acknowledging its positive impact on their performance

and understanding, confirming that the guidance provided was indeed effective mentoring.

4.6.2 Inter-relationship

Healthy departmental relationships can be attributed to effective mentorships. Lecturer-student relationships and relationships between lecturers can be improved through individual mentoring. Mentoring can help one better handle their problems or issues, be they mental, social, or financial, which no doubt affects their relationships. When one's mind and heart are at ease, one's personal and work relationship.

The IDI male lecturer noted that the mentorship programme would also assist the lecturers, as it will help them understand how to handle their learners. Additionally, when lecturers face personal problems, they will know how to manage them better. P002 expressed that the programme will improve the relationships between lecturers, students, and co-workers. Furthermore, the IDI male lecturer observed that mentoring builds relationships. After students complete their studies, they might encounter their mentors in professional settings. If the students recognize their mentors as part of their growth, they will likely assist the mentors in those professional environments.

4.6.3 Informal Mentorship

The existing mentorship programme is unstructured and informal. There are no existing procedural guidelines to ensure smooth and effective mentorship. The lack of formal structure has limited the exploration of the full potential of the positive effects of mentorship. Some participants expressed dissatisfaction with their mentorship, attributing this to the general informal structure. When put in place, formal structure

ensures accountability, monitoring, and evaluation of the system to enhance effectiveness. Mentors' random selection of mentees, lecturers unknowingly mentoring students, and overall participants have informal mentoring relationships with caring lecturers who informally support their academic performance and progress. The following are some of the examples depicting this,

4.6.4 Mentor- Centered

This refers to the mentorship system or programme the mentor and/or lecturer spearheaded. This, however, is not a negative thing since mentors ought to be experienced and more knowledgeable. The problem arises when meetings can only be set up per the mentor's liking and availability. When students cannot meet their mentors, they get assistance or guidance when needed outside the mentor's schedule.

P006 stated that it is not usually frequent because their mentor often has a busy schedule, so it is usually up to them to call whenever they are free. According to the schedule, sometimes their mentor can meet them, but other times, the mentor asks to meet at a specific time. P002 noted that it is not any time because sometimes their mentor is busy. When approached, the mentor might give a specific day or time for a meeting. P001 expressed that maybe when needed, the mentors usually come, but sometimes the mentors are also not available, which is why they are not always in a position to take care of the students.

4.6.5 Attitude

Students' perceptions and general attitudes of students can affect mentoring. Mentoring can only be effective when both parties are committed to it. High-risk students

partaking in illegal substances can sometimes be defensive to external help being offered by being nonreceptive.

P001 noted that not everyone agrees with mentoring as there is always negative energy during mentorship; some may follow your teachings while others fail to listen completely. Some mentors also misadvise others about attending mentorship classes, an idea that has no effect. The perception of the students also has a lot to play in; some maybe would think that why you are deviating from this, then you are moving in this direction, so you find it may be tough on your side.

4.6.6 Time

Time can constrain the effectiveness of mentorship. Ample time with a mentor can enhance an overall mentor-mentee relationship and positively impact the mentee. Meeting bi-monthly or monthly mostly does not suffice for most mentees the limited time from the mentor. One participant noted the limitation on time was due to mentors taking up two roles, mentor and lecturer, who were responsible for lecturing multiple classes, thus limiting their time. Some participants complained of limited time allocated to mentorship. Besides, they noted that the lecturer's time is quite tight, so allocating extra time for mentorship is challenging, as given P00.

4.6.7 Policy

Policy and structure put in place in organizations and institutions can regulate the mentorship programme. Participants outlined their views on formulating a structure for the mentorship programme. Different views were given on how mentorship can be established officially and formally in learning institutions to enhance students' academic performance and lecturers' work performance. Methods of mentoring

selection, eligibility of mentorship programme, proposing number of days and or time for mentorship, and many more. P002 noted that a through-department approach can be used to decide on the best times to do the mentoring as a department, and the same can be taken to other levels. Lecturers were seen as the best people to mentor their students they know personally and then to groups, which can also be escalated to the departmental level according to FDG P3. P001 proposed having lunch or breakfast with the mentees to guide them appropriately.

4.7 Inferential Statistics

To establish the relationship mentorship has on the Department of Medical Engineering performance in KMTC Nairobi campus, Kenya, the study used inferential analysis, which involved correlation analysis among variables in the study. Additionally, the study conducted multiple regression analyses.

4.7.1 Correlation Analysis

In this section, the study sought to determine the relationship between mentorship and performance. A correlation analysis test was conducted with p-values at 0.05 and Pearson Correlation (r) values. The findings are presented in Table 4.5.

Table 4.5 Correlation Matrix

		Mentorship	Performance
Mentorship	Pearson Correlation	1	.758**
	Sig. (2-tailed)		.000
	N	220	220
Performance	Pearson Correlation	.758**	1
	Sig. (2-tailed)	.000	
	N	220	220

** . Correlation is significant at the 0.01 level (2-tailed).

Findings from the table revealed a Pearson correlation coefficient ($r=0.758>0.7$ associated with a p-value of $.0001<0.05$). This suggests a statistically significant and strong positive correlation at the 0.01 level (2-tailed) between mentorship and academic performance.

4.7.2 Regression Analysis

4.7.2.1 Effect of Mentorship on Academic Performance. A regression model was also conducted between mentorship and academic performance. The study model was as follows $Y = \alpha + \beta_1 X_1 + \varepsilon$ with Y being the academic performance of KMTTC, Nairobi campus, Kenya, β_1 the regression coefficient of mentorship, X_1 mentorship, and ε was the error term.

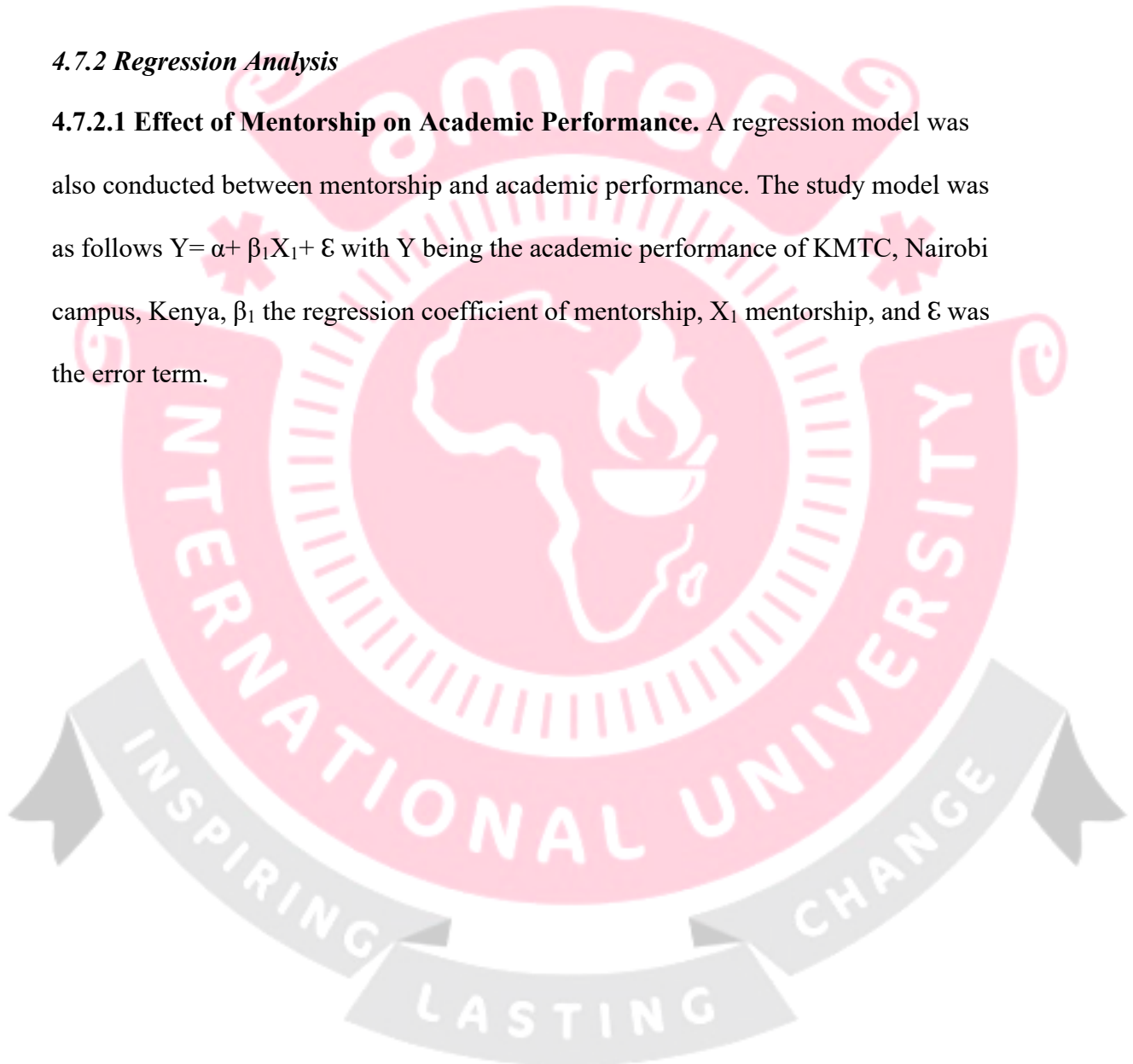


Table 4.6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.758 ^a	.575	.573	.56925

a. Predictors: (Constant), Mentorship

The study's results indicated an R-square of 0.575 associated with mentorship and academic performance, which indicated that 57.5% of the changes in academic performance were due to mentorship, while other variables not included in the model explained 42.5% of the changes in performance.

Table 4.7: ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	95.592	1	95.592	294.991	.000 ^b
	Residual	70.643	218	.324		
	Total	166.234	219			

a. Dependent Variable: Academic Performance

b. Predictors: (Constant), Mentorship

Results also revealed an F-ratio of 249.991 with a p-value of $0.001 < 0.05$, which implied that the model was fit to predict academic performance at the Department of Medical Engineering in KMTC Nairobi campus, Kenya.

Table 4.8: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
1 (Constant)	.109	.219			.496	.621
Mentorship	.935	.054	.758		17.175	.000

a. Dependent Variable: Academic Performance

Besides, the results revealed a beta score of 0.935 and a p-value of $0.001 < 0.05$ between mentorship and academic performance at the Department of Medical Engineering in KMTC Nairobi campus, Kenya, signifying a positive and significant influence of mentorship on performance. The simple regression model can be written as follows:
 $Y = 0.109 + 0.935X_1 + \epsilon$.

4.7.3 Analysis of Variance

The study analyzed variation through Chi-square to determine whether there was a statistically significant difference between the performance of students who attended weekly and monthly mentorship.

Table 4.9: Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	120.438 ^a	4	.000
Likelihood Ratio	124.496	4	.000
Linear-by-Linear Association	90.049	1	.000
N of Valid Cases	220		

a. 0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 5.73.

The Pearson Chi-Square value of 120.438 with 4 degrees of freedom and a p-value of 0.001 indicates a statistically significant difference between the performance of students who attended mentorship weekly and those who attended mentorship monthly.

CHAPTER 5: DISCUSSIONS

5.1 Introduction

This chapter covered a detailed analysis and breakdown of the qualitative and quantitative data results outlined in the previous chapter to address and answer the research questions.

5.2 Socio-demographic Information

Most of the respondents (89%) from the two programmes were between 18 and 25 years old. This shows that most students enrolled in colleges immediately after completing their high school education. There were more female respondents (54.8%) than males (45.2%). This was attributed to the fact that certificate students, who constitute a majority of female students, were also included in the study. This disagrees with the perception that males dominate the engineering field because it's masculine.

5.3 Successful Mentorship Supports a Learning Culture

This study showed that mentors support a learning culture at KMTC Nairobi in the Department of Medical Engineering. One of the participants was inspired by the mentor to network with colleagues in clinical practice for clarity in the practice modalities by noting that their mentors have always encouraged me to boost my interpersonal skills. Other responses from the participants were improvement in communication, self-esteem, interactions, and networking, which the respondents also mentioned. These study findings are comparable to those obtained in the study that was done on Kenyan university nursing students from KEMU and UON by Gichingi (2009), who established that over 65% of the students on both campuses held the opinion that mentorship

improves one's self-esteem and willingness to take on more risk in life. Two out of three participants in these two universities believed that mentorship contributes to critical thinking and career growth.

Mentorship has a positive effect on mentees as far as the directives provided by the mentors are concerned. A study by Udom et al. (2020) concerning the effects of mentoring defines mentoring as a form of a relationship between a more experienced and knowledgeable person who assists a less experienced and knowledgeable person. Similarly, several other scholars who support the practice of mentorship as guidance are Peretomode and Ikoya (2019) and Gazza and Shellenberger (2005).

The study findings also showed that the mentors monitor students' progress and advise them on improving, further supporting a learning culture. One of the participants noted that they had been mentored well. The majority of the respondents mentioned that mentorship has improved the student's approach to studies because of the discipline instilled in them by their mentors, which is consistent with a research study done by Gary (2004) in which students expressed that guidance and support offered by their mentors improved their career development. A review by Jokelainen et al. (2011) of students in the mentorship programme and in clinical practice also showed that the mentorship programme empowers the development of professional attributes. Notably, some students, such as P004, declined, not having adequate mentorship support to facilitate learning.

5.4 Level of Awareness among Medical Engineering Students

From this study, 28% of the students were aware of a mentorship programme in the department. Nevertheless, 49% of the respondents reported having mentors, where 32%

were mentored by lecturers, 19% by peers, 21% by the pastor, and 28% did not specify where they seek mentorship. This compares to little to no statistics by Gichingi (2009) at Kenya Methodist University, in which 44.8% looked for mentorship from their relatives, 24.1%- from their peers, and 20.7%- from the church. This is also collaborative with Larose and Colleagues (2018), who established that mentoring was less or more attractive to students depending on several experiences and characteristics, including available external support from the institution, including parents, help-seeking attitudes, and academic disposition.

Participants in this study majorly associated mentoring with positive guidance on mentees by advising/counseling/role modeling by their lecturers and guidance on all aspects of life, particularly career and social related. This has been confirmed by the mentoring scholar Kram (1985), who resolved that the word mentor has many and varied meanings for people. If no specific definition is provided in the research study, participants (protégés/mentors) must rely on their schematics of what a mentor is (Haggard et al., 2011). This was also evident during this research when some students confused their role models for mentors, as noted by one of the participants who defined a mentor as a person they admire and mentorship.

Most, however, the participants admitted to only opening up about their professional or career life and less about their social life, which might equally require guidance or mentoring, especially if the said social life largely influences the academic and career path. This can be attributed to the fact that the participants perceive mentoring as a formal engagement. Role modeling and guidance are supported by Sobia et al. (2008) and Nablsi et al. (2012). 72% of the respondents have never heard of mentorship in the

Department of Medical Engineering, yet others claim it exists. One of the participants in KII stated “I don't know of any mentorship programme in the department”. This implies that some respondents did not provide detailed awareness of the mentoring programme as outlined by Wachira (2019) that 52% of the participants in her study established that the institution had a formal mentorship structure, while 48% said formal mentorship did not exist. Most participants were right about the forms of help that mentorship provides. Common themes that arose include guidance academically/ career-wise, support to students, encouragement, counseling, and helping students develop positive attitudes towards learning and handle life problems.

5.5 Impact of Mentorship on Academic Performance

The results from this study and others illustrated that mentorship strongly relates positively to students' academic excellence. 55% (11) of the participants (total number 20) who participated in KIIs and FGDs indicated that their mentors helped them improve their performance in mathematics. One participant confirmed that their mathematics performance fluctuated in year one, but once the mentor talked to them, they improved their performance. “I can say they have helped me a lot to improve my mathematics performance.” Similarly, another participant noted that most students were average performers before the mentorship initiative, but now they consider their performance commendable; “in mathematics, I got something like around 50 percent, but now, in the current year, I have improved.” Another participant in FGDs was guided by their mentor to improve academic performance, including failed units, and was inspired to further academics beyond the diploma. This is in unison with the preceding research studies of Campbell and Campbell (1997), Thompson and Kelly (2001), Cho

et al. (2011), Karanja and Gukingu (2014), Pfund (2016), who discovered that mentorship programmes had a beneficial and positive relationship with students' academic excellence.

Staff member 001 also indicated that some of the students they mentored improved in performance and conduct. Staff member 002 held a similar view on the benefits their mentees are reaping from the mentorship, which was evident from the improvement they made after sitting for supplementary exams last semester. The study findings are in agreement with Crisp and Cruz's (2009) viewpoint that mentoring improves academic brilliance and that there is a beneficial relationship between efficient mentoring and high academic performance at all education levels, including tertiary education.

According to faculty member 005, when a mentor constantly addresses a certain issue in a mentee, their consciousness awakens to change the aspects of life that are inconsistent with the advice they give; it keeps that person on track. One of the participants in the study noted that he/she had improved in study confidence, while another noted that concepts were now easier to grasp as a result of mentorship, and there were no more supplementary exams, which was a bigger propeller as given by P004. This study's results also support the views of Jekielek and Moore (2002) that the majority of mentoring programmes have inspired enhancement of the academic and in-borne abilities and experiences of young people and generally learners.

5.6 Relationship between Mentorship and Academic Performance

The study's results also revealed a strong and statistically significant relationship between mentorship and academic performance among students at the KMTC Nairobi

campus. The Pearson correlation coefficient ($r=0.758$, $p<0.01$) indicates a robust positive correlation, suggesting that mentorship is closely associated with higher academic performance. Regression analysis further supports this, showing that mentorship accounts for 57.5% of the variation in academic performance ($R^2=0.575$, $p<0.001$), with a significant positive impact ($\beta=0.935$, $p<0.001$). The ANOVA results confirm the model's predictive validity ($F=294.991$, $p<0.001$). Additionally, the Chi-square analysis ($\chi^2=120.438$, $df=4$, $p<0.001$) indicates a significant difference in performance between students who attended mentorship weekly and students who attended mentorship monthly, highlighting the critical role of mentorship in enhancing student outcomes.



CHAPTER 6: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

Mentorship is a fundamental concept and procedure as it allows different individuals to overcome obstacles and risk components for fruitful academic results. It is undoubtedly an awfully promising strategy for accomplishing students' academic brilliance at all education levels, including college (tertiary level). This chapter entailed a brief conclusion and a list of recommendations from the researcher with regard to the study.

6.2 Conclusion

Several studies have confirmed mentorship's effectiveness in enhancing students' academic performance. As per the data collected and analyzed, this study has a positive hypothesis to the research question: Is mentorship effective in the engineering department at KMTC? While some data results, such as awareness of mentorship programmes in the department, are really low, there is an acknowledgment of an informal mentorship system/programme. Mentorship is effective, however, when all the parameters are considered. Policies and proper structuring of the mentorship programmes can then ensure the success of mentorship.

6.2.1 Successful Mentorship

This study established that the existing mentorship programme is unstructured and informal. There are no existing procedural guidelines to ensure smooth and effective mentorship. The lack of formal structure has limited the exploration of the full potential of the positive effects of mentorship. Some participants expressed dissatisfaction with their mentorship, attributing this to the general informal structure.

6.2.2 Awareness of Mentorship Programme

Several students were not aware of the mentorship programme in their institutions, this study included whether the programme, if any, was formal or informal. Moreover, some respondents are not aware of the existence of the programme, and I do not know of any mentorship programme in the department.

6.2.3 Impact on Academic Performance

The data collected and analyzed indicates that there is a positive hypothesis on the impact of mentorship programmes on academic performance.

6.3 Recommendations

6.3.1 Successful Mentorship Supports a Learning Culture

The study recommends that the Department of Medical Engineering should expand and formalize its mentorship programmes. Additionally, the study recommends that the institution provide structured mentorship opportunities to ensure that all students benefit from academic and professional development guidance. Moreover, the study recommends that KMTC encourage mentors to foster networking, communication skills, and self-esteem among mentees to help students become more proactive in their learning and career pursuits. Lastly, the study recommends integrating mentorship training for faculty and peer mentors to enhance the quality and impact of the guidance provided.

6.3.2 Level of Awareness among Medical Engineering Students

The study recommends raising awareness about the existing mentorship programmes to ensure more students take advantage of these opportunities. The study also recommends that better communication and promotion should be enhanced. Moreover,

the study recommends that KMTC implement regular information sessions, workshops, and campaigns to inform students about the benefits and availability of mentorship. Lastly, the study recommends that KMTC create a dedicated mentorship office or online platform where students can easily access information and sign up for mentorship to enhance participation and engagement.

6.3.3 Impact of Mentorship on Academic Performance

The study recommends that KMTC focus on strengthening the academic support provided through mentorship by setting clear academic goals and regularly monitoring progress. The study also recommends providing mentors with resources and training to offer targeted academic support. The study also recommends that KMTC establish standardized guidelines and expectations for mentorship relationships. Additionally, the study recommends regular feedback mechanisms to assess the effectiveness of mentorship and make necessary adjustments.

6.4 Suggestions for Further Research

The current study's variables could only explain 69.7% of the variations in academic performance. Other variables related to mentorship programmes that were not included in the study accounted for only 30.3% of academic performance. A future study can include more direct and indirect variables, such as mediating or moderating variables like motivation or even a moderating variable like skill development.

REFERENCES

- Akerele, T., Vermeulen, C., & Marnewick, A. (2019). Development of the role and scope of an academic mentorship network for health professionals working with people with rheumatological and musculoskeletal conditions across Europe. *International Journal of Anatomy and Physiology*, 6 (18), 6-25.
- Atalla, O. Vermeulen, A. and Marnewick, A. (2022). Determining the benefits of the engineering mentoring programmes for graduates. *Saudi Journal of Pathology and Microbiology*, 7 (6), 61-87.
- Atkins, M. & Williams, J. (1995). The mentoring effect. Young people's perspectives on the outcomes and availability of mentoring. *Saudi Journal Of Oral And Dental Research*, 11 (56), 45-67.
- Baffour, H.A. (2019). Mentorship in teacher education: Challenges and support provided. *European Journal of Education Studies*, 6 (1), 67-83.
- Barabino, G., Frize, M., Ibrahim, F., Kaldoudi, E., Lhotska, L., Marcu, L., ... & Bezak, E. (2020). Solutions to gender balance in STEM fields through support, training, education and mentoring: Report of the international women in medical physics and biomedical engineering task group. *Science and Engineering Ethics*, 26 (11), 75-92.
- Birhan, M., & Merso, D. (2021). Mentoring the new academic: Conversations for individual and university development. In *Higher education in a changing world, Proceedings of the 28th HERDSA Annual Conference, Sydney, 3-6 July 2005* (p. 507).

- Bordes- Edgar, S., Aredondo, T., Kurpius, C. & Rund, F. (2011). Understanding student attrition from engineering majors. *International Journal of Engineering Education* 29 (4), 914–925.
- Brookfield, S. (1993). Breaking the code: Engaging practitioners in critical analysis of adult educational literature. *Studies in the Education of Adults*, 25(1), 64-91.
- Brookfield, S. (2018). Developing critically reflective practitioners: A rationale for training educators of adults. In *Training educators of adults* (pp. 317-338). Routledge.
- Brookfield, S. A. (1986). Teacher–pupil: The changing relationships of mentors and protégés. *Community College Journal of Research and Practice*, 29(9-10), 759-781.
- Bruce, M., & Bridgeland, J. (2014). The mentoring effect: Young people's perspectives on the outcomes and availability of mentoring. A report for mentor: the national mentoring partnership. *Civic Enterprises*, 2 (7), 32-41.
- Campbell, A., & Campbell, W. (1997). Tuesdays with an open and distance learning mentor. *Africa Education Review*, 11(2), 133-145.
- Chege, I. (2009). Mentoring in the lifelong learning sector: A critical heuristic account. *Teaching in Lifelong Learning*, 2(2), 8-12.
- Cherry, D. L. (2018). Facilitating transformative learning: Attending to the dynamics of the educational helping relationship. *Adult education quarterly*, 47(1), 41-53.

- Cho, J. K., Ramanan, T., & Feldman, A. (2011). Mentoring the beginning teacher: Developing professional autonomy through critical reflection on practice. *Reflective Practice, 6*(3), 419-441.
- Chong, M. E., Pachler, N., Mitchell, H., & Herrington, N. (2020). Towards a pedagogy of mentor education. *Journal of In-service Education, 33*(2), 171-188.
- Coach, H. (2003). Does mentoring new faculty make a difference? *Higher Education, 22*(3), 157-159.
- Cook-Sather, A. (2020). Respecting voices: How the co-creation of teaching and learning can support academic staff, underrepresented students, and equitable practices. *Higher Education, 79*(5), 5-31.
- Coppola, R., Rocha, D. J., & Woodard, R. (2021). Toward a bidirectional and co-constructed mentorship: Rethinking the mentor and student-teacher relationship. *Literacy Research: Theory, Method, and Practice, 70*(1), 25-31.
- Crisp, M. & Cruz's, Y. (2009). Mentorship programmes can help university students unlock their potential. *Journal of Social Sciences and Business, 18* (56), 67-93.
- Dubois, D.L., Portillo, N. & Rhodes, J.E. (2011). How effective are mentoring programmes for the youth? A systematic assessment of the evidence. *Journal of Strategic Management, 5* (67), 45-67.
- Dull, L., Yaylor, B. & Shollen, J. F. (2009). Mentoring across the professions: *Practical Experiences in Professional Education: A Transdisciplinary Approach* (pp. 93-113). Brisbane: Post Pressed.

- Engle, R.M. (2016). Introduction to Special Issue on the Teenage brains. *American Journal of Psychology*, 91(6), 673 – 689.
- Feyissa, S. I., Balabanova, E. A. & Woldie, E. J. (2000). Longitudinal examination of mentoring relationships on organizational commitment and citizenship behavior. *Journal of Career Development*, 26(4), 233-248.
- Fleming, C. Burnham. T., & Huskins, V. (2012). Mentoring in education: An international perspective. *International Journal of Medical Profession education*, 67 (53), 67-89.
- Fong, T.S., Hassan, Z, Kasa, M., Balang, R.V. & Abdullah, S.M, (2021). Exploring mentoring skills to assist new nurses: Mentors' and mentees' perspectives. *Journal of Arts and Management Sciences*, 8 (34), 1123-1145.
- Fox E. (1998). *Evaluating mentorship among Nursing students*. [Masters Project, University of Nairobi].
- Fresh, E.A., & Cruz, T. (2019). Successful enculturation: Strategies for retaining newly hired nursing faculty. *Nursing Education*, 30(6), 251-254
- Garringer, M., Kupersmidt, J., Rhodes, J., Stelter, R., & Tai, T. (2015). Elements of effective practice for mentoring [TM]: Research-informed and practitioner-approved best practices for creating and sustaining impactful mentoring relationships and strong program services. *MENTOR: National Mentoring Partnership*.
- Gershenfeld, S. (2014). A review of undergraduate mentoring programs. *Review of Educational Research*, 84(3), 365-391.

- Goldner, L., & Ben-Eliyahu, A. (2021). Unpacking community-based youth mentoring relationships: An integrative review. *International Journal of Environmental Research and Public Health*, 18(11), 5666.
- Gümüş, E. (2019). Investigation of mentorship process and programmes for professional development of school principals in the U.S.A.: The case of Georgia. *International Journal of Educational Leadership and Management*, 7(1), 2-41.
- Hamilton, D., Krieg, J., Naito, N. & Theobald, R. (2019). Making the most of student teaching: The importance of mentors and scope for change. *Education Finance and Policy*, 15 (3), 581–591.
- Handal, S. & Lauvas, Y. (1983). An analysis of the evolution of mentorship in nursing. *International Journal of Mentoring and Coaching in Education*, 7(2), 155-176.
- Hansford, B., & Hart-Wasekeesikaw, F. (2002). Mentoring women in higher education: Lessons from the elders. *College Teaching*, 42(2), 72-77.
- Hansford, L., Hansford, B., & Tennent, L. (2002). Closing the divide: Theory and practice in mentoring. In *CD-ROM-International Conference ANZAM 2001, Closing the Divide* (pp. 1-15). Massey University.
- Haradhan, T. L. (2007). Preregistering qualitative research, *Accountability in Research*, 26 (3), 229-244.

Henry-Noel, F., & Yonge, O. & Esgy., Y (2019). Preceptor behaviors are integral to the promotion of student critical thinking. *Journal for Nurses in Professional Development, 18*(3), 127-133.

HOD Medical Engineering. (2022). *Medical students hand book*. KMTC, 2022.

Illies. M. Y. (2018). The effect of value similarity on mentoring relationships and outcomes. *International Journal of Evidence-Based Coaching and Mentoring, 16* (1), 67-87.

Ivey, G.W. & Dupré, K.E. (2022). Workplace mentorship: A critical review. *Journal of Career Development, 49*(3),714-729.

Jackson, Y. (2002). Mentoring for delinquent children: An outcome study with young adolescent children. *Journal of Youth and Adolescence, 31*(2), 113–122.

Jekielek, S. E., & Moore, B. (2002). Mentor screening and youth protection. In D. L. DuBois and M. J. Karcher (Eds.), *Handbook of youth mentoring* (2nd. Ed.) (411–425). Thousand Oaks, CA: Sage.

Jordan, S. T., Khan, F., & Chaudary, H. R. (2019). Mentoring: Views and experiences of psychiatrists from low-and middle-income, and high-income countries. *Psychiatric Bulletin, 32*(6), 217-220.

Karanja, J. B., & Gukingu, J. E. (2014). *Mentor training and support*. Thousand Oaks: Sage Publications.

Katherine, L. (2003). The role of mentoring and coaching as a means of supporting the well-being of educators and students. *International Journal of Mentoring and Coaching in Education, 8*(4),229-234.

- Larose, K.W. & Colleagues, D.W. (2018). Mentoring relationship in counselor development. *Asian Journal of Counselling*, 16 (1), 31 – 49.
- Li, J. & Vincin, R. (2011). *Mentoring programme guidelines for mentees and mentors*. Planning Institute of Australia.
- Lunsford, A. (2020). the impact of peer mentoring on mentee academic performance: Is any mentoring style better than no mentoring at all? *International Journal of Teaching and Learning in Higher Education*, 26(1), 102-111.
- Mains, I. & Maclean, S. (2017). Mentor and mentee perceptions and experiences of cross-organizational mentoring. *Industrial and Commercial Training*, 49 (4), 56-67.
- Masehela, L. M. Egytu, Y. & Peter, G. (2014). An assessment of the impact of the mentoring programmeme on student performance. *Journal of Student Affairs in Africa*, 5(2), 163–182.
- Masehela, M. (2017). Two criteria for good measurements in research: Validity and reliability. *Annals of Spiru Haret University*, 17(3), 58-82.
- Mbogo, S. (2019). University Education in Kenya: Current developments and future outlook. *International Journal of Educational Management*, 6 (7), 163-182.
- McBride, A.B., Campbell, J., Woods, N.F. and Manson, S.M., 2017. Building a mentoring network. *Nursing outlook*, 65(3),305-314.
- Merriam, R. (2015). Mentor supervision and development: Exploration of lived experience. *Career Development International*, 7(5), 279-283.

- Murry, A. T., Barnabe, C., Foster, S., Taylor, A. S., Atay, E. J., Henderson, R., & Crowshoe, L. (2022). Indigenous mentorship in the health sciences: Actions and approaches of mentors. *Teaching and Learning in Medicine, 34*(3), 26-56.
- Mutisya, A. K. (2015). *Nursing research and evidence based practice: Assessment, educational intervention and its outcome at Kenyatta National Hospital, Kenya* (Doctoral dissertation, University of Nairobi).
- Nagba, L. C., Hansford, B., & Tennent, L. (1998). Educational mentoring: Is it worth the effort? *Education Research and Perspectives, 30*(1), 42-75.
- Nakao, M. A., Umezu, E., & Iwasaki, E. (2022). Teacher mentoring and the reflective practitioner approach. *International Journal of Mentoring and Coaching in Education, 6*(3), 210-227.
- Nanjala, V. F., Ikoya, P. & Gachu, P. (2023). Mentorship: A strategic technique for achieving excellence, manpower development, and nation-building. *Mediterranean Journal of Social Sciences, 10*(2), 6-17.
- Nerdyseal, (2021). *The role of the mentor in paramedical education assignment*. Pearson.
- Nettleton, P. & Bray, D. (2008). Disgusting animals: Primary school children's attitude and myths of bats and spiders. *Eurasia Journal of Mathematics, Science and Technology Education, 4*(2), 28-97.
- Ng'oda, I. D., Okoedion, E. G., & Okolie, U. C. (2011). Impact of mentorship on students' academic excellence in University of Benin, Benin City. *Journal Plus Education, 25*(1), 211–228.

- Nimmons, D., Giny, S., & Rosenthal, J. (2019). Medical student mentoring programs: Current insights. *Advances in Medical Education and Practice*, 9(21), 3-23.
- Nyikuri, P. (2020). Mentorship: A strategic technique for achieving excellence, manpower development, and nation building? *Mediterranean Journal of Social Sciences*, 10(2), 17-24.
- Okunade, R., Rafii, M. Y., Ismail, S. I., Mohammad Yusoff, M., Miah, G., & Usman, M. (2023). Breeding for anthracnose disease resistance in chili: Progress and prospects. *International Journal of Molecular Sciences*, 19(10), 3122.
- Parise, M.R and Forret, M.L. (2008). The relationship of programme design and support to mentor's perceptions of benefits and costs. *Journal of Vocational Behavior*, 72 (5), 225 – 240.
- Peretomode, B. R. & Ikoya. J. S. (2019). Marginal mentoring: The effects of mentor, quality of relationship and programme design on work and career attitudes. *Academy of Management Journal*, 43(6), 1177-1194.
- Pfund, S.A. (2016). Students' Knowledge of, and Attitudes toward, Mentoring: A case study at the Master's Programme in Health and Hospital Administration. *Advances in Medical Education and Practice*, 6 (5), 149-152.
- Qahtani, K. M. M., (2015). Exploring the relationship between evidence-based nursing research and quality of patients care: A systematic review. *Journal of Namibian Studies: History Politics Culture*, 32 (5), 16-27.

- Raposa, E. B., Rhodes, J., Stams, G. J. J., Card, N., Burton, S., Schwartz, S., ... & Hussain, S. (2019). The effects of youth mentoring programs: A meta-analysis of outcome studies. *Journal of Youth and Adolescence*, 48(12), 23-43.
- Rodriguez, P. J., (2015). Mentorship and cultural belonging for first generation and transfer students at an HSI in South Texas. *Hispanic Serving Institutions (HSIs) in Practice: Defining "Servingness" at HSIs* 15,(21), 29-31.
- Sandelands, E., Gasanova, J., McGrath, J., & O'Donnell, H. (2020). The pathway model academic reference paper. Retrieved from <https://mypathwayjourney.com/wp-content/uploads/2022/01/The-Pathway-Model-Explained.pdf>
- Santos, J. C., Goulart, L. F., Giansante, L., Lin, Y. H., Sirico, A. C. A., Ng, A. H., ... & Ng, K. H. (2020). Leadership and mentoring in medical physics: The experience of a medical physics international mentoring program. *Physica Medica*, 76 (21), 33-47.
- Samier, S. (2020). *Nursing leadership*. Blackwell Publication.
- Shikuku, D. N., Mukosa, R., Peru, T., Yaite, A., Ambuchi, J., & Sisimwo, K. (2019). Reducing intrapartum fetal deaths through low-dose high frequency clinical mentorship in a rural hospital in Western Kenya: A quasi-experimental study. *BMC Pregnancy and Childbirth*, 19 (4), 1-12.
- Sitati, R. A., Githaiga, S. A., & Siagi, M. C. (2024). Differences in perceived barriers to volunteering to formal organizations: Lack of time versus lack of interest. *Nonprofit Management and Leadership*, 17(3), 279-300.

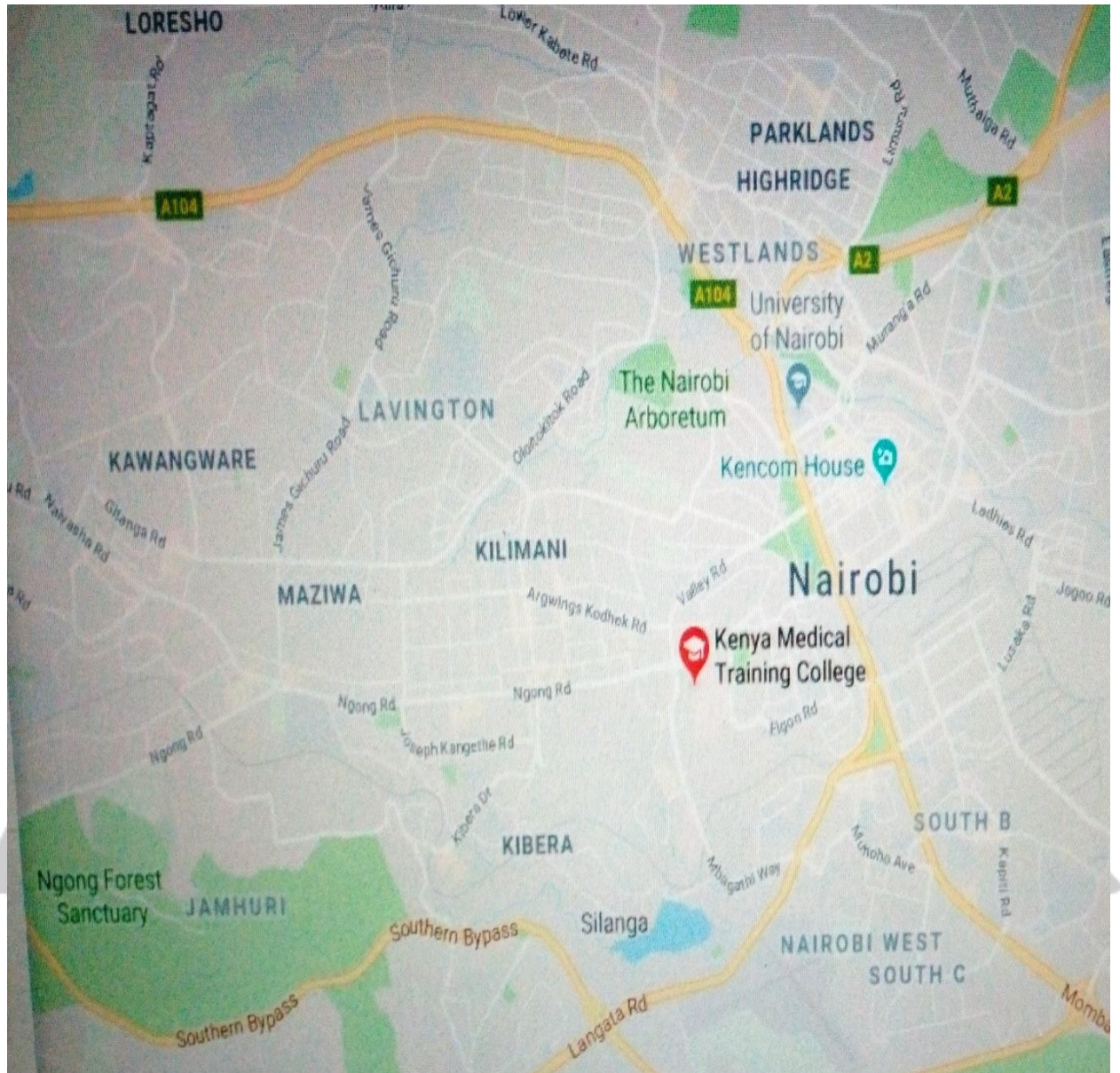
- Sobia, R., Basualdo-Delmonico, A., Walsh, J., & Drew, A. L. (2008). Breaking up is hard to do: A qualitative interview study of how and why youth mentoring relationships end. *Youth & Society*, 49(4), 438-460.
- Stefaniak, V.P. & Gajzlerska, S. (2020). Professional use of different mentor sources at various career stages. Implications for Career cases. *Journal of Applied Psychology*, 40(5), 67-79.
- Synergy Group. (2003). *New Mexico mentorship programme for beginning teachers programme*. Synergy Group.
- Tengah, N., PRAKASH KRISHNAN, M. D., Dharshini, P., Abraham, P., & Thomas, S. (2016). The effect of mentorship program in enhancing the academic performance of first MBBS students. *Journal of Advances in Medical Education & Professionalism*, 8(4), 19-36.
- Thompson, K. & Kelly, M., (2001). Mentoring: Improving transition to practice, *Australian Journal of Advanced Nursing*, 20(11), 27-33.
- Tyson, (2014). *The culturally responsive beginning teacher: Re-imagining onboarding through a lens of equity and social justice*, 12 (9), 33-54.
- Val, J. (2003). Mentoring students in Higher Education. *Education and Training*, 36 (96), 20-26.
- Vassallo, A., Walker, K., Georgousakis, M., & Joshi, R. (2021). Do mentoring programmes influence women's careers in the health and medical research sector? A mixed-methods evaluation of Australia's Franklin Women Mentoring Programme. *BMJ open*, 11(10), e052560.

Wachira, J. W. (2019). Perception on mentorship practices among nursing students at Kabarnet Kenya Medical Training College. *Journal of Nursing and Health Science*, 8(4), 17-40.



APPENDICES

Appendix I: Map of The Study Area



Appendix II: NACOSTI Research Permit


NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

REPUBLIC OF KENYA

Ref No: 352205

Date of Issue: 22/September/2022

RESEARCH LICENSE



This is to Certify that Ms. Agatha Akinyi Omondi of Amref International University, has been licensed to conduct research in Nairobi on the topic: Effectiveness of the Mentorship Programme at the Department of Medical Engineering KMITC Nairobi Campus for the period ending : 22/September/2023.

License No: NACOSTI/P/22/20200

352205

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Verification QR Code



NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

Appendix III: AMREF Research Approval Letter



Amref Health Africa In Kenya

REF: AMREF — ESNC P12J1/2022

July 26, 2022

Agatha Omondi
Kenya Medical Training College
P.O. Box 30195-00100
Nairobi, Kenya
Tel: +254721399646
Email: aggicotieno@gmail.com

Dear AB>a OmOndi,

RESEARCH PROTOCOL: EFFECTIVENESS OF THE MENTORSHIP PROGRAMME AT THE DEPARTMENT OF MEDICAL ENGINEERING KMTC NAIROBI CAMPUS

Thank you for submitting your protocol to the Amref Ethics and Scientific Review Committee (ESRC).

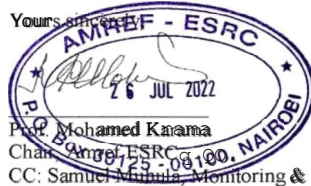
This is to inform you that the ESRC has reviewed and approved your protocol. Your application approval number is ESRC P1231/2022. The approval period is from July 26, 2022 to July 25, 2023 and is subject to compliance with the following requirements:

- a) Only approved documents (including informed consents, study instruments, advertising materials material transfer agreements etc.) will be used.
- b) All changes including (amendments, deviations, violations etc.) are submitted for review and approval by Amref ESRC before implementation.
- c) Deelh and lifmthreatening problems and severe adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the Amref ESRC within 72 hours of notification.
- d) Any changes anticipated or otherwise that may increase the risks or affect safely or welfare of study participants and others or affect the integrity of the research must be reported to Amref ESRC within 72 hours.
- e) Clearance for export of biological specimen must be obtained from the relevant government authorities for each batch of shipment/export.
- f) Submission of a request for renewal of approvd at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
- g) In case of late renewal, the Amref ESRC shell not be held responsible for any severe adverse events (SAEs) that may occur as a result of research activities that were carried out after the expiry of approvd.
- h) Submission of an executive summary report within 90 days upon completion of the study to the Amref ESRC.
- i) All government regulations for prevention and control of the spread of COVID-19 including social distancing, provision of personal protective equipment for participants und research assistants should be adhered to during data collection. All research assistants should be monitored for COVID 19 symptoms and referred for testing in case they present with

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) <https://research-portal.nacosti.go.ke> and also obtain other clearances needed.

Please do not hesitate to contact the ESRC Secretariat (esrc_kenya@amref.orst) for any clarification or query.

Yours sincerely,



Prof. Mohamed Knama
Chair, Amref ESRC
Tel: +254 20 699 4000

CC: Samuel Mutitu, Monitoring & Evaluation and Research Manager, Amref Health Africa in Kenya.



Appendix IV: Consent Form

Informed consent for KMTC Medical Engineering Department

Ethics & Scientific Review Committee

Informed Consent Form

[This ICF should only be used for those who have attained the age of majority, 18 years]

Study Title	EFFECTIVE MENTORSHIP PROGRAMME AT THE DEPARTMENT OF MEDICAL ENGINEERING KMTC NAIROBI CAMPUS
Investigator(s)	1. MRS. AGATHA AKINYI OMONDI – 0721399646 Principal investigator 2. DR. LUCY NJIRU – 0702761850 3. DR. JUNE MADETTE - 0723525361
Study Sponsor(s)	N/A
Collaborators	N/A

This Informed Consent Form has two parts:

- Information Sheet (to share information about the study with you)
- Certificate of Consent (for signatures if you choose to participate)

You will be given a copy of the full Informed Consent Form

Part I: Information Sheet

- Brief description of the research and organization/s involved in the research. This study aims to ascertain whether a successful mentorship programme affects students' performance in the department of medical engineering, determine the level of awareness of the programme, and establish the impact of mentorship programmes among the medical engineering students in Kenya Medical Training College Nairobi Campus.

The research will be carried out at Kenya Medical Training College, Nairobi Campus.

- Brief description of the purpose of the study.

The purpose of the study is to assess how a successful mentorship programme affects students' performance in the department of medical engineering and the impact of an effective mentorship programme on the academic performance of students in the department of medical engineering

- Invitation to participate in the study and an explanation of voluntary participation
The research participants will voluntarily enroll for the study and participant refusal, withdrawal or not answering particular will not attract any penalty or loss of benefits of the research study. There will be no coercion or threat at any point of research or drop out of the study.

Who can participate?

The study participants will be KMTC from the department of medical engineering between 18 - and 32 years old and faculty members at the time the study will be conducted.

Voluntary participation

Research participation will be voluntary and participant refusal, or withdrawal, will not attract any penalty or loss of benefits of the research study.

What is involved in this project?

The research project involves the impact of an effective mentoring programme, the research participants will voluntarily enroll in the study after signing a consent form. They will then fill in a structured questionnaire with a Likert scale of 1 to 5, rating the level of awareness on mentoring, determining mentoring relationships, and mentoring practices.

How long will the project last?

This study will take place for 4-5 months from the commencement of data collection.

What are the risks?

Currently, there is no foreseen risk or discomfort for the participants

What are the benefits?

There will be no monetary benefit, but since there are no previous studies available on mentorship among medical engineering students, this study will therefore obtain data on the current state of the student practices in mentorship and assist the institutions in assessing the importance of the programme on the students. The student's responses can be used by mentors to improve mentoring relationships and by institutions to improve mentorship programmes.

How will we protect your information and maintain confidentiality?

Only authorized personnel will gain access to the data collected and confidentiality will be maintained, no names will be used but participants will be assigned unique identifiers.

What will happen with the results?

The results will be disseminated to the department of medical engineering, KMTC scientific conferences, and finally through publication

Can I refuse to participate or withdraw from the study?

Participants will voluntarily participate in the study and can choose to withdraw or refuse to participate in the study, and this will not affect the results or the outcome of the study.

Compensation

There will be no compensation for the participation in the research study either material or money.

Who can I contact?

If you have any questions, you can ask anyone from our team now or later. If you have questions later, you may contact **AGATHA AKINYI OMONDI - 0721399646 OR [email-aggieotieno@gmail.com](mailto:aggieotieno@gmail.com)**.

If you have questions about your rights as a study subject, you may contact:

The Research Officer
Amref Health Africa in Kenya
Wilson Airport, Lang'ata Road
Office Tel: +254 20 6994000
Mobile No: 0795746777
Fax: +254 20 606340
P.O Box 30125-00100
Nairobi, Kenya

Do you have any questions at this time?

Appendix V: Questionnaire

The appropriate questionnaires will be used to collect information from the students to obtain mentoring practices that can be used in the department of medical engineering at KMTC Nairobi.

Research Instrument- Questionnaire

Introductions

This questionnaire is confidential, and the results obtained will be reported only in the aggregate.

Please tick in the [√] appropriate answer in the spaces provided.

1. Where applicable, write your answer in the space provided
2. Where applicable, multiple answers are allowed

N/B: Please do not write your name on this questionnaire sheet.

Section A: Demographic data

1. What is your gender?
(a) Male (b) Female
2. What is your age?
3. What is your programme?
Certificate
Diploma
4. What is your year of study?
5. Where do you reside?
Resident
Non-Resident

Section B: Successful Mentorship

1. Do you have a mentor in the department?
a) Yes b). No
2. Have you had any mentoring sessions or meetings with your mentor?
a) Yes b) No
c) I don't have a mentor
d) Other specify

.....

.....
.....
.....
.....

3. Did you discuss with your mentor how mentorship should take place?

- a) Yes b) No
- c) I don't know of the programmeme
- d) Other specify

.....
.....
.....

4. Did you establish a written plan for goals to be met?

- a) Yes b) No
- c) I don't know of the programmeme
- d) Other specify

.....
.....

5. How often do you meet with your mentor?

- a) Weekly b) Monthly
- b) Others (Specify)

.....
.....
.....
.....

6. Are you satisfied with the frequency and duration of the meetings?

- a) Yes b) No

Give a reason for your answer

.....

7. Do you have a mentorship plan with your mentor?

a) Yes [] b) No []

ii. If yes is the progress documented? a) Yes [] b) No []

8. What are some of the barriers you have encountered in the mentoring relationship with your mentors? (Tick the statement(s) that applies

(1) Lack of adequate time to meet my mentors.

(2) Lack of clear understanding of my mentorship role.

(3) Unavailability of mentors.

(4) The roles of the mentors are not clear to me.

(5) Lack of support from my mentors.

(6) Any other (specify)

.....

For this part, use the following key:

(1) Never (2) Seldom (3) Acceptable (4) Almost always (5) Always

1	Is your mentor accessible and available?	1	2	3	4	5
2	In case of any professional activities outside the institution, does your mentor facilitate your participation?					
3	Do you get connections to other lecturers or mentors who could fill in the gaps in areas where your mentor could be less skilled?					
4	Does your mentor provide constructive criticism on teaching, skills lab practice, research, or other situations?					

9. To what extent does the mentoring relationship meet your expectations?

a) Satisfied b) Not satisfied

b) Other specify

.....
.....
.....
.....
.....

Section C: Awareness of Mentoring

1. Are you aware of any mentorship programme in the department?

a) Yes b) No c) Don't know

2. Do you have a mentor?

a) Yes b) No c) Don't know

3. If your answer is **Yes** in question 2 above, who is your mentor?

a) Lecturer b) Pastor c) Fellow students

4. Based on your response to question 3 above, what is mentorship?

Please put a tick at the end of each statement on the level that best describes your response using the following key:

1. **Yes,** 2. **No**

Yes

No

- 1 Pairing students with adult volunteers or older students who provide friendship, guidance, and support
- 2 A supportive relationship established between two individuals
- 3 Coaching, counseling, and sponsoring are included in mentorship
- 4 The provision of model performance by persons with wisdom

Section D: Impact of Mentorship Programme on Academic Performance

1. Has your faculty mentor shown a genuine concern for you and treated you with respect?
2. Have your faculty mentor guided your educational problem?
3. Have you been advised by your mentor about academic progress?
4. Have you received any adequate support to facilitate your leaning from your mentor?
5. Did your mentor provide constructive feedback about your performance throughout the semester?
6. How has the mentorship programme helped you improve your academic performance?
7. How has the mentorship programme assisted you in understanding the academic routes to achieve your current career goals?
8. Have your mentor provided information about attachment (internship) opportunities?
9. Have your mentor provided information about attachment (internship) opportunities?
10. Mention at least one lesson you learned about your career or professionalism from your mentor.
11. Is your mentor approachable
12. Can you trust your mentor with your social/academic problems?
13. How can you rate your academic performance since the start of your mentorship programme?
14. Is your relationship with the mentor helpful to you?

Section E: Academic Performance of Students in The Department of Medical Engineering

15. Please indicate the extent you agree or disagree with the following statements on academic performance, please use a Likert scale between 1 and 5. 1= strongly disagree (SD), disagree (D), Neutral (3), Agree (4), strongly agree (5).

Statement

SD=1 D=2 N=3 A=4 SA=5

I have increased my confidence in class as a result of mentorship

I normally complete all my assignments in class as a result of mentorship

I participate more in class discussions as a result of mentorship

My grades in class have improved due to mentorship classes

16. Please indicate your overall score on whether you participated in mentorship and the score you obtained

Yes (), if yes what is your overall/mean Score in the last exams?

Less than 40 ()

Between 40 and 49 ()

Between 50 and 59 ()

Between 60 and 69 ()

Higher than 70 ()

No (), if No what is your overall/mean Score in the last exams?

Less than 40 ()

Between 40 and 49 ()

Between 50 and 59 ()

Between 60 and 69 ()

Higher than 70 ()

Appendix VI: Interview Guide for The Programme Coordinators

Interviewer..... Date.....

Position of the respondent.....

Questions.

1. Is there a formal mentorship programme in the department?
2. How long has mentorship been practiced in the department?
3. How are students introduced to the mentorship programme in the department?
4. How are students introduced to their mentors in the department?
5. Is there a policy on mentorship in the institution?
6. How is the policy communicated to staff and students?
7. Are you a mentor in the department?
8. Why do you think mentorship is important to your mentors?
9. What is the best part of being a mentor?
10. What is the downside of being a mentor?
11. What are some of the benefits of the mentorship programme to the institution?
12. What are the current hindrances that the mentorship programme is facing?
13. What should be done on the hindrances?
14. Are there efforts made to recognize and appreciate mentors in the institution?
What are some of the efforts?

Appendix VII: Similarity Report

Agatha Akinyi's Thesis

ORIGINALITY REPORT

15%

SIMILARITY INDEX

14%

INTERNET SOURCES

3%

PUBLICATIONS

3%

STUDENT PAPERS

PRIMARY SOURCES

1

pdfs.semanticscholar.org

Internet Source

5%

2

www.iosrjournals.org

Internet Source

2%

