FACTORS INFLUENCING SELF-DIRECTED LEARNING READINESS AMONG NURSING STUDENTS IN MEDICAL TRAINING COLLEGES IN SIAYA COUNTY, KENYA

Moses Juma Abiri

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DECLARATION

This thesis is my original work prepared with no other than the indicated sources and support and has not been presented elsewhere for a degree or any other award.

Signature……..……... Date…….……

Moses Juma Abiri

HNR/G/01-53834/2019

CERTIFICATION

The undersigned certify that they have read and hereby recommended for acceptance of Masinde Muliro University of Science and Technology a thesis entitled, "**Factors Influencing Self-Directed Learning Readiness among Nursing Students in Medical Training Colleges in Siaya County, Kenya".**

Signature…… Date……

Dr. Damaris Ochanda

Department of Nursing Research, Education and Management

Masinde Muliro University of Science and Technology

Signature……. Date……...

Dr. David Kaniaru

Department of Health Professions Education (Medical)

Masinde Muliro University of Science and Technology

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DEDICATION

I dedicate this research work to my family, whose unwavering support has been a constant source of strength throughout this research journey.

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ABSTRACT

Self-directed learning readiness represents an individual's capacity and willingness to take charge of their learning journey. Regular assessments of self-directed learning readiness are crucial to gauge its effectiveness within any educational program. Moreover, evaluating self-directed learning readiness is pivotal for educational planning, aiding in selecting appropriate instructional methods tailored to students' academic strengths and weaknesses. Despite integrating self-directed learning into the curriculum of Kenya Medical Training College (KMTC), little is known about the readiness for self-directed learning among students in the institution. This study aimed to evaluate factors influencing self-directed learning readiness among nursing students enrolled in Medical Training Colleges in Siaya County, Kenya. The study adopted a cross-sectional analytical study design and collected mixed-method data. The study included 271 female respondents (67.1%) and 133 male respondents (32.9%). The results revealed that nursing students undergoing training at Kenya Medical Training Colleges in Siaya County exhibited a high level of self-directed learning readiness, with a mean score of 157.2. Whereas, the mean scores for self-management, desire for learning, and self-control were 51.2, 47.4, and 58.6, respectively. Notably, the study found no noticeable differences in self-directed learning readiness between the two campuses ($\chi^2 = 0.001$, $p = 0.971$). The findings underscored the significance of self-directed learning mentorship as one of the most influential factors influencing self-directed learning readiness. Students who received self-directed learning mentorship displayed a substantially higher adjusted odds ratio (aOR) of 0.471 (95% CI=0.239-0.926; p=0.029) compared to those without mentorship. Additionally, ownership of a functional laptop emerged as a significant determinant, with students lacking access to one exhibiting a significantly lower aOR of 0.486 compared to laptop owners (aOR=0.486; 95% CI=0.238-0.992; p=0.047). Lack of laptop access appeared to correlate with reduced readiness for self-directed learning. Furthermore, the source of school fees played a pivotal role, with students receiving scholarships having substantially lower aORs compared to those whose guardians covered their school fees (aOR=0.276; 95% CI=0.077-0.99; p=0.048). This study revealed that nursing students in Siaya County's medical training colleges exhibit high readiness for self-directed learning, emphasizing their inclination toward autonomous education. Individual factors like financial stability, technological resources, and prior exposure to self-directed learning were discernible influencers, alongside institutional factors such as internet access and self-directed learning mentorship. These results underscore the importance of cultivating self-directed learning strategies within nursing education and addressing both individual and institutional factors to empower future nursing professionals for independent and successful healthcare practice. Consequently, this study recommends the continuity of the current approach, emphasizing the strengthening of mentorship strategies for self-directed learning. Additionally, the installation of reliable internet/wi-fi connectivity accessible to students at all times is also recommended to enhance their educational experience.

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LIST OF ABBREVIATIONS AND ACRONYMS

aOR Adjusted Odds Ratio

BScN Bachelor of Science Nursing

HOD Head of Department

ICN International council of nurses

ICT Information, Communication, and Technology

KCSE Kenya Certificate of Secondary Education

KII Key Informant Interview

KMTC Kenya Medical Training College

KRCHN Kenya Registered Community Health Nurse

MMUST Masinde Muliro University of Science and Technology

MOH Ministry of Health

NACOSTI National Commission for Science Technology and Innovation

NCK Nursing Council of Kenya

REF.NO Reference Number

SAGA Semi-Autonomous Government Agency

SCL Student-Centered Learning

SDG Sustainable Development Goals

SDL Self-Directed Learning

SDLR Self-Directed Learning Readiness

SDLRSN Self Directed Learning Readiness Scale for Nurse Education

SW Shapiro-Wilk test

TVET Technical and Vocational Education and Training

UNESCO United Nations Educational, Scientific and Cultural Organization

UNICEF United Nations Children's Fund

USA United States of America

WHO World Health Organization

OPERATIONALIZATION OF KEY TERMS

Faculty -Persons charged with the responsibility of planning, designing, and developing relevant teaching materials for classroom teaching of nursing students and also Setting, administration, and making of examination

Key informants- nursing lecturers played who played a critical role in providing expert opinions, sharing valuable experiences, and contributing to the understanding of the subject matter**.**

Medical training college—Tertiary institution involved in the training of middle-level health professionals.

Nursing students -Persons admitted in a diploma of community health nursing program for three (3) years

Resources- teaching and learning materials including textbooks

Self-directed learning - Method of instruction in which students take charge of their education to meet the goals of the course.

Self-directed learning readiness -Level of ability and willingness where student take responsibility for their learning process, determine their learning goals, and select appropriate resources to achieve their learning objective

CHAPTER ONE

INTRODUCTION

1.1 Overview

This chapter outlines the research by detailing the background of the study, defining the problem at hand, and setting the study's objectives. It includes the research questions that guide the inquiry and justifies why the study is important. Additionally, the chapter presents the theoretical and conceptual frameworks that support the research, offering a foundation for understanding and analyzing the study's focus.

1.2 Background to the Study

Self-directed learning (SDL) has drawn global interest as a successful teaching strategy that may be included in healthcare professionals' curricula and regularly promotes favorable learning results (Al Moteri, 2019; Hill *et al.,* 2020). Whether working independently or with support, self-directed learners identify their learning requirements, define specific goals, locate pertinent individuals and resources, select useful learning techniques, and track their progress. By placing students at the center of their educational journey, it represents a significant shift from traditional instruction paradigms in which teachers serve as the main information source (Bosch, 2017; Boyer, Edmondson, Artis, & Fleming, 2014).

Given the increased need for self-directed learners who regularly meet their learning objectives in the 21st century, the promotion of SDL in medical education has become a global priority (du Toit-Brits, 2019; Guglielmino, 2013). The World Health Organization (WHO) has acknowledged this change and suggested that SDL modalities be included in nursing curricula globally (WHO, 2009). Furthermore, to include SDL into the curriculum effectively and efficiently, nurse educators need to

have a solid foundation in adult learning theories and principles, which are an essential element of SDL (WHO, 2016). However, the learner's readiness for this type of instruction plays a major role in determining success in SDL. Studies have shown that students who have lower self-directed learning readiness (SDLR) find it difficult to adjust to SDL, whereas students with high SDLR will benefit from SDL to the maximum (Morris, 2019).

SDLR is the extent of a learner's responsibility to take control of their learning activities (Fisher, King & Tague, 2001). There are significant variations in students' readiness for SDL; some are highly reliant on teachers while remaining almost self-directed, while others are completely independent. Consequently, the best possibility for successful learning is to use a teaching strategy that corresponds with each student's level of readiness for SDL. Previous studies have underscored the importance of assessing SDLR as a fundamental step in educational planning, as it sheds light on students' academic strengths and weaknesses. Furthermore, understanding a learner's SDLR contributes to the creation of educational environments that nurture learner-centered approaches, ultimately enhancing student autonomy and fostering mutual responsibility for lifelong learning (AlRadini, *et al.*, 2022; El-Gilany *et al.*, 2013).

In Saudi Arabia, a study evaluating SDL readiness among 300 medical students at the College of Medicine, Princess Norah University found a mean readiness score of 124. This score indicates a low level of readiness for SDL, suggesting that the students were not adequately prepared for SDL despite its integration into the curriculum (AlRadini et al., 2022). Studies evaluating nursing students' readiness for SDL in six European nations—the Czech Republic, Finland, Italy, Portugal, Slovakia, and

Spain—found that all of these countries had generally high levels of SDL proficiency. Variations between the nations were found to be statistically significant (Visiers-Jiménez et al., 2022).

Similarly, in India, SDL readiness was explored among 130 medical students using the self-directed learning readiness scale (SDLRS). Findings indicated that the mean item score for the desire for learning was notably high, followed closely by self-control and self-management. This suggests that students may require additional support in enhancing their self-management skills to fully embrace SDL (Abraham *et al.*, 2011).

In a related study conducted in Thailand, 272 nursing students completed Guglielmino's Self-Directed Learning Readiness Scale in addition to a questionnaire collecting demographic information. According to Klunklain et al. (2010), the findings showed that participants were generally well-prepared for SDL, especially in the areas of openness to learning opportunities, self-concept as an effective learner, initiative and independence in the classroom, informed acceptance of responsibility for one's learning, creativity, and the capacity to apply critical study and problem-solving skills. However, in South Africa, Mahlaba (2020) believes that to enhance academic performance, teaching and learning in higher education establishments should concentrate on helping students develop their SDLR.

Although there are few other studies conducted on readiness and factors influencing SDL among students elsewhere (Mahmud, Hardaker, & Venkatasalu, 2020; Premkumar *et al.*, 2018), there is limited evidence on this in the Kenya Medical Training College (KMTC), which is critical in producing over 80 percent of Kenya's nursing workforce. This study intends to evaluate Kenya Medical Training College's readiness for SDL and determine the factors influencing this readiness.

1.3 Statement of the Problem

Given the disruptive effects of the COVID-19 pandemic, which established remote teaching and learning as the new norm in many countries, students' ability to engage in self-directed learning has become crucial for their academic achievement and future development. The ability to cultivate self-directed learning skills not only safeguards the continuity of healthcare education and training worldwide but also empowers students to take charge of their educational journey, foster knowledge acquisition, boost their motivation for learning and accomplishment, and propel them toward the realization of their career aspirations (International Council of Nurses, 2021).

On a global scale, the integration of self-directed learning within nursing education has been instrumental in equipping students with the continuous learning abilities necessary to evolve into autonomous learners, thus preparing them to deliver competent care within intricate healthcare environments (Kaulback, 2020; Rascón-Hernán *et al.*, 2019; WHO, 2009). The Kenya Medical Training College (KMTC) has embraced the pedagogical philosophy of self-directed learning in its diploma program for community health nursing. This curriculum divides each academic year into two semesters, with each week comprising 30 hours of theoretical instruction alongside 5 hours dedicated to self-directed learning. Furthermore, learners are expected to integrate the concept of self-directed learning seamlessly throughout their training (KMTC, 2019).

Nevertheless, despite the incorporation of this philosophy into the educational framework, it is observed that students often display reservations towards this approach, occasionally favoring traditional methods of instruction. This preference might be linked to their readiness for self-directed learning, a facet that remains relatively unexplored among nursing students in middle and low-income countries

(Alharbi, 2018; Mentz & Van Zyl, 2018). Previous research has underscored the significance of assessing self-directed learning readiness as a precursor to effective self-directed learning. The successful implementation of self-directed learning hinges on various factors, including learner and institutional characteristics, with an imperative requirement for satisfactory levels of self-directed learning readiness to facilitate acceptance, participation, and satisfaction (Karimi, 2016; Mahlaba, 2020).

It is essential to understand that SDL readiness varies from student to student. To effectively encourage and support self-directed learning, it is important to regularly assess each student's readiness for self-directed learning at different stages or years of their education. This proactive approach enables institutions to take appropriate measures to assist students in achieving their learning objectives (Ejaz *et al.,* 2018; Prabhakar *et al.,* 2020). However, within the context of Kenya Medical Training College (KMTC), there is a notable lack of evidence regarding the readiness for self-directed learning among nursing students. This study aims to address this gap by evaluating the state of SDL readiness among nursing students at KMTC in Siaya County, Kenya.

1.4 Main Objective

To evaluate factors influencing self-directed learning readiness among nursing students in medical training colleges in Siaya County, Kenya.

1.5 Specific Objectives

i. To assess levels of self-directed learning readiness among nursing students of Medical Training Colleges in Siaya County.

ii. To examine individual factors influencing self-directed learning readiness among nursing students of Medical Training Colleges in Siaya County.

iii. To investigate institutional factors influencing self-directed learning readiness among nursing students of Medical Training Colleges in Siaya County.

1.6 Research Questions

i. What is level of the readiness for self-directed learning among nursing students of Medical Training Colleges in Siaya County?

ii. What individual factors influence self-directed learning readiness among nursing students at Medical Training Colleges in Siaya County?

iii. What institutional factors influence self-directed learning readiness among nursing students at Medical Training Colleges in Siaya County?

1.7 Justification of the Study

Self-directed learning (SDL) is a prominent pedagogical approach within the field of nursing education, as emphasized by the International Council of Nurses (ICN, 2020). The achievement of successful SDL hinges upon an individual's readiness for SDLR and complexity of factors influencing SDLR. It is imperative to assess SDLR at various stages and levels of a student's academic journey (Ejaz *et al.*, 2018). This evaluation holds great significance in educational planning, as it aids in tailoring teaching and learning strategies to align with the unique academic strengths and weaknesses of each student.

Kenya Medical Training College (KMTC), renowned as the largest middle-level training institution in East and Central Africa for nursing education, has conscientiously integrated the philosophy of SDL into its basic diploma in community health nursing curriculum (KMTC, 2019). Nonetheless, despite this integration, there is a noticeable dearth of studies evaluating SDLR among students. Such an evaluation is not only a prerequisite for the effective implementation of SDL but also a pivotal factor in its success.

The outcomes of the present study are poised to offer valuable insights to decision-makers at KMTC, the Nursing Council of Kenya (NCK), and educators within the nursing education community in Kenya and beyond. Understanding SDLR stands to enhance students' engagement and satisfaction with their learning experiences, shedding light on both individual and institutional factors that influence SDLR. Furthermore, the findings and recommendations arising from this study can serve as a foundational resource for future research endeavors in this domain.

1.8 Limitations of the Study

The study was anticipated to be subjected to some limitations arising from the study design, sample size, and sampling procedure. For instance, the study adopted a cross-sectional study design, where data was collected at one point (Polit & Beck,2018). The study also employed purposive sampling, a non-probability method for selecting Siaya County. As a result, the study's conclusions cannot be applied to other contexts because of the method of sampling and study design used. However, simple random sampling was employed within the study to select respondents.

Additionally, as with any other self-administered questionnaires, there was the possibility of inaccuracies in the respondents ' responses; this issue was mitigated by employing research assistants who were available to help respondents with any questions they had.

1.9 Theoretical Framework of the Study

This study's theoretical framework was adapted from Candy's (1991) SDL model. Candy put up a model that included the institutional and student control dimensions of SDL. Within the institutional dimension, the teacher has complete authority over the curriculum, the subjects to be studied, and the expected grades of the students. What he called "autodidact," or student control in circumstances, is the second dimension of SDL. In this dimension, the student determines what will be taught, how it will be taught when it will happen, where it will happen, and how the results will be assessed. The autodidactic domain continuum shows how much support a student receives in making decisions regarding their education.

He goes on to state that "self-direction embraces dimensions of process and product (outcome), which are four separates but connected phenomena; - autodidact, student control, personal autonomy, and self-management." Personal autonomy pertains to the distinct qualities that each student possesses, including independence, self-determination, and logical thought processes. The ability and willingness to behave appropriately in different learning environments is known as self-management. Autodidaxy refers to learning outside of official educational settings, whereas student control deals with control over elements of the instructional scenario. According to Candy's concept, the purpose of education is to help students become more self-directed. Students' levels of self-direction may vary depending on the subject matter.

1.10 Conceptual Framework of the Study

This study's conceptual framework was derived from the Candy SDL model (1991). In this study, two interacting dimensions of SDL student control situation and institutional setting are constructed to form individual and institutional factors (independent variables) influencing self-directed learning readiness (dependent variable).

Figure 1.1 is a conceptual framework depicting the association between independent and dependent factors using the two arrows that point to the two variables. Individual factors were examined in terms of; -age, gender, level of study, qualifications, marital status, awareness of SDL, payment of school fees, and ownership of a laptop. Furthermore, institutional factors were examined in terms of; -faculty, ICT, instructional methods, resources and mentorship, and guidance in other learning situations.

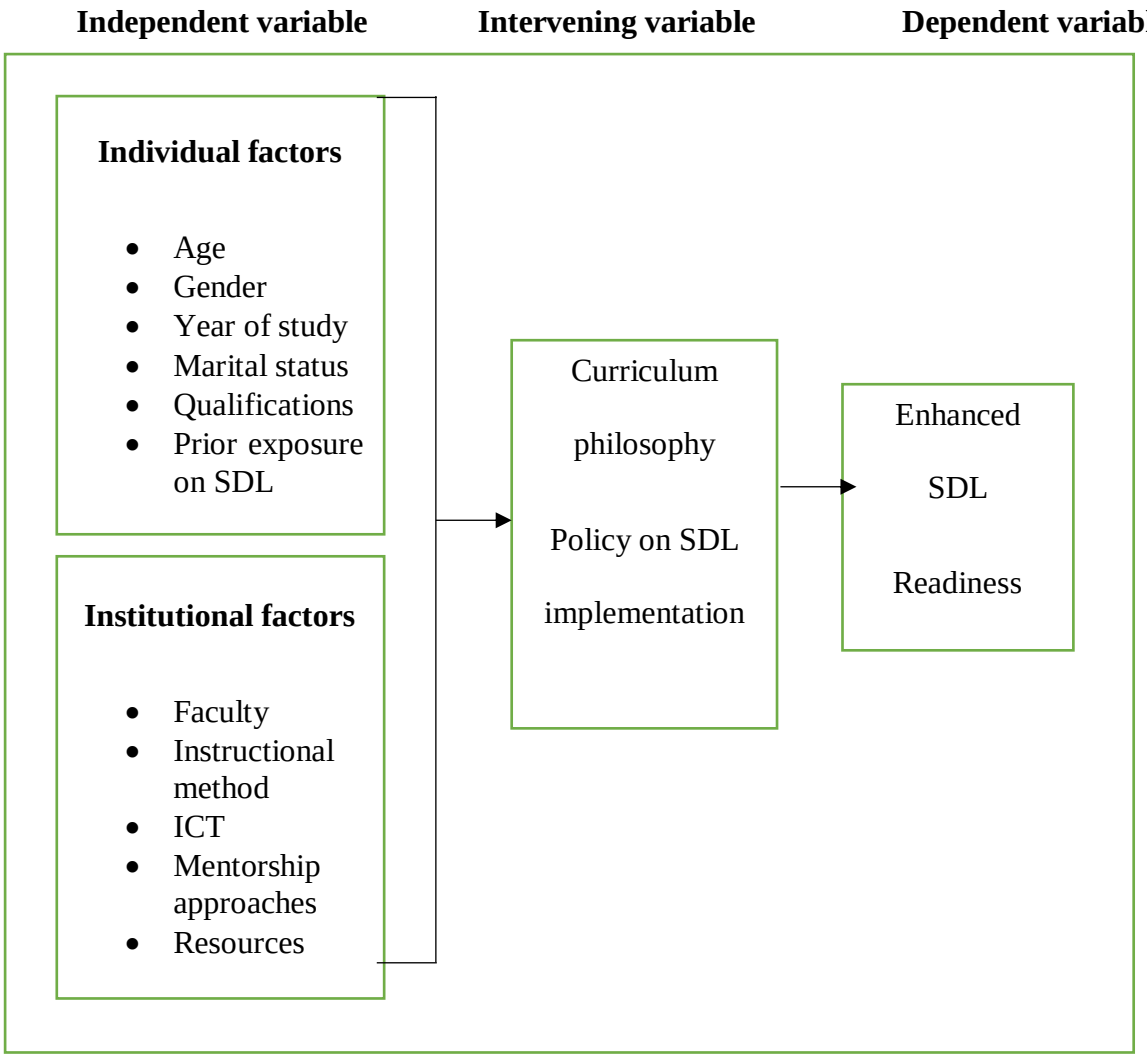

Figure 1.1: Conceptual framework

Source: Researcher, 2023

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview

This chapter presents the study's theoretical review from past research, books, journals, and published papers. This critical review is related to literature pedagogy in nursing education, teacher-centered methods, student-centered learning approach, SDL and SDL models, self-directed learning readiness, and assessment of self-directed readiness. The literature is also reviewed on; - the self-directed learning readiness scale, self-directed learning readiness level, and factors influencing self-directed learning readiness, both individual factors and institutional factors.

2.2 Pedagogy in Nursing Education

There is a dynamic shift in pedagogical approaches in nursing education due to global trends and dimensions which include; -technological explosion, change in student demographics, and the emergence and re-emergence of infectious diseases like the COVID-19 pandemic (International Council of Nurses,2020). The United Nations Educational, Scientific, and Cultural Organization (UNESCO) has advocated the incorporation of innovative teaching and learning strategies, like student-centered instructional methods, in curriculum implementation on an international level. Therefore, the focus needs to be brought back on ‘the learner’, wherein the learner’s strengths are recognized and pedagogies are designed to cater to individual learner needs (UNCESCO,2018). However, it is unlikely that any single teaching style would be effective for all or most students in a classroom. Therefore, faculty must employ a variety of pedagogical methodologies to engage the diversity of learners and the changing trends in nursing education, including SDL (ICN, 2020). The teaching methods utilized in the classroom are broadly classified into two distinct and separate

pedagogical categories: teacher-centered and student-centered (Serin,2018). Previous studies on teaching methods among students have revealed that the majority prefer a hybrid form of teaching, which is a mix of teacher-centered and student-centered approaches or a combination of both (Murphy *et al.*, 2021).

2.2.1 Teacher-Centered Learning Methods

This is a traditional instructional approach whereby, knowledge is transferred from teacher to student under guidance, with an emphasis on the instructor's experience. The teacher also maintains complete control over the learning process of the students (Freire, 2018). The teacher also takes the lead in this method and talks up most of the period in the classroom (Sawant & Rizvi, 2015). It relates to the large-scale dissemination of knowledge from educators to students through lectures, written notes or handouts, and summative testing, such as standardized exams, which evaluate students' retention of the information they have been taught (Freire, 2018)

In teacher-centered activities, learners work independently while the teacher provides feedback or output (lecture). Students get the necessary information from the teacher passively and have little choice over how much they learn. It depends on the teacher's directives, one-sided instruction, and oversight (Emaliana, 2017; Serin, 2018).

Previous studies demonstrated that the teacher-centered approach is the predominant pedagogy, and the great majority of educators continue to use teacher-centered strategies including lectures and additional teacher-directed material for learning like handouts (Muganga & Ssenkusu, 2019).

Deslauriers et al. (2019), on the contrary, found out that students did not gain greater knowledge from lectures in their class and they believed that a more accurate way of evaluating their learning was during active learning. Similarly, professors, tend to utilize teacher-centered approaches to teaching and learning more often compared to student-centered methods (Muganga & Ssenkusu 2019). However, instructor-led instruction, demonstrations, and discussions were not chosen by nursing students as demonstrated by Mathew and Pillai (2016).

This approach to education has faced a lot of criticism. For instance, Paulo Freire saw it as a way to promote oppression, and consequently, he advocated an educational system that gave students a voice by supporting dialogue between them and their instructors and situating educational opportunities within their real-world experiences (Freire, 2018).

2.2.2 Student-Centered Learning Method

In the current worldwide crisis caused by the COVID-19 epidemic, student-centered learning is a preferred teaching and learning technique (World Bank, UNESCO & UNICEF, 2021). This method involves the teacher functioning as a facilitator, helping students develop and reinforce their knowledge while they are engaged in their education. By discussing the material with others and connecting it to what they already know, the students actively participate in their education (Ameliana, 2017).

This method of instruction empowers students to think critically, supports intellectual freedom free from censorship based on ideology, and increases learner self-efficacy. Also, it allows students to actively generate their knowledge through practical experiences and offers them the freedom to choose the activities and evaluations they want to complete (Abualhaija, 2019; Freire, 2018).

In addition to encouraging students to learn and retain more knowledge, the student-centered learning approach also strengthens student cohesion, dissolves barriers between students and teachers, and fosters the development of leadership and problem-solving skills. Additionally, it boosts motivation, student engagement, and the climate for democratic discourse in the classroom (Tamilsevi, 2020). Even in students who are very acclimated to teacher-centered learning, a study by Matsyuma et al. (2019) demonstrated that contextual adjustment toward learner-centered learning increases SDL. Concerning future "self" models, students started to build their self-image, self-reflect, and look for varied learning methodologies in the learner-centered setting.

Previous studies have demonstrated that SDL is a key component of student-centered learning, as it fosters higher test scores, increased engagement, improved learning outcomes, improved critical thinking and problem-solving abilities, and increased motivation. Learners can develop a self-awareness about their capacity to study and gain information through learner-centered programs. Given this, learners are driven to learn on their own as they gain confidence in their abilities (ICN, 2021).

In this type of instruction, teachers provide students with the tools they need to find knowledge on their own. These competencies mostly align with the practical soft skills needed in today's knowledge-based or creative economy, such as creativity, innovation, problem-solving, critical thinking, and teamwork. These abilities, which come from students' active engagement in their education, could potentially provide an escape from oppression and poverty (UNESCO, 2018; Freire, 2018).

2.3 Self-Directed Learning

Self-directed learning (SDL) is an educational strategy in which students take ownership of their learning process, set their learning objectives, choose the resources necessary to meet those objectives, select the learning strategies they prefer, and evaluate their performance. It stands for an individualized, intentional, and developmental learning process (Bosch, 2017). Given that SDL is individualized, it places significant emphasis on autonomy, choice, and self-actualization. According to Morris (2019), learners are perceived as self-sufficient and capable of making thoughtful decisions. They also possess a sense of duty towards both oneself and others, are amiable by nature, aspire to self-actualization, and have an unbounded capacity for development.

The literature on SDL often uses various terms interchangeably to describe SDL, including self-education, autonomous study or learning, self-teaching, self-instruction, individual learning, autonomous self-education, autonomous learning, self-directed inquiry, self-initiated learning, and andragogical learning. This is because there are subtle and inconsistent differences between these terms and SDL (Mahlaba, 2020; Dehnad *et al.*, 2014).

SDL and lifelong learning are emphasized in nursing education and practice to help students acquire the knowledge and mindset needed for the complex trends and aspects in healthcare settings that are always evolving (Al Moteri, 2019; Shen *et al.*, 2014). Additionally, it is essential to adult learning models, as evidenced by the fact that health professionals' curricula worldwide now include it (Cadorin *et al.*, 2015; Green & Schlairet, 2017; Hill *et al.*, 2020). SDL is still developing and is becoming a vital tool for navigating 21st-century life's constant change. According to Qalehsari et al.

(2017) and Loeng (2020), adopting a lifelong learning strategy improves professional competence, educational quality, and nursing care results. Additionally, it's linked to advantages for professional growth and a chance for nursing students to expand their understanding with critical thinking, sensible decision-making, achievement satisfaction, excitement, competence, and increased self-reliance (Shen, Chen, & Hu, 2014).

In addition to traditional teaching methods, self-direction allows students to take control of their learning process, leveraging skills such as resilience, self-control, determination, and dedication to achieve personal educational goals (Jossberger et al., 2018). Research indicates that SDL is a strong predictor of academic success for both teachers and students (Cazan & Schiopca, 2014; Tekkol & Demirel, 2018). Moreover, it enhances learners' problem-solving and reflective abilities, fostering greater innovation (Geng et al., 2019; Servant-Miklos & Noordegraaf-Eelens, 2021). Unfortunately, the adoption of SDL strategies in nursing education has been slower in low- and middle-income countries (Cadorin et al., 2015).

2.4 Self-directed learning models

2.4.1 Long's SDL instructional model

This model offers a framework for instruction that supports SDL and is centered on young learners. The relationship between psychological control and pedagogical control is the main emphasis of this concept. In this concept, the phrase "pedagogical control" describes the extent to which students are allowed to choose their learning objectives, sources, and assessment methods. On the other hand, psychological control is centered on students' readiness to continue having an active influence over their

education. When the two controls are in balance or psychological strength outweighs pedagogical control, a SDL environment is reached (Long, 1989).

2.4.2 Candy's SDL model

According to the model proposed by Candy (1991), students' self-direction in learning is not uniform across different subject areas. The degree to which students are autonomous in their learning can vary significantly depending on the context and nature of the subject matter. For example, a student might exhibit strong SDL skills in a subject they are passionate about or well-versed in, whereas they might struggle to apply the same level of autonomy in a less familiar or less engaging subject. This variability highlights the importance of understanding that a student's self-direction is context-dependent and can shift based on the learning scenario.

Given these variations, educators must be mindful of the fact that students who are self-directed in one area might require additional support and guidance in another. Teachers need to recognize when a student's autonomy might need to be supplemented with more structured assistance. This adaptability ensures that students receive the appropriate level of support tailored to their specific needs and the demands of different subjects.

Moreover, the learning context plays a crucial role in the effectiveness of SDL. When students are engaged in multiple fields of study, their diverse interests and skill sets can influence their capacity for SDL. For instance, a student's enthusiasm for a particular subject can enhance their motivation and ability to work independently, while a lack of interest in another subject might necessitate more direct instruction and guidance. Therefore, educators should consider these contextual factors when

implementing SDL strategies to ensure that all students are supported in achieving their full potential across various disciplines (Candy,1991).

2.4.3 Brockett and Hiemstra's Personal Responsibility Orientation (PRO) model

Self-directed learning (SDL) has two elements, which are represented by the PRO model: personal responsibility in the teaching-learning process and personal responsibility in one's thoughts and behaviors. First, SDL is understood as a procedure where students take the lead in organizing, carrying out, and assessing the learning process. SDL is a goal that centers on a learner's preference or desire to take ownership of their education in the second dimension. Following the concept, people remain in charge of how they respond even when they are incapable of their surroundings. Furthermore, emphasized are the social components of learning and the fact that learners do not learn in isolation (Brockett & Hiemstra, 1991).

2.4.4 Garrison's SDL Model

Motivation, self-monitoring, and self-management are all integrated in Garrison's (1997) theoretical model. "In practice, they are intimately connected," he thought, even though each of these dimensions "is discussed separately." According to Garrison, SDL is "an approach where learners are motivated to assume personal responsibility and collaborative control of the contextual (self-management) and cognitive (self-monitoring) processes in constructing and confirming a meaningful and worthwhile learning outcome." Initiating and sustaining learning processes depend heavily on motivation. Motivation is divided by Garrison into two categories: task motivation and entering motivation. Entering motivation signifies the intention to act and a commitment to a specific objective. The inclination to concentrate on and stick with educational tasks and objectives is known as task motivation. According to him, for students to achieve their learning goals, they must take charge of the learning

environment. He described students' ability to keep an eye on their cognitive and metacognitive processes as self-monitoring. Additionally, this model incorporates the views of SDL as a process of learning and a personal quality (Garrison, 1997).

2.4.5 Oswalt's Model of SDL

Oswalt (2003) analyzed various assumptions of SDL and identified nine fundamental ideas related to SDL. The nine concepts include opportunity, support, collaboration, motivation, context, cognitive skills, content and SDL skills, and willingness to take charge of one's learning. Although he acknowledged the value and advantages of the current models, he maintained that they each only offered a limited perspective on SDL. The full SDL process is welcomed and a more comprehensive understanding of SDL is presented when all nine components are considered collectively.

Oswalt's model classifies the nine SDL ideas that have been established into three main groups: learning scenarios, learning components, and student qualities. Opportunities, encouragement, and teamwork are all present in learning environments. The amount of commitment the facilitator has to promote SDL in the learning environment is what he described as chance. Facilitators who are willing to encourage and allow students to take charge of their learning will be essential in promoting SDL. The degree to which the facilitator offers knowledge, direction, and resources for the learning environment is included in his definition of support (Oswalt, 2003).

Learning attributes integrate content skill, SDL skill, and 'willingness to direct one's learning. He opines that the student's skill level in a content area will directly impact their ability to control their learning within that specific content area. He further states that students will be more willing to take charge of their learning if they have

developed a prior understanding of basic concepts or mastered basic skills in a specific area (Oswalt,2003).

The environmental, cognitive, and motivational aspects of learning are the elements of learning that Oswalt (2003) mentions in his model. According to Oswalt (2003), "critical self-reflection on [both] the individual's learning process and the knowledge and skill the [student is attempting] to master" is one of the mental parts of learning. Self-efficacy and volition are two of the motivating forces. The term self-efficacy describes a student's level of confidence—or lack thereof—in their capacity to succeed or fail. According to Oswalt (2003), discretion also refers to a student's capacity to focus on assignments despite outside distractions. Peers, resources, and other outside elements of the learning environment that the learner has control over are examples of contextual factors. To be an effective self-directed learner, a student has to accept responsibility for all of the previously listed elements. SDL is a process of finding personal meaning in learning materials and procedures with the assistance of others rather than an isolated activity (Oswalt 2003).

2.5 SDL Readiness

Implementation of SDL in any program requires a high level of self-directed learning readiness (SDLR). The capacity and willingness to take charge of one's education is termed as SDL readiness (Hain, 2020). It measures the extent to which the learner accepts autonomy and the ability to study what they deem essential which is based on their capacities, attitudes, and personality traits (Morris, 2019). Assessment of students' preparedness for SDL is essential for instructional design since it helps choose the right teaching strategies based on the academic strengths and limitations of each student (AlRadini *et al.,* 2022).

SDL has been incorporated into the curriculum of the Kenya Medical Training Colleges, with the expectation that students will be independent during their three-year study (KMTC, 2019). However, integrating SDL into the curriculum without first determining whether learners are prepared hasn't always worked, as noted by Levitt-Jones (2005). Unprepared teachers and unprepared students are linked to the indiscriminate use of SDL, which exacerbates student discontent throughout implementation.

Self-directed learning readiness is linked to certain presumptions. Firstly, adult learners are highly prepared for SDL; individuals differ in their level of readiness for SDL based on their age. Secondly, developing self-directed preparation is difficult. SDL preparedness is influenced by several things. To comprehend and demonstrate self-directed conduct, the ideal approach is to learn and practice autonomous behavior. Finally, demonstrating SDLR in one context is deemed highly individualized and representative across the continuum, and it may be applied to different surroundings and situations. Accordingly, research indicates that when students with low SDL readiness are given an SDL assignment, they exhibit high levels of anxiety that are comparable to the reactions of students with high SDL readiness when they are given environments with more structure and guidance from teachers (Mahlaba, 2020).

Students' readiness for SDL varies. For example, an analysis of earlier research (Chakkaravathy *et al.,* 2020; Ors, 2018; Samarasooriya, Park, Yoon, Oh & Baek, 2019) revealed a significant degree of SDLR among nurses worldwide. Desire to learn was found to be the highest of the three SDLR subscales, followed by self-control and self-management. These results, however, are at odds with those of Alkorashy and Assi (2016), who found that nursing students had a low SDLR score. However, there

were also notable disparities between gender and SDLR, with male nurses having lower SDLR levels than female nurses (Ors, 2018). The finding contradicts the findings of Chakkaravathy et al. (2020), who found that SDLR was correlated with demographic characteristics such as age, marital status, and academic background but not gender. This finding is also influenced by several other factors that this study aims to investigate.

2.6 Determining SDL Readiness

Various scales have been employed in different medical and nursing professional training environments to evaluate students' readiness for SDL. The Oddi Continuing Learning Inventory (OCLI) measure, for example, was administered to seniors in college who were enrolled in a private university in Kenya. According to the scale's results, the respondents are highly prepared for SDL. However, age, program duration, and total GPA were found to have small but significant relationships with overall SDL scores (Kungu *et al.*, 2010). A study conducted in Spain found that undergraduate sample students in the fields of psychology, physiotherapy, medicine, and nursing were well-prepared for SDL. Rascón-Hernán et al. (2019) found that there were associations between degree courses and SDL readiness in the subscales measuring learning planning, desire for learning, self-confidence, self-management, and self-evaluation. Results of a multi-institutional research of undergraduate paramedic students in Australia revealed that these students, who attended four different Australian institutions, were sufficiently prepared for SDL, (Williams *et al.*, 2013). Guglielmino's (1977) SDL readiness scale is an additional instrument utilized in the evaluation of SDL preparedness. Using the Delphi method, 58 Likert-type items were developed for this self-report questionnaire with expert assistance. There were fourteen SDL experts in the expert group. Malcolm Knowles and Allen Tough, two

important figures in adult education, were among the specialists. The eight components of SDL were identified by Guglielmino's model as follows: a positive outlook on the future, creativity, openness to learning opportunities, self-concept as an effective learner, initiative, and independence in learning, informed acceptance of responsibility for one's learning, love of learning, and the capacity to apply fundamental study and problem-solving skills.

Guglielmino's SDLRS simply assesses how much an individual believes they embody the knowledge, abilities, and dispositions associated with SDLR. Fisher's scale was created to address the numerous difficulties with the validity and reliability of Guglielmino's scale and make it freely available. The tool's validity and reliability have numerous faults that need to be fixed. Several research has validated the tool (Abraham *et al.,* 2011; Bridges *et al.,* 2007; Fisher and King, 2010; Fisher *et al.,* 2001; Huynh *et al.,* 2009; Kocaman *et al.,* 2009; Smedley, 2007; Williams *et al.,* 2013). This study will employ the SDL readiness scale, which is suggested for evaluating SDL readiness in nursing education (Fisher *et al.,* 2001), even though numerous tools have been employed to assess the level of readiness for SDL within varied cadres in developing countries**.**

2.6.1 SDL Readiness Scale for Nursing Education

The self-directed readiness scale was developed by Grace Tague, Jennifer King, and Murray Fischer in 2001 for use in nursing education. It is used by educators worldwide to diagnose students' attitudes, aptitudes, and personality traits that are required for SDL. The tool also aids in determining whether students can pursue SDL (Kumar, *et al.,* 2021).

This instrument was created in two phases by Fisher et al. (2001). A panel of eleven nurse educators with experience in SDL research evaluated the content and construct validity of many items that indicate preparedness for SDL in the first stage of the study using the Delphi technique. Every panelist was asked to score each item's significance on a Likert scale in their own right. In the second phase of development, the questionnaire was given to twenty-one (201) University of Sydney undergraduate nursing students as a convenience sample size.

The construct validity, internal consistency (reliability), and one-dimensionality of the scale were then assessed using principal components factor analysis with varimax rotation, Cronbach's coefficient alpha, and item-to-total correlations, in that order. The tool is an effective research and teaching tool since nurse educators may access it easily. Nurse educators can diagnose students' learning requirements and use the most effective teaching tactics by using the scale. The instrument comprised forty items categorized into three subscales: characteristics of self-control or the ability to control one's learning (15 items); desire for learning (12 objects); and self-management (13 items), which suggested the attributes and ability to manage one's learning (Fisher's *et al.*, 2001).

2.6.1.1 Self-management subscale

A key component of self-management is individual effort that enables students to identify their ability to achieve their goals. It depicts the person having control over a certain area of their decision-making and chosen actions. The individual must perform the necessary actions and identify particular behaviors that are connected to the goals that have been specified. Self-management, a subscale of SDL preparedness, is concerned with how well students study and acquire logical and ordered thinking skills

as well as the self-control to prioritize their studies. Among these is the capacity for metacognition, in which students ponder carefully what they must learn to meet their learning objectives (Qamata-Mtshali, 2012).

2.6.1.2 Desire to learn subscale

A student's ability to actively create knowledge and study on their own is demonstrated by their desire to learn about SDL readiness. To favorably and pleasantly meet their realistic learning needs, is related to the students' motivation levels and capacity to seek out new information. Students who show an intense desire to learn are confident and cognizant of their strengths and weaknesses in terms of their study techniques. It covers characteristics including desiring to acquire more new information, feeling confident in one's ability to search for information, enjoying studies with high expectations, and asking for help to solve problems (Fisher *et al.*, 2001).

2.6.1.3 Self-control subscale

It refers to students' capacity for discipline, intrinsic will to learn, and ability to take charge of organizing their own educational experiences. Associated with taking ownership of decision-making and learning evaluation, it also involves students creating goals and locating, utilizing, and addressing learning needs through relevant resources (Williams *et al.*, 2013). According to a study by Mohoaduba (2018), self-control is rated above learning desire and self-management. This was in line with a Turkish study on the effects of SDL readiness, which involved 162 second-level nursing students and used Fisher's SDL readiness scale (SDLRS) to measure students' preparedness for SDL. The study found that taking a web-based course improved the students' ability to take charge of their education (Senyuva & Kaya, 2014).

2.7 SDL Readiness Levels

There are various levels of SDL readiness depending on scales used to measure readiness; for instance, Lucy M. Guglielmino in l977 developed a SDL Readiness Scale (SDLRS), a self-report questionnaire with 58 items and 5 Likert-type scores. The tool is designed to measure the complex attitudes, skills, and characteristics that comprise an individual's current level of readiness to manage their learning. The scale has a minimum score of 58 and a maximum of 290, and the levels for SDL readiness are categorized depending on scores; that is, a score of 58 to 201 is below average level, a score of 202 to 226 is average level and a score of 227 to 290 is above average level. Persons with a high level of SDL readiness usually prefer to determine their learning needs and plan and implement their learning. This does not mean that they will never choose to be in a structured learning situation. They may select traditional courses or workshops as a part of a learning plan. Persons with an average level of SDL readiness are more likely to be successful in more independent situations. Still,

they are only somewhat comfortable handling the entire process of identifying their learning needs and planning and implementing the learning. Persons with below-average levels of SDL readiness usually prefer structured learning options such as lectures and traditional classroom settings (Guglielmino, 1977).

Levels of SDL readiness is also derived from using a self-rating scale of SDL. The self-rating scale of SDL comprises 60 questions within five dimensions. Each dimension contains 12 question items. The responses for each item are rated using a 5-point Likert scale ranging from always to never. The self-rating scale of SDL score ranges from 60 to 300. Low level SDL ability range is 60 to 140, moderate level is 141 to 220, and high level is 221 to 300 (Williamson,2007).

Fisher et al. (2001) also developed a scale to assess levels of SDL readiness. Level of readiness assists nursing educators in developing curricula and implementing teaching strategies that best fit the students' current SDL readiness. The levels are based on a 40-item questionnaire employing a 5-point Likert scale ranging from strongly disagree to strongly agree. The total score varies from 40 to 200. Elevated scores signify a greater degree of SDLR. Mean scores of 150 or below signify low SDLR.

Studies on levels of SDL readiness among nursing students have yet to be carried out in countries such as Australia, China, Pakistan, Saudi, and India. For instance, in a study conducted in Australia by Smedley (2007) on first-year bachelor of nursing students to determine SDLR levels, the total mean score was 151.09; thus, high levels for SDLR and subscales were 44.26, 47.31, and 58.98 on self-management, Desire for learning, and self-control, respectively. A study conducted in Pakistan by Said et al. (2015) on nursing students' readiness for SDLR revealed that approximately sixty

percent of second-year students from four different universities were prepared for SDL. The subscale scores for self-management, self-control, and learning were 48 ± 8.4, 58.2 ± 11, and 47 ± 8, respectively, contributing to the overall mean SDLR score of 153 ± 25. A comparable study conducted in Saudi Arabia, however, found that approximately 77 percent of students had high levels of SDLR.A study by El-Gilany & Abusaad (2015) reported that the mean scores for the subscales were 51.3 ± 5.9 for self-management, 48.4 ± 5.5 for desire for learning, and 59.9 ± 6.7 for self-control. The overall mean SDLR score was 159.6 ± 13.8. In contrast, a study carried out in China found that nursing students from three universities had a mean SDLR score of 148.55 ± 18.46. The study found that the self-management subscale had the lowest mean score of 46.60 ± 6.86, and the desire for learning subscale had the highest mean score of 45.40 ± 6.52 (Yang & Jiang, 2014).

2.8 Factors Influencing SDL Readiness

The availability of a supportive family environment and an academic environment that encourages good achievement can motivate students to achieve academic success, boost their interest in learning, and prepare them for SDL, according to a studyS by Ramli, Muljon, and Afendi (2018). The results from this study corroborate those of Taheri et al. (2015)'s research conducted at Guilan University of Medical Science, which indicates that the academic atmosphere of universities plays a major role in influencing achievement motivation due to sociocultural factors. Still, a related study conducted in 2012 by Mustafa and Zalim showed that situational factors—such as the influence of teachers, families, and curricula—are what shape students' interests. For each learner and every learning environment, self-direction is best understood as a continuum (Morris, 2019). Metacognition, motivation, self-efficacy, past formal and informal learning experiences, and topic area interest all have an impact on a learner's

readiness and inclination to participate in SDL activities. These factors also vary from person to person. SDL practices will be appropriate for certain students in a typical classroom but not for others. Thus, educators play a crucial role in assisting students in acquiring and utilizing SDL techniques Regarding other studies, there are three main obstacles to the development of nursing students' SDL abilities: the situation (passive teaching methods could make the nursing student a passive learner), the person (nursing student's dependence and lack of self-confidence), and the process (learning/teaching experience). Furthermore, students' capacity to apply self-direction in learning is impacted by contextual elements such as cultural, social, and educational contexts, the effect of past experiences, and self-concept (Behar-Horenstein *et al.*, 2018; Al Moteri, 2019).

2.8.1 Individual factors influencing self-directed learning readiness

SDL readiness is influenced by various factors, for instance in an observational descriptive cross-sectional study at the University of Gerona in Spain, which included 865 undergraduates pursuing psychology, physiotherapy, medicine, and nursing showed that females outperformed males, and preparation for SDL varied by gender and academic year (Rascón-Hernán et al. (2019). However, different results were found on the role of age on preparation for SDL in other studies. Williams, et al., (2013) concluded that SDLR escalates with age. However, it was shown in Gilany & Abusaad's (2012) study that the majority of students (77%) had a level of SDL preparation that was independent of their demographic makeup.

However, there were no significant differences in the SDL overall score in the various levels of the following demographic variables: gender and marital status among college seniors enrolled in the same private Kenyan University (Kungu *et al.*, 2010).

In our study, individual demographic characteristics will be explored and compared with the readiness scores to determine how they could affect the student readiness for possible support for the innovative SDL uptake.

A study on examination of SDL readiness of paramedics by William et al.., (2013), found that older learners are more prepared for SDL tasks. Gilany and Abusaad (2012) however, found that a significant portion of students (77%) had a level of preparedness for SDL that was independent of their demographic makeup. Gender and marital status did not significantly affect the overall score for SDL across different levels of these demographic characteristics. In China-based study, advanced nurse practitioner students' clinical practice SDL must be enhanced by meeting their unique demands for belongingness and high self-esteem (M. Kim & Park, 2011). Therefore, for nursing students to have strong returns on SDL, other high-order needs must be met in addition to the demographic specifications. The purpose of the study is to investigate the potential effects of individual demographic features on student readiness for potential support for innovative SDL uptake by comparing the readiness scores with the characteristics.

2.8.1.1 Age influence on SDL readiness

The cognitive qualities required to sustain functional independence, such as picking up new skills, are frequently linked to aging. While teaching tasks involving associative binding are likely to be badly affected, many aspects of motor learning seem to be well-preserved with age (Clark *et al.,* 2015). However, according to Knowles (1990), people learn best when they're ready to, and as they become older, they become more independent and capable of learning on their own. Prior research indicated that an increased capacity for SDL was linked to both age-related maturity

and the participation of older students in academic courses. After finishing their secondary education, many students enroll directly in nursing schools. Learners' willingness to assume control varies according to their aptitude, disposition, and personal traits (Fisher *et al.*, 2001; Qamata-Mtshali, 2012). Nevertheless, an Australian study on readiness for SDL revealed no statistically significant difference in the mean age associated with SDL readiness, and the age-related association between SDL readiness and preparedness was statistically negligible (Mohoaduba, 2018).

2.8.1.2 Gender influence on SDL readiness

The biggest gender gap is found in nursing practice and education (Dyck, Oliffe, Phinney, & Garrett, 2009). According to the WHO report on the condition of nursing worldwide, women make up the majority of nurses, which lends credence to this viewpoint (WHO, 2020). Because more women than men enroll in nursing programs, the belief that nursing is a job more suited for women serves as a barrier for men who are interested in pursuing nursing education (Muldoon & Reilly, 2003). It has been shown that gender influences educational systems; Huang's (2013) study revealed that female students in North America and Europe had lower levels of academic self-efficacy than male students.

In addition, a survey conducted by Yahya and Javad (2014) revealed statistically significant variations in written performance between male and female students. According to a study on children and adolescents' academic achievement, girls outperformed boys in both writing and reading (Diniz, Piccolo, Couto, Salles, & Koller, 2014). Female students showed lower levels of academic self-efficacy than male students in a South African study on the subject of electrical and technology

teacher program students' self-efficacy (Mackay & Parkinson, 2008). The study discovered that participation in science-related disciplines was culturally discouraged for female students. But according to Mackay and Parkinson (2008), male students were culturally encouraged to enrol in these courses. Females have a higher SDLR than males, which has an impact on the gap in nursing training between the sexes. In contrast, mean scores for SDL related to gender did not exhibit any statistical significance in a study conducted to assess fourth-year nursing students' preparedness for SDL at a public nursing college in Gauteng Province (Slater, *et al.*,2018; Mohoaduba,2018). The mean SDRL scores of all students were 156.65 ± 20.74, according to another study done in Turkey on the SDLR levels of nursing and midwifery students; females scored higher at 158.25 than males at 149.74 (Örs M, 2018).

2.8.1.3 Student year of study influence on SDL readiness

Requirements for SDL among nursing students in Lahore, Pakistan, are contingent upon the academic year in which the students are enrolled, according to a study by Ejaz et al. (2018). In contrast, first-year junior students were less prepared for self-direction than final-year students. Identifying learners' needs is made easier by distinctions in academic years. Using Guglielmino's SDL Readiness Scale (SDLRS), another study in India assessed medical students' preparedness for SDL. Data was collected from six groups of 452 students at various points throughout their training: at admission, at the end of the first, second, third, and fourth years, and at the beginning of their internship in the undergraduate medicine program. From the first year of school all the way through graduation, the results showed that SDLR decreased across student batches (Premkumar *et al.,* 2018).

2.8.1.4 Student prior qualifications influencing SDL readiness

Research has indicated that nurses possessing a bachelor's degree had a higher level of SDL readiness than those holding a diploma or post-basic certification (Chong *et al.*, 2016; Ors *et al.*, 2018; Kaur et al. 2020 & Chang *et al.*, 2022). A comparison of nurse preparation levels has also been made. Other research, however, has indicated that the student's readiness for SDL was impacted by their academic background before pursuing nursing training (Prabjandee et al, 2013; Mohoaduba, 2018). Additionally, an Australian study involving 67 individuals in the population sample assessed the impact of previous student qualifications on SDL preparedness among first-year Bachelor's program participants. As for prior requirements for SDL preparedness, the study found no statistically significant differences (Smedley, 2007).

2.8.1.5 Student prior exposure to SDL influence on SDLR

The best way to think about self-direction is as a continuum that permeates every learner and circumstance. Furthermore, a learner's readiness and inclination to participate in SDL activities differ from person to person and are influenced by a variety of factors, including motivation, self-efficacy, metacognition, and prior exposure to SDL. Previous exposure to SDL can occur in both formal and non-formal learning environments. Learners who have previous SDL exposure, have shown to have high SDLR, thus they are prepared to use self-directed approaches to learning (Morris, 2019)

Students who have previously engaged in SDL are likely to have a better understanding of what to expect and how to regulate their learning processes. This understanding can help them navigate SDL tasks more smoothly and efficiently. Prior experience with SDL helps students develop foundational skills like goal setting, self-

assessment, and time management. These skills are crucial for effective SDL and can make students more confident and prepared to engage in SDL activities. Exposure to SDL can foster a greater sense of autonomy and independence. Students who have practiced SDL are generally more comfortable with taking responsibility for their learning and are better prepared to manage the challenges that come with it (Park & Choi,2021; Smith & Anderson,2020; Wang & Zhang,2019)

Overall, the literature suggests a positive relationship between prior exposure to SDL and readiness for SDL. Students who engage in SDL early on are generally better prepared for future SDL challenges, although the degree of impact can vary based on several factors, including educational context and personal characteristics.

2.8.2 Institutional factors influencing SDL readiness

It should be recognized that a large portion of the learning process for learners takes place in an institutional context (Candy, 1992). Their desire and capacity to learn are greatly impacted by the administration and teaching staff of the school. Faculty-controlled elements that support or obstruct effective SDL learning include class structure, curriculum design, and the attitudes and characteristics of the teaching faculty (Beckers, Dolmans, & Van Merriënboer, 2016; Douglass & Morris, 2014). Infrastructures, resources, and student incentives are examples of administration-controlled facilitators and obstacles that may act as roadblocks or facilitators to SDL.

Researchers found that access to technology, class size, faculty workload, and course scheduling all had an impact on students' ability to engage in SDL and self-assessment in a study involving 80 upper-level undergraduate students drawn from the College of Business and the College of Health and Human Sciences at a sizable Midwestern university (Douglas & Morris, 2014). Additionally, a second study used a quantitative

research design to determine the student's readiness for SDL and the underlying factors influencing it. Five Indonesian medical schools with integrated SDL strategies into their curricula and comparable establishment dates and curriculum structures were chosen. According to its findings, the teaching strategy used in a classroom helped students become more prepared for SDL (Leatemia, Kerayan & Kelna, 2015). The results of a comprehensive review also highlighted the importance of institutional and curriculum aspects in preparing students for SDL. For example, inadequate time, unsupportive teachers, and a lack of resources such as core course texts can all interfere with SDL (Beckers *et al.*, 2016; Guglielmino and Guglielmino, 1991). There is no research at KMTC on how different institutional characteristics affect nursing students' readiness for SDL, although these factors are thought to be crucial.

2.8.2.1 Information and communication technology influence on SDL readiness

For a SDL strategy to be effective, technology is essential (Douglas & Morris,2014). Telecommunication-based information access technologies are referred to as information and communication technology (ICT). According to Geng et al. (2019), ICTs are now widely used in daily life and are taught in schools. It is a useful tool for encouraging students to take an active role in their education since it supports student-centered learning and methodological diversity. ICTs in the classroom significantly impact how students learn. ICTs can help with the comprehension of information, promote clinical decision-making, foster more autonomy in knowledge searching, and enhance the standard of nursing care delivery in nursing education (Alven *et al.*, 2020).

According to a study by Rashid and Asghar (2016), students' usage of social media, email, smartphones, and the Internet improved their SDL levels. Learners have access to a wealth of knowledge and resources via the Internet, including technology tools or systems that facilitate the creation of a collaborative environment, as well as books, videos, and web pages. A study conducted in India reveals that smartphones significantly enhance education by providing rapid access to essential online resources. This accessibility facilitates immediate information retrieval and supports diverse learning methods, leading to more flexible and efficient educational experiences. In a study on medical students' use of smartphones as learning tools, 96% of participants reported owning smartphones, and 90% indicated they possess the necessary knowledge and skills for their studies (Latif et al., 2019). Additionally, 79.4% of the participants expressed a desire for smartphone applications to be integrated into medical school curricula. Access to online educational resources encourages SDL among students, further highlighting the value of smartphones in education (Latif et al., 2019). Another study by Hamid et al. (2015) found that students

using social technologies for learning can freely acquire new knowledge, underscoring the role of SDL. This research highlighted the benefits of online social networking in education. Furthermore, Al-Hariri and Al-Hattami (2017) emphasized that access to and effective use of technology are crucial for supporting SDL and enhancing educational outcomes in higher education institutions. Technology use and portable digital assistants have become essential components of modern teaching and learning (Hashim, 2018). Many technological tools, such as Dropbox, Google Apps, Twitter, and YouTube, have greatly improved higher education, with a notable impact on nursing education. These tools are now a part of everyday teaching and learning. In the twenty-first century, technology continues to be the foundation of medical and nursing education, with students primarily using it for web browsing, preparing for class, and documenting and recording class activities for referral (Alsayed *et al.*, 2020).

Many studies (MacKay, Anderson & Harding 2017; Márquez-Hernández et al. 2020; Subedi et al. 2020) have emphasized the advantages of technology in nursing education concerning its exponential expansion. Research on the factors influencing SDL readiness with technology in developing countries is lacking, even though studies have mostly concentrated on how technology use affects SDL in developed countries.

2.8.2.2 Instructional strategies influencing SDL readiness

In order to help students become independent learners, teachers should implement teaching strategies that encourage them to take charge of their education (Morris, 2019). The majority of instructional strategies that encourage SDL facilitate agency, responsibility, choice and customization, teamwork, and peer support. Personalized learning, inquiry-based learning, competency-based learning, online and distance

learning, problem-based learning, project-based learning, experiential learning, and self-assessment are examples of common approaches. With these methods, instructors take on a more consultative rather than authoritative position as students complete tailored tasks to demonstrate their abilities (Sale, 2018; Shogren, Wehmeyer, Burke, & Palmer, 2017). Including students in their education also makes it possible for nursing educators to evaluate the methodology's effectiveness and readiness. Sound teaching methods and effective nursing practices are predicated on effective learning techniques (Owens, 2017).

According to a study conducted at Kenya Medical Training College to evaluate classroom teaching strategies during nursing education, nurse educators consistently employed 90% (9) n=10 of the traditional lecture teaching strategies. On the other hand, nurse educators employed creative teaching tactics to a minimal extent. Specifically, they employed 20% (2) n=10 small group discussions, 20% (2) case-based teaching, and 20% (n=2) n=10 humor (Amtamwa *et al.*, 2019). According to Subban (2014), a study conducted to assess the pedagogical teaching styles employed by nurse educators at Kwa Zulu Natal College of Nursing campuses across many courses revealed that the lecture strategy was the most desired approach, with 63.2% of respondents, followed by demonstration at 30.1%.

2.8.2.3 Mentorship approaches influencing SDL readiness

In a mentoring relationship, one individual with higher status, more experience, and more competence instructs, counsels, directs, and supports the personal and professional growth of the other. In nursing education, it is a helpful teaching and learning method. The mentorship responsibilities of nurse educators include knowledge and skill transfer, feedback and assessment, psychological support and guidance, role modeling, and research to enhance practice (Shaikh, 2017). Self-

directed learning readiness is enhanced by mentorship approaches within an institution. Students who have no mentorship in many circumstances lack confidence and feel underprepared for their future positions and find it difficult to adjust to the professional level when they must practice autonomously (Ali & Panther, 2008). One of the most important aspects of the mentoring process that meets students' learning needs is the regularity of communication between learners and their facilitators. Saarikoski *et al.*, (2009) survey of 21 Finnish nursing schools (n = 549) also brought this to light. According to that study, students' levels of overall learning and satisfaction with their clinical placement increase with the amount of interaction they have with their role models. Overall, a mentoring relationship component that supports students' positive clinical learning experiences is the frequency and quality of contact between students and facilitators (Dale *et al.,* 2013).

2.8.2.4 Faculty influence on SDL readiness

Teachers are essential to students' education and the development of the abilities they will need to thrive in the twenty-first century. They are subject matter experts in the classroom, and it has been discovered that their ability to manage the classroom positively correlates with their success as teachers (Sanchez, *et al.,* 2022). In addition to imparting knowledge, faculty members need to be able to support students' learning; they take on the role of advisor rather than just authority when students complete tailored assignments to show their abilities. Additionally, as students become more self-reliant and take charge of their education, they must carefully balance the kind and quantity of support they receive. For instance, the pedagogies used in the classroom should increase students' capacity for self-direction (Failano *et al.,* 2022; Guiamalon, 2021; Lumapenet, 2023).

According to the Grow SDL model, which builds on the role of the educator in assisting adult learners in becoming more self-directed, the faculty plays a crucial role in ensuring that students are prepared for SDL. Educators ought to tailor their pedagogical approaches to the specific stage of each student. The paradigm categorizes learners into four stages: self-directed, reliant, involved, and interested. Teachers' roles must change to accommodate the requirements of their students. A coach and authority figure are necessary for dependent learners; a motivator and guide are needed for interested learners; a facilitator is needed for involved learners; and a consultant is needed for self-directed learners. Coaching is the best method for teaching dependent students in stage one. To employ the coaching method, educators must first establish their authority and trustworthiness. Because most "students respond best to an organized, rigorous approach to the subject," educators should "prescribe clear-cut objectives and straightforward techniques" for reaching these. This means that the course should have a defined design, with challenging assignments and set due dates (Grow,1991; Morris,2019).

2.8.2.5 Teaching and learning resources influencing SDL readiness

Teaching-learning resources are instructional materials that teachers employ to help their students comprehend and acquire new ideas, concepts, abilities, or knowledge. (Amedahe, Tamakloe, & Atta, 2005). The textbook is a crucial instrument for efficient teaching and learning; in its absence, instructors and students approach things abstractly, which makes them challenging to understand. Learning materials facilitate and enhance student learning; they enable students to comprehend and derive pleasure from the lesson imparted by the instructor (UNESCO, 2018). Additionally, it facilitates students' comprehension of the teacher's intended study topic. Furthermore,

the utilization of teaching-learning tools facilitates the assessment of students' progress in grasping the subject matter (Klaus, 2010).

2.8.2.5 Curriculum philosophy influence on SDL readiness

Philosophical inquiry is a reflective and analytical process that delves into the underlying assumptions, perceptions, emotions, and understandings that shape our views. According to Bevis (2000), this method involves scrutinizing what is considered important, valuable, or worthy of commitment. By engaging in philosophical inquiry, individuals critically examine the foundational principles and beliefs that influence their thinking and actions. This reflective process helps clarify what goals and values should guide personal and educational endeavors.

The significance of philosophy in education is emphasized by Billings and Halstead (2016), who argue that it should underpin all curricula. Philosophy provides a framework for developing educational goals and objectives, ensuring that the curriculum has a clear and coherent direction. By grounding curricula in philosophical principles, educators can create programs that are not only methodically sound but also purpose-driven, aligning educational activities with broader values and objectives.

It is expected of students at KMTC to become self-directed learners throughout their studies. The academic structure is designed to support this goal by dividing the academic year into two semesters, with a weekly schedule comprising thirty hours of theory and an additional five hours specifically allocated for SDL (KMTC, 2019). This approach underscores the institution's commitment to fostering autonomy and self-directedness in students, preparing them for professional practice by encouraging them to take responsibility for their own learning and development.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Overview

This chapter outlines the research methods used in the study, organized into the following sections: research design, study area, study population, sampling procedure, sample size calculation, data collection procedure, data management, data analysis, and ethical considerations.

3.2 Research Design

This study employed a cross-section analytical design to evaluate SDL readiness among nursing students training in Medical Training Colleges in Siaya County. The design was adopted because it is appropriate for describing the relationships among phenomena at a fixed point in time (Polit & Beck, 2018). In this study, data was collected at one point in time from the study respondents

3.3 Study Area

This study was conducted at the Bondo and Siaya campuses of Kenya Medical Training Colleges (KMTC) located in Siaya County, Western Kenya. Siaya County, part of the Nyanza region, is bordered by Vihiga and Kakamega Counties to the northeast, Kisumu County to the southeast, Busia County to the north, and Homa Bay County across the Winam Gulf. Siaya County experiences relatively warm temperatures, ranging from 21°C to 25°C, and receives moderate rainfall, with annual precipitation between 1,000 mm and 1,750 mm (Kenya County Climate Risk Profile, 2022). The county is home to two medical colleges: Kenya Medical Training College (KMTC) and Matibabu College of Health Sciences.

Matibabu College of Health Sciences, a private technical training institution located in Ukwala town, offers three medical programs: a diploma in community health nursing, a diploma in perioperative theatre technology, and a certificate in perioperative theatre technology.

The Kenya Medical Training College (KMTC) is a semi-autonomous government agency under the Ministry of Health, tasked with training health professionals for local, regional, and international markets. The college aligns its strategies with national health priorities and contributes significantly to achieving the Sustainable Development Goals (SDGs) and Vision 2030. KMTC plays a crucial role in producing over 85 percent of Kenya's healthcare workforce, graduating more than 12,000 students annually. It operates 71 campuses nationwide, including five in Siaya County: Siaya, Bondo, Rera, Ugenya, and Ugunja (KMTC, 2022). The Bondo and Siaya campuses were purposively selected for this study because they are the only KMTC campuses within Siaya County offering diploma in community health nursing training courses.

3.3.1 KMTC Siaya Campus

The campus is situated in Siaya town's Central Business District, next to Siaya County Referral Hospital, within Siaya County. It was established in September 2005. It is located on 4.75 acres of land and offers four courses, namely Clinical Medicine and Surgery (Diploma), Kenya Registered Community Health Nursing (Diploma), Health Records and Information (Certificate, & Diploma), and Foundation Course in Community Health. It has a total student population of 1050, out of which 350 are nursing students (KMTC, 2022).

3.3.2 KMTC Bondo Campus

The Campus is located in Bondo Constituency, Siaya County, adjacent to the Bondo Level IV Hospital, while the Annex is situated in Masita, seven (7) kilometers from the main Campus. It has 7.3 acres of land and was established in March 2012. It offers three courses; - Clinical Medicine Surgery (Diploma), Kenya Registered Community Health Nursing (Diploma) and Health Records & Information Technology (Certificate, Upgrading, and Diploma). It has a total student population of 988, out of which 322 are nursing students (KMTC,2022).

Activities and school calendars across all the campuses are similar as the institution uses one calendar and curriculum for its academic activities. They both have double intake for nursing students; each intake is capped at 50 students. Therefore, the nursing class in each year of study is 100 students.

3.4 Study Population

This is a reference to the researcher's considered collection of items, either finite or infinite. According to Sekaran (2010), the study population is the set of individuals, occasions, or things to which the researcher intends to relate the research findings.

The study population for this study were nursing students in years one, two, and three at the Siaya and Bondo campuses of KMTC; this is because it is essential to regularly investigate and analyze SDL readiness at every level or year of study to take proper action to help students achieve their learning objectives (Ejaz, *et al.*, 2018; Prabhakar, *et al.*, 2020).

The study population comprised a total of 672 nursing students, with 350 from the Siaya campus and 322 from the Bondo campus.

Nursing lecturers were included as key informants (KII) for this study, both campuses have a total of 17 nursing lecturers (Bondo; -8 and Siaya; -9)

3.5 Sample Size Calculation

The Kish Leslie formula for cross-sectional studies was applied as follows

$n = \frac{P(1-P)Z^2}{d^2}$,

Where:

P = proportion of phenomena of interest in the population (set at 50% maximum given that this readiness level has not been explicitly provided in the studies conducted in developing countries and therefore the 50% proportion gives the maximum possible sample size required to detect any statistically significant differences in the population)

Z = is the level of significance (set at 1.96) and 'd' is the acceptable sampling error (set at 5%, 0.05). To mitigate against non-response or account for any missing students who were at different campuses for their clinical rotation experiences at the time of data collection, a 10% rate was included in the sample size (Kish,1965)

$n = \frac{0.5(1-0.5)1.96^2}{0.05^2}$, = 384 students

To account for any missing students, 10% of 384 = 38 was included. Therefore, the total sample size was 384+38 = 422 students.

Since the two campuses had similar annual intakes and nearly equal student populations for the nursing program, the sample size was evenly distributed between the two campuses, resulting in 211 respondents from each campus, as depicted in Table 3.1.

Table 3.1: Sample allocation

Target population	Research Instrument	Total Sample
Bondo KRCHN students • **Year 1 (71)** • **Year 2 (70)** • **Year 3 (70)**	Self-administered questionnaire	211
Siaya KRCHN students • **Year 1 (71)** • **Year 2 (70)** • **Year 3 (70)**	Self-administered questionnaire	211
Total	Self-administered questionnaire	422
Key Informants (Nursing lecturers)		
Bondo	Key informant interview guide	4
Siaya	Key informant interview guide	4

3.6 Sampling Procedure

This study used a purposive sampling method to select Siaya County because it is one of the 41 Counties in Kenya with the highest number (five) of Kenya Medical Training College (KMTC) campuses spread across it. The two campuses (Siaya and Bondo) were also purposively selected as they are the only KMTC campuses within Siaya County offering diploma training in Community Health Nursing (KMTC,2022)

A simple random sampling method was adopted to select the study respondents. This method gave all the nursing students on both campuses equal chances of being selected to participate in the study, as proposed by Polit & Beck (2018). This was done by writing numbers 1 to 100 on small paper using a red marker pen for each year of study and each campus. The papers were then fun-folded and dropped in an open bowl, and the researcher shook it for five minutes. Then, each student was asked to pick up one

folded paper and unfold it. Only those who picked up successive numbers, 1 to 71 for year one and 1 to 70 for years 2 and 3, were allowed to participate in the study.

Nursing lecturers, who were the key informants were purposively selected to participate in the study, however, simple random sampling was used among the lecturers to choose those who were interviewed.

3.7 Inclusion and Exclusion Criteria

According to Yale (2017), inclusion criteria are qualities that a potential study participant must possess to be accepted into the study, whereas exclusion criteria are qualities that a potential study participant must not possess to get excluded from participation.

3.7.1 Inclusion criteria

The following study respondents were included in the study at the time of data collection; -

i. Nursing students in years one, two, and three of their academic study.
ii. Nursing students who had completed at least one trimester from the time of admission.
iii. Nursing students who consented to participate in the study.

3.7.2 Exclusion criteria

The following were excluded from the study:

i. Nursing students who meet the inclusion criteria but were away on sick off or out of campus during the period of the study.
ii. Nursing students who did not give consent to participate in the study

3.8 Data Collection Instrument

Data collection instruments are means by which primary data is collected in social research (Kothari, 2009).

3.8.1 Quantitative Data Collection Instrument

Data on socio-demographics and factors affecting SDLR were collected using a self-administered questionnaire. Additionally, the Fisher, King, and Tague (2001) SDL readiness scale was used to assess the SDLR levels of the study respondents. This scale consists of 40 items divided into three subscales: self-control (15 items), learning desire (12 items), and self-management (13 items). Responses were measured using a five-point Likert scale, where 1 represented "strongly disagree" and 5 represented "strongly agree." Four negative statements—"I am disorganized," "I dislike studying," "I am poor at managing my time," and "I am not in control of my life"—were scored in reverse. The total score ranged from a minimum of 40 to a maximum of 200 (**See Appendix II).**

3.8.2 Qualitative Data Collection Instrument

The researcher collected qualitative data through key informant interviews (KIIs). A key informant interview guide was utilized to gather insights from nursing lecturers in alignment with the study objectives, thereby enriching the research (see Appendix III)

.3.9 Validity and Reliability of the Instrument

3.9.1 Validity of the Instrument

The tool is pre-validated (Fisher *et al.*, 2001), and the questionnaire was designed to capture both independent and dependent study variables. Professional advice on the tool was sought from experts in the subject matter, and their suggestions were incorporated into the tool.

3.9.2 Reliability of the Instrument

Reliability refers to the consistency of a measurement when it is repeatedly performed under the same conditions. A pretest of the study tool was conducted among 42 nursing students in the KMTC-Busia campus,10% of the sample size as suggested by Mugenda and Mugenda (2003), to test the tool's clarity and feasibility and introduce necessary modifications.

The reliability of the tool was assessed using Cronbach's alpha coefficient, which yielded a value of 0.852.

3.10 Data Collection Procedure

The researcher recruited four research assistants registered nurses with Bachelor of Science in Nursing (BScN) degree qualifications. The research assistants were trained for one day on the study objectives, data collection tool, administration of consent, and how to handle and keep completed questionnaires from the study respondents.

After that, with the help of the head of department (HOD) of the respective campuses, the nursing students were assembled in their classrooms as per the year of academic study and sampled before the start of data collection. The researcher explained the purpose and the benefits of participating in the survey to the students and clarified any questions from the students. The research assistants then gave consent to the study respondents and issued self-administered questionnaires to all who consented. This questionnaire was completed by the study respondents in less than 30 minutes, and the researcher and the research assistants collected the completed questionnaire.

A key informant guide was used to obtain qualitative data, wherein the researcher reached out to each key informant (nursing lecturers) and solicited their opinions on the subject in line with the study objectives and their responses were tape recorded.

3.11 Data Management

Data was cleaned upon the student completing the questionnaires, and the incomplete questionnaire was removed. Complete questionnaires were kept in a safe, locked cupboard, and only the researcher had access to the questionnaires. All the data were entered in Microsoft Excel 2007, and the file was protected with a password.

3.12 Data Analysis

The Statistical Package for the Social Sciences (SPSS) software, version 24, was used to enter and analyze the obtained data. As shown in Table 3.2, the study used both inferential and descriptive statistical methods. Calculations were made for descriptive statistics, such as mean, standard deviation (SD), frequency, percentages (%), and range. The associations between independent and dependent variables were investigated using inferential statistics, such as bivariate and multivariate analyses. P-values, odds ratios, and 95% confidence intervals were provided with the results. P-values were deemed statistically significant if they were less than 0.05.

Qualitative data collected from key informants was analyzed using NVivo 12.6, a software designed for qualitative data analysis. The process began with verbatim transcription of the recorded interviews, ensuring that every detail of the informants' responses was accurately captured. This transcription provided a comprehensive dataset for subsequent analysis.

Following transcription, thematic coding was employed to identify and categorize recurring patterns and concepts within the data. This method involved systematically examining the transcribed text to uncover significant themes. The analysis revealed

several key themes that highlighted the role of technology and faculty involvement in the educational context.

The themes that emerged from the analysis indicated the various ways in which technology and faculty contributions impacted the effectiveness of educational practices and the experiences of the students.

Table 3.2: Data analysis objective matrix

Specific objective	Type of data	Statistical test
Levels of SDLR	Quantitative	Descriptive; -mean, SD
Individual factors	Quantitative	Descriptive; -%, frequency
	Qualitative	Inferential; -bivariate
		Thematic analysis
Institutional factors	Quantitative	Descriptive; -%, frequency
	Qualitative	Inferential; -bivariate
		Thematic analysis

3.13 Ethical Considerations

Ethical approval for this research was obtained from several entities: the Directorate of Postgraduate Studies (REF.MMU/COR:509099, see Appendix IV), the Institutional Scientific and Ethics Review Committee (ISERC) of MMUST (REF.MMU/COR:403012 Vol 6(01), see Appendix V), and the National Commission for Science, Technology, and Innovation (NACOSTI) (License No. NACOSTI/P/22/18995, see Appendix VI). Data collection permissions were secured from the County Commissioner of Siaya County (REF.CC/SC/A.31 VOL.IV/91, see Appendix VII), the County Director of Education (REF.MOE/SYA/CDE/URA/1/10/VOL.II/51, see Appendix VII), the principal of KMTC-Siaya (REF.Sya/MTC/TR.84/VOL.1/193, see Appendix VII), and KMTC-Bondo (see Appendix IX). Additionally, formal permission to use the SDLRS tool was obtained from Fisher via email.

Before data collection, the study's selected respondents submitted written informed consent. Before the study started, participants were given comprehensive information on the objectives of the investigation, its dangers, and benefits, and how to proceed. Additionally, respondents were informed that they would not be penalized for declining to participate in the research.

3.13.1 Ethical principles of research were applied

According to Polit and Beck (2018), ethical principles in research are fundamental to ensuring that studies are conducted with integrity and respect for participants. The key ethical principles typically emphasized included:

Justice: -the researcher and research assistants introduced themselves and clearly stated that the data would be used solely for academic purposes. In a letter attached to the questionnaire, they assured respondents that their information would remain confidential and would not be shared with others. The letter also emphasized that participation was voluntary, and respondents had the right to withdraw at any time without any repercussions.

Confidentiality; - was maintained by coding all data and storing it in a secure, locked location. Access to the data was restricted to authorized personnel only. Respondents' names were not disclosed, ensuring their identities remained anonymous throughout the study.

Autonomy: Informed and signed consent of the willing respondents was sought, and clarifications were provided to the respondents.

Respect: No respondents were forced to take part in the study; instead, they were informed of its purpose and given assurances of anonymity and confidentiality.

Beneficence: Due to the free and voluntary nature of the study, withdrawal was not penalized. The collaborating organization was to be informed of the study's conclusions.

CHAPTER FOUR

RESULTS

4.1 Overview

This chapter provides a comprehensive presentation of the study's findings, encompassing both descriptive and inferential data analyses, all aligned to evaluate SDL readiness among nursing students in Medical Training Colleges located in Siaya County.

The study's specific objectives guided the investigation systematically. The first objective aimed to assess the levels of SDL readiness among the nursing student population. The second objective examined individual factors that influence SDL readiness among these students. The third objective investigated institutional factors affecting SDL readiness in nursing programs.

The ensuing sections of this chapter will provide a comprehensive account of the findings derived from the analysis conducted to address each of these specific objectives, thereby offering a holistic view of SDL readiness and its various determinants among nursing students in Siaya County's Medical Training Colleges.

4.2 Questionnaire Response

The study initially aimed to collect responses from a sample of 422 respondents. However, 404 respondents provided fully completed questionnaires, resulting in an impressive response rate of 95.7% (n= 404). This high response rate is indicative of

the study's reliability and acceptability. In the realm of social research, a response rate of 60% is considered good, and a rate of 70% or higher is even more favorable, as suggested by Mugenda and Mugenda (2003). Therefore, the study's robust response rate enhances the confidence in the reliability and validity of its outcomes.

4.3 Socio-demographic characteristics of the study respondents

Table 4.1 presents a comprehensive overview of the socio-demographic characteristics of the study's respondents. This section delves into the respondents' age, gender, highest qualifications attained before enrollment at KMTC, their specific campus affiliation, marital status, and their current year of study.

The average age of the respondents in this study was 23.0 years, with a standard deviation of 3.8 years. In terms of age distribution, the majority of respondents, representing 42.8% (n=173) of the sample, fell within the age range of 17-21, while a substantial 4.1% (n=166) were aged between 22 and 26. A smaller but still significant proportion, 16.1% (n=65), were 27 years or older.

Gender-wise, the study demonstrated a notable gender disparity, with 67.1% (n=271) of the respondents identifying as female. This discrepancy highlights a predominance of females in the study, suggesting that the nursing course attracted a higher number of female students.

Regarding the highest qualifications held before joining KMTC, the data revealed that 44.1% (n=178) of the respondents had already attained a post-KCSE certificate, diploma, and bachelor's degree in other professions before embarking on nursing courses at KMTC.

In terms of the respondents' current year of study, the study sample was fairly evenly distributed, with 38.9% (n=157) in their first year, 30.7% (n=124) in their second year, and 30.4% (n=123) in their third year of study.

When analyzing campus affiliation, the data showed that 54.7% (n=221) of the respondents were affiliated with the KMTC-Bondo campus, while the remaining 45.3% (n=183) were associated with the KMTC-Siaya campus. Finally, examining marital status, the results indicated that a significant majority, 81.7% (n=330) of the respondents, were single.

Table 4.1: Socio-demographics characteristics of the respondents

Variable	Categories	Frequency (n=404)	Percentage (%)
Mean Age ± SD	23.0 ± 3.8		
Age	17-21	173	42.8
	22-26	166	41.1
	27+	65	16.1
Gender	Male	133	32.9
	Female	271	67.1
Highest qualifications	KCSE	226	55.9
	Post-KCSE certificate	74	18.3
	Diploma	75	18.6
	Degree	29	7.2
Campus	Bondo	221	54.7
	Siaya	183	45.3
Year of Study	1	157	38.9
	2	124	30.7
	3	123	30.4
Marital status	Married	64	15.8
	Single	330	81.7
	Widowed	1	0.2
	Divorced/separated	9	2.2

4.4 Frequency and percentage distribution of respondents' SDL readiness (n=404)

Table 4.2 below provides the frequency and percentage distribution of respondents' SDL readiness as assessed using the SDL Readiness Scale (Fisher, King & Tague, 2001) in the context of this research. This scale comprises 40 items, categorized into

three key parameters: Desire for learning (consisting of 12 items), Self-management (comprising 13 items), and Self-control (including 15 items). Respondents rate their agreement with each item using a 5-point Likert scale, ranging from 1, indicating complete disagreement, to 5, representing complete agreement. The total scores on this scale can range from a minimum of 20 to a maximum of 200.

A significant indicator derived from these scores is the level of SDL readiness (SDLR). Specifically, if respondents obtain a total score exceeding 150 on this scale, it suggests a high level of SDL readiness. Conversely, if the total score is equal to or less than 150, it signifies a low level of SDL readiness among the respondents. In the study, the majority of the respondents, 73.5% (n=297), had a high level of SDL readiness, while 26.5% (n=107) had a low level of SDL readiness.

Table 4.2: Frequency and percentage distribution of respondents' SDL readiness (n=404)

SDLR levels	Frequency	Percent
Low - Not ready (<=150)	107	26.5
High - Ready (>150)	297	73.5

Table 4.3 presents an overview of the levels of SDL readiness among the surveyed respondents. To assess SDL readiness (SDLR), the mean and standard deviation (SD) scores were calculated for the three key parameters of the adopted scale, which was administered to a total of 404 respondents. These parameters include self-management, desire for learning, and self-control.

The calculated mean and SD scores for self-management were 51.2 ± 5.4, for desire for learning they were 47.4 ± 4.5, and for self-control, they were 58.6 ± 5.3. To provide an overall picture of SDLR, the mean and SD scores for these three parameters were

combined. The total mean SDLR score was determined to be 157.2 with a standard deviation of 12.2.

The outcome of this analysis indicates that the SDLR level among nursing students in medical training colleges in Siaya County is notably high. Specifically, the mean SDLR score of 157.2 exceeds the threshold of 150, signifying that the students are well-prepared for SDL. This implies a strong readiness and inclination towards SDL among the surveyed nursing students.

Table 4.3: Levels of SDL readiness among the respondents

SDLR Parameter	Mean	SD
Self-management	51.2	5.4
Desire for learning	47.4	4.5
Self-control	58.6	5.3
Total SDLR	**157.2**	**12.2**

Table 4.4 below provides an analysis of the normality of data scores within the parameters of SDLR. The assessment was conducted using Shapiro-Wilk (SW) tests, and the results revealed significant departures from a normal distribution for all three parameters: self-management, desire for learning, and self-control.

Specifically, the SW test statistics, along with their associated p-values, were examined. The p-values were found to be highly significant ($p < 0.0001$) for all three parameters, indicating a substantial deviation from normality in the data. It's important to note that when the p-value of the SW test is greater than 0.05, this suggests that the data adheres to a normal distribution. In contrast, when the p-value is less than 0.05, as observed in this analysis, it signifies non-normality in the data.

To provide a deeper understanding of the variability within the non-normally distributed data, standard deviation (SD) scores were calculated for each of the three parameters. These SD scores were then employed to assess the level of SDL readiness.

Among these parameters, self-management exhibited the highest SD score, measuring at 5.4. Following closely behind was self-control, with an SD score of 5.3. The desire for learning parameters had a lower SD score of 4.5, indicating variability in SDLR levels across these parameters.

Table 4.4: Normality test of parameters in SDL readiness scale

SDLR PARAMETER	Mean	SD	Shapiro-Wilk test statistic	P-value
Self -management	51.2	5.4	0.955	**0.0001**
Desire for learning	47.4	4.5	0.938	**0.0001**
Self-control	58.6	5.3	0.985	**0.0001**

4.4.1 Level of SDL readiness between the campuses

In the Bondo campus, the majority of respondents, 164 out of 221 displayed a high level of SDLR, indicating their readiness for SDL. Shifting the focus to the Siaya campus, again majority of respondents,133 out of 183 demonstrated a high level of SDLR, signifying their readiness for SDL.

However, it is worth noting that there were no significant differences in SDLR levels between the two campuses, as evidenced by a Chi-square test ($X^2 = 0.1204$, $p = 0.729$). This suggests that SDLR levels were comparable in both Bondo and Siaya campuses, with no statistically significant variations observed (Table 4.5).

Table 4.5: Levels of SDL readiness between the two campuses among the respondents

	SDL Readiness	Total

			High level >150.0	Low Level <150.0		Pearson chi-square	P-value
Campus	Bondo	N	164	57	221		
		%	40.6 %	14.1 %	54.7%		
	Siaya	N	133	50	183		
		%	32.9 %	12.4 %	45.3%	0.1204	0.729
Total		N	297	107	404		
		%	73.5%	26.5%	100.0%		

4.4.2 Levels of SDL Readiness Between Years of Academic Study

Table 4.6 presents an analysis of SDL readiness levels among the study respondents, categorized by their respective years of study. The data reveals the distribution of high and low SDL readiness scores, with a focus on those who scored above or below the threshold of 150.0, indicating readiness or lack thereof.

Among the respondents in the first year, a majority,113 out of 157 demonstrated high levels of SDLR, signifying readiness for SDL. Moving on to the second year of study, a significant number of the respondents,95 out of 124 had a high level of SDL readiness. In the third year of study, the majority of the respondents, 89 out of 123 similarly exhibited high SDLR levels, indicating readiness for SDL.

Interestingly, when comparing the levels of SDL readiness across these different years of study, the analysis found no statistically significant difference. The p-value associated with this comparison was calculated to be 0.642, which exceeds the recommended threshold of 0.05 for statistical significance. Therefore, it can be concluded that there is no significant disparity in SDL readiness levels among students in various years of study.

Table 4.6: SDL readiness in different years of study

Characteristic	Year of Study	High SDLR (Ready) >150.0	Low SDLR (Not ready)	Total	Chi-square	p-value

		<150.0			
1	113(71.9%)	44(2.8%)	157 (38.9%)		
2	95(76.6%)	29(23.4%)	124 (30.7%)		
3	89(72.4%)	34(27.6%)	123(30.5%)	0.887	0.642

4.5 Individual factors influencing SDL readiness among the respondents

Table 4.7 presents findings regarding the individual factors that influence SDL readiness among nursing students in Siaya County's medical training colleges.

The majority of respondents, accounting for 77.5% (n=313) of the total, reported that their parents or guardians covered their fees. In contrast, a smaller group, 8.4% (n=34), paid their school fees independently. Additionally, 7.7% (n=31) had their fees partially covered by parents and scholarships, while only 3.5% (n=14) enjoyed full scholarships, with sponsors fully covering their fees. A smaller percentage, 3.0% (n=12), had a combination of self-funding and scholarship support.

Analysis of laptop and smartphone ownership revealed that a significant majority, more than 80% (n=361), possessed either a laptop or smartphone, which they found beneficial for their learning.

Respondents were queried about their knowledge of SDL, with 82.2% (n=333) indicating that they were familiar with it. However, 17.6% (n=71) reported not having heard of SDL.

Regarding their understanding of SDL, the majority of respondents believed that SDL involved individualized learning, where they were personally responsible for their education without heavy reliance on teachers to attain educational objectives. Many associated SDL with self-study.

Key informants expressed similar views, with one describing it as *"Student-centered learning where the learner takes the initiative and responsibility for planning their*

learning, including sourcing necessary educational materials to achieve their learning objectives." (KII,05)

Another key informant stated, *"This is a contemporary learning method where the student takes charge in executing their learning activities, with the teacher acting as a consultant to provide direction and ensure the student adheres to the course objectives."(KII,07)*

When asked about their opinions on SDL, 68.3% (n=276) of the respondents found it effective and believed it helped them learn more independently, leading them to prefer it. However, 21.5% (n=87) held negative views, suggesting that SDL could make lecturers less involved in teaching, burdening students with additional assignments. A smaller group, 10.1% (n=41), expressed a need for assistance in understanding SDL and could not offer a definitive opinion on its merits or drawbacks.

In terms of prior exposure to the SDL approach before joining the Kenya Medical Training College (KMTC) for nursing training, over 80% (n=331) of the respondents had experience with SDL. This exposure provided them with familiarity with the modality before embarking on their nursing training at KMTC.

These findings shed light on the various individual factors that influence SDL readiness among nursing students, including their financial support, access to technology, awareness of SDL, understanding of SDL concepts, opinions on SDL, and prior exposure to SDL methods.

Table 4.7: Individual factors influencing SDL readiness

Variable	Characteristic	Frequency	Percent (%)
Who pays the school fees?	Self	34	8.4
	Guardian/parent	313	77.5
	Scholarship	14	3.5
	Scholarship and self	12	3.0
	Scholarship and guardian/parent	31	7.7
Own a laptop or smartphone	Yes	361	89.4
	No	43	10.6
Heard of SDL	Yes	333	82.4
	No	71	17.6
Opinion of SDL	Its effective and help me learn more on my own, thus prefer it	276	68.3
	It makes lecturers lazy and load us with more assignments	87	21.5
	I do not understand it thus do not prefer it.	41	10.1
Have you used SDL?	Yes	331	81.9
	No	73	18.1

4.5.1 Influence of individual factors on SDL readiness.

As displayed in Table 4.8 below, a logistic regression analysis was conducted to explore the relationship between readiness for SDL and several socio-demographic and individual factors that may affect SDL readiness among nursing students.

Students who do not have access to a working laptop were found to have an odds ratio (OR) of 0.569 in comparison to their peers who own laptops. However, it's important to note that this difference was marginally significant, with a p-value of 0.095. This suggests that not having a laptop may have a slight influence on a student's readiness for SDL, but the effect is not strong.

Another factor to consider is students' opinions on SDL. Those who perceive SDL as ineffective and believe it makes lecturers less engaged were found to have an OR of 0.517 compared to students who prefer SDL. Again, this difference was marginally

significant, with a p-value of 0.073. This indicates that students' viewpoints regarding SDL might have some impact on their readiness for SDL.

Interestingly, the usage of SDL itself emerged as a significant factor. Students who have not engaged in SDL were found to have an OR of 0.573 compared to those who have used SDL, and this difference was statistically significant with a p-value of 0.044. This suggests that actively utilizing SDL significantly influences SDL readiness among nursing students.

On the other hand, various socio-demographic factors such as age, gender, highest qualifications, campus choice, year of study, marital status, and who pays the school fees do not appear to be significant determinants of SDL readiness among nursing students in Siaya County. These factors do not seem to have a discernible impact on students' readiness for SDL.

Generally, the logistic regression analysis reveals that while factors like laptop ownership and opinions on SDL may have some influence on SDL readiness, the most significant factor is the actual use of SDL. Other socio-demographic and personal factors examined do not appear to play a significant role in determining readiness for SDL among nursing students in Siaya County.

Table 4.8: Bivariate analysis of individual factors and SDL readiness

Variable	Category	OR	95% CI		p-value
			Lower bound	Upper bound	
Age	17-21	Ref			
	22-26	1.566	0.797	3.074	0.193
	27+	1.195	0.6	2.379	0.612
Gender	Male	Ref			
	Female	1.31	0.825	2.079	0.253
Highest qualifications	KCSE	Ref			
	Post-KCSE certificate	2.11	0.773	5.759	0.145
	Diploma	1.432	0.474	4.324	0.525
	Degree	1.302	0.429	3.952	0.642
Campus	Bondo	Ref			
	Siaya	0.925	0.593	1.44	0.729
Year of Study	Year 1	Ref			
	Year 2	1.019	0.602	1.726	0.943
	Year 3	0.799	0.45	1.418	0.443
Marital status	Single	Ref			
	Married	0.744	0.393	1.409	0.364
Who pays the school fees?	Guardian	Ref			
	Self	0.689	0.317	1.497	0.347
	Scholarship	0.313	0.094	1.042	0.058
	Scholarship and self	0.496	0.114	2.164	0.351
	Scholarship and guardian/parent	0.364	0.067	1.965	0.24
Owning a functional laptop	Yes	Ref			
	No	0.569	0.293	1.103	0.095
Heard of SDL	Yes	Ref			
	No	0.829	0.471	1.46	0.516
Opinion of SDL	Help me learn more on my own,	Ref			
	It makes lecturers lazy as they neglect their duty of teaching and load us with more assignments	0.517	0.251	1.064	0.073
	I do not understand it thus do not prefer it.	1.833	0.839	4.004	0.128
Used SDL	Yes	Ref			
	No	0.573	0.333	0.986	0.044

4.6 Institutional factors influencing SDL readiness

Table 4.9 shows findings on institutional factors influencing SDL among nursing students training in Medical Training Colleges in Siaya County. Textbooks are essential educational resources that enhance SDL; the study findings revealed that of the four hundred and four (404) respondents who participated in the study, the majority, 68.6 % (n=277), had access to core textbooks in every course in the college library. Only 31.4% (n=127) did not have access. The respondents were asked if they could access college internet connectivity/Wi-Fi; results indicated that about half, 52.2% (n=211), were able to access and nearly another half, 47.8% (n=193), were unable to access.

On internet connectivity influence on SDL readiness, one of the key informants submitted as follows; -

"If the college could have stable and reliable internet connectivity, then the student level of self-directed learning will increase. This is because the majority will be able to download free e-books and other resources they can use when they are in their houses, as most of our students stay outside the college. With the current economic time, buying data bundles is challenging for many students. I therefore think that access to institutional internet connectivity influences their readiness to self-directed learning." (KII,07)

Concerning the teaching method commonly used by the majority of the lecturers, it was established that most teacher uses the lecture method, as reported by 72.2% (n=293) of the respondents, secondly followed by group discussion and presentation, as indicated by 24.5% (n=99) of the respondents, thirdly followed by SDL approach, as revealed by 2.0% (n=8) of the respondents. However, only 1.0% (n=4) of the respondents indicated that their lecturers preferred demonstrations as a teaching method. Therefore, this study revealed that the lecture method is the most preferred teaching method by many nursing lecturers. This was further shown during an interview with the key informant, who asked why they chose this teaching method.

"We have many students in a class, and time is of the essence in implementing the curriculum. For instance, in year one, semester 2, there are about 12 modules to be covered in barely six weeks. I, therefore, find the lecturer method of teaching to be convenient as I will cover many topics within the short time allocated in that level of study" (KII,03).

Results on whether they are provided with a course outline at the beginning of the unit, more than ninety percent reported being supplied with a course outline at the start of every unit, 92.6 % (n=374) of the respondents and only less than ten percent, 7.4% (n =30) of the respondents reported to have not been provided with the course outline at the start of every unit. However, regarding SDL mentorship in the college, the majority, 78%, indicated that there is no such program, and only 22% confirmed the existence of such a program.

Concerning orientation on SDL, more than 80% (n= 296) of the respondents had yet to be oriented, and less than half of the respondents, 26.7% (n= 108), had no orientation on SDL. When asked what motivates them in using SDL, self-motivation was leading at 44.3% (n=179), followed closely by course structure design at 43.1% (n=174) and distantly followed by teachers and peers at 6.7%(n=27) and 5.9% (n=24) respectively. However, when asked what hinders them from using SDL, most respondents reported time constraints as the leading factor, 53.7(n=217), followed closely by the design of the course structure and load, 35.4% (n=143). Only 8.4% (n=34) submitted that self, and 2.5% (n=10) indicated teachers hinder their use of SDL.

Table 4.9: Institutional factors influencing SDL readiness

Factor	Category	Frequency (n=404)	Percent (%)
Do you have access to core textbooks in every course in your college library	Yes	277	68.6
	No	127	31.4
Are you able to access college internet connectivity/Wi-Fi?	Yes	211	52.2
	No	193	47.8
Teaching method commonly used	Lecture	293	72.5
	Demonstration	4	1.0
	Group discussion and presentations	99	24.5
	Self-directed learning approach	8	2.0
Course outline provided at the start of every unit	Yes	374	92.6
	No	30	7.4
Do you have self-directed learning mentorship in your college?	Yes	89	22.0
	No	315	78.0
Where you oriented on SDL?	Yes	108	26.7
	No	296	73.3
Do you use SDL in your learning	Yes	330	81.7
	No	74	18.3
What motivates you in using self-directed learning?	Self	179	44.3
	My teachers	27	6.7
	My peers	24	5.9
	Course structure	174	43.1
What hinders you in using SDL?	Self	34	8.4
	My teachers	10	2.5
	Course structure and load	143	35.4
	Time constraints	217	53.7

4.6.1 Bivariate analysis of the Institutional factors and SDL readiness

Table 4.10 presents the outcomes of the logistic regression analysis, which aimed to investigate the connection between self-directed learning (SDL) readiness and certain institutional factors that potentially impact SDL readiness among nursing students.

Firstly, the presence of internet access or Wi-Fi connectivity emerged as a notable institutional factor. Students who lack access to the internet or Wi-Fi were found to have a lower odds ratio (OR) of 0.635 when compared to those with internet access. This difference proved to be statistically significant, with a p-value of 0.046. This

implies that having internet access significantly influences SDL readiness in a positive direction. In essence, students who can access online resources appear to be better prepared for SDL.

Another pivotal institutional factor is the provision of SDL mentorship. Students who do not receive SDL mentorship exhibited a substantially lower OR of 0.402 compared to their counterparts who do receive mentorship (p-value = 0.005). This finding underscores the critical role of SDL mentorship in enhancing SDL readiness among nursing students in Siaya County. Mentorship in SDL appears to be a potent factor in positively shaping students' readiness for SDL.

While access to the internet/Wi-Fi and SDL mentorship show significant associations with SDL readiness, other institutional factors such as access to textbooks in the library and orientation on SDL do not seem to exert a significant influence on students' readiness for SDL. These factors did not yield statistically significant results in our analysis.

In general, our logistic regression analysis illuminates the role of institutional factors in influencing SDL readiness among nursing students in Siaya County. Internet access and SDL mentorship are positively associated with readiness for SDL, whereas access to textbooks in the library and orientation on SDL do not appear to have a significant impact.

Table 4.10: Bivariate analysis of the Institutional factors and SDL readiness

Variable	Category	OR	95% CI		p-value
			Lower bound	Upper bound	
Access to textbooks in the library	Yes	Ref			
	No	1.102	0.682	1.782	0.691
Access to internet/Wi-Fi	Yes	Ref			
	No	0.635	0.407	0.991	**0.046**
SDL mentorship	Yes	Ref			
	No	0.402	0.213	0.76	**0.005**
Orientation on SDL	Yes	Ref			
	No	0.786	0.47	1.315	0.359

4.7 Factors and determinants of readiness for SDL in the Bondo and Siaya KMTCs

Individual and institutional factors that exhibited marginal associations with p-values ≤ 0.1 were subjected to a multivariable analysis. Table 4.11 below reveals the results of multivariate analysis, a comprehensive examination of factors and determinants influencing SDL readiness among nursing students in Bondo and Siaya KMTCs.

First and foremost, the role of SDL mentorship emerges as a significant factor. Students who do not receive SDL mentorship exhibit a markedly lower adjusted odds ratio (aOR) of 0.471 when compared to those who do receive mentorship (p-value = 0.029). This highlights the pivotal role of SDL mentorship in elevating SDL readiness among nursing students in these institutions.

The source of school fees is also influential. Students who receive scholarships have significantly lower aORs compared to those whose guardians pay their school fees (p-value = 0.048). This suggests that the financial source for education impacts SDL readiness, with scholarship recipients demonstrating lower levels of readiness.

Furthermore, the ownership of a functional laptop is a noteworthy determinant. Students who do not possess a working laptop exhibit a significantly lower aOR of 0.486 compared to those who own one (p-value = 0.047). The absence of a laptop appears to be associated with reduced readiness for SDL.

Interestingly, students' preferences regarding SDL play a role as well. Those who do not prefer SDL, primarily due to a lack of understanding, have an aOR of 2.563 compared to those who prefer it (p-value = 0.056). This implies that students' opinions about SDL, especially if they find it challenging to comprehend, influence their SDL readiness, with those who do not understand it showing lower readiness.

In conclusion, based on multivariate analysis, several factors stand out as influential in shaping SDL readiness among nursing students in Bondo and Siaya KMTCs. SDL mentorship, ownership of a functional laptop, and the source of school fees, particularly in the case of scholarships, are linked to SDL readiness. Conversely, access to the internet/Wi-Fi and whether students have previously used SDL do not seem to significantly impact readiness. Additionally, students' opinions about SDL, especially if they struggle to understand it, play a role in their readiness for SDL.

Table 4.11: Multivariable analysis of factors and determinants of SDL readiness in Bondo and Siaya KMTCs

Variable	Category	Aor	95% CI		p-value
			Lower bound	Upper bound	
Access to internet/Wi-Fi	Yes	Ref			
	No	0.887	0.537	1.465	0.639
SDL mentorship	Yes	Ref			
	No	0.471	0.239	0.926	**0.029**
Used SDL	Yes	Ref			
	No	0.729	0.356	1.491	0.386
Who pays the school fees?	Guardian	Ref			
	Self	0.749	0.326	1.721	0.496
	Scholarship	0.276	0.077	0.99	**0.048**
	Scholarship and self	0.521	0.11	2.462	0.411
	Scholarship and guardian/parent	0.314	0.054	1.838	0.199
Owning a functional laptop	Yes	Ref			
	No	0.486	0.238	0.992	**0.047**
Opinion of SDL	Help me learn more on my own	Ref			
	Lecturers load us with more assignments	0.792	0.315	1.989	0.619
	I do not understand it thus do not prefer it.	2.563	0.975	6.734	0.056

CHAPTER FIVE

DISCUSSION

5.1 Overview

This chapter discusses the research findings in relation to the research objectives and questions. The study aimed to evaluate factors influencing self-directed learning readiness among nursing students in Medical Training Colleges in Siaya County. Specifically, it assessed the levels of self-directed learning readiness, examined individual factors affecting this readiness, and investigated institutional factors that influence self-directed learning among these students.

5.2 Socio-demographic characteristics of the respondents

Demographic characteristics of the respondents reveal that the study respondents' average age of 23.0±3.8 years is consistent with the typical age range for individuals pursuing nursing education. The majority fell within the age range of 17-21 for more than two-fifths of the students, and about a fifth of the students were within the age range of 22-26, reflecting the trend of students entering nursing programs immediately after completing their secondary education. These findings align with the International Council of Nurses (ICN) (2023) report on the nursing workforce, which observed a younger cohort of nurses entering the clinical practice**.**

This study's results showed that the highest percentage of the respondents were female compared to males. Men continue to be a minority in the nursing profession, as was revealed in the report on the state of world nursing (WHO, 2020). The dominance of females can be attributed to the perception of nursing careers as more suited to women, thus a barrier to men interested in pursuing nursing education as more females enroll for the course than males (Zhang & Tu, 2020). The study findings also demonstrate that nursing courses are highly competitive and attract students of diverse professional

backgrounds. Notably, more than one-third of the students had other qualifications (certificate, diploma, and bachelor's degree) than the Kenya Certificate of Secondary Education in different fields before joining KMTC for a nursing diploma course

5.3 Levels of SDL readiness among nursing students

Regarding self-directed learning readiness, the study's results show that more than two-thirds of the respondents had a high level of SDLR and, therefore, were ready to embrace SDL as a pedagogical approach in nursing education. Nearly one-third of the respondents were not ready for SDL because they had a low level of SDLR. This outcome is commensurate with a study done in Nepal among nursing students on the level of SDLR, which concluded that more than two-thirds of the students were ready for self-directed learning (Singh & Paudel, 2020).

The level of SDLR was explored using the three parameters of the self-directed learning readiness scale, which collectively contribute to students' overall SDLR. The study reveals that the respondents had a high level of SDLR, mean score of 157.2. These findings indicated the students were ready to use a self-directed learning approach. These findings are congruent with a study in Pakistan, which revealed that the students had a high level of SDLR, with a mean score of 153.0 (Said *et al.*, 2015). However, some dissimilarities in findings were reported in a study conducted in China among college students on self-directed learning readiness by Yang and Jiang (2014), which reported a low level of self-directed learning readiness, with a mean score of 148.55. However, of the three SDLR parameters, self-control exhibited the highest mean, indicating a strong sense of discipline and control among the students. The findings are similar to a study in Nepal among nursing students on readiness for SDL using a similar scale, which revealed that the self-control parameter of SDLR had the highest mean of 58.65 (Singh & Paudel, 2020).

The current study showed no differences in SDLR levels between the two campuses, Bondo and Siaya ($X^2 = 0.001$, $p = 0.971$). This can be attributed to KMTC nursing training campuses having a similar intake and using the same academic calendar and curriculum.

The study findings also demonstrated that the level of SDLR between the years of study was not statistically significant, as indicated by a p-value of 0.648, which is greater than the recommended p-value of 0.05. Similar findings were reported in studies conducted in Australia, the USA, and Taiwan, which reported statistically insignificant results on the level of SDLR and academic year of study (Williamson & Seewoodhary,2017). However, contrary to the current results, a Turkish study by Slater *et al.* (2017) reported significant variation in the level of SDLR in different academic years.

5.4 Individual Factors influencing SDL readiness

First and foremost, when it comes to age and gender, our analysis has shown that there are no statistically significant differences in SDL readiness among students of varying ages (17-21, 22-26, and 27 and above) or between male and female students. These results align with previous research, indicating that SDL readiness does not exhibit age or gender dependence (Premkumar *et al.,* 2018; Atreya *et al.,* 2020). Likewise, the type of academic qualifications, be it KCSE, Post-KCSE certificate, Diploma, or Degree, has not been found to significantly influence SDL readiness among nursing students. This aligns with the notion that SDL readiness is not strongly correlated with one's academic qualifications (Munasingh, *et al..*,2020).

However, the ownership of a functional laptop has emerged as a statistically significant factor influencing SDL readiness. Students without access to laptops had

slightly lower SDL readiness, with an odds ratio (OR) of 0.569 (95% CI=0.293-1.103; p=0.095). Although the p-value is marginally significant, this suggests that lacking a laptop may have a minor adverse effect on SDL readiness. This finding underscores the importance of technology access in facilitating SDL, consistent with prior research (Li & Wu,2023).

Contrary to expectations, awareness of SDL, as indicated by having heard of SDL, did not significantly affect SDL readiness. Both aware and unaware students exhibited similar levels of readiness. Furthermore, while opinions on SDL significantly impacted SDL readiness, the results were only marginally significant. Students who perceived SDL as ineffective and making lecturers less engaged had an OR of 0.517 (95% CI=0.251-1.064; p=0.073) compared to students who preferred SDL. These findings highlight the importance of addressing misconceptions and negative perceptions about SDL to potentially enhance readiness (Morris,2019).

Finally, the usage of SDL itself emerged as a highly significant factor influencing SDL readiness. Students who had not engaged in SDL had significantly lower SDL readiness, with an OR of 0.573 (95% CI=0.333-0.986; p=0.044) compared to those who had used SDL.

5.5 Institutional Factors Influencing SDL Readiness

Institutional factors influencing SDL readiness reveal that many students had access to core textbooks in the college library, indicating a relatively favorable situation regarding educational resources for SDL. However, around half of the students had this privilege regarding internet access. Notably, internet access significantly influenced SDL readiness, with students having connectivity exhibiting higher readiness. This result resonates with the idea that online resources can boost self-

directed learning (Rashid & Asghar,2016). Access to the Internet enables students to acquire e-books and other materials, which is particularly beneficial for those without easy access to physical textbooks. Other congruent studies have observed that the provision of stable internet connectivity in training institutions enhances students' SDLR (Almaiah *et al.*, 2020).

In contrast, the lecture method was the predominant teaching approach used by lecturers due to the need to cover extensive curriculum content in a limited time. However, this conventional teaching approach is different from promoting SDL. This finding highlights the necessity for a pedagogical shift towards more self-directed learning-oriented teaching methods (World Bank, UNESCO & UNICEF, 2021). Only a small percentage of respondents reported the utilization of SDL as a teaching method, indicating room for improvement in integrating self-directed learning into nursing education.

While providing course outlines at the beginning of each unit was common, orientation on SDL was lacking for many students. This lack suggests that while students have a clear course structure, they may need to be adequately prepared or oriented for SDL. Orientation on SDL is essential to equip students with the skills and mindset necessary for self-directed learning (Morris,2019). The absence of orientation may hinder students' ability to take full advantage of SDL opportunities.

Self-motivation and course structure design emerged as leading motivators for SDL. This finding aligns with the Candy Model of self-directed learning proposal that intrinsic motivation and a conducive learning environment can foster SDL (Candy, 1991). Conversely, time constraints and course load were significant barriers to SDL. Time constraints have consistently been recognized as a challenge in SDL (Khalid *et*

al., 2020). These findings underscore the importance of creating flexible schedules and manageable course loads to promote SDL.

Students receiving self-directed learning (SDL) mentorship were notably more prepared for self-directed learning, with a higher odds ratio than those without mentorship. This finding underscores the critical role of mentorship in nurturing SDL readiness. The positive impact of mentorship aligns with previous research emphasizing the importance of guidance and support in SDL (Morris,2019). Mentorship provides students with strategies, motivation, and a supportive environment for SDL. The curriculum review of the Kenya Medical Training College (KMTC) diploma in community health nursing reveals no explicit SDL mentorship mechanism. However, in the curriculum course's organization, self-directed learning appears as a sub-topic in the communication module (Kenya Medical Training College (KMTC,2019).

5.6 Factors and determinants of readiness for SDL in the Bondo and Siaya KMTCs

The multivariate analysis conducted in this study aimed to pinpoint the factors significantly influencing SDL readiness among nursing students in Bondo and Siaya -KMTC.

One of the most influential factors in determining SDL readiness was the presence of SDL mentorship. Students who received SDL mentorship demonstrated a substantially higher adjusted odds ratio (aOR) of 0.471 (95% CI=0.239-0.926; p=0.029) compared to those who did not receive mentorship. This result underscores the pivotal role of mentorship in enhancing SDL readiness. Mentorship programs can provide students with guidance, support, and the necessary skills to excel in self-

directed learning. The finding aligns with previous research emphasizing the importance of mentorship in promoting SDL (Morris,2019).

The source of school fees also played a significant role in SDLR. Students who received scholarships had substantially lower aORs compared to those whose guardians paid their school fees (p=0.048). This suggests that the financial source for education impacts SDL readiness, with scholarship recipients exhibiting lower readiness. It's essential to further investigate the reasons behind this association to develop strategies for supporting SDL readiness in financially diverse student populations.

Ownership of a functional laptop was another noteworthy determinant. Students who did not possess a working laptop had a significantly lower aOR of 0.486 (95% CI=0.238-0.992; p=0.047) compared to laptop owners. This implies that the absence of a laptop is associated with reduced SDL readiness. Laptops can facilitate access to online resources and support self-directed learning (Zhang, 2020). The finding underscores the importance of ensuring that students have access to the necessary technology for SDL.

Interestingly, students' preferences regarding SDL also played a role in SDLR. Those who did not prefer SDL, primarily due to a lack of understanding, had an aOR of 2.563 (95% CI=0.975-6.734; p=0.056) compared to those who preferred it. This suggests that students' opinions about SDL, especially if they find it challenging to comprehend, influence their readiness for self-directed learning. Addressing misconceptions and enhancing understanding of SDL could be beneficial in promoting SDL readiness.

On the other hand, access to the internet/Wi-Fi and whether students had previously used SDL did not significantly impact SDL readiness in the multivariate analysis. These factors, while important, may not be as influential as SDL mentorship, financial factors, access to technology, and students' perceptions of SDL.

CHAPTER SIX

CONCLUSION AND RECOMMENTATIONS

6.1 Overview

This chapter presents the conclusion and recommendations in line with the study's specific objectives

6.2 Conclusions

6.2.1 Levels of SDL Readiness.

The study examined the levels of SDLR among nursing students in Siaya County's medical training colleges, using the Self-directed Learning Readiness Scale (Fisher, King & Tague, 2001). The results indicate a notable readiness for SDL among the surveyed nursing students. The majority of respondents scored above the threshold of 150 on the SDLR scale, signifying their preparedness for SDL. This suggests a strong inclination and readiness for autonomous learning among nursing students in the study.

The analysis further explored the three key parameters of SDLR: self-management, desire for learning, and self-control. These parameters collectively contribute to students' overall SDLR. The mean scores for each parameter were found to be above average, with self-control exhibiting the highest mean score, indicating a strong sense of discipline and control among the students. These findings emphasize the importance of these individual parameters in shaping students' readiness for SDL.

Additionally, the study examined SDLR levels across different campuses and years of study. Interestingly, no significant differences were observed between the two campuses (Bondo and Siaya) in terms of SDLR levels, suggesting that SDLR is consistent across the campuses. Furthermore, there were no statistically significant

differences in SDLR levels among students in various years of study, indicating that readiness for self-directed learning is a characteristic that transcends academic progression. Overall, the study provides insights into the SDLR levels of nursing students in Siaya County, highlighting their readiness for self-directed learning.

6.2.2 Individual factors influencing SDL readiness

In conclusion, the findings provide valuable insights into the individual factors influencing self-directed learning readiness among nursing students in Siaya County's medical training colleges. The study highlights several key observations that shed light on the complex interplay between various determinants of SDL readiness.

Firstly, the majority of respondents reported strong support from their parents or guardians in covering their school fees, potentially indicating that financial stability might not be a significant barrier to self-directed learning readiness among these nursing students. Additionally, a substantial proportion of students possessed essential technological tools such as laptops and smartphones, which they perceived as beneficial for their learning.

Secondly, a significant portion of respondents expressed familiarity with the concept of SDL and held positive opinions about it, seeing it as an effective means to learn independently. However, a notable proportion had concerns about SDL's impact on lecturer involvement and expressed a need for assistance in understanding the approach.

Finally, the logistic regression analysis revealed that while factors like laptop ownership and opinions on SDL had a limited influence on self-directed learning readiness, the most significant predictor was the actual prior engagement in SDL. Students who had previous exposure to SDL methods were more likely to exhibit readiness for self-directed learning.

Overall, these findings underscore the importance of providing nursing students with opportunities to engage in SDL before and during their training. Additionally, they emphasize the need for educational institutions to address students' concerns and provide guidance on the effective implementation of SDL strategies. In the context of Siaya County's nursing education, promoting SDL practices, and addressing individual variations in readiness can contribute to the development of more autonomous and empowered nursing professionals.

6.2.3 Institutional factors influencing SDL readiness

The findings provide valuable insights into the institutional factors that influence SDL readiness among nursing students in Siaya County's medical training colleges. These insights shed light on the complex interplay between various institutional determinants and students' preparedness for SDL.

Firstly, access to the internet and Wi-Fi connectivity emerged as a crucial institutional factor positively associated with SDL readiness. Students who have access to online resources are better equipped for SDL, highlighting the importance of technology in facilitating independent learning. This finding underscores the need for institutions to provide reliable internet access and promote the use of online educational materials to enhance SDL readiness.

Secondly, the presence of SDL mentorship programs significantly influenced students' readiness for self-directed learning. Those who received mentorship in SDL demonstrated a higher level of SDL readiness, emphasizing the pivotal role of mentorship in guiding and supporting students in their self-directed learning journey. This highlights the importance of institutions establishing and maintaining effective mentorship programs to foster SDL skills among nursing students.

However, factors such as access to textbooks in the library and orientation on SDL did not yield significant associations with SDL readiness in this study. While these factors are important, their impact on students' readiness for SDL may be influenced by other variables or may require further exploration and enhancement.

These findings underscore the need for nursing education institutions in Siaya County and similar contexts to prioritize internet access and mentorship programs as integral components of their strategies to promote SDL readiness among nursing students. Recognizing the influence of these institutional factors can contribute to the development of more autonomous and empowered nursing professionals prepared to navigate the evolving landscape of healthcare education and practice.

6.3 Recommendations

- The study findings suggest that the students had a high level of self-directed learning (SDL) readiness. Therefore, this study recommends continuity in this teaching and learning approach by the learners and educators in KMTC. However, the study recommends further research to compare students with high SDL readiness and those with low SDL readiness to identify distinctive student factors and characteristics that influence SDL readiness

- Given the significant influence of mentorship on SDL readiness, this study recommends strengthening mentorship for SDL among nursing students by the KMTC academic council.
- The study findings identified internet/Wi-Fi to influence SDL readiness, attributed to its connectivity and reliability. The study recommends the improvement of technological infrastructure by principals and the KMTC board of directors across various campuses, through the installation of stable and dependable internet/Wi-Fi in places students can access all the time.

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APPENDICES

APPENDIX I: INFORMED CONSENT FORM

Dear Respondent,

I am Moses Juma Abiri, a student at Masinde Muliro University of Science and Technology, School of Nursing, Midwifery and Paramedical Sciences, pursuing a Master of Science in Advanced Nursing Practice. I am conducting a study on '***Factors Influencing Self-Directed Learning Readiness among Nursing Students in Medical Training Colleges in Siaya County, Kenya'***. Respondents will complete a self-administered questionnaire to provide information; your identity will not appear in the report. Additionally, we expect that this study's findings will enhance student nurses' educational experiences and nursing education's teaching strategies. Your responses to the study will be kept private and confidential. The data will only be accessible to the primary investigator and research assistants. Throughout and after the study, the primary investigator will keep the data under lock and key.

For any clarification, please you can contact- **Moses Abiri** -by phone number; - **0729929389 or email at -abirimoses@yahoo.com**

Thank you

I hereby consent to participate in this study.

Signature of participant…… Date……

Signature of Research Assistant……Date…….

APPENDIX-II: QUESTIONNAIRE FOR STUDENTS

The questionnaire has been designed to collect information solely for academic purposes, which will enable the researcher to complete the project on the topic: **Factors Influencing Self-Directed Learning Readiness among Nursing Students in Medical Training Colleges in Siaya County, Kenya**.

The questionnaire is divided into two sections: **Section A:** Individual and Institutional Factors. **Section B:** Self-Directed Learning Readiness Scale

NOTE; - All information will be treated with the utmost confidentiality. Thank you.

Instructions; -

- Please respond to all items in the questionnaire.
- Record your answers in the code column on the right side.
- Do not write your name on the questionnaire.

SECTION A

PART I: ---INDIVIDUAL FACTORS

	QUESTION	RESPONSE	CODE
	SOCIO-DEMOGRAPHICS		
1	How old are you? (years)	_____	
2	What is your year of study?	1.Year 1 2.Year 2 3.Year 3	
3.	Which campus are you in?	1.Bondo 2.Siaya	
4.	What is your gender?	1.Male 2.Female	

5	What is your marital status?	1.Married 2.Single 3.Widowed 4.Divorced/Separated	
6	How do you pay your school fees?	1. Self 2. Guardian/Parent 3. Scholarship 4. Scholarship and self 5. Scholarship and guardian/Parent	
7	Do you have a functional laptop/smartphone/Android	1. Yes 2.No	
8	What is your highest level of qualification	1. KCSE 2.Post-KCSE Certificate 3. Diploma 4. Degree	
9	Have you heard of Self-directed learning?	1. Yes 2.No	
10	What is your understanding of Self-directed learning?	- _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	
11	What is your opinion on Self-directed learning?	1.Its effective and help me learn more on my own, thus prefer it 2.It make lecturers lazy as they neglect	

		their duty of teaching and load us with more assignments 3. I do not understand it thus do not prefer it.	
12	Have you used self-directed learning?	1.Yes 2.No	
	PART II **INSTITUTIONAL FACTORS**		
13	Do you have access to core textbooks in every course in your college library?	1.Yes 2.No	
14	Are you able to access college internet connectivity/Wi-Fi?	1.Yes 2.No	
15	If **Question 14 is NO,** why?	_____ _____ _____ _____ _____ _____ _____ _____ _____ ___	
16	Which method of teaching is commonly used by the majority of the lecturer?	1. Lecture 2. Demonstration 3.Group discussion and presentations 4. Self-directed learning approach.	
17	Are you provided with the course outline at the start of every unit?	1. Yes 2.No	
18	Do you have self-directed learning mentorship in your college?	1.Yes 2.No	
19	Did you receive orientation on SDL?	1.Yes 2.No	
20	Do you use SDL in your learning	1.Yes 2.No	

21	What motivates you in using self-directed learning?	1.Self 2.My teachers 3.My peers 4.Course structure	
22	What hinders you in using SDL?	1.Self 2.My teachers 3.Course structure and load 4.Time constrains	

SECTION B

SELF-DIRECTED LEARNING READINESS SCALE (Fisher, King & Tague, 2001)

The following is a bank of items perceived to reflect the attributes, skills and motivational factors required of self-directed learners.

Please evaluate each item based on how well it measures a characteristic of yourself. Use the 5-point Likert scale below to indicate your response for each item. Circle the number that best represents your view:

1. **Strongly Disagree** – You believe the item does not measure a characteristic of yourself at all.
2. **Disagree** – You believe the item does not measure a characteristic of yourself.
3. **Unsure** – You are uncertain whether the item measures a characteristic of yourself.
4. **Agree** – You believe the item measures a characteristic of yourself.
5. **Strongly Agree** – You believe the item strongly measures a characteristic of yourself.

(SD =strongly disagree, D =disagree, A = agree, U= unsure, SA = strongly agree)

B1. Self -management

ITEMS	**SD 1**	**D 2**	**U 3**	**A 4**	**SA 5**
1. I solve problems using a plan	1	2	3	4	5
2. I prioritize my work	1	2	3	4	5
3. I do not manage my time well	1	2	3	4	5
4. I have good management skills	1	2	3	4	5
5. I set strict time frames	1	2	3	4	5
6. I prefer to plan my own learning	1	2	3	4	5
7. I am systematic in my learning	1	2	3	4	5
8. I am able to focus on a problem	1	2	3	4	5
9. I need to know why	1	2	3	4	5
10. I critically evaluate new ideas	1	2	3	4	5
11. I prefer to set my own learning goals	1	2	3	4	5
12. I learn from my mistakes	1	2	3	4	5
13. I am open to new ideas	1	2	3	4	5

(SD = strongly disagree, D = disagree, U=unsure, A = agree, SA = strongly agree)

B2. Desire for learning

ITEMS	**SD 1**	**D 2**	**U 3**	**A 4**	**SA 5**

1. when presented with a problem I cannot resolve, I ask for assistance	1	2	3	4	5
2. I am responsible	1	2	3	4	5
3. I like to evaluate what I do	1	2	3	4	5
4. I have high personal standards	1	2	3	4	5
5. I set strict time frames	1	2	3	4	5
6. I have high beliefs I my abilities	1	2	3	4	5
7. I am aware of my own limitations	1	2	3	4	5
8. I am confident in my ability to search out information	1	2	3	4	5
9. I do not enjoy studying	1	2	3	4	5
10. I have a need to learn	1	2	3	4	5
11. I enjoy a challenge	1	2	3	4	5
12. I want to learn new information	1	2	3	4	5

B3. Self-control

ITEMS	**SD 1**	**D 2**	**U 3**	**A 4**	**SA 5**
1. I enjoy learning new information	1	2	3	4	5
2. I set specific times for my study	1	2	3	4	5
3. I am self-disciplined	1	2	3	4	5
4. I like to gather the facts before I make a decision	1	2	3	4	5
5. I am disorganised	1	2	3	4	5
6. I am logical	1	2	3	4	5
7. I am methodical	1	2	3	4	5
8. I evaluate my own performance	1	2	3	4	5
9. I prefer to set my own criteria on which to evaluate my performance	1	2	3	4	5
10. I responsible for my own decisions/actions	1	2	3	4	5
11. I can be trusted to pursue my own learning	1	2	3	4	5
12. I can find out information for myself	1	2	3	4	5
13. I like to make decisions for myself	1	2	3	4	5
14. I prefer to set my own goals	1	2	3	4	5
15. I am not in control of my life	1	2	3	4	5

Thank you for your time and participation

APPENDIX III: KEY INFORMANT INTERVIEW GUIDE

SECTION A

1. Which teaching method do you prefer, and what are the reasons behind your preference?_____
_____
_____
_____

2. Explain your understanding of self-directed learning (SDL)

_____
_____
_____
_____

3. What are some of the challenges associated with implementing SDL?

_____
_____
_____
_____
_____
_____

4. What are the factors that influence SDL readiness among diploma nursing students?

_____
_____
_____
_____
_____
_____

6. Provide recommendations for improving the use of SDL for diploma nursing programs.

_____
_____
_____
_____
_____
_____

Thank you for your time and participation.

APPENDIX IV: LETTER FROM DIRECTORATE OF POSTGRADUATE STUDIES

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

Tel: 056-30870
Fax: 056-30153
E-mail: directordps@mmust.ac.ke
Website: www.mmust.ac.ke

P.O Box 190
Kakamega – 50100
Kenya

Directorate of Postgraduate Studies

Ref: MMU/COR: 509099 **19th May 2022**

Moses Juma Abiri,
HNR/G/01-53834/2019,
P.O. Box 190-50100,
KAKAMEGA.

Dear Mr. Abiri,

RE: APPROVAL OF PROPOSAL

I am pleased to inform you that the Directorate of Postgraduate Studies has considered and approved your Masters Proposal entitled: ***"Self-directed learning readiness among Nursing Students in Medical Training Colleges in sSiaya County, Kenya"*** and appointed the following as supervisors:

1. Dr. Damaris Ochanda - MMUST
2. Dr. David Kaniaru - MMUST

You are required to submit through your supervisor(s) progress reports every three months to the Director of Postgraduate Studies. Such reports should be copied to the following: Chairman, School of Nursing & Midwifery Graduate Studies Committee and Chairman, Department of Nursing Research, Education and Management and Graduate Studies Committee. Kindly adhere to research ethics consideration in conducting research.

It is the policy and regulations of the University that you observe a deadline of two years from the date of registration to complete your Masters thesis. Do not hesitate to consult this office in case of any problem encountered in the course of your work.

We wish you the best in your research and hope the study will make original contribution to knowledge.

Yours Sincerely,

MASINDE MULIRO UNIVERSITY
OF SCIENCE AND TECHNOLOGY
DIRECTORATE OF POSTGRADUATE STUDIES
P.O. Box 190 - 50100, KAKAMEGA (K)
Date:..... Sign:.....

Dr.Consolata Ngala
DEPUTY DIRECTOR DIRECTORATE OF POSTGRADUATE STUDIES

APPENDIX V: LETTER FROM INSTITUTIONAL SCIENTIFIC AND ETHICS REVIEW COMMITTEE

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY

Tel: 056-31375
Fax: 056-30153
E-mail: ierc@mmust.ac.ke
Website: www.mmust.ac.ke

P. O. Box 190,
50100.
Kakamega,
KENYA

Institutional Scientific and Ethics Review Committee (ISERC)

REF: MMU/COR: 403012 Vol 6 (01)

Date: July 06th, 2022

To: Moses Juma Abiri
Masinde Muliro University of Science and Technology.

Dear Sir.

RE: SELF-DIRECTED LEARNING READINESS AMONG NURSINGSTUDENTS IN MEDICAL TRAINING COLLEGES IN SIAYA COUNTY, KENYA.

This is to inform you that the ***Masinde Muliro University of Science and Technology Institutional Scientific and Ethics Review Committee (MMUST-ISERC)*** has reviewed and approved your above research proposal. Your application approval number is **MMUST/IERC/072/2022.**The approval covers for the period ***July 06th, 2022*** *to* ***July 06th, 2023.***

This approval is subject to compliance with the following requirements;

i. Only approved documents including informed consents, study instruments, MTA will be used.
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by ***MMUST-ISERC.***
iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to ***MMUST-ISERC*** within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to ***MMUST-ISERC*** within 72 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days upon completion of the study to ***MMUST-ISERC***.

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.

Yours Sincerely,

Prof. Gordon Nguka (PhD)
Chairperson, Institutional Scientific and Ethics Review Committee

Copy to:
- The Secretary, National Bio-Ethics Committee
- Vice Chancellor
- DVC (PR&I)

APPENDIX VI: NACOSTI APPROVAL LETTER

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **588448**

Date of Issue: **21/July/2022**

RESEARCH LICENSE

This is to Certify that Mr.. moses juma abiri of Masinde Muliro University of Science and Technology, has been licensed to conduct research in Siaya on the topic: SELF-DIRECTED LEARNING READINESS AMONG NURSING STUDENTS IN MEDICAL TRAINING COLLEGES IN SIAYA COUNTY,KENYA for the period ending : 21/July/2023.

License No: **NACOSTI/P/22/18995**

588448

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 VII: LETTER FROM BONDO KMTC

MOSES JUMA ABIRI
SCHOOL OF NURSING AND MIDWIFERY
MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY
P.O BOX 190-50100
KAKAMEGA
25TH AUGUST 2022.

25/8/2022.
Permission Granted.

THE PRINCIPAL
KENYA MEDICAL TRAINING COLLEGE-BONDO CAMPUS
P.O BOX 473
BONDO

DEPUTY PRINCIPAL
KENYA MEDICAL TRAINING COLLEGE
P. O. BOX 473 BONDO

Dear Sir,

RE: REQUEST FOR PERMISSION TO COLLECT ACADEMIC RESEARCH DATA

I am a student of Masinde Muliro University of Science and Technology taking a Master of Science Advanced Nursing Practice (Nursing Education),Registration number;- HNR/G/01-53834/2019.As part of the course, am to conduct a research on the topic: **Self-directed learning readiness among Nursing students in Medical Training Colleges in Siaya County, Kenya**.

I hereby request for permission to collect data among nursing students. The research proposal has been approved by Masinde Muliro University institutional scientific and ethics review committee **MMUST/IERC/072/2022**, and the National Commission for Science, Technology and Innovation, **NACOSTI/P/22/189959**(Attached).

Thanking you in advance

Yours faithfully
MOSES JUMA ABIRI

0729929389/Email;-abirimoses@yahoo.com

APPENDIX VIII: LETTER FROM COUNTY COMMISSIONER

REPUBLIC OF KENYA

OFFICE OF THE PRESIDENT

MINISTRY OF INTERIOR & CO-ORDINATION OF NATIONAL GOVERNMENT

E-Mail cc.siaya@yahoo.com
When replying please quote ref. & date

COUNTY COMMISSIONER
SIAYA COUNTY
P O Box 83-40600
SIAYA

CC/SC/A.31 VOL.IV/91

31st August, 2022

All Deputy County Commissioners
SIAYA COUNTY

RE: RESEARCH AUTHORIZATION – MR. MOSES JUMA ABIRI

The person referred to above from Masinde Muliro University has been authorized by the Director General, National Commission for Science, Technology and Innovation vide letter Ref.no *NACOSTI/P/22/18995/588448* dated 21st july 2022 to carry out research on "***self-directed learning readiness among nursing students in medical training colleges",*** for the period ending **21st July 2023**.

Therefore, the purpose of this letter is to ask that you accord him the necessary support as he conducts research in your Sub County.

NOTE: Due to the prevailing COVID - 19 situation, he must observe containment protocols as directed by the Ministry of Health.

A. W. MATOFARI
For: COUNTY COMMISSIONER
SIAYA COUNTY

COUNTY COMMISSIONER
SIAYA COUNTY
P. O. Box 83
SIAYA - 40600

Copy to; Moses Juma Abiri
Masinde Muliro University of Science and Technology

APPENDIX IX: LETTER FROM COUNTY DIRECTOR OF EDUCATION

REPUBLIC OF KENYA
MINISTRY OF EDUCATION
State Department of Early Learning and Basic Education

COUNTY DIRECTOR OF EDUCATION
SIAYA COUNTY
P.O. BOX 564
SIAYA

E-mail:cdesiaya2016@gmail.com

MOE/SYA/CDE/URA/1/10/VOL.II/51 Wednesday, August 31, 2022

TO WHOM IT MAY CONCERN

RESEARCH AUTHORIZATION

MOSES JUMA ABIRI – HNR/g/01-53834/2019

Refer to your request letter dated 30th August, 2022 on the above subject.

Authority is granted to research License No. **NACOSTI/P/22/18995** dated 21ST July, 2022 to be used in conducting research in this county for the period ending 21st July, 2022.

The research title is "***Self-directed learning readiness among Nursing students in Medical Training Colleges in Siaya County, Kenya***"

Please accord him necessary assistance in this County as he may require.

FOR
COUNTY DIRECTOR OF EDUCATION
31 AUG 2022
SIAYA COUNTY
P. O. Box 564 - 4060, SIAYA

OWINO A. ALUSO
FOR: COUNTY DIRECTOR OF EDUCATION
SIAYA COUNTY

Copy to:

All Sub County Directors of Education
Siaya County

APPENDIX X: APPROVAL LETTER FROM KMTC SIAYA CAMPUS

Please address all correspondence to;
KMTC SIAYA CAMPUS
P.O. Box 465 – 40600, Siaya.

Tel: 0748032675
Email: siaya@kmtc.ac.ke
Website: www.kmtc.ac.ke

KMTC SIAYA CAMPUS

When replying please quote;

Ref No.:SYA/MTC/TR.84/VOL.I/193

Date: Thursday 13 October, 2022

Moses Juma Abiri
Masinde Muliro University of Science and Technology
P O Box 190-50100
KAKAMEGA

RE: PERMISSION TO COLLECT ACADEMIC RESEARCH DATA.

This is in regards to your letter requesting to collect data in our Institution, we hereby acknowledge to be in receipt of your letter and you have been allowed to do so, but we request that you provide to us a copy of the proposal before collecting data.

You will also need to provide the time frame for your data collection for our planning.

Thank you.

Alice M.Wagunda (Mrs)
PRINCIPAL