



WHAT WORKS BETTER? A COMPARATIVE ANALYSIS OF VIRTUAL AND FACE-  
TO-FACE MENTORING EXPERIENCES AMONG NURSING STUDENTS AND  
LECTURERS IN NAMIBIA

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By Sithulisiwe Ndlovu

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## Approval of the Thesis

### WHAT WORKS BETTER? A COMPARATIVE ANALYSIS OF VIRTUAL AND FACE-TO-FACE MENTORING EXPERIENCES AMONG NURSING STUDENTS AND LECTURERS IN NAMIBIA.

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## ABSTRACT

### WHAT WORKS BETTER? A COMPARATIVE ANALYSIS OF VIRTUAL AND FACE-TO-FACE MENTORING EXPERIENCES AMONG NURSING STUDENTS AND LECTURERS IN NAMIBIA

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For centuries, nursing has relied on the traditional apprenticeship model of mentoring. The COVID-19 pandemic forced nursing training institutions to quickly transition to online learning without adequate preparation for both students and lecturers. This sudden shift left nursing lecturers and students unfamiliar with virtual mentorship. The purpose of this study was to compare virtual and face-to-face mentoring experiences among third- and fourth-year nursing students and their lecturers during online learning. The cognitive apprenticeship model served as the guiding theoretical framework. A mixed-methods approach with a case study focus and an exploratory sequential design was utilised. The study population consisted of 211 third- and fourth-year nursing students and 51 lecturers. The qualitative phase employed purposive and convenience sampling methods, while the quantitative phase used random sampling for students and total population sampling for lecturers.

The qualitative results identified five themes among both groups of participants: preparation of crucial content for teaching, promoting student expertise and independent learning, group work, and the use of social media platforms for socialisation. Nonverbal communication, psychological support, and the use of videos during live lectures were paramount. The quantitative results revealed positive mentoring experiences with both virtual and face-to-face interfaces from nursing students and lecturers. The study concluded that although virtual mentoring for undergraduate nurses is in its infancy, students' and lecturers' virtual mentoring experiences were comparable to face-to-face mentoring. The study recommends further research on the development of virtual mentoring frameworks and models, as well as the effective use of cognitive apprenticeship model components during virtual mentoring.

## DECLARATION

I declare that this thesis has been composed solely by myself and that it has not been submitted, in whole or in part, in any previous application for a degree. Except where stated otherwise by reference or acknowledgment, the work presented is entirely my own.



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## DEDICATION

I dedicate this work to my husband, Timothy and to my children Tinotendaishe and Abel  
R.K Muvuyah.

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## **CHAPTER 1: INTRODUCTION**

Nursing's antiquity is as old as humankind. Human and Mogotlane (2019) assert that the evolution of nursing from caring without formal education activities to professional nursing in the 18th century closely aligns with changes in societal needs. Women played a crucial role in nursing care by tending to sick individuals at home and offering nurturing activities to their children and extended family members. Traditionally, people viewed nursing as one of the roles that female members assumed. In Hellas and Rome, nursing moved from family circles to the homes of the rich. When those women did not have a family member to take care of at home, they would volunteer to go to the houses of the rich, where medicine men, usually males, provided treatment to the sick. Jacobi (1883a; 1883b) postulates that there may have been hospitals in Greece dating back to the 4th or 5th centuries, although there is no evidence pointing to that. Despite a lack of documented notes, generations have passed down the art of nursing through observation and word of mouth. Donahue (2011) asserts that individuals who honed their nursing skills while caring for the sick gained recognition as nursing experts, leading to a high demand for their services in caring for sick relatives and friends. Thus, they served as mentors to those who aspired to care for the sick.

Florence Nightingale is believed to have initiated professional nursing education at the end of the eighteenth century. Human and Mogotlane (2019) emphasise that Nightingale, who adhered to the nursing profession's standards, grew up in a strong Christian family and felt a calling to nursing. The Crimean War (1853–1856) influenced the development of nursing from simple care to professional nursing. Through

environmental modification, Nightingale attended to the wounded soldiers and managed to reduce the mortality rate from sixty per cent to forty-two per cent. It is interesting to note that while these kinds of activities were taking place in Europe and the United States of America, there were no recorded events in other parts of the world. Roux and Halstead (2009) point out that the word 'nurse' was still vague until the outbreak of the Civil War around 1865.

Florence Nightingale established the first school to provide formal professional nursing education in Keizer Werth, Germany, in 1860 (Searle, 2004). Florence Nightingale established the Florence Nightingale School for Nursing in London in the same year (Human & Mogotlane, 2019). In 1973, the United States of America established its first formal school after a century. Early nursing schools employed the apprenticeship model of training. The apprenticeship model allowed the acquisition of cognitive, psychomotor, and affective skills shared between the mentor and mentee through face-to-face interaction. Pop et al. (2022) agree with Donahue (2011), linking the informal practice of mentoring in nursing to Florence Nightingale's works. Pop et al. (2022) further argue that there is evidence of some letters written to Rachel Williams demonstrating the role of Nightingale as a mentor and Williams as a mentee. The notes included words of motivation, teaching, assessing, and encouraging continuous learning. Missionary work in Africa had a close connection with nursing. The development of professional nursing in Southern Africa came through South Africa. Several factors influenced the development of professional nursing, according to Human and Mogotlane (2019). The influx of trained nurses from Europe, industrialisation, urbanisation, and the

need to blend indigenous health practices with European cultural and health practices were the major driving forces. Sister Henrietta Stockdale provided the first nursing services in 1877 (Searle, 2004). Sister Stockdale's efforts resulted in the registration of the first nurses from the Cape of Good Hope Hospital. Human and Mogotlane (2019) purport that the first country to establish professional nursing and midwifery services on the African continent was South Africa.

Professional nursing activities spread from South Africa to neighbouring southern African countries through Catholic sisters and Finnish missionaries. In Namibia, formal nurse training started in 1930, when the Finish Missionaries opened the first training hospital in Onandjokwe, Northern Namibia (Van Dyk, 1997). The Government of Namibia adopted the apprenticeship learning model for nurses, establishing all nursing schools in hospitals to implement Florence Nightingale's scheme. Human and Mogotlane (2019) argue that work-based learning for student nurses emphasises craftsmanship and the consolidation of skills through repetition. Due to a scarcity of nurse tutors, medical practitioners typically incorporated theoretical input into clinical practice. Luhanga (2016) notes that the apprenticeship model in nursing education provided nurse educators with maximum control over what students learned and how they could evaluate students' progress within the hospital environment.

Vince (1977) provided literature about the concept of mentoring in the 1970s, marking the beginning of the documented relationship between nursing education and mentorship. Further developments in Stewart and Krueger's (1996) literature reveal a shift in the focus of mentorship in nursing education from the ward to the classroom over

the decades. The development of mentoring in nursing education can be traced into five stages described in Table 1.1.

**Table 1.1**

*Development of Nursing Education*

Stage	Period	Activities
The apprenticeship model	Early 20th century	Nursing education followed an apprenticeship model. Working alongside experienced nurses helped student nurses learn. This hands-on approach facilitated the transfer of practical skills and knowledge in a real clinical setting.
Formalisation of Nursing Education	Mid-20th century	With the establishment of nursing schools and curricula, the mentorship model persisted. Experienced nurses served as clinical instructors, guiding students in both classroom and clinical settings. Mentoring was an integral part of the education process supplementing theoretical knowledge with practical experience.
Transition to college and university-based programs	Late 20th century	Many programmes are transitioning from hospital-based to college- and university-based settings. Despite these changes, the mentorship model remained a key component, ensuring that students received hands-on training and guidance from experienced nurses.
Introduction of preceptorship programmes	Late 20th century	The concept of preceptorship gained popularity in nursing education. Preceptorship involves pairing a student with an experienced nurse in a one-on-one relationship, allowing for personalised guidance and support. This model became important as nursing education diversified and students pursued a variety of specialties.
Emphasis on evidence-based practice	Late 20th century to present	Mentorship evolved to include the development of critical thinking and research skills. Mentors not only guide students in clinical skills but also help them navigate the research literature and apply evidence-based approaches to patient care.
Role of mentorship in professional development	Present	In contemporary nursing education, mentoring still plays a critical role in the professional development of nursing students. Mentoring extends beyond the acquisition of clinical skills, guiding leadership, ethics, communication, and other essential aspects of nursing practice.
Integration of Technology	Present	The present transition integrates technology. The growing use of online platforms and simulation has influenced the mentoring process in nursing education. Virtual mentorship, e-mentoring, and simulation scenarios have become increasingly common expanding opportunities for mentoring in diverse settings.

Luhanga (2016) adds that the goal of the apprenticeship approach was to develop not only the knowledge and skills but, also the covert processes of cognition, metacognition, and nursing culture. Human and Mogotlane (2019) point out that qualified nurses and nurse tutors play a pivotal role in protecting patients' and the public's rights to quality nursing services. They had a responsibility to serve as role models and mentors, inspiring students to strive for excellence. The dedication to mentoring ensured effective relationships and professional growth between nurse tutors and their students. Throughout its history, mentoring in nursing education has adapted to changes in the healthcare landscape, education systems, and technology. The enduring nature of mentorship reflects its importance in preparing the next generation of nurses for the challenges and responsibilities of the profession.

Nightingale had strong, scientifically-based principles that influenced the evolution of nursing education, some of which are still in practice in modern-day nursing. According to Human and Mogotlane (2019), Nightingale was the first nursing theorist to come up with evidence-based practice and critical thinking in her Environmental Theory. She established infection control principles through environmental theory, nutrition, and wound care, which are still applicable in nursing practice. Europe developed its nursing curriculum using the Nightingale notes on nursing and the Nightingale environmental theory.

Traditionally, nursing education has relied on face-to-face, one-on-one, and group mentoring approaches. Experienced nurse educators acted as role models and coaches (National League of Nursing [NLN], 2006). Vance and Olson (1991), as well as Love and



McCarthy (2018), define apprenticeship nurse training as a system in which students receive classroom instruction as well as time allocated for on-the-job training during clinical attachment and remuneration. During on-the-job training, students received mentorship, solidifying the connection between nurse training and mentoring.

The advent of private nursing schools in Namibia provided an opportunity for educationists to engage in nurse training to continue the supply of nursing human resources. Except for the University of Namibia, the majority of nurse training institutions operate privately. According to Namibia's nurse training regulations, the Nursing Act of 2004 provided for accreditation and approval of private institutions to train different nursing cadres. The Health Professions Council, through the Nursing Council of Namibia, is responsible for regulating nurse training in Namibia. The National Qualifications Authority (NQA) and the Namibian Council of Higher Education (NCHE) act as watchdogs to ensure that the institutions that train nurses provide quality education and adhere to training standards. Government institutions have phased out the Diploma in Nursing and Midwifery Science training to make room for private nurse training institutions. So far, three institutions have trained Bachelor of Nursing Science students in Namibia: the University of Namibia (UNAM), the International University of Management (IUM), and the Welwitchia Health Training Centre (WHTC).

Grossman (2013) points out that mentors use frequent verbal communication, empathy, and active listening skills during face-to-face interaction with the student. The author adds that mentoring enhances recruitment and reduces student attrition in nursing schools. This also applies to the sharing of skills and attitudes in non-formal nursing

during ancient times, when individuals who pursued nursing activities considered it a vocation. The Canadian Nurses Association (2004) acknowledges that the definition of mentorship in nursing varies depending on the context.

Nursing lecturers and student nurses have been enjoying the benefits of traditional face-to-face instruction. However, in 2020, the COVID-19 infection pandemic disrupted normal classroom teaching due to its restrictions. During the pandemic's peak, nurse training institutions abruptly transitioned to online lecture delivery. The separation between nurse lecturers and their student nurses left them uncertain about how the online learning interface would help them achieve their goals. The absence of face-to-face interactions left some grey areas of uncertainty in mentoring relationships. The situation affected face-to-face interaction between students and lecturers as there was a restriction on movement and social distancing.

Clement (2018) states that postgraduate nursing students, particularly doctoral students, have largely utilised virtual mentoring. Face-to-face teaching has not exposed undergraduate students to this practice. Maritz and Roets (2013) also acknowledge that virtual mentoring is a new concept in nursing and that there is limited research on its effectiveness. Billing and Halstead (2009) suggest that virtual mentoring networks could enhance nursing education by shifting from traditional, rigid methodologies to a technology-driven environment. This modern approach enables nurses to make informed patient care decisions.

## **Statement of the Problem**

Morin (2020) contends that the study of virtual mentorship in nursing has not garnered as much scrutiny as it has in other domains, such as higher education. The lack of study on virtual mentoring in nursing education, especially at the undergraduate level, can be attributed to the predominant use of face-to-face training.

According to Clutterbuck et al. (2017), virtual mentoring is a seventh typology that evaluates how virtual mentoring occurs and is a precursor to positive online learning outcomes. Virtual mentoring is synonymous with cyber-mentoring, remote mentoring, and distance mentoring. Despite the existing literature on virtual mentoring, the authors acknowledge that there are unexplored areas, particularly real-time mentoring. Figueroa (2017) evaluated virtual mentoring strategies for students in under-represented industries. The author observes that, due to the nature of instruction in medical sciences, students in medical professions were largely unfamiliar with virtual mentoring. In recent years, technological advancement has influenced how Generation Z students think and learn. Therefore, Figueroa (2017) recommends that educators need to sustain connections with young students by evolving the ways they interact using various engagement styles.

For many students entering the academic environment, resilience within the programmes may be challenging (Clutterbuck et al., 2017). Gregg et al. (2010), as cited in Figueroa (2017), argue that mentoring is a vehicle for increasing student retention and persistence in professional programmes. Furthermore, Searle (2004) contends that mentoring plays a crucial role in promoting student retention and persistence in

professional programmes. Nursing involves the transfer of overt skills like resilience, self-confidence, reflection, curiosity, and tolerance to novice students through teaching and learning interactions. As a result, the nursing profession heavily relies on traditional face-to-face mentoring to teach, guide, coach, and role model nursing students. Tornwall (2022) argues that mentoring has proven to touch the heart and mind of a student if executed properly. One-on-one and group mentoring approaches typically facilitate face-to-face interactions. On the other hand, virtual mentoring harnesses the power of technology in a web-based environment to foster the mentor-mentee relationship without face-to-face meetings (Tinoco et al., 2020). Figueroa (2017) also purports that using the computer interface, virtual mentoring provides more flexible interactions across distances, races, and cultures. Educators have yet to investigate several virtual mentoring strategies that the author identified for classroom use.

In March 2020, the declaration of COVID-19 as a global pandemic forced most higher education institutions to migrate to online teaching platforms. The predicament also affected Namibia's nurse training institutions. According to Morin (2020), the sudden migration from face-to-face to online instruction in nursing education has challenged nurse education institutions to be innovative. The lockdown challenges and restrictions on public gatherings due to the onset of COVID-19 automatically substituted traditional face-to-face mentoring with virtual mentoring, impacting interactions between students and nursing lecturers. Despite the challenges, most institutions could not shut down but had to find means of survival amid COVID-19 threats. Shaikh (2017) contends that within a profession as intricate as nursing, mentoring is a vehicle for supporting holistic

development among nursing novices and promoting resilience during crises. The author laments the lack of clear understanding and formal mentoring frameworks that support mentoring relationships. With this in mind, online learning introduced the challenges of unfamiliarity and fear of the unknown among nursing students and their lecturers.

Morin (2020) reviewed the status of nursing education in the post-COVID-19 era in Nepal to find out the impact of face-to-face restrictions on nursing education in Nepal post-COVID-19. The author also observes that the online interaction between the nursing lecturer and the student diminishes the cultural knowledge and self-reflection they would otherwise acquire from the nurse educator during face-to-face instruction. The lecturer effectively conveyed the intended material to the students through the online platform, ensuring that the cognitive aspects of the coursework were thoroughly covered. However, there was a noticeable gap in addressing the affective domain. This domain, which includes emotional and interpersonal dimensions of learning, is critical for fostering a well-rounded educational experience and was not adequately addressed.

Barrett (2010) argues that the virtual learning environment primarily focuses on the cognitive domain, neglecting the affective and psychomotor domains that mentoring typically enhances. In addition, Keengwe (2019) highlights that learners engaged in virtual learning often encounter significant challenges related to media literacy skills and the affordability of smartphones. Media literacy skills, which encompass the ability to critically evaluate and effectively use various forms of digital content, are essential for successful participation in online education. Many students, however, may lack these skills, leading to difficulties in navigating online learning platforms, understanding digital

content, and engaging with interactive educational tools. Although there may be some disadvantages to mentoring using the digital interface, Tornwall (2022) argues that virtual mentoring provides cost-effective experiences and diversity in nursing education.

Most undergraduate nursing students experienced online learning for the first time because of COVID-19 restrictions. Undoubtedly, there was inadequate preparation due to the unforeseen nature of the pandemic. Private Nurse training institutions primarily provide nursing training in Namibia, as highlighted earlier in the introduction. Students need to continue their learning, and lectures are necessary to keep them engaged. Amid the COVID-19 crisis, nurses needed to maintain their jobs and ensure the viability of nurse training institutions. There was a scramble for possible online learning platforms to keep businesses afloat. Therefore, challenges of access to internet facilities, affordability of smart gadgets, and infrastructure were inevitable. Tornwall (2022) identified many researchable areas of virtual mentoring, such as ethical and cultural influences, developing collaboration, and relationships. However, this research delved into the experiences of students and nurse lecturers during virtual learning, aiming to understand how their virtual mentoring experiences differed from face-to-face mentoring.

### **Purpose of the Study**

The purpose of this research study was to conduct a comparative analysis of virtual and face-to-face mentoring experiences among 3rd and 4th-year Bachelor of Nursing Science students and their lecturers at nurse training institutions in Namibia. According to Huggins (2016), mentoring is a training system in which a more experienced

individual guides a student, developing their skills, improving performance, and achieving career goals. Technology has continued to evolve and influence how students and instructors interact. Given the ever-changing interaction environment, Figueroa (2017) maintains that there is a need for student-teacher engagement strategies that suit technological development. Nursing faculty cannot ignore the inevitable force of virtual mentorship. As an online communication style, it uses tools such as Skype, email, telephone, and messaging to enable communication.

Following the isolation and confirmation of the first COVID-19 case, Namibia entered a social shutdown in mid-March 2020. According to Shikololo (2020), the Ministry of Education and Culture announced that schools and higher learning centres could reopen in April 2020, with e-learning as the sole method of lesson delivery. As a result, the sudden migration to online learning without adequate preparation challenged both the student's and the lecturer's mentoring relationships. The pandemonium that occurred during the COVID-19 lockdown served as motivation for this study. Interestingly, institutions that did not have an established online learning platform used social media interfaces such as Workplace, Google Meet, and Zoom to conduct lectures. Such platforms may pose a risk of cyberattacks, a lack of accountability, privacy, and confidentiality, distractions, and a limited quality of interaction. Considering these obstacles, this research aimed to explore the dynamics through which nursing students and nurse educators established mentoring relationships conducive to fostering academic achievement and the personal development of the students during online learning.

## **Research Aims and Objectives**

Virtual mentoring is a new concept in nursing education. Clement and Welch (2017) assert that the business, military, and higher education environments have been using virtual mentoring for decades. Nursing lecturers have extensive face-to-face mentoring expertise but little or no online teaching experience, notably before the COVID-19 pandemic (Morin 2020). The author further argued that online interfaces should be able to merge face-to-face mentoring skills with virtual mentoring to enhance student learning experiences during virtual interactions. Virtual mentoring aims to provide motivation and emotional support to students using technology. Researchers have found that fully engaging students during online learning reduces absenteeism and student attrition, particularly when the students' experiences mirror those of face-to-face mentorship relationships. Brannagan and Oriol (2014) state that it bridges the generational gap that is mostly found between experienced and novice nurses by strengthening support and collaboration between the two groups. This may move nursing away from rigid old ways to flexible two-way learning experiences that prepare both mentors and mentees to handle the impact of technology in the nursing profession.

Most undergraduate students are part of the Generation Z population. According to Francis and Hoefel (2018), Generation Z is a young population primarily born in the 2000s. Generation Z was born in the technological age of the internet and social media. They are characterised by their zeal to search for both communal and personal truth. They have greater openness and freedom of expression than the previous generations.



Most lecturers fall under Generation X (1960–1979) and Generation Y, also called the Millennials (1980–1995). Francis and Hoefel (2018) assert that political transitions primarily impacted these generations. Despite the internet's emergence, they seem uninterested in exploring the various truths embedded within it. Examining the virtual mentoring experiences of 3rd and 4th-year nursing students and lecturers provides valuable insights into their use of technology, the internet, and social media. This sheds light on the potential for these tools to facilitate meaningful mentoring interactions in the nursing field. The study also compared virtual and face-to-face mentoring experiences.

The aim of conducting a comparative analysis of virtual and face-to-face mentoring experiences for nursing students was to evaluate the effectiveness, advantages, and disadvantages of each mentoring approach. By comparing these two modalities, the researcher can identify which method better supports the academic, professional, and personal development of nursing students. Analysing the two approaches also sheds light on the implementation and optimisation of mentoring approaches in nursing education, considering factors such as accessibility, engagement, and the quality of mentor-student interactions. Also, the exploration provided means to understand virtual mentoring experiences that have not been clearly defined by the students and lecturers, as it was a first-time experience.

The broad question of the study was:

How do 3rd and 4th-year nursing students and their lecturers perceive the effectiveness and benefits of virtual mentoring compared to traditional face-to-face mentoring experiences?

The following objectives were developed:

1. To explore the virtual mentoring experiences among 3rd and 4th-year nursing students, while also examining the perspectives of nurse lecturers engaged in virtual mentoring.
2. To perform a comparative analysis of mentoring experiences, comparing virtual mentoring with traditional face-to-face methods for nursing students and their lecturers.
3. To discover valuable insights aimed at improving the virtual mentoring dynamics between nursing students and their lecturers.

### **Nature and Significance of the Study**

The study's nature involves following a systematic structure of procedures in research to transform data into meaningful results and draw conclusions (Brink et al., 2018). According to Bryman et al. (2017), the methodology of choice should have precision and objectivity. The use of appropriate research designs and standardised instruments eliminates biases. This study employed a mixed-methods approach to investigate 3rd and 4th-year nursing students' and lecturers' virtual mentoring experiences during remote learning. According to Johnson et al. (2007), integrating two methods allows qualitative exploration of the meaning and understanding of constructs from the participant's point of view. The quantitative strand assesses the frequency and magnitude of the identified constructs. The study answers research questions by qualitatively exploring patterns of mentoring interactions between nursing students and

nursing lecturers during virtual mentoring and quantitatively comparing them with face-to-face mentoring experiences. According to Creswell and Clark (2018), the mixed-methods approach has the advantage of providing a description and understanding of virtual mentoring experiences from the participant's perspective, given that virtual mentoring is a new phenomenon among undergraduate students. We tested hypotheses derived from the descriptions to understand how students and lecturers compare their virtual and face-to-face mentoring experiences.

This study used an exploratory sequential design. Exploring has been a human's passion since time immemorial (Creswell & Clark, 2018). Exploratory designs enable the researcher to provide an empirically based picture of what is happening. They build tentative propositions from the large amount of unstructured data they collect. Bryman (2012) contends that it is impossible to conceptualise or theorise human experiences. The explorative design allowed the researchers to collect qualitative data from participants who described mentoring experiences from their perspectives. The first group of participants were third- and fourth-year nursing students pursuing a Bachelor of Nursing Science degree. The additional group of participants consisted of lecturers from three collaborating institutions—IUM, UNAM, and WHTC—instructing the Bachelor of Nursing Science degree programme. The researcher collected data through focus group discussions with students and telephonic interviews with lecturers, as the study aimed to explore mentoring experiences. Polit and Beck's (2017) assertion informed the choice of data collection techniques, as phenomenological studies aim to comprehend experiences beyond quantification. Therefore, researchers employ interviews to elicit

participants' detailed descriptions of the phenomenon they are investigating. In addition, the sequential design allowed the collection of qualitative data first, followed by the collection of quantitative data. According to Creswell and Clark (2018), exploratory sequential studies have two variants: theory development variants and instrument development variants. The latter scenario occurs when the researcher uses qualitative data to guide the development of a qualitative instrument for testing hypotheses. The authors argue that the exploratory sequential design allows the researcher to delve deeper into the subject matter before determining which variables to measure.

Purposive sampling was used to collect qualitative data from students, and convenient sampling for nursing lecturers. Creswell and Clark's (2018) observations guided the choice of sampling techniques. The authors noted that purposive sampling makes it easier for the researcher to identify participants who have experienced the phenomenon under study. Furthermore, the authors also pointed out that convenience sampling, sometimes called availability sampling, may be used to recruit readily available participants for the study. Focus group discussions and interviews were done until no new data emerged from the participants. Qualitative data collected through virtual focus group discussions and telephone interviews was audio-recorded and transcribed manually. The steps of qualitative data analysis described by Nowell et al. (2017) and Braun and Clarke (2006) guided the thematic analysis. Qualitative data was analysed using the STATA software package.

As previously mentioned, Morin (2020) posits that online mentor-mentee interactions diminish the cultural and self-reflection learning that would occur during face-

to-face interactions. In addition, Barret's (2010) analysis of virtual interactions revealed that the virtual learning environment largely covers the cognitive domain, leaving grey areas in the affective and psychomotor domains. Mentorship typically strengthens these two domains. Clement and Welch (2017) note that virtual mentoring imposes inherent restrictions on the exchange of information between the lecturer and the student, particularly when the latter has limited time to fully understand the subject matter. This may lead to demoralisation and a lack of self-reflection and self-esteem for the student. In addition to Clement and Welch's (2017) observations, Keengwe (2019) highlights that learners engaged in virtual learning may face challenges related to media literacy skills and the affordability of smartphones. Tinoco et al.'s (2020) literature review on the future implications of virtual mentoring in higher education recommends that there is still a need for research work to find strategies that seek to establish effective mentor-mentee relationships that foster the sharing of information, skills, and culture, just as in traditional mentoring relationships.

According to Crisp and Cruz (2016), traditional mentoring programmes have the same limitations as those that threaten the effectiveness of online mentoring. However, if academic institutions leverage computer-mediated communication, they can access virtual mentoring through social media, mobile messaging, and virtual communications. The interfaces may serve as major routes of communication, making it possible for students and lecturers to realise virtual mentoring goals. Given these possibilities, this study aimed to investigate the experiences of 3rd and 4th-year Bachelor of Nursing Science students and nursing lecturers during virtual mentoring. A comparison with

traditional face-to-face mentoring experiences provided the basis for finding ways to strengthen virtual mentorship experiences.

The nursing profession needs to keep abreast of current trends and fast-paced technological advances (Figueroa, 2017). Threats to traditional face-to-face nursing instruction have led nursing lecturers to abandon the belief that "we have always done it this way," allowing them to embrace the inevitable change that nursing education is facing. According to Glen and Cox (2006), the nursing profession cannot stay ignorant of the societal forces that demand a shift in the mindset of the 21st-century nurse. Changes in social, cultural, and political institutions affect family, work and employment industries, education, and a growing tendency towards choice. Given the inevitable changes, Morin (2018) recommends that to stay relevant in healthcare reforms, nursing education should create a robust virtual mentoring environment that has the same efficacy as traditional face-to-face mentoring relationships. The study aimed to inform action on virtual mentoring, as the era of online learning is inevitable in nursing education. Proactive institutions will benefit, especially when staff and students are psychologically prepared, despite Namibia's technological limitations as a middle-income country.

The goal of this research study was to identify unexplored areas that nurse educators and student nurses could employ during virtual interactions. For many students and nurse lecturers, remote learning was their first experience during the COVID-19 pandemic. It is the nature of human beings to have feelings of hopelessness, anxiety, and despair when faced with situations that move them away from the zone of comfort. The research built upon the implications of its findings to identify and suggest

improvements for the practice of virtual mentoring. The implications laid the groundwork for future research recommendations. For example, nurse training institutions need to review their curriculum to incorporate online instruction and pave the way for virtual mentoring activities. Although COVID-19 has subsided, nurse training institutions have adopted blended learning to improve online learning. For example, WHTC is collaborating with the University of Witwatersrand, South Africa, through the European Union funding programme to improve health sciences education in Southern Africa. The project aims to use advanced technologies in and outside the classroom to teach and assess students' competencies.

Figuerola (2017), Clement (2017), and Morin (2020) have noted that virtual mentoring in nursing is still in its infancy. Therefore, they recommend further explorations in various areas to ensure mentoring remains relevant in the digital era. Notably, this study combined the participants' practice data suggestions and practice recommendations.

The importance of this study lies in its capacity to offer insights into the most efficient mentoring approaches for nursing students and lecturers. By examining both virtual and face-to-face mentoring experiences, the study can inform educational institutions and healthcare organisations about the optimal approaches to supporting the growth and success of nursing students without face-to-face interactions. Additionally, the findings can contribute to the development of evidence-based practices and policies aimed at enhancing virtual mentoring programmes within nursing education, ultimately improving the quality of online learning and mentoring.

## **Research Questions**

Developing research questions helps to focus and narrow the purpose of the statement (Creswell & Clark, 2018). The research question is broad. According to Swaminathan and Mulvihill (2017), research questions are the heart of a research study. The authors argue that the ability to formulate qualitative research questions depends on the researcher's strong conceptual and practical critical thinking skills. The breadth of research questions indicates their applicability at different stages of a research study. First, research questions aim to justify the study's relevance in the conceptual stage. Second, they provide advice on the depth and breadth of the literature. The researcher refines and orients the literature review according to the research question under investigation. Last, research questions provide precision, clarity, and accuracy during the data collection, analysis, and reporting stages. A mixed-methods study develops both qualitative and quantitative research questions. Quantitative research questions differ from qualitative research questions, and both serve different purposes. According to Fischler (2018), quantitative research questions are more concerned with the cause-and-effect relationship. They question differences, magnitude, and why things happen. Qualitative questions are open-ended inquiries that aim to gather detailed and descriptive responses from participants. These questions aim to delve into the thoughts, feelings, experiences, and perspectives of individuals. These questions typically do not have predetermined response options but instead allow participants to provide narrative responses that can be rich in detail and context. Researchers use words like 'how,' 'what,' and 'why,' to encourage participants to elaborate on their experiences and opinions (Brink



et al., 2018). They may also involve probing follow-up questions to explore responses further.

The researcher designed the qualitative questions to gather qualitative data on the respondents' experiences, structuring them in an open-ended format to allow both student nurses and lecturers to articulate their subjective experiences of virtual mentoring. The development of the quantitative research questions was based on these descriptions. As student nurses and lecturers had encountered both face-to-face and virtual mentoring before and during lockdown restrictions, the qualitative questions aimed to explore virtual mentoring experiences. Subsequently, the quantitative questions aimed to compare the virtual and face-to-face mentoring experiences of nursing students and lecturers.

The following research questions were developed to guide the study:

RQ1. What are the virtual mentoring experiences of 3rd and 4th-year nursing students?

RQ1a. What are the face-to-face mentoring experiences of 3rd and 4th-year nursing students?

RQ1b. What are the virtual mentoring experiences of nursing lecturers?

RQ1c. What are the face-to-face mentoring experiences of lecturers?

RQ1d. How do nursing students compare virtual mentoring to face-to-face mentoring experiences?

RQ1e. How do the nursing lecturers compare virtual mentoring experiences to face-to-face mentoring experiences?

RQ1d. How do the nursing lecturers compare virtual mentoring experiences to face-to-face mentoring experiences?

## **Hypotheses**

According to Brink et al. (2018), quantitative researchers use hypotheses as a method to substantiate, verify, or reject assumptions. Dayanand (2018) viewed a hypothesis as a researcher's assumption or prediction about a relationship between two variables. Tashakkori and Teddlie (2010) assert that a mixed-methods study uses hypotheses to address the quantitative dimension, utilising participant descriptions to predict relationships among variables. Hypotheses help the researcher reach a conclusion based on two conflicting assumptions. Dayanand (2018) highlights several advantages of hypothesis testing in research. Replicating a study through hypothesis testing ensures its reliability. Testing facts that demonstrate a relationship between variables allows for the drawing of logical conclusions.

This research formulated two types of hypotheses: the null hypothesis and the alternative hypothesis. A null hypothesis ( $H_0$ ) rejects a relationship between face-to-face and virtual mentoring experiences, whereas an alternate hypothesis ( $H_a$ ) accepts the relationship between face-to-face and virtual mentoring experiences.

The hypotheses developed for this study were:

H1<sub>0</sub>. There were no significant differences between virtual and face-to-face mentoring experiences among nursing students.

H1<sub>a</sub>. There were significant differences between virtual mentoring and face-to-face mentoring experiences among nursing students.

H1<sub>0</sub>. There were no significant differences between virtual and face-to-face mentoring experiences among nursing lecturers.

H1<sub>a</sub>. There were significant differences between virtual and face-to-face mentoring experiences among nursing lecturers.

The reason for hypotheses testing was to determine whether virtual mentoring is as effective as face-to-face mentoring, particularly in situations like lockdown restrictions where in-person interactions are limited. The researcher also aimed to generate empirical evidence that informs evidence-based decision-making processes regarding mentoring in nursing. Institutions, policymakers, and educators can use the findings to make informed decisions about the implementation, modification, or continuation of virtual and face-to-face mentoring programmes based on their efficacy and suitability for the nursing education context. Understanding the relative effectiveness of virtual and face-to-face mentoring can help institutions allocate resources more efficiently. If one approach proves to be more effective or cost-efficient, it may warrant greater investment or adoption, leading to optimised resource allocation. Furthermore, one cannot overemphasise the contribution of mentorship to effective assessment. By comparing the outcomes of experiences with both mentoring interfaces, academic performance, satisfaction levels, and skill development between the two modalities, researchers can determine which method yields better results.

## **CHAPTER 2: LITERATURE REVIEW**

### **Introduction**

This chapter presents literature on mentoring. The review's goal was to identify the theoretical and methodological contributions other studies have made to the subject under study. First, the chapter presents a comprehensive overview of the guiding themes in literature search and the search engines employed during the study. The chapter proceeded with a detailed explanation of the theoretical framework that guided this investigation, showcasing specific studies that employed it, and providing a synopsis of results to validate its selection in this study. Second, the researcher conducted an in-depth and comprehensive literature review on the mentoring process in nursing; highlighting the distinctions between traditional and cognitive apprenticeship models, as well as the advantages of mentoring. Since the focus of this study is virtual mentoring, a thorough review of mentoring on virtual platforms was conducted. The review paved the way for understanding student and nurse lecturers' experiences during virtual learning.

### **Literature Search Strategy**

The literature search strategy employed the SPIDER (Sample, Phenomena of Interest, Design, Evaluation, and Research Type) tool as described by Cooke et al. (2012). The SPIDER search tool allowed the researchers to define key elements of the research question and direct the search strategy. The D for design was excluded from the search criteria since the literature review does not target a specific research approach. The search criteria also excluded the R for research type because the review did not rely

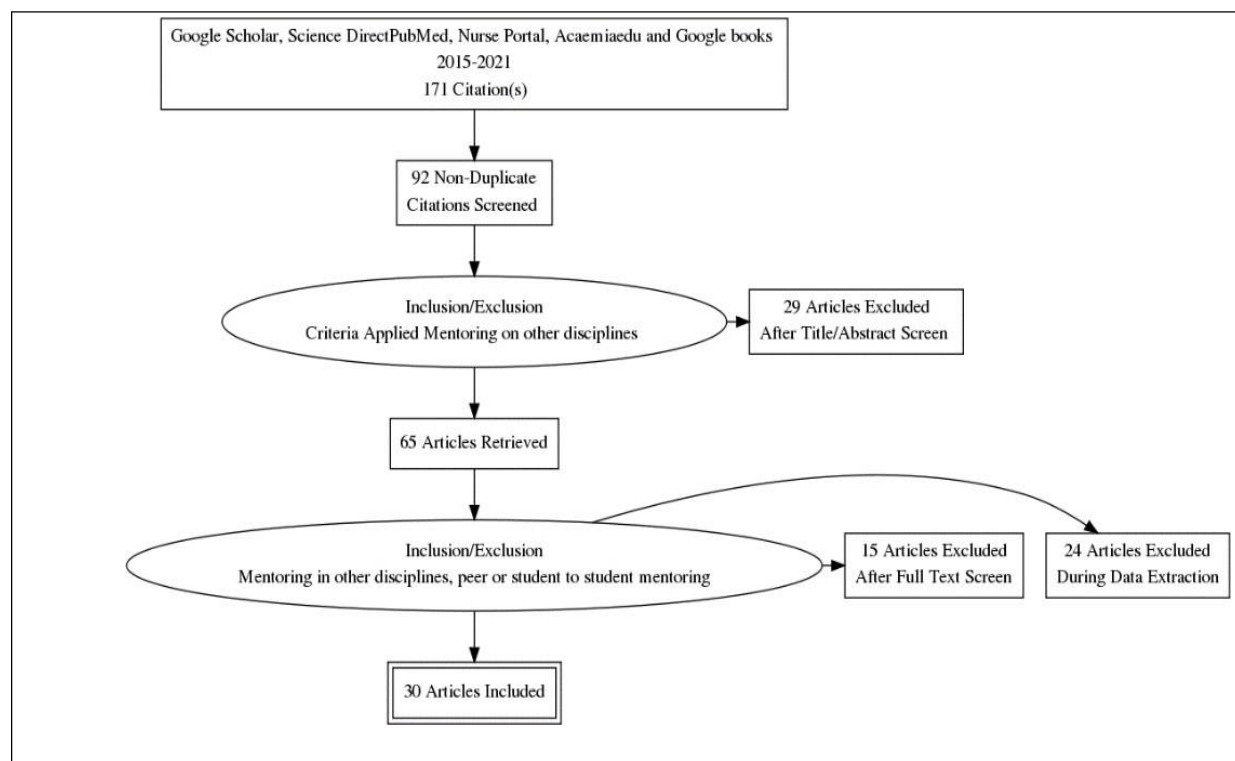
on articles that referenced it. The search inclusion criteria were S (sample), PI (phenomena of interest), and E (evaluation). The first guiding theme was the sample, which represents who is being looked at or the population under study. The keywords nurse, educator, and student nurse were used. These were merged with the phenomena of interest that describe the reason for behaviour, actions, or decisions. The phenomena of interest in this study were mentoring, mentoring experiences, traditional apprenticeship or cognitive apprenticeship, virtual mentoring, nursing education, and higher education. The phenomena of interest were paired with the E, or what is being evaluated, which are the experiences.

An extensive current literature search was done using Google Scholar to find reviewed scholarly articles that are less than five (5) years old. Google Books has selected particularly updated additions from Google Scholar, Science Direct, PubMed, Royal College of Nursing, Nurse Portal, Academia.edu, Google Books, and the e-library. Peer-reviewed articles that are less than five years old were reviewed, except for the proposed theory and supporting material. Relevance was used to review studies on the main research question, and at least three (3) most relevant articles were selected per theme. Each article's analysis was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) format to cover all aspects of the included articles. Cooke et al. (2012) argue that the role of PRISMA flow is to promote transparency, methodological rigour, efficiency, communication, and quality assurance throughout the review process. By adhering to PRISMA guidelines, the researcher

enhanced the credibility and reliability of the literature review by documenting the flow of information in a structured manner.

**Figure 2.1**

*Prisma Flow Diagram of Literature Reviewed*



## Theoretical Framework

Lederman and Lederman (2015) contend that the absence of a framework in a research study indicates a deficiency in the researcher's ability to justify their findings. The weakness is due to the data's non-existent validity and, consequently, reliability. For this study, I selected the Cognitive Apprenticeship model. The Cognitive Apprenticeship (CA) model of mentoring is a framework for learning and skill development that draws

inspiration from traditional apprenticeship methods but integrates cognitive psychology principles. Developed by Collins, Brown, and Newman in the late 1980s, this model emphasises the importance of guiding novices through authentic tasks while making the underlying thought processes explicit.

In nursing, mentoring is a two-fold phenomenon. In the classroom, academic mentoring takes place, while clinical mentoring occurs in a practical setting. This study focuses solely on virtual classroom mentoring, so the CA model is chosen. Cooper and Palmer (1992, as cited in Barret, 2010) contend that a CA model perspective can elucidate the reasoning behind mentoring techniques. Keating and DeBoor (2017) assert that Florence Nightingale (1860–1896) established the traditional mentorship model as the preferred method of nurse training. Between 1969 and 1979, nursing faced significant criticism from the General Nursing Councils in England, which advocated for nursing to become a standalone profession and increased theoretical input for nursing students. Keating and DeBoor (2017) further note that this movement led to an emphasis on vocational training ethics for nurses, resulting in the addition of more theoretical content and classroom instruction hours to balance with clinical practice hours. However, nurse training today continues to utilise the principles of the apprenticeship model.

Advances in the discipline of psychology enabled educationists to better understand human learning and borrow from cognitive psychology to develop theories that support the acquisition of knowledge and skills. According to 'O' Brian and Thompson (1992), the strength of cognitive learning theories is that they do not take a learner as a passive recipient and consumer of information, but view learning as an active, internally

mediated process leading to scientific productivity. Braungart and Braungart (2019) align with O'Brien and Thompson (1992), asserting that cognitive learning revolves around the student's perception, processing, and structuring of given information to make sense.

Olurunfemi (2019) asserts that acquiring competence requires mentoring interactions that balance assignment completion, observation, and demonstration. According to Lyons et al. (2017), the cognitive CA focuses on making thinking visible to both the student and the lecturer during theoretical input. An examination of the CA model of mentoring reveals several assumptions that provide a theoretical foundation for understanding how learning occurs and how mentors can effectively support learners in acquiring expertise.

1. Learning is situated: The cognitive apprenticeship model assumes that learning is situated within authentic contexts relevant to the learner's goals and experiences. Real-world tasks, problems, and activities embed learning, reflecting the complexities of the studied domain, instead of abstract or decontextualised knowledge.
2. In this context, we view learning as a social process that involves interaction and collaboration with others, especially more experienced individuals like mentors or peers. Social interactions provide opportunities for students to observe, imitate, discuss, and receive feedback, which is essential for constructing knowledge and developing expertise.
3. Learning is active: The CA model emphasises that education is an active process involving learners' engagement in meaningful tasks and problem-solving activities.



Mentors encourage students to actively participate in their own learning by applying, practicing, and reflecting on newly acquired knowledge and skills.

4. The CA model views learning as purposeful and goal-directed. The motivation and interests of learners drive its activities and aspirations. Mentors play a crucial role in guiding learners' intentions, setting clear goals, and helping them monitor their progress toward achieving desired outcomes.
5. The CA model scaffolds learning by providing structured guidance, resources, and feedback tailored to the student's current abilities and needs. It gradually withdraws support as learners gain greater proficiency and independence.
6. Learning is reflective. Within the CA model, reflection is an integral component of learning. Mentors encourage students to reflect on their experiences, assess their understanding, identify areas for improvement, and set goals for future learning. Reflection promotes metacognitive awareness and self-regulation, enhancing learners' ability to monitor and control their learning processes. Collins et al. (1991) argue that students demonstrate metacognitive processes by recognising when they understand a concept or when they are struggling, enabling them to employ appropriate strategies to enhance their understanding or overcome obstacles.
7. Learning is transferable: The CA model aims to cultivate not only domain-specific knowledge and skills but also generalisable cognitive strategies and problem-solving abilities that can be applied across diverse contexts. Mentors help students develop flexible and adaptive expertise that enables them to transfer their learning to new situations and challenges.

The advantage of using this model in exploring virtual mentoring experiences was its capability to integrate academic and vocational learning techniques into mentoring students in a classroom setting. The techniques empower students to construct their own understanding of the subject matter. They also internalise thought processes and develop critical thinking and problem-solving skills that they can use outside of the classroom. Further dissection of the CA model reveals the powerful dimensions that virtual interactions can harness. According to Collins et al. (1989), firstly, the content taught should have specific facts that are generally applicable so that the self-directed learning of the student becomes easier. Making thinking visible liberates the students' minds and refines their abstract thinking skills. The authors also emphasised that to effectively utilise the CA, the sequence of learning activities should enable a learner to comprehend the entire task by simply glancing at the introduction, thereby rendering thinking visible. They also internalise thinking processes, develop critical thinking and problem-solving skills they may apply outside the classroom. A further dissection into the CA model reveals the powerful dimensions that can be harnessed through virtual interactions. According to Collins et al. (1989), first, the content taught should have specific facts which are generally applicable such that self-directed learning of the student becomes easier. As the student's mind is liberated through making thinking visible, abstract thinking skills are refined. The authors also highlighted that, to use the CA successfully, learning activities should be sequenced in a way that a learner can conceive the entire task by merely looking at the introduction before each step of the task is described, thus making thinking visible.

The teaching methodology is the second dimension. Collins et al. (1989) challenge teachers to use teaching strategies that position a student as an active participant during the teaching and learning process. The cognitive apprenticeship approach employs mentoring elements to develop a student's cognitive abilities. Modelling, coaching, scaffolding, articulation, exploration, and reflection are methods used to develop expertise in students.

Mentors demonstrate expert performance or problem-solving strategies through modelling, which allows learners to observe, analyse, and emulate the demonstrated behaviours. Mentors use modelling to demonstrate skills. In nursing, lecturers provide learners with concrete examples of how to approach and complete tasks within the domain by demonstrating tasks, techniques, and problem-solving approaches. This implies that a student must watch an expert carry out a task and explain their thought processes, the physical abilities they are showcasing, and their mindset and imitate. Explicit representations of expert thinking and practical examples to model the student's performance are also used. Shaikh (2017) argues that through modelling, mentors exemplify best practices, standards, and conventions within the domain, illustrating the characteristics of high-quality performance. Learners observe and internalise these examples, developing a clearer understanding of the criteria for success and the expectations for proficient performance.

The second technique in the CA model is coaching. Collins et al. (1987) argue that coaching plays a crucial role in guiding learners through their journey of skill acquisition and knowledge development. Coaching involves providing learners with personalised

guidance, feedback, and support as they engage in authentic tasks and problem-solving activities within the domain. Mentors work closely with learners to identify their strengths, weaknesses, and learning goals, designing learning experiences and interventions that address their unique requirements. Coaches scaffold learners' experiences by gradually withdrawing support as their competence and confidence increase. They provide just enough support to assist learners in completing tasks or solving problems while gradually encouraging greater independence and self-direction over time.

When looking at the CA model and nursing, coaching facilitates reflection and metacognition. Lecturers, as coaches, encourage learners to critically evaluate their thinking processes, strategies, and performance outcomes. They facilitate discussions and activities that prompt learners to assess their strengths and weaknesses, set learning goals, monitor their progress, and adjust their approaches as needed. Coaching offers students timely and constructive feedback on their performance, highlighting areas of strength, areas for improvement, and specific strategies for enhancement. Feedback is specific, actionable, and focused on promoting mastery and growth, rather than simply evaluating performance.

The other task for coaches is to address challenges and obstacles. Lecturers help students navigate challenges, setbacks, and obstacles encountered during the learning process. They provide encouragement, support, and resources to help learners overcome difficulties, develop resilience, and persist in their efforts towards mastery. In addition, a coach also fosters motivation and engagement. A coach achieves this role by fostering a supportive and encouraging learning environment. Lecturers celebrate learners'

successes, acknowledge their progress, and cultivate a sense of confidence, efficacy, and intrinsic motivation to excel within the domain.

Scaffolding is a technique that plays a fundamental role in supporting learners as they gradually acquire new knowledge, skills, and competencies within a specific domain. Collins et al. (1991) point out that it involves providing temporary, tailored support to learners to help them engage in tasks or activities that they would not be able to accomplish independently. Scaffolding allows learners to acquire new skills and knowledge gradually, starting with their current level of understanding and competence. Mentors provide structured support that matches the learners' current abilities, gradually increasing the complexity and challenge of tasks as they demonstrate proficiency and confidence. Furthermore, psychologist Lev Vygotsky's concept of the Zone of Proximal Development (ZPD) closely aligns with scaffolding. The ZPD refers to the difference between what a student can do independently and what they can achieve with the guidance and support of a more knowledgeable person. Scaffolding helps students operate within their ZPD, enabling them to tackle tasks that are slightly beyond their current level of mastery. Lecturers assess students' prior knowledge, skills, and understanding before determining the appropriate level of support required. Scaffolding can take various forms, including prompting, questioning, feedback, and providing resources or tools. To support students' cognitive processes, mentors break down complex tasks into smaller, more manageable components, offering guidance and assistance as learners navigate each stage of the task. This method promotes student autonomy.

Mosher and Delanoy (2021) argue that effective scaffolding is responsive to students' evolving needs and progress. For example, the teaching methods ensure that mentors continually monitor students' performance and adjust the level of support accordingly, providing additional guidance or resources as needed to address areas of difficulty or confusion. This flexibility guarantees that scaffolding remains relevant and beneficial throughout the learning process. It is important to note that modelling, coaching, and scaffolding are also components of the traditional apprenticeship model of mentoring, but the application differs due to the mentoring interface used. The next three techniques are CA model appendages. Collin et al. (1987) argue that they allow students to use their cognitive and metacognitive processes in learning, which are the basic activities in CA.

In CA, articulation is the fourth technique. According to Collins et al. (1991), articulation involves expressing one's ideas, reasoning, and understanding clearly and coherently, typically through verbal or written communication. When one considers a mentor's role, there are several activities that mentors engage in to promote articulation. Collins et al. (1987) argue that articulation encourages students to reflect on their learning experiences and engage in metacognitive processes by articulating their thoughts and reasoning. Students also express their understanding of concepts, problem-solving approaches, and strategies through verbalisation or writing, which allows them to gain deeper insights into their thought processes. This self-awareness allows them to effectively monitor and regulate their learning, as well as identify areas for strength and improvement. The act of articulating thoughts forces learners to organise and structure their knowledge coherently, thereby enhancing comprehension and retention. As

students become aware of their weaknesses, the mentor uses the opportunity to address misconceptions or gaps in understanding, guiding learners towards more accurate and complete comprehension.

A second benefit is the improvement of communication as the mentor and mentee engage in articulation. Delanoy and Mosher (2021) add that the development of effective communication skills, both verbal and written, is essential for sharing ideas, collaborating with others, and conveying information in professional contexts. Through articulation, students learn to express themselves clearly, concisely, and persuasively, which enhances their ability to communicate their thoughts and findings to peers, mentors, and stakeholders in their field. In addition, students learn to share knowledge with their peers through discussions and collaborations. For example, during online learning, students can create journals, blogs, or portfolios to record their reflections, insights, and achievements, enabling them to track their progress over time and document their learning journey. Peers, mentors, and future learners can also share these artefacts, thereby contributing to a collective body of knowledge within the learning community. Mentors can also utilise learners' articulations, such as verbal explanations and written responses. Their responses or presentations serve as the basis for providing formative feedback, identifying areas of strength and areas for improvement, and guiding learners towards deeper levels of understanding and mastery.

Following successful articulation, the students engage in reflection. Based on the need to use cognitive processes, Collin et al. (1987) explain that reflection plays a vital role in CA mentoring by promoting metacognition, facilitating deep learning, and fostering

professional growth. It stimulates the student's metacognitive awareness. For instance, a student who engages their metacognitive processes in reflection can monitor, evaluate, and regulate their thinking and learning strategies. Upon reflecting on their experiences, actions, and learning outcomes, an apprentice develops metacognitive awareness of their strengths, weaknesses, and areas for improvement. This amplified self-awareness empowers students to become more strategic and intentional learners, capable of identifying effective learning strategies and adapting their approaches to different tasks and contexts.

Another strength of reflection is that it promotes deep learning. Urban and Gates (2021) describes deep learning as a process where students use metacognitive abilities to incorporate strategies that allow artificial neural networks to monitor and regulate their learning processes. Reflection encourages nursing students to go beyond surface-level understanding and engage critically with their learning experiences, which promotes deep learning. Students explore the underlying principles, connections, and implications of their learning through reflection rather than simply memorising facts or procedures. Students create strong mental images of the learning process. This deeper level of engagement allows students to construct more robust mental representations of the knowledge domain, fostering conceptual understanding, problem-solving skills, and transferability of learning to new situations.

In addition, integration of theory into practice is important in nursing. Reflection facilitates the integration of theoretical knowledge with practical experience by prompting students to connect classroom learning to real-world contexts and applications. By



reflecting on how theoretical concepts manifest in their professional practice or clinical experiences, students deepen their understanding of the relevance and applicability of academic knowledge in the field. This fusion enhances the authenticity and practicality of learning, allowing students to effectively connect theory with practice.

Another aspect of reflection is its ability to promote professional identity and continuous improvement. An analysis of Collin et al.'s (1991) description of reflection gives the impression that reflection serves as a catalyst for continuous improvement by encouraging novices to assess their progress, set goals for growth, and develop action plans to achieve those goals. Through reflective practice, students identify areas of strength and areas for development, seeking feedback from mentors and peers to inform their learning journey. This ongoing process of self-assessment and self-directed learning empowers apprentices to take ownership of their professional development, striving for excellence and mastery in their chosen field. Furthermore, there is room for fostering professional identity. Reflection on professional ethics, for example, contributes to the development of a professional identity by prompting students to consider the profession's values, ethics, and responsibilities. Through reflective practice, students explore their beliefs, attitudes, and motivations, aligning them with the norms and standards of their professional community. A sense of commitment, purpose, and integrity shapes novices into ethical and competent practitioners who contribute positively to their profession.

In the CA model, exploration is the final technique. According to Collins et al. (1991), exploration plays a crucial role in CA by promoting active engagement, curiosity, and experiential learning. Students take an active role in their learning process by seeking

out the latest information, experimenting with different approaches, and investigating complex problems. Rather than passively receiving knowledge from mentors, students actively explore the subject matter, learning environment, and learning resources available to them. Active engagement promotes autonomy, makes students innovative, and fosters a sense of ownership and responsibility for learning outcomes. Similarly, active engagement stimulates curiosity and fosters a spirit of inquiry, encouraging students to ask questions, seek answers, and pursue deeper understanding. Through exploration, students develop a sense of wonder and fascination with the subject matter, motivating them to probe into unfamiliar topics, challenge assumptions, and explore alternative perspectives. This curiosity-driven approach to learning cultivates a lifelong passion for discovery and intellectual curiosity, driving ongoing exploration and learning beyond the formal apprenticeship.

Experiential learning is another intriguing aspect of CA exploration. This study limits the broad term from experiential learning theory to opportunities that allow students to actively engage with real-world problems, tasks, and situations relevant to their field of study. Collin et al. (1991) argue that by immersing themselves in authentic learning experiences, students acquire practical skills, apply theoretical knowledge in context, and develop a deeper understanding of the complexities and nuances of their chosen profession. This hands-on, experiential approach to learning fosters skill acquisition, problem-solving abilities, and critical thinking skills, preparing apprentices for the challenges they will encounter in their future careers. Experiential learning allows students to learn through discovery and innovation. This is a dimension that encourages

students to explore unfamiliar territories and boundaries and generate innovative ideas through creative experimentation and exploration. By encouraging a mindset of exploration and experimentation, mentors empower students to think creatively, challenge conventional wisdom, and embrace innovative approaches to problem-solving. This essence of exploration fosters a culture of discovery, innovation, and continuous improvement within the learning community, driving forward progress and advancement in the field.

It is critical to note that tertiary-level students also benefit from exploration through self-directed learning. A closer examination of Collins et al. (1991) exploration activities reveals that exploration empowers students to take initiative, set goals, and pursue learning opportunities aligned with their interests and aspirations. Rather than relying solely on structured instruction from mentors, apprentices proactively seek out resources, engage in independent study, and pursue self-directed projects that allow them to explore areas of personal interest or curiosity. This self-directed approach to learning cultivates autonomy, self-regulation, and lifelong learning habits, enabling apprentices to continue their learning journey beyond the formal apprenticeship period.

Lyons et al. (2017) conducted a review to understand the application of the CA model of mentoring in health sciences education. The published literature indicated a widespread application of the CA model in health sciences education but there is limited documentation in nursing, pharmacy, and medicine. The review delved into the nursing department, pharmacists, medical practitioner training, and veterinary medicine to provide empirical support for the CA model and understand its theoretical underpinnings

that inform health sciences education, practice, and research. The authors identified and reviewed twenty-six articles. The phenomenon of interest was the theory of the four dimensions of the CA model, which are: content or subject matter specifics, teaching methodology, sequencing of teaching-learning activities, and the social characteristics of the learning environment. The analysis was done in two phases. The first phase detailed the characteristics of manuscripts that used the term CA and phase two focused on making themes out of theory talk. The analysis of language and contextual meaning led to three categories: minimal, moderate, and major talk, as well as the dimensions of the theory. The major finding indicated a lack of widespread application of the prescribed methodology of the CA model in health sciences education. The primary finding revealed that health sciences educators did not employ all six elements of the cognitive apprenticeship model.

Dennen and Burner (2016) also examined the use of the CA model in American education practice. Literature motivated the review, suggesting that the CA model accurately describes learning and its instructional strategies, drawn from daily life experiences, can positively impact formal learning. The authors acknowledged that centuries ago, before the formalisation of learning in a school setting, learning took place through apprenticeship. Despite the establishment of formal university systems, vocational training continued to use the apprenticeship model. It was established that the CA model expands beyond the traditional apprenticeship model as it enhances the guided experiences in cognitive and metacognitive dimensions.

Overall, the CA model of mentoring aligns well with the goals and principles of higher education, emphasising active learning, critical thinking, practical skill development, metacognitive awareness, social interaction, and the integration of technology. By implementing this model, educators can create enriching learning experiences that empower students to succeed academically and professionally.

### **Conceptual Framework**

A conceptual framework for virtual mentoring in nursing education would provide a robust theoretical foundation and a set of guiding principles for designing, implementing, and evaluating mentorship activities within online or remote learning environments tailored specifically for nursing students. This framework would serve as a blueprint for educators and programme designers to create effective virtual mentoring systems that support the unique needs of nursing students. As noted earlier in the theoretical framework, traditional mentorship models in nursing education heavily rely on activities such as modelling, coaching, and scaffolding. These activities are integral to the apprenticeship model, where mentors demonstrate skills and behaviours (modelling), provide guidance and feedback (coaching), and gradually transfer responsibility to the mentee (scaffolding) as their competence increases.

However, the transition to online learning and mentoring fundamentally alters the dynamics of these traditional roles. In a virtual setting, mentors and mentees must adapt to new methods of communication and interaction. Mentors might employ digital tools and platforms to demonstrate techniques and procedures, provide real-time feedback through

video calls or online discussion forums, and offer resources that mentees can access independently. This shift necessitates that mentors be adept at using technology and develop new strategies for building rapport and trust in a virtual environment. The researcher developed a conceptual framework as illustrated in Figure 2.2.

**Figure 2.2**

*Conceptual Framework for Virtual Mentoring*



*Source: Author's Work*

**Field of Study: Nursing Education**

Nursing, although an ancient art practiced since the dawn of humanity, is a relatively youthful profession, as noted by Bruce et al. (2011). According to Keating and DeBoor (2017), professionalisation of nursing began in the 19th century after the Civil War, and the industrial revolution put a demand on the need for well-trained nurses. Florence Nightingale, a trailblazer in modern nursing practice, established a nursing education model that has endured for more than a century, employing the apprenticeship model of learning. The model aimed to instruct not only on what actions to take but, also on how to carry them out and the rationale behind them. The Nightingale system of hospital-based nursing training received criticism from nurse educators at the beginning of the 20th century, particularly in Europe and the United States of America. The developments led to formal nursing education moving away from hospital-based training to universities and other higher institutions of learning. Starting in the 1950s, universities offered Bachelor of Nursing Science, Master of Nursing Science, and Doctor of Nursing degrees.

Nursing education is a combination of two professions: nursing and education. The field of nursing education encompasses the training, development, and preparation of individuals to become competent and skilled nursing professionals. It involves a combination of theoretical knowledge, practical skills, clinical experience, and professional values essential for delivering high-quality patient care. Nursing education occurs at various levels, including undergraduate, graduate, and continuing education programmes (Bruce et al., 2011). According to Clement and Welch (2017), online nursing

education offers a viable and convenient option for individuals seeking to pursue a nursing career or advance their nursing education while accommodating diverse learning needs and lifestyles. As technology advances, online nursing programmes are likely to evolve, incorporating innovative teaching methodologies and interactive learning experiences to prepare nurses for the dynamic healthcare environment. While nursing education has transitioned from an apprenticeship model to one that integrates liberal arts principles, incorporating both scientific and artistic aspects, Morin (2018) contends that mentoring remains a vital component of the nursing profession.

As highlighted by Bruce et al. (2011), societal shifts have prompted reforms in nursing education. Additionally, Morin (2018) recognises the significant impact of the explosion of information and technology, advocating for reforms in nursing education to align with the demands of the current century. The emergence of diseases like COVID-19, which have necessitated restrictions on face-to-face learning, has further underscored the need for a departure from traditional instructional methods and mentoring, as noted by Robinson and Breen (2020). They emphasise that nursing education catalyses the nursing profession to stay relevant and responsive to evolving healthcare needs. Hence, institutions responsible for nurse training must integrate online learning and embrace technology as a complementary tool to enhance best practices.

Nurse training institutions in Namibia are not immune to technological advancements and the repercussions of COVID-19 regulations on traditional classroom learning. According to Ndala (2020), the effects of COVID-19 on higher education institutions in Namibia were similar to those experienced by other countries affected by



the pandemic. Disruptions in academic calendars led to challenges with examinations, field placements, and skill development. There were no clear plans for implementing e-learning, particularly regarding online learning interfaces, scheduling, and, crucially, practical training in nursing. This scenario presents a challenge for nurse training institutions to innovate and maintain the delivery of quality education using a combination of face-to-face and online platforms.

### **The Concept of Mentoring in Nursing**

Olurunfemi (2019) highlights mentoring's ancient roots, dating back to Greek mythology. In this narrative, Odysseus, the King of Ithaca, entrusts his son Telemachus to the care of Mentor while he embarks on the Trojan War. The mentor assumes a paternal role, offering guidance and support to Telemachus in his father's absence. This tale serves as an archetypal example of the mentor-mentee relationship, characterised by the transfer of knowledge and wisdom from an experienced individual to a less experienced counterpart. Since ancient times, the term mentor has permeated various academic disciplines, embodying the essence of guidance and support provided by seasoned individuals to their protégés. Rooted in mutual understanding and trust, this concept transcends time and discipline, symbolising the act of nurturing, advising, and empowering those who are less experienced in a given field. The story of Mentor and Telemachus highlights the enduring importance of mentorship, emphasising its critical role in promoting growth and development across various generations and domains.

According to the Canadian Nurses Association (CNA) (2004), mentoring is defined

as a reciprocal association in which an individual with expertise and experience provides guidance and encouragement to nurture the growth of someone less knowledgeable and experienced. Hayes (2019) similarly defines mentoring as a constructive relationship fostering learning and advancement between a seasoned individual within a specific field and a novice. This relationship, according to both authors, hinges on trust and confidentiality. Providing a comprehensive perspective on mentoring within the nursing profession, Searle (2004) emphasises that mentoring entails supportive communication between a nurse tutor and a nursing student. Communication is done through word of mouth, written words, postures, actions, dressing and grooming, lifestyles, and work performance. This highlights the multifaceted nature of mentoring within the nursing context, where guidance and encouragement are vital components in facilitating professional development and growth.

People often view the tutor as wise, experienced, and often older than the mentee. Searle (2004) argues that experienced nurses share resilience, which is another important characteristic of mentoring. Mentoring permits the dissemination of experience as older nurses in the profession impart the characteristic of resilience to the future generation of nurses. According to Searle (2004), if a nurse lacks mentoring assistance in developing a sound personal and professional philosophy, they may not perceive nursing as a noble profession but rather as a mere job.

Nursing is a multifaceted profession wherein the implementation of evidence-based practice plays a pivotal role in fostering professional growth. Clutterbuck (2001, cited in Shrestha et al., 2009) stresses the close integration of mentoring and the

apprenticeship model of training within nursing education. In this model, an apprentice works alongside a master or an experienced individual within the craft or industry. Florence Nightingale founded hospital-based training in the 19th century, and this perspective has led to the primary focus of mentorship activities on the clinical environment rather than the classroom. The authors further contend that the adoption of the apprenticeship model in nurse training facilitates learning opportunities for nursing students under the guidance of senior nurses and doctors in hospital settings.

Nurse educators embark on their professional journey by first becoming registered nurses. Those who opt for a career in teaching must further their education by obtaining a Master's degree in nursing and a teaching qualification (Paton et al., 2020). The World Health Organisation [WHO] (2016) has integrated the core competencies of nurse educators in response to calls from the American Nursing Association (ANA) and the International Council of Nurses (ICN) to adopt a higher education approach in nurse training. Due to the alignment of nursing with missionary work and Christianity, professional nursing organisations have advocated for a shift away from a hospital-centred approach to integration into mainstream higher education. Jooste (2018) notes that, while most African countries started training nurses with bachelor's degrees later, the United Kingdom and the United States of America trained the first nurses with degrees as early as 1916. A qualified nurse educator facilitates this shift by encouraging nursing students to learn in a more collaborative and transformative manner.

The concept of mentorship in nursing encompasses several key elements and benefits. For example, Olurunfemi (2019) found that mentoring provides opportunities for

mentees to enhance their clinical skills, critical thinking abilities, and decision-making processes through hands-on experiences, feedback, and constructive guidance from their mentors. It also facilitates mentees' professional growth and advancement by offering insights into career pathways, goal-setting, and career progression strategies within the nursing profession. Of note, mentoring engages the techniques found in the traditional apprenticeship model, such as modelling, coaching, and scaffolding. Mentors serve as role models for mentees, demonstrating professionalism, ethical behaviour, and exemplary clinical practice. Through observation and interaction with their mentors, mentees can adopt and emulate these qualities in their practice.

While students receive coaching, mentors also offer emotional support, encouragement, and reassurance during difficult periods or transitions in their nursing careers. Mentors provide a safe space for mentees to express concerns, seek advice, and receive constructive feedback. Mentoring for professional development encompasses networking opportunities for mentees, allowing them to establish connections with experienced nurses, healthcare professionals, and leaders within the nursing community. These connections can be valuable for career advancement, collaboration, and professional development. This guarantees the maintenance of ambitious patient care standards and the transfer of valuable clinical knowledge and expertise to the upcoming generation of nurses.

Leineinger (2019) emphasises the importance of guiding and supporting nurses to develop awareness, understanding, and sensitivity towards diverse cultural backgrounds and practices. To provide culturally congruent care, nurses must acknowledge and

respect the cultural beliefs, values, and traditions of individuals and communities, according to Leininger's Theory of Cultural Care Diversity and Universality. Therefore, by incorporating Leininger's principles into mentoring practices, nurses can enhance their ability to provide culturally competent care, promote health equity, and improve health outcomes for individuals and communities from diverse cultural backgrounds.

The concept of mentoring in nursing education involves establishing clear expectations, maintaining open communication, and fostering a supportive and collaborative relationship between mentor and mentee (Wynn, 2021). Nursing lecturers facilitate learning by providing guidance and support to nursing students as they navigate the complexities of nursing education. They assist mentees in understanding theoretical concepts, applying clinical skills, and integrating knowledge into practice. They also help to build mentees' confidence and self-efficacy by offering encouragement, constructive feedback, and opportunities for skill development. This support is particularly valuable for nursing students transitioning into the clinical setting or novice nurses adjusting to their new roles. As a nursing lecturer, adopt a culture of lifelong learning and professional growth within the nursing profession. Mentors inspire mentees to pursue continuing education, specialty certifications, and advanced practice roles, fostering a commitment to ongoing professional development.

To grasp the concept of mentoring models used in nursing, Olurunfemi (2019) conducted a review of two articles to analyse the various mentoring models applied in the field. The review aimed to elucidate the defining attributes of mentoring, validate these attributes through the construction of model cases, identify the antecedents of mentoring

concepts, and define empirical referents. Allen et al. (2004) and Castaneda and Scanlan (2014) authored the scrutinised articles on mentoring models in nursing. Employing the third step of concept analysis as outlined by Walker and Avant (2005), Olurunfemi (2019) identified four prevalent mentoring models utilised in nursing.

Firstly, the apprenticeship model is characterised by a hierarchical relationship where a seasoned nurse mentors either a student or a junior staff member. Secondly, the cloning model relies on role modelling. Role modelling typically occurs when an outgoing member prepares another for succession or assumes their responsibilities upon departure from the organisation. Olurunfemi (2019) views cloning as part of mentoring, Jooste (2018) contends that it stifles the mentee's growth by limiting them to emulating the mentor's actions. Thirdly, the nurturing model focuses on fostering a supportive environment free from fear to facilitate the mentee's growth within the organisation. Lastly, the friendship model, defined as a horizontal relationship primarily utilised by senior staff members or nurse practitioners to support each other in planning and decision-making processes.

Based on the models described, Olurunfemi (2019) argues that at the heart of all models are the attributes of mentoring that include modelling, nurturing, support, friendship, experience, and endurance. Nurturing is an attribute that creates a supportive and encouraging environment where students feel valued, respected, and empowered to learn and grow. Nurturing mentors provide emotional support, guidance, and constructive feedback, helping students build confidence and resilience in the face of challenges. While maintaining a professional relationship, mentorship in nursing education can also

incorporate elements of friendship. According to Jooste (2018), a friendly mentor-student relationship fosters trust, open communication, and mutual respect, creating a comfortable environment for learning and collaboration. Friendship-based mentoring allows students to feel more at ease seeking guidance and support from their mentors.

In addition, experienced mentors bring valuable clinical knowledge, expertise, and wisdom to the mentoring relationship. Drawing from their own experiences as practicing nurses, mentors offer practical insights, problem-solving strategies, and real-world perspectives to guide students in their learning journey. Experience-based mentoring helps students to bridge the gap between theory and practice, preparing them for the challenges of nursing practice. As noted by Searle (2004), endurance is a critical attribute as mentoring in nursing education benefits both mentors and students. Mentors demonstrate endurance by providing consistent support and guidance to students over time, even in the face of setbacks or challenges. Similarly, students must demonstrate endurance as they persevere through rigorous academic coursework, demanding clinical experiences, and the transition to professional practice. Endurance in mentoring fosters resilience, determination, and growth in both mentors and students.

Drawing upon the identified attributes, Olurunfemi (2019) utilised four model cases to validate the characteristics of mentoring. The first case involved mentoring an undergraduate student nurse in research, affirming the lecturers' expertise and adeptness in guiding the research process in a supportive and approachable manner, thus nurturing the novice researcher. The student developed a keen interest in emulating their mentor, recognising them as a commendable role model. Additionally, an incidental case of

mentoring emerged, highlighting attributes of role modelling, friendship, regular meetings, and the demonstration of experience when a newly qualified nurse mentors students. In another instance, learning in the clinical setting often occurred through intuition and trial and error, as illustrated when a graduate nurse independently acquired skills in operating medical equipment. Conversely, coaching, which closely aligns with mentoring but involves training individuals in a specific activity before allowing them to practice and refine their skills independently, was identified in a contrasting case.

### **Theoretical Underpinnings of Mentoring**

According to Gopee (2018), the development of many nursing curricula places fifty per cent of the student's learning in practice in the setting patient care interventions are the main activities for the student nurse.

According to Hayes (2019), social learning theories play a significant role in defining mentoring within the nursing profession, offering valuable insights into the dynamics and processes involved in mentorship relationships. For example, Bandura's Social Learning Theory underscores the importance of observational learning, modelling, and imitation in the acquisition of knowledge, skills, and behaviours. This theory suggests that mentees learn by observing and emulating the actions and behaviours of their mentors within the context of nursing. The mentees internalise and replicate the clinical skills, ethical decision-making, and professional conduct that mentors demonstrate as role models. Similarly, Vygotsky's sociocultural theory emphasises the role of social interaction and cultural context in shaping learning and development. This theory



highlights the significance of interpersonal relationships and collaborative learning experiences in nursing mentoring. Mentors and mentees share, negotiate, and co-create knowledge, expertise, and values within the social context of mentoring relationships. Through collaborative activities such as case discussions, clinical simulations, and reflective practices, mentees are able to achieve higher levels of clinical competence and professional growth.

Another significant theory is Mezirow's Transformative Learning Theory, which offers insights into the transformative nature of mentoring relationships. According to this theory, mentoring catalyses transformative learning experiences by challenging mentees' existing beliefs, assumptions, and perspectives. Mentors facilitate critical reflection, dialogue, and self-discovery, encouraging mentees to examine and reframe their understanding of nursing practice and professional identity. Through this process of transformative learning, mentees develop the cognitive and emotional capacity to adapt to complex healthcare environments, embrace lifelong learning, and enact positive change in their practice.

According to Aliakbari et al. (2015), Piaget's theory describes how individuals progress through stages of cognitive development, from infancy to adulthood, by actively constructing knowledge through interactions with their environment. In mentoring, understanding mentees' cognitive abilities and learning styles is essential for tailoring teaching strategies and facilitating cognitive growth. Mentors can scaffold mentees' learning experiences, providing opportunities for exploration, reflection, and problem-solving to promote cognitive development. In addition, Kohlberg's Moral Development

Theory proposes a six-stage theory of moral development, which describes the progression of moral reasoning from pre-conventional to post-conventional levels. In mentoring, moral development plays a vital role in guiding mentees' moral and ethical decision-making. Mentors provide opportunities for mentees to explore ethical dilemmas, reflect on their values and beliefs, and develop ethical reasoning skills. By modelling ethical behaviour and fostering discussions on ethical issues, mentors help mentees cultivate moral integrity and professionalism in nursing practice. The environment plays a major role in the definition of mentoring interactions. According to Jooste (2018), Bronfenbrenner's Ecological Theory (1979) emphasises the influence of environmental factors on individual development, highlighting the importance of multiple interacting systems, such as family, school, community, and culture. In mentoring, mentors consider the various ecological influences shaping mentees' development and learning experiences. Mentors collaborate with mentees to navigate the complex interplay between personal, social, and institutional factors, fostering resilience, adaptability, and cultural competence in nursing practice.

Despite the widespread use of mentoring and the theoretical frameworks that support it, Nowell et al. (2017) found that mentoring practices were predominantly informal, lacking distinct procedures and clear objectives. While mentoring components such as training, modelling, and guidance were acknowledged and used, there was a deficiency in evaluative metrics for these aspects. The findings indicate that informal mentorship in nursing may be more prevalent than formal mentorship, resulting in haphazard mentoring processes. Furthermore, the authors observed that in instances

where formal mentorship programmes were absent, both mentors and mentees possessed minimal to no knowledge of applicable mentorship models that could enhance the success of the mentorship relationship. Most participants perceived mentoring as merely connecting individuals with more experience to those seeking guidance, resulting in a lack of a standardised definition and significance.

In summary, educational mentors play a crucial role in establishing an environment conducive to student learning. They are responsible for choosing learning opportunities and providing activities that encourage students to develop reflective learning skills. The higher education approach underscores the significance of mentorship in both recruiting and retaining students within institutions, emphasising the importance of maintaining consistent contact with students throughout the learning journey.

### ***Role of Mentoring Teaching and Learning***

Mentoring's role in the teaching and learning process is multifaceted and essential for both educators' and learners' growth and development. Shaikh (2017) examines the relational-reliant aspect of mentoring in nursing education to assess its implementation and influence within nursing academia. While acknowledging variability in mentoring approaches in nursing education, the author identifies specific mentor roles that underscore the significance and effect of mentoring in nursing education. The notable roles are that:

1. Mentoring is a vehicle or medium for providing feedback and evaluation for a mentee's development, according to nurse educators.

2. Mentoring relationships are a platform that allows nurse lecturers to provide psychological support and encouragement to students, especially during stressful moments.
3. Role modelling occurs when a mentor shapes the student's thinking, ideas, and attitudes and instils professional values in the mentee.
4. Mentoring allows mentors to provide skills and tools that equip mentees to respond to ethical dilemmas in their profession.
5. A mentor serves as a research resource, stimulating the mentee's critical thinking and scientific inquiry skills.

Shaikh (2017) concurs with Jooste (2018) that the specific roles of both mentors and mentees in the classroom and clinical settings influence the definition of mentoring in nursing education, which lacks precision. Furthermore, Woolhouse and Nicholson (2020) emphasise that both theoretical and practical contexts often use the term mentoring' interchangeably. Shaikh (2017) contends that mentoring plays a crucial role in the development of student nurses, enabling them to provide comprehensive care encompassing emotional, physical, and existential aspects. It serves as a mechanism for the holistic growth of nursing students, impacting both their classroom and clinical experiences. While acknowledging the predominant focus on clinical mentorship in existing literature, Shaikh's (2017) review argues that, for mentoring to be significant in nursing education, it should bridge the gap between classroom and clinical environments as illustrated in Table 2.1

**Table 2.1***Primary Roles of Mentors in the Classroom.*

Transmission of Knowledge and Skills	A mentor's primary role is to provide theoretical input. As a mentor, the lecturer chooses the content to instruct students. The lecturer links the content to teaching methods and classroom activities. They provide professional support, facilitating learning opportunities. They mentor students on academic survival skills, facilitate efficient information retrieval, and help with reading, writing, and presentation skills.
Student Feedback and Evaluation	Lecturers assess students' progress through formative and summative assessments. They give constructive feedback on students' performance and guide them on how to answer questions and their academic development.
Psychosocial Support and Counselling	Nurse lecturers offer psychological support to students dealing with stressful situations like academic difficulties and social issues that could hinder their academic progress.
Role Modelling	Nurse lecturers use their experience to mentor nursing students by shaping ideas, values, attitudes, and professional identities. They inculcate nursing ethos and nursing culture to instill confidence and empower student nurses during their journey to becoming professional nurses.
Research	Nurse lecturers encourage and support students in research and thus play a part in supporting mentees in each stage of the research and publication process.

*Adapted from Shaikh (2017) Roles of Mentoring in Nursing Education*

Shrestha et al. (2009) suggest that mentoring serves as a proactive approach to identifying struggling students in the classroom and providing targeted support and guidance to those in need. Mentors can play a crucial role in this process by closely observing students' performance, engagement, and progress within the learning environment. Through regular interactions and feedback sessions, mentors can identify signs of academic challenges, such as difficulty understanding concepts, a lack of participation, or mediocre performance in assessments. Additionally, mentors can collaborate with other educators and support staff to develop intervention strategies

tailored to the specific needs of struggling students. This may involve offering additional tutoring sessions, recommending resources for further study, or implementing alternative teaching methods to accommodate diverse learning styles.

Shrestha et al. (2009) also added the dimension of mentoring for classroom discipline. Mentoring promotes self-discipline and responsible behaviour. Mentors play a crucial role in creating a supportive and respectful classroom environment where students feel valued and empowered to make positive choices. As mentees, students tend to focus more intently and maintain discipline during classroom sessions, particularly when they are required to take notes. Also, a friendly environment with no disruptions is conducive for students to follow the flow of a lecture and maintain interest. In addition, mentoring models appropriate behaviour and communication skills, demonstrating empathy, active listening, and conflict resolution techniques. By setting clear expectations and boundaries, mentors help students understand the importance of respect, cooperation, and accountability in the classroom. When disciplinary issues arise, mentors address them promptly and constructively, focusing on solutions rather than punishment. They can engage in one-on-one discussions with students to identify the underlying reasons for their behaviour and offer guidance on alternative approaches.

Shaikh (2017) highlights an intriguing aspect: students, as mentees, undergo subconscious mentoring through lecturer interactions, fostering acceptance of shared knowledge. Furthermore, students observe the lecturer's progression through objectives and their approach to seeking answers, solidifying the lecturer's role as a knowledge source. This observation reinforces Shaikh's (2017) assertion that mentors serve as role

models for student nurses, imparting communication, empathy, and ethical skills crucial to the profession. Munir and Amin (2018) stress the utility of the mentoring process, particularly when lecturers assign tasks aligned with students' training levels. Effective mentoring also entails providing timely feedback and support to students.

Mentoring plays a pivotal role in the socialisation process of individuals, particularly in educational and professional settings. De Swardt et al. (2016) emphasise that the socialisation of nursing graduates during their training period directly correlates with their calibre and the quality of care they provide to patients. The instructional methodologies used in the classroom have a significant impact on student nurses' effectiveness. The authors devised teaching and facilitation approaches aimed at fostering nursing students' socialisation into the profession within Gauteng Province, South Africa. The authors developed these strategies using data gathered from a study conducted in 2011 and 2012, which explored nurses' viewpoints on their roles and experiences in the socialisation of student nurses. Data was collected in two phases where first phase collected qualitative data through focus group interviews with both student nurses and nurse educators. Subsequently, the insights gleaned from the qualitative analysis informed the development of a semi-structured questionnaire for the second phase. Data analysis lead to the formulation of effective strategies. Eight strategies of professional socialisation were recommended, which include reflection, the development of problem-solving skills, role modelling, group learning, hidden curriculum learning, preceptorship, and mentoring. The findings highlighted that mentors facilitate the socialisation process by providing guidance, support, and feedback to students as they navigate their

educational journey and transition into the nursing workforce. Through mentoring, student nurses learn about the norms, values, and expectations of the nursing profession. Mentors help students understand the culture of nursing, including professional conduct, ethical principles, and communication styles. By modelling appropriate behaviours and attitudes, mentors instil in students the importance of compassion, empathy, and integrity in nursing practice. Socialisation also involves exposure to various clinical settings and experiences, which mentors facilitate by arranging clinical placements and opportunities for hands-on learning. Mentors guide students in developing clinical skills, critical thinking abilities, and confidence in their abilities to provide safe and competent patient care. Additionally, mentors support students in navigating the challenges and complexities of the healthcare environment. They provide emotional support, encouragement, and mentorship to help students cope with stress, manage workload, and maintain their well-being.

In the context of classroom mentoring for student nurses, socialisation plays a pivotal role in helping students adapt to the academic environment, develop professional identities, and integrate into the nursing profession. Munir and Mohammed (2018) assert that mentors facilitate socialisation by creating a supportive and collaborative learning environment where students can engage with course material, interact with peers, and acquire essential knowledge and skills. One key aspect of socialisation in classroom mentoring is fostering a sense of belonging and community among student nurses. Mentors strive to create inclusive classrooms where students feel valued, respected, and supported in their academic journey. By encouraging participation, collaboration, and



peer interaction, mentors help students develop interpersonal skills and build relationships with their classmates, which are essential for teamwork and professional networking in the nursing field. According to De Swardt et al. (2016), mentors socialise students to prepare them for the challenges and expectations of clinical practice. Mentors guide clinical decision-making, critical thinking, and evidence-based practice, helping students to bridge the gap between theory and practice. By incorporating case studies, simulations, and real-life scenarios into classroom instruction, mentors simulate clinical experiences and prepare students for the realities of patient care. Moreover, mentors support students in developing effective communication skills, cultural competence, and teamwork abilities, which are essential for delivering patient-centred care in diverse healthcare settings, as noted earlier. According to De Swardt et al. (2016), current trends in nursing education no longer rely solely on students acquiring knowledge but are also heavily reliant on students acquiring knowledge only but, also is heavily reliant on the affective processes of being and acting. This strategy concurs with Collins et al.'s (1991) reflection stage, where students use cognitive processes to learn and arrive at a new understanding of concepts.

Peer-group mentoring was also identified as a strategy for promoting socialisation. According to Swardt et al. (2016), the strategy promotes students' professional development, a sense of belonging, and well-being in the profession. Sometimes nurses struggle to supervise and mentor every student according to their needs. Senior-level students can become peer mentors for junior-level students by modelling and providing psychological and emotional support.

Learning also occurs through the hidden curriculum during mentoring relationships. According to Raso et al. (2019), the hidden curriculum serves as a powerful tool for socialising student nurses, often influencing their attitudes, behaviours, and professional identities in ways that extend beyond formal classroom instruction. While the explicit curriculum focuses on the formal content and learning objectives of nursing education, the hidden curriculum encompasses the implicit messages, values, and norms conveyed through the broader educational environment. In nursing education, the hidden curriculum plays a significant role in shaping students' understanding of professional roles, ethical standards, and cultural norms within the healthcare system. Through informal interactions with faculty, preceptors, and peers, student nurses absorb subtle cues about professional conduct, patient care practices, and organisational hierarchies.

### **Mentoring Relationships in Nursing Education**

Demand for quality nursing care, strained working conditions, and high nursing staff turnover put enormous pressure on nursing professionals to meet societal expectations (Davey, 2020). The nursing profession must focus on training, developing, and implementing staff retention measures to avoid the adverse consequences of a decreased nursing workforce. Mackh (2019) observes that young nurses, who require mentoring to uphold nursing values, are rapidly replacing the ageing nursing workforce. The author further argued that age, background, and culture are the main characteristics that separate adults from youth. These differences may be an obstacle to establishing successful mentoring relationships. Learning to trust is a gradual process, especially for

students, as they come from parental care to a pristine environment with new people and new demands. Cypress (2020) posits that trust, caring, and support generally strengthen human relations. Before establishing a mentorship relationship, the author further argued that nursing students should understand that higher education is not a purchase like a cell phone but rather a social contract with prescribed roles in the learning process. They need to successfully acquire the knowledge, skills, and attitude of the profession. As a result, mentors must possess qualities such as friendliness, which are critical in building relationships with a mentee.

Mentoring relationships develop as soon as nursing students enrol for their first year. A mentorship relationship may last over two to fifteen years (Cypress, 2020). The guiding principle is that mentoring has no financial gain; therefore, a mentor should align their passion with their work. Mentorship relationships are focused on the mentee's needs. Mentoring relationships develop as soon as nursing students enrol for their first year. A mentorship relationship may last over two to fifteen years (Cypress, 2020). The guiding principle is that mentoring has no financial gain; therefore, a mentor should align their passion with their work. Mentorship relationships are focused on the mentee's needs.

The role of the mentor is to help the mentee meet their needs and model their character through being available, constant communication, and perseverance. Nowell et al. (2017) contend that pairing mentors and mentees based on the mentor's educational background and experience, along with the mentee's career goals, fosters strong relationships, albeit challenging in the nursing field due to the absence of a clearly defined

mentoring framework. The author also suggests that other attributes such as gender, attitude, beliefs, and personality may also be considered as they play a key role in building relationships. Cypress (2020) adds that a mentoring relationship is more collaborative than competitive. Mentees do not compete to be better than their mentors, nor do mentors solve problems for the mentees, but they support and guide a mentee to develop problem-solving skills that create a positive experience. However, Nowell et al. (2017) warn that during the collaborative relationship, the mentor and the mentee should avoid actions that could put the relationship in disrepute. Actions such as violating confidentiality, forcing opinions on each other, and attempting to 'clone' a mentee are detrimental to a mentoring relationship. Mentoring relationships are successful and can be maintained through commitment and enthusiasm from both the mentor and the mentee. Searle (2004) notes that a successful mentoring relationship facilitates the transfer of covert skills like reliance to a mentee. Successful mentoring relationships can motivate a novice nurse to deal with a pressurised work environment, burnout, and work-related stress, as Davey and Jackson (2020) concur with Searle (2004).

### **Mentoring Models in Nursing**

Nursing education may formally adopt a variety of mentoring models, despite arguments that mentoring is largely informal and lacks defined frameworks. Mentoring models used in nursing education include a variety of frameworks and approaches aimed at facilitating the development of nursing students and novice nurses. These models

provide structure and guidance for mentoring relationships, outlining roles, responsibilities, and strategies for both mentors and mentees.

According to Kuperminc (2021), the traditional apprenticeship is the first mentoring model. The historical traditions of nursing serve as the foundation for this model. The traditional apprenticeship model involves a senior nurse guiding and supervising a junior nurse in a one-on-one relationship. Mentoring occurs primarily in clinical settings, with the mentor providing hands-on instruction, feedback, and role modelling to support the mentee's learning and skill development. Peer mentoring is also included in traditional mentoring practices. According to Collier (2017), peer mentoring entails a dynamic process where an experienced student provides support, advice, and knowledge to a less experienced peer, thereby enhancing academic performance. The primary benefit of peer mentoring is that the mentor and mentee are similar in age. There may be variations in their academic levels, such as when a fourth-year student mentors a first-year student. Seshabela et al. (2020) emphasise the use of this mentoring model to provide both academic and psychosocial support, thereby reducing student attrition, especially when faced with interpersonal, cultural, and social challenges. Peer mentoring fosters student connections, improves group cohesion, and encourages peers to share resilience skills.

There are also formal mentoring programmes, which are structured initiatives established by educational institutions or healthcare organisations to facilitate mentoring relationships. These programmes typically match nursing students or novice nurses with experienced mentors based on specific criteria, such as clinical specialities, career goals, or personal interests. Formal mentoring programmes often include orientation, training,

and ongoing support for mentors and mentees. Another model is group mentoring, in which a single mentor collaborates with a small group of mentees at the same time. This model allows for collective learning, peer support, and collaboration among mentees while still benefiting from the guidance and expertise of the mentor. Group mentoring can be especially effective in academic settings or larger healthcare organisations where resources are limited. Jacobson and Sherod (2020) argue that this model is more favourable when the ratio of mentors and mentees is imbalanced. Often, group mentorship has no formal structure; rather, the mentor takes on responsibility if they are motivated and decides to role model, support, and guide the group of mentees.

As noted by Kaufman (2017), the online mentoring model is an emerging contemporary approach, spurred by the growing integration of technology into nursing education. Online mentoring platforms and virtual communities connect mentors and mentees across geographic locations, allowing for flexible communication, resource sharing, and networking opportunities. Online mentoring can complement traditional face-to-face coaching and provide additional support for distance learners or working professionals. The online mentoring model encompasses key aspects and considerations that include use of virtual platforms, flexible communication, networking opportunities, and distance learning support.

Kaufman (2017) posits that virtual platforms specifically cater to mentorship, learning management systems, or social media platforms. These platforms enable mentors and mentees to communicate, share resources, and engage in discussions asynchronously or in real time. Mentors and mentees can connect through email, instant

messaging, video conferencing, discussion forums, or virtual meetings, allowing for communication to occur at convenient times and accommodating busy schedules. Also, for nursing students enrolled in distance learning programmes or online courses, online mentoring provides essential support and guidance. Mentors can offer academic assistance, career advice, and clinical insights remotely, bridging the gap between classroom learning and practical experience. Online mentoring offers flexibility, allowing for the incorporation of evaluation mechanisms to assess experiences and gather feedback from both mentors and mentees. Regular assessments help ensure the quality and effectiveness of the mentoring relationships and provide opportunities for continuous improvement.

Collins et al. (1987) developed the CA model as one of the mentoring models. As noted before, the CA model emphasises the transfer of cognitive skills and knowledge from mentor to mentee through observation, coaching, and practice. Mentors engage mentees in authentic learning experiences, encourage metacognitive reflection, and provide scaffolding to support skill acquisition and problem-solving. This model is particularly relevant for developing critical thinking, clinical reasoning, and decision-making skills in nursing education. It employs both one-on-one and group mentoring styles, assigning one person to mentor a group of students, possibly the entire intake.

### **The Future of Mentoring in Nursing**

The World Health Organization (2020) predicts significant evolution and innovation in the future of mentoring in nursing education to keep pace with the changing healthcare

and education landscape. These changes are driven by shifts in disease patterns, demographics, and technological advancements, underscoring the critical importance of adequately preparing nurse educators. Theoretical understanding of learning and motivation theories enables nurse educators to employ a variety of learning models, thereby facilitating competency-based education. Proficiency in curriculum knowledge and implementation is another essential competency. To do this, nurse educators need to know how to effectively use curricula and teaching methods that take into account modern educational models and the way people learn in society to stimulate the cognitive, affective, and psychomotor areas of learning.

According to Figueroa (2017), the persistence of the mindset among senior nurses that 'we've always done it this way' threatens nursing's relevance. Nurse educators must have proficiency in using online resources to enhance learning, as well as inspire and instruct nursing students on how to use technology to improve their educational achievements. Jacobson and Sherod (2021) note that with the increasing reliance on technology in healthcare delivery and education, mentoring programmes are likely to incorporate more virtual and online components. This could include virtual mentoring sessions, online platforms for communication and resource sharing, and more.

People are increasingly acknowledging the significance of diversity and inclusion in healthcare, (Jacobson & Sherod, 2021). In the context of nursing education, forthcoming mentoring initiatives ought to prioritise pairing mentors and mentees from diverse backgrounds. This approach fosters cultural competence, diminishes healthcare disparities, and attends to the distinct needs of underrepresented populations. Moreover,



Woolnough and Fielden (2020) accentuate the necessity of remaining conscious of the continuously evolving healthcare landscape, characterised by innovative technologies, policies, and patient care paradigms. To remain pertinent, nursing education must adapt to these changes. Thus, mentoring programmes must equip mentors with the necessary knowledge and skills to guide students through complex healthcare environments and embrace emerging practices.

### **Mentoring Students during Crises**

Mentoring during crises in nursing education, such as the COVID-19 pandemic, presents distinct challenges and prospects for both mentors and mentees. Leaders in any organisation play a crucial role in responding to crises. Lasater et al. (2021) investigated mentorship practices during the COVID-19 pandemic crisis, specifically focusing on educational leadership in the southern United States of America. The organisation gathered data from various communication channels during the crisis, including internal memos, emails, dialogues, student evaluations, and meeting notes. The analysis of the data revealed five themes that required attention during the crisis.

The COVID-19 pandemic disrupted educational systems, resulting in faculties being unable to meet student needs, disturbance of learning processes, and threats to the lives of both leaders and students due to the rapid spread of the virus. Role conflicts emerged as educational leaders struggled to clarify values and priorities amid the crisis. The study's recommendations emphasised the need for a deeper conceptualization of mentoring within educational institutions. The authors urged faculty members to foster a

more compassionate and intimate relationship with their mentees. Considering that the pandemic halted all face-to-face mentoring in educational programmes, the authors also suggested further research on how to effectively implement mentorship for well-being on online platforms.

Lasater et al.'s (2021) study offers several valuable lessons. Firstly, crises can exacerbate stress, anxiety, and burnout among nursing students. Mentors play a crucial role in providing emotional support, reassurance, and encouragement to mentees during challenging times. They create a safe space for mentees to express their concerns, fears, and frustrations and offer coping strategies to help them manage stress effectively. Secondly, there were challenges caused by rapid changes in education delivery, such as transitioning to online learning or implementing hybrid models of instruction. Mentors help mentees navigate these changes by guiding access to resources, adapting study habits to online formats, and maintaining motivation and engagement in virtual learning environments. Thirdly, crises require adaptability and resilience from nursing students as they navigate uncertainty and rapidly changing circumstances. The role of mentors is to foster these qualities by modelling resilience, sharing first-hand experiences of overcoming adversity, and encouraging mentees to embrace challenges as opportunities for growth and learning. Furthermore, mentors act as advocates for mentees' needs and ensure they have access to essential resources and support services during crises. This may include advocating for mental health services, technology support, or financial assistance to alleviate stressors and facilitate academic success.

Lastly, as the COVID-19 pandemic disrupted clinical placements and limited opportunities for hands-on learning experiences, mentors supported mentees in finding alternative learning opportunities, such as virtual simulations or telehealth experiences, and helped them develop critical thinking and clinical reasoning skills in unconventional settings.

### **The Transition of Mentoring**

The demand for quality nursing care services that are based on sound scientific knowledge drove the shift in nursing education (Love & McCarthy, 2018). The authors reviewed the driving forces that led nursing education to move from hospital-based to university-based training. The review's objective was based on the Institute of Medicine's goal Number Four, which was to increase the number of degree-trained nurses in the United States of America by eighty per cent. The rationale for phasing out the apprenticeship training for nurses was that the programme was loosely structured, the content and quality varied across the country, and it did not give nursing students the same learning experiences. There was wide exploitation of aspiring nursing students, where students would work in departments that were poorly staffed and fail to experience nursing in other care areas. The approach also resulted in little academic preparation, as the emphasis was more on practice than theory (Love & McCarthy, 2018).

Jooste (2018) echoes the sentiments expressed by Love and McCarthy (2018) regarding the outdated perception of nurse apprentices as passive recipients of information, prompting a transformation in nurse training methodologies. This transition

shifted from traditional hospital-based training to an approach rooted in higher education. In alignment with the Institute of Medicine (IOM) (2018) fourth goal, efforts aimed to increase the number of nurses holding a bachelor's degree in nursing. This initiative sought to strike a balance between theoretical knowledge and practical application to enhance the delivery of quality evidence-based care. Consequently, nursing education confronted the challenge of preparing professionals with the necessary knowledge and skills to actively participate as equal partners alongside other healthcare professionals. Nurse practitioners were encouraged to transcend their traditional role of subservience to physicians and instead, practice autonomously within their defined scope of practice.

Furthermore, the World Health Organisation (2020) outlined competencies expected of nurse educators, aligning with prescribed curricula for nurses. Nurse educators faced the challenge of acquiring essential proficiencies. These included knowledge of adult learning theories and principles, curriculum development and execution, nursing practice, research methodologies, and evidence-based practices. They also encompassed effective communication, collaboration, and forming partnerships, as well as understanding ethical and legal principles alongside professionalism. Additionally, nurse educators were tasked with acquiring skills in monitoring and evaluation, as well as management, leadership, and advocacy. Recent curriculum revisions have sought to incorporate a harmonised blend of theoretical instruction and clinical practice components.

Gopee (2018) highlights a significant drawback of the traditional apprenticeship mentoring model, emphasising that learners primarily acquire procedural knowledge and

psychomotor skills associated with a profession. This approach often neglects the development of critical thinking and the rationale behind actions, leading to potential gaps when faced with changing situations. This perspective resonates with recommendations from the Institute of Medicine (2018), the Nursing and Midwifery Council (NMC) (2010), and WHO (2020), advocating for a collaborative and substantial transformation in nursing education. Such changes aim to cultivate cognitive skills essential for nurses to navigate increasingly complex healthcare environments. The transition from the traditional apprenticeship model to the CA model of mentoring in nursing education has significant implications for both educators and learners aligned with the WHO (2020) competencies.

The traditional apprenticeship model typically emphasises hands-on clinical training and experiential learning under the guidance of a more experienced nurse. In contrast, the CA model places greater emphasis on cognitive processes such as problem-solving, critical thinking, and metacognition. This shift in focus encourages mentees to not only acquire practical skills but also develop a deeper understanding of the underlying concepts and principles of nursing practice. According to Chen (2018), the CA model encourages mentees to engage in higher-order thinking skills such as analysis, synthesis, and evaluation. On the other hand, mentors provide opportunities for mentees to explore complex clinical scenarios, engage in collaborative problem-solving, and reflect on their decision-making processes. This promotes deeper learning and prepares mentees to effectively navigate the complexities of modern healthcare environments. Also, as the CA focuses on metacognitive skills, mentors explicitly teach mentees metacognitive strategies such as goal setting, self-monitoring, and self-regulation. Mentees learn to

reflect on their learning progress, identify areas for improvement, and adapt their learning strategies accordingly. This metacognitive awareness enhances mentees' ability to become self-directed learners and lifelong practitioners.

Collins (1991) argues that teachers need to look at three fundamental processes to translate the traditional mentoring approach to teaching and learning. The first step involves making a task visible to the student. This applies to a situation where the mentor and the mentee are separated by geographical boundaries and the task to be learnt is not in real life or present. The steps enable the student to formulate abstract concepts about the task at hand, which they can then apply and transfer to the real world. Secondly, it helps students understand the relationship between the content and its practical applications. Since making thinking visible requires application skills, the final task for teachers is to diversify the task scenarios, enabling students to articulate common themes and apply the knowledge in various ways. Transitioning from the traditional apprenticeship model to the CA model of mentoring in nursing education holds promise for fostering deeper learning, promoting critical thinking skills, and preparing future nurses to thrive in dynamic healthcare environments.

### **Relevance of the CA Model in Nursing Education**

The application of the CA model of mentoring in nursing education involves leveraging cognitive processes, such as problem-solving, critical thinking, and metacognition, to facilitate deeper learning and skill development among nursing students. This approach emphasises on the active engagement of students in authentic

clinical and classroom experiences under the guidance of experienced mentors, with a focus on both practical skills and theoretical understanding.

Based on the Collins et al. (1989) model, educators allow active engagement of students through hands-on experiences, case studies, simulations, and reflective activities. Mentors provide opportunities for students to apply theoretical knowledge to real-world clinical scenarios, fostering a deeper understanding of nursing concepts and principles. It emphasises the importance of authentic clinical experiences that closely resemble the challenges and complexities of real-world nursing practice. Mentors expose students to a variety of clinical settings, patient populations, and healthcare challenges, allowing them to develop clinical competence and confidence. Shaikh (2017) analysed the roles of a mentor in the CA model, which include being a resource person, a role model, a transmitter of knowledge and skill, and providing constructive feedback. These roles focus on the content taught, methods of promoting expertise among students, the sequencing of teaching-learning activities, and the social environment in which learning takes place. The principle making thinking visible to the student can be applied as follows:

### **Teaching Content**

Based on Collins et al. (1991), mentors demonstrate their thinking processes by verbalising their thoughts aloud while solving problems, analysing texts, or completing tasks. This allows students to observe and learn from the teacher's cognitive strategies, such as how to approach a problem, identify relevant information, and make decisions. Teachers may also encourage students to participate in think-aloud activities. Students

explicitly verbalise their thought processes while completing tasks or solving problems. Students gain insight into the cognitive steps involved in tackling a task, which helps them develop their own problem-solving skills. In addition, mentors provide explicit instruction on cognitive strategies, such as how to analyse text, organise information, or evaluate evidence. By breaking down complex cognitive processes into manageable steps and providing clear explanations, teachers help students develop effective thinking skills.

The application of the CA is in contrast with traditional mentorship, which is dependent on the principle of learning by doing. The acquisition of skills and knowledge does not rely on specific notions and facts. Instead, the work is physically observable to the learner. It focuses on developing proficiency in physical abilities and movements while excluding the use of cognitive and analytical skills. Chen (2018) adds that the content taught using the traditional mentoring model solely relies on modelling. The mentors expect that the learners will gain knowledge and skills when they watch their mentor perform. In contrast, the CA model emphasises the teaching of facts, concepts, and procedures. Shaikh (2017) points out that cognitive abilities such as goal setting, critical thinking, and inquisitiveness are critical skills during mentor-mentee interactions. The application of the CA model when teaching makes a student an active participant and utilises principles of adult learning to achieve the goals of learning

### **Methods of Promoting Expertise**

The CA model is highly effective in promoting student expertise because it provides a structured framework for learning that emphasises the development of



cognitive skills. Delanoy and Mosher (2021) highlight the importance of knowledge acquisition and metacognitive awareness in the process of learning. According to Gessler (2019), modelling through observation and imitation is the cornerstone of the traditional apprenticeship model. This method entails learners closely observing skilled practitioners, internalising their actions, and then replicating them in their practice. This approach not only facilitates the acquisition of practical skills but also allows for the absorption of tacit knowledge and expertise embedded within the actions of experienced professionals. Through this iterative process of observation and emulation, apprentices gradually develop proficiency and competency within their chosen field.

Collin et al. (1991) argue that the CA model encourages students to engage in authentic learning experiences that closely resemble real-world situations, thus promoting expertise. By participating in tasks and activities that mirror the challenges and complexities of their future profession, students develop practical skills and expertise that are directly applicable to their field. It also facilitates the application and transfer of learning to new contexts. By engaging in authentic tasks and problem-solving activities, students develop the ability to apply their knowledge and skills to different situations, settings, and challenges, demonstrating their expertise in diverse contexts.

The methods employed in the CA model offer a more rigorous approach to mentoring students towards expertise. Through the six steps of modelling, coaching, scaffolding, articulation, reflection, and exploration, lecturers effectively address the cognitive, affective, and psychomotor needs of students. Pratt and Johnson (1998) state that the implementation of this mentorship model aligns with a higher education learning

methodology. This approach places a strong emphasis on cultivating critical thinking skills and integrating technology to simulate real-life situations, which in turn provides students with immersive learning experiences. During practice, students transform abstract ideas into tangible concepts that they can apply to various situations.

### **Sequencing of Learning Activities**

The CA model can be efficiently utilised in sequencing learning activities to enhance students' comprehension, proficiency, and mastery of intricate subjects. Chen (2018) argues that arranging learning activities in a specific order creates a learning atmosphere that is friendly and inclusive, allowing students to feel at ease while expressing themselves and seeking advice. Mentors establish a connection with students by using icebreakers, introductions, and actively listening to them. The mentor gradually introduces learning exercises while demonstrating expert-level thinking and problem-solving skills. Additionally, they showcase efficient tactics, methods of making decisions, and ways of approaching work, thereby offering students a clear model to imitate. Gessler (2019) also presents the notion of self-directed learning, feedback, and support. The author posits that fostering a culture of self-directed learning can be achieved by providing students with chances to pursue their interests, establish learning objectives, and investigate subjects autonomously. It motivates students to be proactive, actively search for resources, and assume accountability for their educational path. Additionally, students receive continuous feedback and guidance as they progress through learning exercises. Mentors offer prompt feedback on assignments, examinations, and performance,

emphasising strengths and identifying areas for improvement. They provide supplementary assistance or resources to pupils who may be encountering difficulties.

To highlight the limitations of the traditional mentoring approach, Milojevic et al. (2020) carried out a study to determine if CA was more effective than traditional mentoring in teaching design students in Shanghai Institute of Visual Arts. The study focused on teaching design students at the Shanghai Institute of Visual Arts. The study sought to determine if the adoption of CA would still require modelling in the curriculum. The mixed-methods study collected data through surveys, interviews, and observation. Data analysis identified six themes that supported the CA approach in the sequencing of learning activities. The study found that in the traditional apprenticeship approach, there was low self-regulated learning from students. Students relied on the mentor to stimulate them and provide learning activities. The traditional apprenticeship model, heavily focused on task performance and completion, also reduced creative thinking styles. The study confirmed that CA fosters creative thinking styles and boosts student self-efficacy. The study identified CA components such as coaching, scaffolding articulation, and exploration as part of designing teaching-learning activities that promoted self-regulated learning and decreased teaching hours, promoted teamwork as compared to individual work, and promoted resource mobilisation for students.

Milojevic et al. (2020) found that through mentoring using the CA model, learners can generalise their learnt skills to varied contexts. Articulation and reflection facilitate the application and transfer of acquired skills to unfamiliar scenarios. For instance, nursing students use their understanding of physiology in practical applications. Nurses analyse

a disease's aberrant physiology and correlate it with the indications and symptoms to develop precise nursing care. According to Woolhouse and Nicholson (2020), the field of evidence-based practice in nursing relies not only on ability but also on cognitive talents.

### **Social Environment**

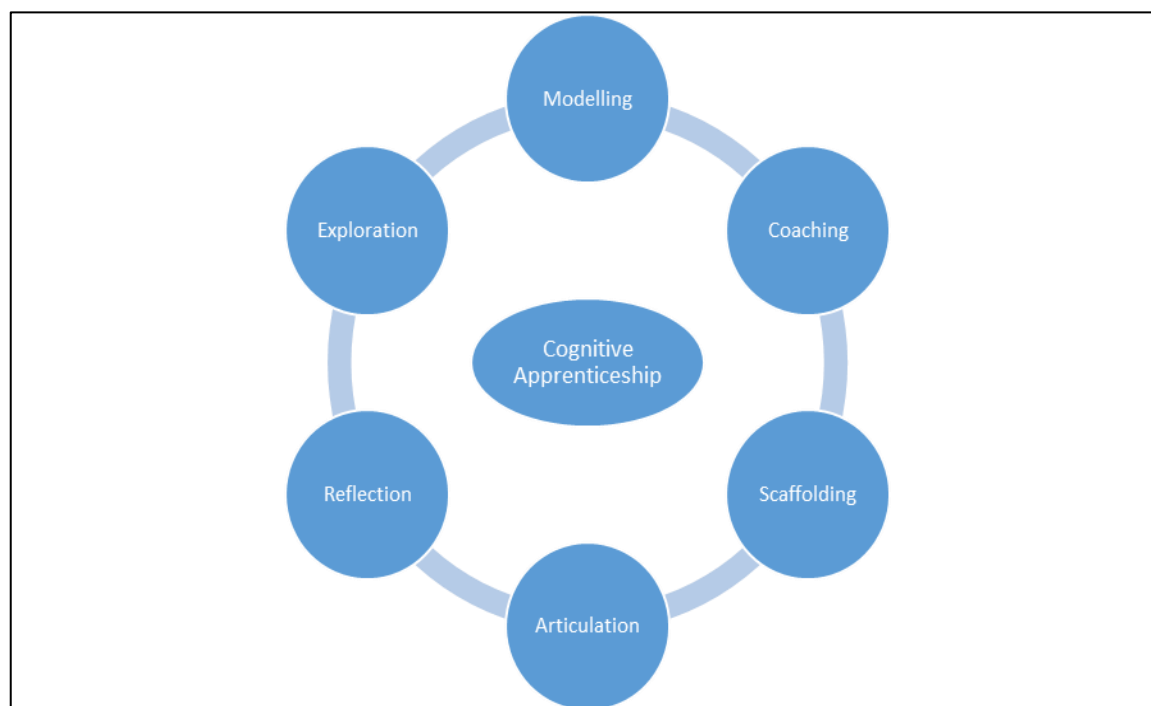
Cognitive apprenticeship refers to a learning approach where individuals acquire knowledge and skills by working closely with an expert in a particular field. Mentoring in nursing education facilitates cognitive development and skill acquisition, as well as socialisation among nursing students. Chen (2018) posits that the social attributes of the surroundings have an impact on the process of acquiring knowledge. Milojevic et al. (2020) argue that the social learning theory states that individuals acquire new behavioural patterns by observing and experiencing them. The apprenticeship model incorporates this idea, along with Bandura's theory of positive reinforcement, to create a conducive environment in which mentors acquire knowledge through observation and modelling. When coaches acknowledge the mentee with positive thoughts, it strengthens skill acquisition and inspires the learner to tackle the next assignment. Gessler (2019) highlights that providing monthly incentives to apprentices not only serves as a source of motivation but also helps to decrease student attrition. Although the learning environment may be unclear, Searle (2004) argues that mentoring effectively conveys explicit skills, such as work attitude, values, and nursing culture, to the learner. Students acquire resilience in an evolving environment, deriving joy from successfully accomplishing their tasks and gaining the security of employment upon completing their training.

In exploring the intricacies of learning environments, the CA model extends its reach to encompass various social factors, including mentee motivation, peer collaboration, community engagement, and adherence to institutional protocols (Chen, 2018). Following what Jacobs (2018) said, the move of nurse training to higher education requires more institutional support for nursing faculty, especially when it comes to more simulation-based learning environments. Within this dynamic landscape, nurse lecturers bear the responsibility of offering extrinsic motivation to students as a means of mitigating attrition rates.

The organisational culture is another social factor that affects mentoring. According to Fain and Zachary (2020), in today's competitive world, hunger for human connectedness at workplaces has never been palpable. Organisations that promote a mentoring culture combine the impact of learning with the human connections formed by mentoring relationships. The benefit is organisational vitality in the face of high-paced and challenging socio-economic and demographic changes. Fain and Zachary (2020) also echo that organisational culture influences employee behaviour, processes, and business practices. Daily activities feel and express the mentoring culture, which explains and shapes employee behaviour through organisational values, rituals, language, and customs.

**Figure 2.3**

*The Cognitive Apprenticeship Model Applied in Mentoring*



*Note: Adapted from Kurt (2021): Components of the CA Model*

### **Importance of Mentoring in Nursing Education**

The effectiveness of mentoring relationships depends on the organisational structures that establish the presence and ease of access to mentors and resources (Woolhouse & Fielden, 2017). The authors contend that mentoring in the nursing profession can yield significant benefits when applied as a concept, process, and developmental experience, encompassing a range of activities. According to Crisp and Cruz (2016), the benefits of mentoring are contingent upon the contact between the mentor and mentee, which can be either formal or informal, of varying duration, and either planned or spontaneous. The role mentors assume and the effects of mentoring activities on mentees determine the positive influence of mentoring in the academic sphere.

Wynn et al. (2021) investigated the significance of mentorship in nursing academia, specifically focusing on the problem of shortages of healthcare professionals and experienced nurse educators. They contended that mentorship is an essential instrument for retaining both students and educators in the area. After conducting their analysis, the researchers discovered a consensus among the studied publications. These articles emphasised the impact of faculty mentoring in both classroom and clinical settings on students' ability to mentor their peers and junior staff after graduation. Nursing instructors have a crucial role in creating a nurturing atmosphere that promotes a sense of safety, worth, and belonging among students. The review highlighted mentorship as a crucial element in transforming student attitudes, promoting resilience, and establishing a strong base of knowledge and skills necessary for nursing practice. Faculty members act as exemplars, showcasing their dedication to achieving success in their field, thereby fostering beneficial mentorship encounters. However, the National Mentoring Resource Centre (2020) review of mentoring in nursing, uncovered that negative mentoring experiences often stem from mentors' poor attitudes, leading to detrimental effects such as low self-esteem, burnout, and attrition among students and faculty alike. Extreme emotional outcomes, including depression and a sense of purposelessness, can result from such poor mentoring relationships.

Welner (2020) emphasises the need for support for both new faculty members and student nurses, expanding on the importance of mentoring and resilience. Wynn et al. (2021) further argue that effective mentoring requires basic characteristics such as role modelling, nurturing, and friendliness. Mentors share their experiences to instil resilience

in their mentees, ultimately reducing faculty turnover and preventing novice nurses from leaving the profession soon after licensure. In summary, Wynn et al. (2021) perceive mentorship as not only advancing the nursing profession but also as a means of giving back to the field, illustrating its critical role in shaping the future of nursing. Several benefits of mentoring have been identified by nursing scholars as follows;

### **Mentoring as a Tool for Professional Development**

Continuous professional development is required for teaching staff in order to upgrade their nursing knowledge and skills. Most regulatory bodies of nurses in every country adopted the International Council of Nurses recommendations of Continuous Professional Development (CPD), the points they adhere to every year when they renew practicing certificates. The purpose of CPD points is to enable nurses who work either full time or part time to enrol in short courses related to their work. The aim is to improve and broaden the nurse practitioner's knowledge in current practices in nursing, improve expertise and competence. It also helps nurses to develop personal and professional qualities required throughout their professional lives through lifelong learning approach. Nursing is a profession that heavily relies on mentorship for professional growth. According to Jafaru et al. (2018) nursing education perceived moderate mentorship culture through models such as the traditional dyad and peer mentoring. Mentorship activities are driven by the high demand of competent staff that can align the values of mentorship when performing their duties despite lack of tangible frameworks and resources.



Jafaru et al. (2018) reviewed empirical and theoretical literature on mentoring as a tool for professional development in nursing. The purpose of the review was to showcase the role of mentoring in dimensions such as improving evidence-based practice, professional competence, reducing nursing professional shortages and promoting retention. Mentoring serves as a powerful tool for professional development across various fields, including but not limited to business, academia, healthcare, and technology. The authors found evidence that reinforces mentoring in professional development.

Mentoring enables the transfer of knowledge, expertise, and practical insights from experienced professionals to less experienced individuals. Mentors share their experiences, lessons learned, and best practices, providing mentees with valuable learning opportunities that contribute to their professional development. It provides opportunities to enhance skills and competencies relevant to the profession. Mentors offer guidance, feedback, and constructive criticism, helping mentees identify areas for improvement and develop new skills essential for success in their careers. Novices are mentored in career guidance, helping them navigate their career paths, set goals, and make informed decisions about their professional development. Mentors share insights into career advancement opportunities, networking strategies, and industry trends, empowering mentees to achieve their career aspirations. Mentoring also promotes diversity and inclusion by providing mentees from underrepresented groups with access to mentors who can offer support, guidance, and advocacy. Mentors help mentees

navigate barriers, overcome biases, and thrive in diverse professional environments, fostering a culture of inclusivity and equity.

Based on Jafaru et al. (2018) findings, mentoring is affirmed as a transformative tool for professional development, empowering individuals to enhance their knowledge, skills, and confidence, navigate their career paths, and achieve their full potential in their chosen fields. By fostering meaningful mentor-mentee relationships, organisations can cultivate a culture of learning, growth, and success, driving individual and collective excellence in the workforce.

### **Mentoring as a Tool for Designing Teaching and Learning Strategies**

Mentoring can be a useful technique for developing efficient teaching and learning strategies. Hudson (2013) asserts that educators must cultivate pedagogical approaches that accommodate the distinct requirements and cognitive preferences of their students. Mentors can improve learning outcomes by tailoring educational methods and resources to each student's strengths and shortcomings. Pedagogical knowledge practices can help mentors integrate novel teaching methods, such as active learning strategies, flipped classrooms, or technology-enhanced learning, into their instructional design.

Riley and Fearing (2009) collected data using the Visual, Aural, Read and Write and Kinaesthetic (VARK) strategy used to design teaching and learning activities. The purpose was to find the preferred learning styles of student nurses and position mentoring as a teaching strategy. The breakdown of the learning styles was as follows:

1. The visual dimension is associated with students' preferences for learning information presented in graphs, charts, and videos.
2. Aural learning pertains to the auditory senses. It encompasses how educators communicate, including voice clarity and diction, as well as the use of teaching strategies like group discussions, tutorials, and seminars to enhance learning.
3. Read and write learning that simulates learning preferences where students gravitate towards written information displayed for reading and comprehension.
4. Kinaesthetic learning that involves learning through practical application, emphasising connections to real-life experiences.

The findings from the VARK survey showed that students learn using different modes; although other students learn using multiple modes, one method may be dominant within each student. The implications of developing mentoring strategies were based on the student learning modes. In visual learning, nursing educators can incorporate visual aids such as diagrams, charts, models, and videos into their teaching materials. Visual representations of anatomical structures, disease processes, and clinical procedures help reinforce concepts and enhance students' understanding. For example, using multimedia resources to demonstrate patient care techniques or medical simulations with virtual reality technology can aid visual learners in grasping complex nursing concepts.

Aural learners benefit from auditory information and instructional methods that emphasise listening and verbal communication. Nursing educators can enhance aural learning by delivering clear and concise lectures, engaging in interactive discussions, and providing verbal explanations of clinical scenarios. Additionally, incorporating audio recordings of patient assessments, therapeutic communication techniques, and nursing interventions can help aural learners develop effective communication skills and critical thinking abilities. Nursing students who prefer the read-or-write learning style excel in activities that involve reading, writing, note-taking, and text-based materials. Educators can cater to these preferences by assigning textbooks, articles, case studies, and written assignments that require analysis, synthesis, and reflection. Providing study guides, handouts, and online resources with written content allows learners to review information at their own pace and reinforce key concepts through written expression.

Kinaesthetic learners thrive in hands-on learning environments that involve physical movement, manipulation, and experiential activities. In nursing education, educators can engage kinaesthetic learners through interactive simulations, skills labs, clinical practicums, and role-playing exercises. Hands-on experiences such as conducting patient assessments, practicing nursing procedures, and participating in simulated patient care scenarios allow learners to apply theoretical knowledge in real-world contexts and develop clinical competency. Based on the findings, mentoring was identified as an important factor that teachers need when developing teaching-learning activities. VARK provides development of multimodal strategies with emphasis on individual student learning style.

Lyons et al. (2017) add that mentoring ensures the department produces both quantity and quality graduates. Utilising different mentoring strategies helps mentors identify students who have difficulties grasping content and skills. Mentors can engage these students in a one-on-one mentoring exercise to enhance their learning experiences. The other benefit is the identification of at-risk students. As noted in the study of Riley and Fearing (2009), Lyons et al. (2017) add that different socioeconomic, cultural, and ethnic backgrounds influence how a student responds to the mentoring relationship. The faculty is responsible for selecting suitable mentors based on their knowledge and personal attributes for the student's benefit.

Li (2018) argues that student evaluation tailors both formative and summative assessments to meet individual learning needs. Mentors align clinical competency procedures with curriculum requirements to guide students towards achieving their goals. Moreover, mentors guide problem-solving skills. Teaching models such as the self-directed learning approach, coupled with adult learners' mental orientation, prompt them to adopt mentoring as an integral aspect of their learning journey and a means to attain their objectives.

According to Collins et al. (1991), problem-solving application questions necessitate critical thinking skills involving understanding, application, analysis, and creativity, all of which are fostered through mentoring. A mentor who has content knowledge carefully selects learning opportunities for the students according to their level of training and learning styles, as identified by Riley and Fearing (2009). Students progress from simple to complex tasks, with creativity representing the highest order of

learning. Various assessment strategies can be employed to evaluate students' abilities to remember, apply, analyse, and demonstrate creativity. For example, Lyon et al. (2017) advocate for the use of multiple methods in the examination of students, such as multiple-choice questions, matching, essays, probing, and application questions. This approach allows the student's thought process to become apparent to the lecturer, who can then utilise the findings to mentor and support the student accordingly. The diverse methodologies cater to all learning styles, contributing to student satisfaction and diminishing anxiety and attrition rates.

According to Tukur and Umar (2020), the goal of clinical teaching is to allow students to acquire skills in managing patients with various health problems, give them a platform to put theory into practice, and give them a chance to identify themselves with the profession and standards of practice. As a result, Jafaru et al. (2018) argue that mentoring is not an option for nursing education. When students enter the clinical environment for the first time, they often experience fears of death and anxiety about handling sick people, which can hinder their goal achievement if not addressed. Mentors assist students in developing competencies such as manual dexterity when performing nursing procedures in a complex environment, which leads to professional growth.

### **Mentoring as a Tool to Boost Self-esteem**

Mentoring improves both the mentor's and the mentee's self-concept. According to Berman (2020), a human being is not born with a self-concept; it is a phenomenon that develops as a consequence of socialisation. Self-concept is defined as an awareness or

mental image of oneself. Berman (2020) notes that a balance of self-knowledge, self-expectation, and social evaluation forms a positive self-concept. According to Collins et al. (1991), modelling in the CA approach stimulates positive thoughts in the mentee about academic excellence. Mentors have the responsibility of assessing students who have a negative self-concept and employing strategies such as peer mentoring to boost their self-concept. The benefits of a positive self-concept include improvements in thinking, communication, and acting. Students can form groups and mutually treat each other. Mentorship is based on mutual relationships that are based on choices, giving and receiving love and support, and the ability of both parties to act to change things. Students must identify with their peers and profession. Therefore, the mentor's ability to identify talents during training determines the benefits of mentoring relationships. For example, the mentor may identify specialty areas where the student needs pressure for continuous professional development based on their intellectual functioning, ability to cope and solve problems, independence, confidence when performing tasks, and ability to socialise with others.

Dimitriadou et al. (2015) conducted a literature review examining how self-esteem influences professional practice in Greece. The authors noted that the socialisation process in nursing education served as a vehicle for the assimilation of professional standards, the development of professional identity, and a positive perception of the profession.

Dimitriadou et al. (2015) conducted a literature review examining how self-esteem influences professional practice in Greece. The authors noted that the socialisation

process in nursing education served as a vehicle for the assimilation of professional standards, the development of professional identity, and a positive perception of the profession. The authors cite Terry (1999), who argues that the treatment of students by their mentors and other healthcare professionals during practice significantly influences their professional behaviour. A review of an article by Arter (1992) revealed that there was generally a problem of low self-esteem among nurses. They blamed senior nurses for using intimidation, bullying, and verbal humiliation against students. The cruel actions of novice nurses reduce self-confidence, competence, and consequently self-esteem. The paper suggested crafting nursing education learning strategies to boost self-esteem. Mentors should use constructive criticism, offer positive feedback, and reward work well done to boost self-esteem.

### **Benefits of a Mentoring Culture**

Culture has both conscious and unconscious influences on how people behave (Zachary, 2011). It is an omnipresent phenomenon that is deeply rooted in human relations passed down through generations. Culture models mental processes such as one's assumptions, choices, philosophy, values, interests, and overall behaviour. Values and philosophy hold employees of an organization together as they strive to achieve a common goal of success. According to Zachary (2011) if nursing schools promote a mentoring culture, they would enjoy benefits that include:

1. Employee accountability, where everyone feels a sense of ownership of the success of the organisation.



2. Promoting shared responsibility among management and nurse educators and student nurses.
3. Use of resources is maximised and there is no duplication of activities which reduces costs and saves time.
4. The culture of mentoring maintains integrity within an organisation as educators are ready to support students and other colleagues and help each other perform tasks.
5. There is massive knowledge utilisation during mentoring that creates new learning opportunities for the mentor and mentee.
6. The components of mentoring such as goal setting and positive feedback are key to improve the performance of both nurse educators and students.
7. There is trust among members of the organisation because of open and trustworthy mentoring relationships.

### **Professional Socialisation of Student Nurses**

Research findings on the significance of mentoring universally lament the shortage of nursing faculty and professionals in the field. De Swardt et al. (2017) argue that the roles of mentoring in nursing fall under one umbrella, which is socialisation. In examining the agents facilitating socialisation for mentoring, various factors emerged, including teaching methodologies, curriculum design, and carefully structured learning experiences. These elements collectively shape the environment in which mentoring

occurs, guiding the integration of novice professionals into the broader nursing community.

De Swardt et al. (2017) argue that the choice of becoming a nurse may emanate from various reasons that include a desire to care for others, financial independence, and job security, therefore, what nursing faculty needs is to put in place measures to positively socialise the student nurse using the socialisation agents identified. Public perceptions of nurses' lack of discipline and negative attitudes, along with media reports of misconduct and nurse shortages, prompted the study. The authors attributed the problems to the inadequate socialisation of nurses during their training. Drawing upon the provided information, the authors formulated guidelines to bolster the professional socialisation of undergraduate student nurses and nurse educators. Their approach commenced with an investigation into the experiences of students throughout the socialisation process and the perceptions of professional nurses regarding their role in mentoring socialisation.

The study sample consisted of students pursuing a Bachelor of Nursing Science degree at a training school located in Gauteng Province, South Africa. While the study did not explicitly discuss mentoring, the examination of its contents mostly concentrated on key aspects of mentoring, such as role modelling, coaching, and scaffolding. This analysis supports the decision to include it in the review. The study utilised a mixed-method design, employing an exploratory sequential approach. The data for the discussion groups was obtained from five group discussions, transcribed and analysed it using the Tech (1990) model. The researchers discovered three topics in which socialisation played a crucial role. The initial concept centred on socialisation within the

healthcare setting. People regarded professional nurses as role models and mentors who inspired the acquisition of skills, attitudes, and values. I mentored students during their attachment, offering assistance and helping them accomplish objectives in a demanding setting. The clinical atmosphere was characterised by volatility and a substantial workload. Additionally, students observed discrepancies between the operations performed and the ones presented in class. The atmosphere rendered the mentor's role ambiguous. Nurse educators struggled to effectively connect theoretical concepts with practical applications. The lack of effective communication between nursing instructors and clinical staff resulted in student discontent.

The second theme analysis revealed deeply rooted issues in the nursing educational institution's environment. While students acknowledged the high level of knowledge and skill possessed by nurse educators, they held a negative attitude towards the clinical mentors who assist students during their practical training. Nurse educators perceived professional nurses as deficient in the knowledge and abilities required for overseeing and guiding pupils. The primary obstacle to bridging the theory-practice divide was the lack of instructors in the clinical setting. Most often, nurses in a clinical setting prioritised using students to address staff shortages rather than attending to their educational requirements. Nurse educators mostly utilised reflection, especially during the post-attachment era.

The last theme revolved around mentorship as a means to foster work ethics, culture, and gender awareness. Students reported instances of verbal abuse from their mentors, despite the Nurses' Pledge of Service, which highlights the importance of

respecting human dignity. The observed conduct resulted in diminished self-worth among student nurses, as documented by Dimitriadou et al. (2015). Nurse educators saw challenges in integrating students who did not initially select nursing as their preferred career but opted for it due to financial incentives. These pupils encountered challenges in adapting to the professional dress code and overall standards of good behaviour. Nurses undergo training to effectively operate in a multicultural setting. In South Africa, English is the language of instruction. However, the study uncovered inconsistent use of the official language in both theoretical and practical contexts, leading to cultural conflicts. The scarcity of male instructors and male professional nurses available to guide male students resulted in mentors perceiving male students as challenging. On the other hand, male students received inequitable treatment, as nursing instructors showed a preference for female students over their male counterparts.

Based on the experiences, the study recommended strengthening the mentor role during academic and clinical learning. Nurse educators and nurse mentors at hospitals serve as role models responsible for providing positive mentoring outcomes. Role modelling instils the values of nursing as a profession and ensures that imitation produces ethical nurses. Nursing faculty should extend teaching and learning strategies that foster student growth to the clinical setting to prevent students from becoming accustomed to staff shortages. Of note, there was a strong emphasis on nursing educators considering the learning styles of students, as pointed out by Riley and Fearing (2009). Matching mentors to their mentees is an important aspect of successful mentoring relationships. By matching male student nurses with male professional nurses and nurse educators,

stigmatisation can be reduced. The study concluded that mentoring strategies should influence student behaviour while they are still in the nursing profession's developmental stages.

### **Benefits of Clinical Mentoring**

John et al. (2020) did a quantitative study to identify student nurses' expectations and potential benefits of mentoring in the Ministry of Health Institutions in Malaysia. Growing concerns about newly qualified nurses' ability to provide quality nursing care to the general population prompted the study. Students pursuing a diploma in nursing from first to third year comprised the population. The study employed a face-to-face distribution of questionnaires. Out of a population of 243 students, sixty per cent of the respondents responded to the questionnaires. The study identified mentoring as a recognised vehicle for career growth and success. During their training, all participants responded positively to the benefits of mentoring. However, students pointed out that the benefits depended on the availability of the mentor. Third-year students in remote villages, far from the nursing school, expressed feelings of abandonment due to the mentors' infrequent reach. The benefits of mentoring in remote areas were different from the classroom situation, where mentors were always present to teach and support them. The respondents also pointed out the importance of mentor attitudes. The study found that some nurse educators concentrated more on theoretical work than clinical mentoring. They were not easily accessible to their students. The study recommended mentoring frameworks within nursing schools and emphasised mentor roles both in class and in the clinical area.

## **Virtual Mentoring**

Virtual mentoring refers to computer-based or assisted mentoring that uses information and communication technology (Garringer et al., 2019). Figueroa (2017) defines virtual mentoring as the practice of using a computer interface to connect with another party. Merriam's Webster dictionary (n.d.) defines the word virtual as a term in computing that describes a non-physical phenomenon that software creates and simulates online. Virtual mentoring is also known as online mentoring, digital mentoring, or electronic mentoring. The objectives of virtual mentoring align with those of traditional face-to-face mentoring. According to Iqbal (2020), virtual mentoring has been practiced in higher education, research and hospitality mainly in the upper and middle level income countries. New Zealand, the Netherlands, and the United States of America provide evidence of its success. Virtual communication is mainly via phones and computers using online instruments such as Skype, WhatsApp, Viber, Messenger, and Virtual Learning Environments (VLE), and maintaining communication by e-mail and message.

The findings by Iqbal (2020) show the innovation gap between higher- and lower-income countries, with limited opportunities for knowledge exchange and collaboration between regions. Virtual mentoring initiatives in wealthier countries often drive innovative practices and research findings in fields such as science, technology, and entrepreneurship, which lower-income countries could benefit from. There is also a digital divide where lower-income countries and marginalised populations may lack the

necessary infrastructure, technology access, and resources to engage effectively in virtual mentoring programmes.

### **Virtual Learning Platforms**

Virtual learning occurs without face-to-face interactions and therefore is a tool for distance learning (Kulik, 2018). Knowledge transfer on virtual platforms mimics knowledge transfer in face-to-face interactions, as it is based on mentee and mentor interaction activities. According to Burns (2011), web-based learning has gained significant popularity in most parts of the world, with approximately thirty American states offering virtual schools starting in high school. According to Burns (2011), virtual schools are no different from brick-and-mortar schools because instructors can design content appropriately, deliver lectures, discuss and communicate with students, answer questions, use formative evaluation to check for understanding, grade projects, and assign grades online. Virtual learning utilises communication media such as webcasts, webinars, Google Meet, Microsoft Teams, Blackboard, Canvas, Khan Academy, portals, and many more. The advantage of virtual learning tools and environments is that they provide a medium for sharing content, curriculum, and learning objects, which improve learning experiences and assessment strategies. For example, Google Classroom and Microsoft Teams come with features like examination forms, quizzes, automation, PowerPoint presentations, and spreadsheets. Kulik (2018) asserts that virtual learning platforms offer a comprehensive range of teaching and learning features, catering to the

needs of both instructors and learners. Students develop self-efficacy and self-study skills during web-based learning.

Virtual mentoring has many facets that depend on how and when the mentors and mentees meet and interact. Garringer et al. (2019) state that interactions depend on the chat features present on the online platform. Iqbal (2020) searched electronic databases to understand the current state of e-mentoring in education and its implementation to improve learning experiences in distance learning. The search criteria included articles that discussed e-mentoring from 1979–2020. Relevant articles were randomly extracted and downloaded from databases that include PubMed, Google Scholar, Science Direct, and Emerald. E-mentoring and its effectiveness were the keywords used. The reviewed literature covered published editorials, theses, journal articles, edited books, and blogs that contained comments on e-mentoring. The study found that virtual mentoring holds great potential for enhancing learning experiences in distance education by providing accessible, flexible, personalised, collaborative, and professional development opportunities for mentors and mentees alike. As technology advances and online learning becomes more prevalent, virtual mentoring is likely to play an increasingly important role in supporting student success and fostering lifelong learning in educational settings.

A review of Daniel et al.'s (2008) study on the use of cost-benefit analyses of e-mentoring revealed that e-mentoring has the power to bridge geographical and distance gaps. By leveraging the connectivity and accessibility of digital platforms, e-mentoring enables mentors and mentees to connect, communicate, and collaborate regardless of their physical locations, unlocking new possibilities for learning, growth, and collaboration



on a global scale. Additionally, Ekeroma et al. (2015) conducted a systematic review of e-mentoring strategies and their impact on the relationship between teaching, learning, and mentoring in technology-mediated environments, which sheds light on the nature and scope of e-mentoring. Researchers found that e-mentoring in higher education encompasses accessibility, flexibility, personalisation, collaborative learning, professional development, diversity and inclusion, and sustainability.

Iqbal (2020) sought to understand the significance of e-mentoring, specifically in Asian countries. Iqbal (2020) argues that the notion of traditional mentoring is becoming obsolete. Traditional mentorship is conservative; it views learning as a linear transformation of knowledge in asymmetrical power relationships between the mentor and mentee. E-mentoring emerges as a preferred method, shading traditional methods and enhancing knowledge acquisition across power boundaries.

Iqbal (2020) first provided a comparative analysis of face-to-face and online mentoring by reviewing literature from five articles. E-mentoring dominated the Likert scale on variables such as asynchronous benefits, which include: communication outside of real-time between the mentor and mentee, providing time convenience; reduced discrimination by gender and race; proper use of digital platforms and technology; diverse cultural practices; and improved communication in a mentoring relationship. A review of online tools aimed at enhancing teaching and learning experiences revealed that email, Skype, Dropbox, and Google Drive are instrumental in helping mentors improve the reading and writing skills of their mentees. Additionally, mentors can enhance the mentees' thematic analysis skills by sharing articles through these communication

platforms for analysis. Furthermore, social media platforms such as Facebook, WhatsApp, and Messenger serve as valuable tools for networking, communication, and brainstorming within mentoring relationships. Dropbox emerged as a viable option for document sharing in mentoring, particularly in academic development, as indicated by studies conducted by Evans and Forbes (2012) and Mollenkopf (2009). Moreover, digital media platforms that facilitate the uploading of videos enable both mentors and mentees to observe each other while performing tasks, thereby fostering skill development and problem-solving abilities.

However, Iqbal (2020) also notes that despite the advantages of online mentoring, poor internet access and generational and cultural differences may still hinder the implementation of mentoring education programmes. The author recommended that organisations that intend to use e-mentoring services should provide basic training for mentors on the use of virtual environments. Training will enhance the creation of interpersonal bonds between mentors and mentees. Electronic equipment should be purchased and continuously updated to provide a conducive learning environment that satisfies learners' and teachers' expectations. As a final point, Iqbal (2020) recommends that e-mentoring should be compulsory in the era of technology, and future research can look at strategies that can improve the impact of e-mentoring.

### **Online Nursing Education**

Yangoz et al. (2017) argue that the development of information technology and sophisticated web-based applications have created remarkable opportunities for higher

education institutions to conduct online learning. Particularly, the nursing profession needs to use these platforms because they continuously require updated information on disease patterns, new skills, and disease management.

Yangoz et al. (2017) conducted a literature review using Moher's (2015) PRISMA-P models to understand the use of e-learning programmes in nursing education. The search criteria included key terms relating to e-learning, nursing education, and nursing students. In June 2016, databases such as MEDLINE, CINAHL, Science Direct, and the Cochrane Library yielded a total of 554 articles. The publication years ranged from 2011 to 2016, and only articles accessible in full text were considered for review. A population, intervention, comparison, and outcome (PICO) strategy was utilised to define the inclusion and exclusion criteria for the articles under review. The authors supplemented this with study design criteria, aiming to incorporate studies utilising qualitative designs, quasi-experimental designs, and randomised trials. The authors excluded articles that used systematic reviews and meta-analyses. Ultimately, six studies meeting the inclusion criteria were selected and reviewed, focusing on aspects such as design, subjects, implementation, outcomes, and results, which are summarised as follows:

Abdelaziz et al. (2011) conducted the first study, using 270 nursing students in a quasi-experimental design to compare the effects of online and face-to-face learning. The experimental group used online learning, and the control group used traditional face-to-face knowledge. Students were taught using three methods of cardiovascular assessment: observation tool kits, monitoring of central venous pressure, and an electrocardiogram. The students filled out a seven-point scale to evaluate their learning

experiences, and the findings showed that pupils who participated in online learning were pleased and satisfied with the teaching method used.

Mehrad et al. (2011) conducted the second study in Iran to investigate the impact of the online lecture method on nursing students. The authors utilised a crossover design that recruited thirty-two nursing students who participated in traditional face-to-face lectures for four weeks. After orienting students on how to use the online learning interface, they transitioned to online lectures. Researchers found that students demonstrated greater capability and self-efficacy during e-learning compared to their reported effectiveness in face-to-face learning. The third study by Keefe (2012) utilised a randomised cohort design to find out the effectiveness of pain assessment taught via e-learning. Forty-two nursing students participated in the study. The students were taught pain assessment and pharmacological interventions using online media. The remaining one hundred and sixty-four students received a traditional lecture on pain assessment and interventions. The study revealed that students who received online instruction exhibited higher levels of reflection and retention compared to those who received a face-to-face lecture.

An examination of the Barker et al. (2013) study investigating the efficacy of virtual learning in midwifery training identified numerous advantages of mentorship in midwifery education. Barker et al. (2013) employed a qualitative interpretative methodology to assess the perspectives of students towards e-learning. The study included fifty-one students who had already completed their maternal attachment. Throughout the twelve-week attachment, the students actively engaged in an e-learning curriculum focused on

maternity care. Despite acknowledging the benefits of e-learning, the students suggested that virtual learning could supplement traditional in-person teaching methods. In a separate study conducted by Lin (2013), a historical comparison was made between e-learning systems designed to enhance knowledge in the field of medication management, specifically in the context of paediatrics. Among the 349 students in the cohort, eighty underwent traditional face-to-face education for paediatric courses, while the remaining students received their education online. The post-test results demonstrated that the online learning environment exhibited superior knowledge retention and practical experience compared to the face-to-face setting. In 2015, a study aimed to investigate the impact of e-learning on lectures and role-playing in terms of students' information acquisition, retention, and satisfaction. A sample of sixty students currently enrolled in an online medical-surgical nursing school participated in the study. Online learning satisfaction data was gathered on a Likert scale. The study determined that online lectures were more effective in imparting teaching approaches than role-playing in traditional in-person instruction. The review determined that e-learning in nursing education enhances experiences beyond traditional in-person instruction due to its focus on the needs and preferences of the learners. Additionally, it improves personalised learning experiences and caters to individual learning preferences. The incorporation of images, animations, and videos enhanced the learning process for skill development across many technologies. However, the researchers determined that the challenges of e-learning depend more on specific circumstances than those of traditional face-to-face learning. It necessitated the use of sophisticated teaching and learning methodologies

that effectively met students' educational needs. The nursing faculty should leverage its cost-effective and inventive characteristics to provide esteemed programmes that have a positive influence on nursing education and nurses' professional advancement.

### **Virtual Mentoring in Nursing Education**

The technological boom and the emergence of diseases like COVID-19 seem to make online learning inevitable, but Johnson et al. (2019) note that many critics question its authenticity and value. Allen and Seaman's (2020) survey in the United States revealed that twenty-five per cent of faculty members viewed online learning outcomes as inferior to traditional face-to-face instruction. This goes against the benefits of online learning, which Iqbal (2020) identified as flexible, convenient, and less expensive than face-to-face instruction. Therefore, for the process of virtual mentoring to succeed, mentors must spend as much time with their learners online to keep the relationship as exciting as face-to-face. There are numerous benefits of extended engagement between lecturers and students in virtual mentoring, including deeper relationship building, personalised support, continuous learning and growth, increased motivation and confidence, enhanced academic performance, improved retention rates, and preparation for real-world challenges. However, Johnson et al. (2019) argue that there is still controversy regarding how a mentor can instil skills and attitudes when there is a separation between the lecturer and the student, with the computer serving as the medium of interaction.

Clement (2018) examines the concept of virtual mentoring, exploring its advantages, various models, and significance within the nursing profession. The

specificity of this study in nursing education led to its selection, despite its focus on doctoral nursing students. Virtual mentorship for undergraduate nursing students has not received much attention. The author employed a GALILEO methodology to explore virtual mentoring topics within the nursing domain, conducting searches on Google Scholar using keywords like mentoring, nursing education, and e-mentoring. The search attempted to identify full articles from reviewed journals between 2010 and 2016, which focused on the value of virtual mentoring in nursing education. Furthermore, it was noted that there was a unanimous agreement among authors that mentoring is the backbone of nursing; however, there was a new force in nursing education in the form of virtual mentoring that cannot be ignored and is a current trend in online education.

A review of Mirajes et al. (2013), Holey and Cadwell (2012), and Murdock et al. (2013) revealed that mentoring is critical in ensuring that students complete their programmes as they receive counseling and support from mentees. Literature also provides empirical evidence that virtual mentoring is a promising socio-technical replacement for traditional face-to-face mentoring. Evidence suggests that virtual mentoring can incorporate elements of face-to-face learning, including enhancing mentor and mentee confidence, sharing mentoring experiences, role modelling, coaching, and critical thinking skills.

Clement (2018) identified four common themes that characterise virtual mentoring in nursing education. The first attribute identified was that both the mentor and the mentee take responsibility for the learning process. Mentors and mentees work collaboratively and actively engage in the mentoring relationship to create a dynamic learning

environment that fosters growth, development, and mutual learning. Mentees set personal and professional goals for their learning and development, articulating what they hope to achieve through the mentoring relationship. The second theme emphasised how the motivation and commitment of both the mentor and the mentee shape the circumstances surrounding the responsibilities. Motivation and commitment are key drivers of mentor and mentee responsibilities in a mentoring relationship. Clement (2018) argues that by fostering a shared sense of enthusiasm, dedication, and accountability, mentors and mentees can create a supportive and empowering environment that maximises learning and development opportunities. Third, online mentoring should be voluntary and reciprocal, facilitating the transfer of knowledge from a knowledgeable individual to a less knowledgeable mentee. For example, Clement (2018) noted that doctoral students wanted mentors to guide and support them during research to achieve their goals. Knowledge and experience are critical in nursing. The final themes were the mentor's time and the mentee's location. A review of Willian et al. (2012), Donar and Kumar (2016), and Hansen (2000) studies affirms that virtual mentoring suits busy time schedules and also accommodates remote and distant locations that separate mentors from their mentees.

A further examination of the antecedents of virtual mentoring revealed details on motivation, commitment experience, and electronic access. Clement (2018) created a survey tool to gauge the influence of virtual mentoring, using the Easy Survey Package (ESP). A questionnaire was developed with thirty-three multiple-choice questions and some open-ended questions that focused on online mentoring experiences. An analysis



of three selected cases, each depicting a contrary, related, and borderline case, demonstrated the positive outcomes of virtual mentoring. Clement (2018) concludes that, although virtual mentoring is a relatively new concept in nurse training, it has existed in doctoral student mentoring. Despite the quantifiable attributes, the concept of virtual mentoring remains unmeasured, and there are no established instruments or evaluation procedures for virtual mentoring relationships. Based on Clement's (2018) assertion, the researcher concludes that without standardised instruments or evaluation procedures, it becomes challenging to assess the effectiveness and impact of virtual mentoring relationships accurately. Also, the lack of measurement tools and evaluation procedures hinders the identification of best practices for virtual mentoring. This can lead to missed opportunities for supporting mentees' growth and development, as well as potential negative outcomes such as dissatisfaction, disengagement, or a lack of progress in achieving mentoring goals.

### **Implications of CA to Online Nursing Education**

As online nursing education is inevitable, nursing faculty must merge and replace the traditional apprenticeship model of mentoring with one that incorporates online aspects of education. Collins et al.'s (1991) CA development challenges educators to design learning activities in various areas, including professional education. Although CA pedagogy is already in professional disciplines such as nursing, medicine, and pharmacy, it remains a strong contender for connecting knowledge and skills where distance separates the educator and the student. Delanoy and Mosher (2021) conceptualise CA

as an online pedagogy by reviewing its dimensions concerning online teaching and learning. The authors argued that there is a difference between traditional apprenticeship, CA, and online cognitive apprenticeship. According to Collins et al. (1991), the traditional apprenticeship process works when there is an observable task; learning occurs when tasks arise in a natural physical environment. CA, on the other hand, entails making thinking visible, motivating learners to use their cognitive abilities to form abstract concepts about the taught content, and then applying these concepts to real-world scenarios to ensure comprehension. Delanoy and Mosher (2021) expand upon these two arguments to characterise the features of an online CA within a technology-mediated fluid environment. The authors argue that online CA is based on the ability to use technology to make things like simulators, artefacts, and processes visible. Instructors have the choice of using both asynchronous and synchronous instruction. Burns (2011) describes asynchronous instruction as communication between a lecturer and a student that occurs via email and virtual learning environments. Asynchronous mentoring refers to a mentoring relationship where communication and interaction between the mentor and mentee occur at different times rather than in real time. In asynchronous mentoring, participants engage in exchanges of information, feedback, and guidance through methods such as email, discussion forums, or shared documents without requiring simultaneous availability. This approach offers flexibility and convenience, allowing mentors and mentees to communicate and collaborate at their own pace, irrespective of time zone differences or scheduling conflicts.

Virtual synchronous instruction occurs in real time, such as through messaging, chatting, and video calls. Synchronous interactions resemble face-to-face instruction. Delanoy and Mosher (2021) propose that digital forms of communication act as a facilitator for sharing content between the teacher and the learner. The asynchronicity of online CA highlights the benefits of using various digital platforms that mimic different teaching pedagogies used during face-to-face instruction. It is the digital interfaces that overcome distance and time barriers to form strong mentoring relationships.

### **Effectiveness of Virtual Mentoring**

According to Schnieders (2022), the day WHO announced COVID-19 as a global pandemic, a new era began for all professions. The new era compelled everyone to devise strategies for maintaining connectivity and engagement, in order to sustain business operations. The effectiveness of virtual mentoring is determined by a variety of factors, including the quality of communication, level of engagement, and compatibility of the mentoring platform with participants' needs.

The Mentoring Complete Guide (2022) points out that technology-enabled mentoring increases the learner's focus span as they frequently navigate through the interface, checking for the latest information and interacting. Virtual learning tools ensure that online activities receive undivided attention. Schnieders (2022) posits that the accuracy of matching a mentor to a mentee determines the effectiveness of virtual mentoring. Artificial intelligence can guide accurate matching. Some features embedded in virtual learning environments can report interaction success between a mentor and

mentee. Furthermore, the use of fun and engaging online activities determines the effectiveness of virtual mentoring. Robust feedback mechanisms are used to measure the effectiveness of virtual mentoring. A virtual mentoring relationship without feedback leads to participant disengagement and loss of interest.

Neely et al. (2017) assert that while virtual mentoring has gained traction in various disciplines, it still represents an emerging area of research. Many businesses that use virtual mentoring do not understand the process or its effectiveness. A literature review by De Janasz et al. (2008) uncovered a compelling argument that role modelling, which is a core mentoring role, is less effective in the virtual interface as mentees have difficulties emulating the mentor's skills and behaviours, mainly due to the limitations of technology and accessibility. Lamb and Aldeus (2014) concur with Janasz et al. (2008) that computer-mediated mentoring may supplement but will not replace traditional face-to-face mentoring. Therefore, Neely et al. (2017) propose that, despite the computer-mediated environment, virtual mentoring provides a larger pool of mentors and mentees than the traditional approach. Furthermore, virtual mentoring promotes equality and reduces hierarchical interactions compared to face-to-face interactions. The Mentoring Complete Guide (2022) provides some tips that can be used to measure the effectiveness of virtual mentoring. First, it is determined whether organisational and individual goals have been met. Secondly, the satisfaction of both the mentor and the mentee determines the effectiveness of a mentoring relationship. In a teaching setting, student retention determines the effectiveness of faculty mentoring.

Neely et al. (2017) developed a model that sought to understand the effectiveness of virtual mentoring, following literature review on the implementation of virtual mentoring. The authors identified five attributes of a virtual mentoring relationship. The model argued that the mentor and mentee may be paired by using gender, age, perceived similarities, extraversion and proactive personality. These characteristics merge on the virtual mentoring relationship that is based on communication, communication media, and virtual mentoring training. The first attribute examined was the role played by gender on virtual mentoring relationships. Previous theories by Kram (1985); Regies (1989) suggest that women are affected by time constraints, therefore, may not participate as mentors in many professions. Neely et al. (2017) quote Lukaszeweski (2006) who notes that women belonging to general and ethnic minorities may not participate in virtual mentoring because of lack of confidence and lower levels of computer self-efficacy. However, later studies by Eshner and Murphy (2002); Headlam-Wells (2006) dismissed the assertion that women were less likely to participate in virtual mentoring. The findings argue that women are underrepresented in virtual mentoring programmes, they may be affected by social norms that stereo type women in the Science Technology Engineering and Mathematics (STEM) fields and may be overwhelmed by work and life balance.

Furthermore, Neely et al. (2017) reject the gender effect on virtual mentoring relationships due to the typical concealment of individual characteristics. Culture, ethnicity, and gender were found not to be active ingredients, except when the mentor and the mentee decided to use media that allowed video chatting. Therefore, virtual mentoring becomes effective in mentoring relationships as it decreases the impact of

stereotypes. It also reduces the use and impact of visual cues, thereby reducing biases. The second attribute is the generational gap. Generational gaps lead to differences in opinions, beliefs, and values between one generation and the next. Joshi et al. (2010) and Neely et al. (2017) found that generational identities shape how a person adopts virtual mentoring. Millennials born in the technology era are more likely to adopt, understand, and feel more comfortable with virtual mentoring compared to baby boomers born before 1980. This argument concurs with Francis and Hoefel (2018) who noted that students in Generation Z are more likely to adopt virtual learning with positivity than the older generation. Based on Francis and Hoefel's (2018) observation, older individuals may have less experience with or exposure to digital technologies compared to younger generations. As a result, they may feel less confident or competent in using the virtual platforms and communication tools required for virtual mentoring. Other reasons could include resistance to change and a preference for familiar methods of communication and interaction. In addition, Panopoulos and Sarri (2013) found that a student who is less efficacious in the use of computers and smart gadgets is less likely to participate in virtual mentoring. The study also suggested that older mentors are not comfortable with the use of computers. According to Neely et al. (2017), technological access and technological literacy have a positive correlation, leading to higher adoption rates and the maintenance of virtual mentoring relationships. Therefore, without training on virtual mentoring platforms, it would be difficult to initiate and maintain mentoring relationships.

Matching the mentor and mentee based on knowledge, skills, and personal attributes is one of the recommendations for effective mentoring. Neely et al. (2017) argue

that perceived similarities in attitudes, goals, and values between mentor and mentee impacted positively knowledge and skills transfer, including the psychosocial support given by the mentor. There is a concept of a shared mental model that enhances understanding and opens communication between the mentor and mentee. Based on these findings, Neely et al. (2017) hypothesise that perceived personality similarity between a mentor and mentee positively influences virtual mentoring adoption and success.

Extraversion was another characteristic identified. Extraversion is defined as a measure of satisfaction and gratitude obtained from others (Miriam's Webster Dictionary, 2020). It is characterised by energy transfer, positivity, and an energetic personality. Individuals who are extroverts engage and participate more in virtual mentoring relationships than introverts. The two reviewed studies concurred that socialites, assertive, and dominant individuals are more likely to seek professional development and guidance in pursuit of goals than introverts. Neely et al. (2017) postulate a positive correlation between extraversion and more effective virtual mentoring relationships compared to traditional face-to-face mentoring.

The last attribute is reactivity. According to Neely et al. (2017), reactivity refers to the individual's ability to create a conducive environment for mentoring relationships. A previous review of traditional and cognitive apprenticeship approaches to mentoring emphasised the importance of a conducive environment to allow learning to take place. Proactive mentors and mentees can scan the learning environment for possible opportunities to enhance learning. They recognise potential barriers to learning

and devise strategies to mitigate them before they cause any harm. Neely et al. (2017) postulate, based on this argument, that extroverted mentors and mentees tend to avoid engaging in overly computer-mediated mentoring activities. They are likely to leverage the power of technology to build strong and effective relationships. Such relationships may prove to bring out more positive experiences than traditional face-to-face mentoring relationships.

In addition to the above, Neely et al. (2017) argue that the characteristics of the mentor and mentee are ingredients of a virtual mentoring process. The communication style, media use skills, and communication media used determine the strength of mentoring relationships. Three articles reviewed by Neely et al. (2017) from Daft et al. (1987); Dennis et al. (2008); and Zack and McKenney (1995) concur that communication in virtual mentoring depends on media richness, media synchronicity, feedback, and cues. The cues include body language, voice projection, and physical presence. Media richness infuses the communicated messages and enhances personal feelings and emotions. Neely et al. (2017) discovered that media synchronicity occurs when communication occurs simultaneously and at the same pace, mirroring face-to-face interactions. Virtual synchronous interactions done using Facebook, Skype, WhatsApp, Instagram, Microsoft Teams, Google Classroom, Moodle, and many more provide the same experiences as face-to-face interactions. Communication is also enhanced by the social context in which it takes place. The authors present a scenario in which a mentor and mentee use the three contexts to form effective virtual mentoring relationships. They could utilise social media platforms like Facebook, which offer a high level of social



context, and video conferencing, which offers a high level of media richness and synchronicity, similar to online chats. The three contexts of virtual mentoring build trust and quality relationships. Based on the three contextual discussions about communication in virtual mentoring, Neely et al. (2017) hypothesise that written electronic communication such as emails, chats, and text messaging builds trust between mentor and mentee. Trust is more than word of mouth in traditional face-to-face interactions. Breaking the hierarchical boundaries allows mentees to share fears and experiences with their mentors rather than wait for the mentor to initiate conversations as in traditional face-to-face relationships.

Virtual mentoring employs a wide range of communication technologies. Neely et al. (2017) note that many educational institutions have turned to virtual learning environments (VLE) to overcome the limitations of distance and the prohibition of face-to-face interactions. Virtual learning environments provide interaction between mentor and mentee via avatars that may represent the mentor in media such as Second Life. Some games, quizzes, and simulators may also be uploaded on virtual platforms to test problem-solving and critical-thinking skills. Also, social media allows themes such as interaction, storytelling, and connections between the mentor and the mentee. Mentors and mentees create social media profiles that describe their interests and learning needs. Social media platform profiles match a mentor and mentee. Neely et al. (2017) argue that the effectiveness of virtual mentoring relationships is dependent on the mentor and mentee's familiarity with a variety of online communication media. However, a low income, a lack of smart gadgets, and a lack of knowledge about online platforms can lead

to problems with technology, such as internet access. A review of Bierma and Merriam's (2002) articles notes that such obstacles pose a negative impact on virtual mentoring relationships.

Privacy concerns arise from the possibility of recording and capturing communication via email, text messaging, or video conferencing. This weakens the maintenance and effectiveness of virtual mentorship. According to Neely et al. (2017), institutions that use virtual mentoring as a strategy to develop mentees must provide training for both the mentor and the mentee to address privacy issues. The author suggests organisations need to implement privacy policies and practices that prioritise data security, confidentiality, informed consent, boundary management, and cultural sensitivity. Providing training and guidance on privacy best practices can help mentors and mentees navigate privacy issues effectively and maintain the integrity and trustworthiness of the mentoring relationship.

### **Adaptation of the Nursing Profession to the Digital World**

McBride et al. (2021) assert that digital technology's impact on education and practice extends to the nursing profession. Technologies such as robotics, artificial intelligence, telehealth, the internet, and virtual models have been in the spotlight, particularly in response to COVID-19. Booth et al. (2021) observe that nursing education has successfully adjusted to the swift advancements in technology, acknowledging its profound influence on educational methodologies and societal norms. The slow response to technological positives has limited potential benefits; the nursing profession could

benefit from technology. Domhoff et al. (2019) argue that by embracing telehealth, nurses can mentor and coach patients with chronic diseases and triage to reduce congestion in hospitals. During the current COVID-19 epidemic, nurses can screen patients, advise them on COVID-19 safety tips, and monitor them throughout their recovery. Booth et al. (2021) contend that resistance within the nursing profession towards digital educational methods and technology in patient care may stem from the perception that technology serves as a diversion from or an unwanted invasion into the practical caregiving role. They suggest that this resistance may also stem from concerns about its potential impact on therapeutic relationships and face-to-face mentoring, which are critical for facilitating the transfer of knowledge, attitudes, and skills.

Booth et al. (2021) attribute the slow pace of the nursing profession to its history of subordination to other healthcare professions, such as medicine. The authors also point out that although nurses make up the bulk of healthcare professionals, they are still in the process of cementing leadership roles in the healthcare industry. In addition, unequal access to technological infrastructure between the developed and developing worlds is a major factor affecting digitalization in nursing education. The digitalisation of higher education, healthcare services, internet connectivity, and smart devices is a challenge in resource-constrained countries that have limited internet access.

Based on the review's findings, Booth et al. (2021) recommend that nursing education reforms include undergraduate training in digital health and informatics. Data science may help in the creation of knowledge that supports current trends in nursing practice. O'Connor (2019) echoes Booth et al.'s (2021) assertion, emphasising the

necessity for nurse training institutions to revamp their curricula to accommodate the growing integration of digital technologies in both higher education and practice settings. This emphasises the potential value of innovative pedagogical approaches, such as virtual teaching using augmented reality, as effective tools for facilitating simulation-based learning experiences. Furthermore, Lai and Yen (2018) support the use of smartphones during teaching and learning activities. The authors noted that while mobile phones may be viewed as distractions, students may not use laptops and computers in their daily learning; therefore, mobile phones are a choice of communication because they are portable and can be available anytime students need to communicate.

Lai and Yen (2018) further advocate for the use of mobile devices to sustain virtual mentoring, thereby enhancing students' learning encounters in both classroom environments and practical placements. They underscore that mobile phones have already proven effective in enriching learning experiences across various disciplines such as computer engineering, mathematics, history, and environmental studies. Drawing from these diverse fields, nursing education can gain valuable insights to inform its practices. In line with this perspective, Booth et al. (2021) highlight that student nurses embarking on their professional journey in this century will inevitably witness significant transformations driven by digital technology by the time they complete their training and enter the workforce. They caution that without proactive measures from nursing faculty and leaders, the nursing profession risks missing out on opportunities to develop innovative knowledge and teaching methodologies that transcend traditional physical and social constraints.

## **Face-to-Face to E-Learning**

Various factors have driven the shift from face-to-face to e-learning in higher education, bringing about significant changes in the way tertiary institutions deliver lectures. The transformative shift offers numerous benefits and opportunities for students, educators, and healthcare institutions. By embracing e-learning technologies and methodologies, nursing education can evolve to meet the needs of a rapidly changing healthcare landscape and prepare nurses to deliver high-quality care in diverse clinical settings. Many students and nursing lecturers, accustomed to face-to-face interactions, found the transition to online learning instruction shocking. Ramos-Macillo et al. (2020) conducted a study to investigate the student nurses' experiences with the sudden change from face-to-face to online learning due to restrictions posed by COVID-19 in Spain. The study utilised a qualitative approach with an inductive thematic analysis to understand the expectations and experiences of the sudden migration to online learning. The focus was on students pursuing a Bachelor of Nursing or a Master of Nursing. The maximum variation strategy was used to ensure the sample is represented in terms of age, gender, the academic year of training, rural and urban setting, and programme. The university's student delegation employed snowballing sampling because students were subject to stringent COVID-19 regulations.

Semi-structured interviews, conducted from March 25th to April 20th, 2020, gathered data. The authors contend that this method was the most suitable given the abrupt changes caused by the pandemic. Two researchers interviewed thirty-two

participants using a pre-prepared script that covered general reactions to the impact of COVID-19, lockdowns, and restrictions on face-to-face meetings. The questions were based on online learning and teaching methodologies, as well as student expectations. All responses were transcribed verbatim. Tong and Sainsbury's Consolidated Criteria for Reporting Qualitative Data guided the presentation of the report. The interview time ranged from 20 to 39 minutes, with the longest duration observed among the five Masters students.

Six themes emerged from the data analysis. The respondents described their experiences in nursing care, including the uncertainty of their studies, time constraints, difficulties associated with lockdown, and hope for face-to-face instruction. The first theme pertained to the training level of 1st and 2nd-year students, who expressed concerns about their clinical attachment, which required them to apply their theoretical knowledge. Failure to meet the required clinical competencies led to the expulsion of several students from clinical practice. As a result, students believed that the absence of these competencies could jeopardise their qualifications. However, students in their 3rd and 4th-years perceived a deficiency in their ability to manage learning during crises, and they believed they lacked sufficient clinical experience to graduate. Masters students were worried about job loss as all of them were working students. The lockdown effect was expected to negatively impact their study duration and employment status. Despite the challenges and fear of COVID-19 worldwide, nursing students expressed a desire to help in the care of COVID-19 victims.

Uncertainty jeopardised the safety of all students. They believed that the nursing faculty lacked the necessary preparation to evaluate them both clinically and theoretically. Given the lack of interaction with the faculty, students conjectured that they might receive general passes. Despite the abandonment of classes, students maintained their motivation to read and prepare for examinations. Masters' students were grateful for the sudden migration to online learning because it reduced pressure on them as they were able to balance the time and pace of study on their own. In their first week, students expressed shock at the introduction of online lectures. They noted that only a few lecturers offered live online lectures, while the rest uploaded pre-recorded material. There was uniformity in the teaching strategies and approaches used by lecturers, which left students confused. 3rd and 4th-year students appreciated that online learning taught them time management skills. Although they were attending classes in the comfort of their homes, self-discipline was mandatory. After the lectures concluded, they organised group studies in the afternoon. Students found out that they slept more than necessary as online lectures were shorter than face-to-face lessons. They feared that they would be victims of inadequate training, which might affect their employment prospects.

The nursing faculty utilised a variety of teaching methods. The study noted that as nursing faculty adjusted to the online teaching environment, they were able to use video conferencing, chats, uploaded recorded lectures, assignments, homework, and other supportive teaching material. Students appreciated the video conferencing because it immersed them in a real classroom environment. They experienced a sense of belonging within the group and felt closely connected to the lecturer. However, Master's students

voiced dissatisfaction with the quality of interactions during video conferencing, finding them inferior to face-to-face interactions. Additionally, some virtual sessions lasted up to five hours, leading to a decrease in students' ability to maintain focus.

The effectiveness of the classroom activities depended on the complexity of the content taught. Students felt that modules such as pharmacology, which required intense explanations, should have varied teaching strategies to enhance understanding. Older lecturers used PowerPoint presentations and sent Word documents, while younger lecturers utilised video conferencing and were able to summarise their content for students' understanding. Students were ecstatic as they managed to use the chat section to post questions, and lecturers responded promptly; however, some lecturers appeared not to be aware of the chats that needed their attention during the lectures. Students from all levels commended the lecturers for their prompt responses to emails.

However, students described learning in the home environment as never easy. Students observed that balancing work and family responsibilities posed challenges to attending school from home. These challenges were compounded by limited internet access and a lack of electronic devices for online learning, particularly for those living in rural areas of Spain. Students recognised the traditional nature of nursing education in Spain, emphasising the importance of face-to-face instruction. Older students encountered difficulties with writing quickly during chats. Additionally, WhatsApp messages were abundant on the group platform, with students frequently sharing screenshots and seeking guidance on navigating online learning platforms.



This study was carried out in the first month after the discontinuation of face-to-face learning. However, even after a year, COVID-19 persisted, imposing ongoing restrictions on face-to-face interactions. The discussion within this study highlighted that nursing education may need to acknowledge the new reality, potentially transitioning permanently to online learning platforms. The dilemma faced by nursing education revolves around weighing the benefits of clinical practice against the potential risks to students. The study's findings, indicating that students prefer face-to-face instruction over online teaching, challenge nursing education in terms of theoretical teaching. Therefore, there is a need for further exploration of online learning platforms to enhance e-learning experiences.

Research on virtual mentoring for undergraduate nursing students is still in its early stages, as noted by Clement (2017). According to Brand (2020), the majority of research on mentoring in nursing has concentrated on the mentor's experiences and roles in clinical settings. Other mentoring studies have concentrated on mentoring junior faculty members, with limited research on mentoring in classroom settings and virtual mentoring. Heinonen et al. (2019) conducted a study to describe nursing students' mentoring experiences during clinical practice, as well as the benefits of digital technology in the context of mentoring in Finland. Clinical practice plays a crucial role in ensuring the delivery of nursing care. Clinical practice enhances classroom theory by providing students with the chance to learn and encounter distinctive, genuine real-life scenarios. As part of their mentoring activities, nurse educators guide students throughout their

academic journey. Heinonen et al. (2019) cite the recommendations by the WHO (2020) that stipulate the competencies of a nurse educator.

According to WHO literature, nurse educators should possess qualifications in education, knowledge, and skills to transfer these to students. In addition to their capability to teach, there should be a minimum of years of experience in clinical nursing. The recommendations of the Institute of Medicine to increase theory for nurses (IOM, 2010) caused a shift in the European nursing education system, with nurse educators' time in the clinical area reduced to accommodate the high demand for theoretical input. Dimitriadou et al. (2015) highlighted the role of nurse educators in the clinical area, arguing that they model reflection skills in students by organising time for common discussions about the application of theory into practice. Educators act as mentors who support the students, help them formulate learning goals, and develop their professional competence. Clinical mentors assist students in developing skills, socialising professional values, and building self-esteem, confidence, and interpersonal relations.

Heinonen et al. (2019) emphasise the critical role of digital technology in student support. The authors acknowledge the assertion by Mannisto et al. (2019) that healthcare institutions need to embrace the global trend and modernise patient care environments and health personnel training. The authors acknowledge that digitalisation will help improve the current pedagogical approaches to health sciences education. Heinonen et al. (2019) conducted a study to understand the student nurses' mentoring experiences by nurse educators in the clinical area and their experiences with the use of technology during mentoring relationships. The researchers purposefully selected fifteen participants

from two universities that train nurses. The researchers divided the students into groups of 3–5 to facilitate focus group discussions. The focus groups were guided by previous research on mentoring experiences and the use of digital technology. The focus groups convened to deliberate and exchange the insights they acquired from the nursing lecturers' mentoring. After reading and understanding the responses several times, inductive content analysis guided the manual data analysis procedures.

The analysis revealed two themes derived from the initial research question, which focused on the mentoring experiences of student nurses. The first theme delved into pedagogical mentoring regarding competencies, emphasising the continuous presence of lecturers to offer support to students and foster a strong bond between them. The alignment of theory with practice became smoother as both mentors and mentees collaborated in setting learning outcomes. Mentees described the relationships forged with their lecturers as collaborative and trustworthy, citing the lecturers' responsiveness to their needs, emotional support, and guidance through their learning journeys. The nurse educator's role as a mentor became more apparent, with students expressing appreciation for their mentor's role modelling, practical expertise, and motivational support. With mentoring assistance, students seamlessly adapted to diverse clinical environments. The second theme explored the organisation's role in nurturing mentoring relationships. Students emphasised the benefits of mentoring and advocated for the enhancement of mentoring programmes, particularly in challenging scenarios where they were required to take ownership and seek solutions.

Two themes also addressed the benefits of communication technology. The first theme highlighted the factors that affect the use of digital technology in mentoring, and the second theme describes the support that digital technology offers to mentoring relationships to enhance positive learning outcomes. Positive experiences highlighted the inherent advantages of digital technology, including video calls, video recording, virtual mentoring, and discussion forums to help whenever they needed their lecturers' input, despite geographical distances. The second theme described the benefits of using smartphones to improve mentoring. Students appreciated constant communication, evaluation, and follow-up using emails and chats. The study concluded that nurse educators are pivotal in mentoring students for positive mentoring experiences. If only clinical mentors handled their mentoring, students would not feel abandoned. Researchers found that mentors and mentees could improve cooperation by using mobile phones and other communication devices to share information at any time. Students gain more learning experiences from nursing faculty mentoring than from clinical staff mentoring.

Joubert and De Villers (2015) conducted a study on mentors' and mentees' learning experiences during a mentoring programme in nursing schools in Free State Province, South Africa. The mentoring programme aimed to foster the academic, clinical, and social needs of student nurses. The mentoring programme paired 1st-year student nurses with their 3rd-year counterparts; the choice of mentors and mentees depended on clinical and academic performance. Third-year students were paired with students training for post-basic courses in critical care nursing. Both mentors and mentees were

briefed on their roles and the goals of the mentoring programme. The study enrolled twelve post-basic students and fifty-five third-year students. The study's rationale was based on Mabuda et al. (2008), who found that 3rd-year students lacked support during their training and therefore showed poor skills in integrating theory into practice. Also, anxiety and emotional stress associated with working in new environments prevented students from taking advantage of clinical learning time.

The data was collected using the nominal group technique as described by Potter et al. (2004) with the help of an internal facilitator who purposefully recruited the participants. The mentees and mentors were asked to describe their mentoring experiences and write down recommendations to improve the mentoring programme. The study discovered that mentors' accessibility, knowledge sharing, competency, attitude, and support, both during theory instruction and practical application integration, influenced learning outcomes. For students, the mentor-mentee ratio proved to be an obstacle. Although the students described the mentoring experiences as good, the busy unit schedule and limited time with mentors left grey areas on their goals. Students felt satisfied because the mentors they chose demonstrated knowledge and skills in critical nursing care. During mentoring relationships, the mentors exhibited positive traits. They were enthusiastic to share experiences, teach, and support students in achieving their goals. In skill development, mentors exercised patience with their mentees. Because of the support received, integrating theory into practice was not a challenge for the mentees. Although the mentees appreciated the nursing faculty for developing the mentoring

programme, there was a need to educate mentors and mentees on their roles and create a conducive environment for mentoring to occur.

The mentors also described their own experiences using five themes. The first theme was the mentor-mentee ratio allocation. Twelve mentees expressed difficulty mentoring students due to their busy work schedules. The one-month mentorship proved to be too short for positive learning experiences and satisfaction. Without proper support, mentees found themselves overburdened with work. The second theme discussed the relationship between theory application and practical implementation. The mentoring relationships satisfied both mentors and mentees by achieving critical thinking goals and developing reflective skills. The third theme described mentee attitudes. The mentees exhibited a positive attitude towards mentoring relationships, demonstrating their willingness to assist with basic nursing care and the overall operation of the unit. A few students showed little interest in their learning and went for the day's activities unprepared. Although the mentoring programme benefited both the mentor and the mentee, there was a need for improvement during the process of matching mentors to mentees, according to the study. The programme should have provided guidelines for the duration of mentoring activities and enhanced support from the School of Nursing.

### **Student Nurses Virtual Mentoring Experiences**

Various factors have driven the shift from face-to-face to e-learning in higher education, bringing about significant changes in the way tertiary institutions deliver lectures. The transformative shift offers numerous benefits and opportunities for students,

educators, and healthcare institutions. By embracing e-learning technologies and methodologies, nursing education can evolve to meet the needs of a rapidly changing healthcare landscape and prepare nurses to deliver high-quality care in diverse clinical settings. Many students and nursing lecturers, accustomed to face-to-face interactions, found the transition to online learning instruction shocking. Ramos-Macillo et al. (2020) conducted a study to investigate the student nurses' experiences with the sudden change from face-to-face to online learning due to restrictions posed by COVID-19 in Spain. The study utilised a qualitative approach with an inductive thematic analysis to understand the expectations and experiences of the sudden migration to online learning. The focus was on students pursuing a Bachelor of Nursing or a Master of Nursing. The maximum variation strategy was used to ensure the sample is represented in terms of age, gender, the academic year of training, rural and urban setting, and programme. The university's student delegation employed snowballing sampling because students were subject to stringent COVID-19 regulations.

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ranged from 20 to 39 minutes, with the longest duration observed among the five Masters students.

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Uncertainty jeopardised the safety of all students. They believed that the nursing faculty lacked the necessary preparation to evaluate them both clinically and theoretically. Given the lack of interaction with the faculty, students conjectured that they might receive general passes. Despite the abandonment of classes, students maintained their motivation to read and prepare for examinations. Masters' students were grateful for the sudden migration to online learning because it reduced pressure on them as they were



able to balance the time and pace of study on their own. In their first week, students expressed shock at the introduction of online lectures. They noted that only a few lecturers offered live online lectures, while the rest uploaded pre-recorded material. There was uniformity in the teaching strategies and approaches used by lecturers, which left students confused. 3rd and 4th-year students appreciated that online learning taught them time management skills. Although they were attending classes in the comfort of their homes, self-discipline was mandatory. After the lectures concluded, they organised group studies in the afternoon. Students found out that they slept more than necessary as online lectures were shorter than face-to-face lessons. They feared that they would be victims of inadequate training, which might affect their employment prospects.

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educators are pivotal in mentoring students for positive mentoring experiences. If only clinical mentors handled their mentoring, students would not feel abandoned. Researchers found that mentors and mentees could improve cooperation by using mobile phones and other communication devices to share information at any time. Students gain more learning experiences from nursing faculty mentoring than from clinical staff mentoring.

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exhibited a positive attitude towards mentoring relationships, demonstrating their willingness to assist with basic nursing care and the overall operation of the unit. A few students showed little interest in their learning and went for the day's activities unprepared. Although the mentoring programme benefited both the mentor and the mentee, there was a need for improvement during the process of matching mentors to mentees, according to the study. The programme should have provided guidelines for the duration of mentoring activities and enhanced support from the School of Nursing.

### **Perceptions of Students Regarding Online and Face-to-Face Mentoring**

Martin et al. (2017) conducted a descriptive correlational study to compare nurse educators' and student nurses' perceptions of face-to-face and virtual mentoring in Spain. The study aimed to examine the influence of sociodemographic variables on e-mentoring and face-to-face mentoring. The study also sought to identify effective e-mentoring tools. The researchers compared face-to-face and virtual mentoring using a sample of 181 nursing faculty members and 1051 student nurses, each of whom received a questionnaire. The results indicated that nurse educators utilised face-to-face mentoring the most. The effectiveness of mentoring activities depended on the educator's experience. Students commented positively on the timely availability of educators during face-to-face interactions, which made role modelling easier. They felt a sense of belonging and shared the hidden curriculum, which included socialising with other students on and off campus. Face-to-face mentoring allowed students to look up to mentors as pace guides. Nurse educators could set targets for students and provide



prompt assistance when needed, such as with technological issues or searching for information online. Students could get instant support while working on assignments in groups and individually, as mentors were physically present, unlike during online learning, where the mentor would respond late to inquiries and may not be available to give instructions on how to perform a task.

Borup et al. (2018) observed that during online learning, students do not necessarily need initial instruction in the subject matter but rather require mentoring in utilising online platforms. In contrast to traditional face-to-face instruction, students did not require guidance when entering a physical classroom and participating in activities. Instead, they needed instruction on setting up accounts, logging in, and initiating communication with online tutors. During online mentoring tasks, students expressed concerns about geographical distance, especially in the absence of adequate technological support. While students acknowledged the flexibility of online learning in terms of time management, they perceived it as unsuitable for adolescents lacking the metacognitive skills necessary for effective self-regulated learning. Moreover, students raised concerns about the elevated risk of dropout due to excessive flexibility. Students also expressed discomfort with using online media to communicate with lecturers, preferring face-to-face interactions to maintain etiquette. Misinterpretation of messages due to the absence of non-verbal cues from mentors led to feelings of isolation and a lack of emotional support. Additionally, students reported relying on parental financial support to stay connected during online classes, with challenges arising from parents' lack of understanding of online learning.

## **Nursing Faculty as Mentors**

Nurse educators have a critical role in developing future generations of nurses (Royal College of Nursing [RCN], 2007). Mentors primarily focused on the clinical setting, where their responsibilities included aiding students in translating theory into practice, fostering reflective thinking during practice, and offering constructive feedback. The overarching objectives of mentoring, as suggested by De Swardt et al. (2016), are to enhance student confidence, support them in accomplishing planned learning objectives, and integrate them into the nursing profession while instilling ethical values. Students' socialisation into the nursing profession is the reality of transferring comprehensive, complex scientific knowledge and translating it into practice. According to the Nursing and Midwifery Council [NMC] (2010), a mentor is required for nurses to preregister. The RCN (2020) provides a toolkit to help nurse educators understand their roles and responsibilities in mentoring student nurses.

The RCN (2020) emphasises the coordination between the training institutions and the clinical area to ensure that students achieve the desired goals. According to the RCN's Code of Conduct for Nurses (2020), all nurses are responsible for assisting nursing and midwifery students to develop their competence during their training. The code requires nurses to be prepared to serve as role models throughout their professional lives. The RCN (2020) requires mentors to possess knowledge of clinical assessment strategies, including observation, simulations, and the Observed Structured Clinical Examinations (OSCE). In addition, the RCN (2020) points out that mentors should be objective and be

able to give specific constructive feedback on all areas of student assessment. The RCN (2020) further stresses that the school of nursing or training institution's role is to provide support to mentors by providing resources for effective mentoring and effective evaluation criteria for measuring mentoring outcomes.

Despite the widespread use of mentoring as a learning tool for nurses, most hospitals and training institutions lack formal mentoring programmes to ensure adherence to the standards. Mentoring programmes have the potential to close a critical gap in nursing education, and closing this gap is critical for promoting a culture of learning, excellence, and innovation in nursing education and practice.

Mubeezi and Gidman (2017) carried out a phenomenological study on perceptions of mentors' knowledge and skills in mentoring student nurses in Uganda. In response to students' informal feedback on the quality of their mentoring and public concerns about Uganda's nursing standards, the authors conducted the study, which had negative implications for the Uganda Vision 2040. While acknowledging the pivotal role of mentoring in nursing, the authors noted a gap between the widespread discourse on mentoring in nursing and the inadequate implementation of clinical teaching and mentoring, as observed by Uys et al. (2010). Furthermore, the authors highlighted the lack of formal training for professional nurses to assume mentorship roles, along with the absence of clear mentoring frameworks. They noted that mentoring predominantly follows the traditional apprenticeship model, focusing primarily on skill acquisition rather than understanding the underlying principles. This model fails to recognise the importance of fostering enduring relationships for continuous learning. Consequently, the researcher

explored mentors' experiences regarding mentoring skills and knowledge, aiming to develop a mentorship model that enhances mentoring relationships and improves effectiveness in nursing mentorship.

The sample consisted of five participants who had mentored student nurses during clinical attachment. The researchers used semi-structured interviews with open-ended questions to collect the data. The primary objective was to assess the participants' understanding of mentoring in a nursing context. The respondents' responses indicated that they were familiar with the concept of mentoring, primarily associating it with role modelling. They recognised their role in influencing the behaviour and performance of student nurses during practical training. They highlighted the importance of transferring skills but were not cognisant of the significance of building relationships with their mentees. Notably, participants expected students to adhere to a hierarchical senior-junior relationship, with failure to recognise this hierarchy viewed as disrespectful. They conveyed that students often exhibited apprehension towards them, such as moving away when entering a room. The prevailing expectation was for students to assume a subservient role to the mentor, with the mentor taking the lead in initiating conversations and issuing instructions.

The second objective sought to describe mentors' perceptions of their knowledge and skills in mentoring. Mentors expressed that they believe their mentoring knowledge is lacking. When mentoring current students, they stated that they rely on their own past experience as students. However, because society is changing and the perceptions of the younger generation are changing, they felt that there was a need for changes in the

mentoring approach to suit the current generation of nurses, who are considered to have a more liberal approach to learning. They needed knowledge on identifying learning gaps for students, the skills of questioning students during evaluations, and how to stimulate student thinking when teaching skills and theory integration. Mentors had trouble mentoring students who lacked initiative. They would leave students on their own and only force them to learn a task as a pair of hands when there was a high workload. They also needed support from nursing faculty in terms of current knowledge and practices.

In terms of the challenges encountered while mentoring students, mentors expressed frustration over the scarcity of material resources. They often had to resort to improvisation for various procedures due to a lack of adequate materials. The mentors prioritised other tasks due to their overwhelming workload and busy schedules. Also, burnout from working longer hours with a high number of patients due to staff shortages took much of their time. Another challenge was dealing with students who were poorly prepared and lacked theoretical knowledge. Certain procedures taught in the classroom may not prepare students for the practicum area. Mentors found it time-consuming to start teaching theoretical concepts to students when they expected them to apply their knowledge immediately in practical settings. According to reports, some other students were not actively participating in the mentoring process or taking their studies seriously. According to Mubeezi and Gidman (2017), nursing staff generally did not prioritise mentoring, and they were unaware of their responsibility to mentor students. These findings reveal that nursing staff often lack awareness of their mentoring responsibilities, which can have a detrimental effect on the quality of nursing education. Many nurse

practitioners view mentoring as fundamental, and this undermines its role. The study suggested that nursing should recognise mentoring as an obligation. Giving mentoring incentives may strengthen mentoring relationships and have a positive impact on student learning outcomes.

### **Nursing Faculty Mentoring Experiences**

Nursing faculty play a crucial role in mentoring students, offering guidance, support, and expertise throughout their educational journey. Faculty members frequently draw from their extensive clinical experience and academic background to provide mentorship to nursing students. Marcario (2018) used Hudson's five-factor model to analyse nurse educators' experiences mentoring student nurses in the Philippines. The author notes that there is a thin line between nursing practice and teaching in nursing education, yet these are two distinct professions. Many nurse educators found themselves instructing students without basic educational qualifications. Although they may be experts with clinical experience, teaching is a profession that requires training to meet the demands of the classroom environment.

Marcario (2018) argues that one of the challenges of transitioning from being a practical nurse to a nurse educator is a lack of mentoring. The study utilised a qualitative design and a descriptive approach, involving 131 participants from both private and public nurse training institutions across the Philippines. The researchers used a questionnaire and interview guides. The questionnaire sought answers based on Hudson's mentoring model's five factors, which include mentor personal attributes, education requirements,

mentor pedagogical knowledge, teaching practice modelling, and feedback mechanisms. The researchers distributed the questionnaires first, followed by conducting interviews based on the responses. The research questions aimed to investigate the respondents' experiences with mentoring, evaluate its impact on their professional and personal development, and pinpoint the advantages and disadvantages of receiving mentorship.

The first factor in Hudson's model described the effect of mentor attributes on mentoring relationships and their success. The respondents echoed that they received positive mentoring from mentors who were friendly and supportive. Although mentors were not always present in the classroom, they continuously monitored their mentees' progress by asking how the teaching and learning were going. Mentors offered tips on classroom management, setting and marking tests, student support, and coping strategies. Although they had no formal teaching qualifications, mentorship helped them to be confident when teaching. Mentoring also improved the quality and skills of teaching. The mean score for modelling was the lowest, coming in at two. Mentors blamed their lack of preparation for their limited time with mentees.

The authors observed that nurse educators had a limited understanding of the influence of modelling on mentoring. Feedback emerged as a vital tool for prompting mentees to contemplate their practice and pinpoint areas for improvement. According to Hudson's model, the absence of timely oral and written feedback hampers mentees' progression in acquiring new concepts and skills. Mentors typically provided feedback to students at the end of the semester, which made it too late for mentees to adjust and refine their teaching and learning approaches. Lastly, novice nurse educators must gauge

their competencies against the requisite standards to facilitate self-evaluation. Reflecting on their performance allows educators to initiate discussions with mentors on ways to enhance their teaching skills and effectiveness. The study concluded that despite the widespread use of mentoring in nursing, it is still at its pedagogical stage in nursing education. These findings suggest that the implementation of mentoring in nursing could benefit from improvement and refinement. Institutions and educators can use this knowledge to develop and improve mentoring programmes, ensuring that they are more effective in supporting nursing students' learning and professional development. To produce and retain quality educators, nursing education must invest in mentoring for professional growth.

### **Mentoring Student Nurses for Academic Excellence**

Student attrition is a uniform problem among institutions that train nurses. It is estimated that about fifty per cent of students in a class may drop out of school for assorted reasons at any given time during training (Lewis et al., 2018). Nurse educators are responsible for preventing student attrition and increasing the number of qualified nursing professionals in the field. Butler and Ardary (2020) note that there is a vast body of literature on mentoring professional nurses to mentor students during practical attachment, but little or no literature on mentoring for academic success. Mentoring should start in the classroom environment, where nurse educators act as role models and mentor students on overt skills such as resilience. Burtler and Ardary (2020) conducted a study to identify nurse educators' experiences with tutoring nursing students who were



at risk of failing a nursing course in Pennsylvania. The researchers found that tutoring and mentoring are synonymous, as they both refer to providing support to a novice and encouraging behavioural changes that improve their academic success.

The National League of Nursing (2014) observed a notable trend of increasing ages among new student nurses, with a growing number of recruits being thirty years old or older. This shift indicates that nursing programmes are attracting a more diverse age group, reflecting broader changes in career dynamics and educational pursuits. The trend suggests that more individuals are either pursuing nursing as a second career or returning to education later in life to enhance their skills and qualifications. This demographic change can bring a wealth of diverse experiences and perspectives to the nursing profession, potentially enriching the learning environment and the quality of patient care.

In response to these generational shifts, the National League of Nursing advocates for additional support for nursing students during their training. Older nursing students often bring a wealth of life experience to their education, which can enrich the mentoring relationships. They may have different learning needs and preferences compared to their younger counterparts; they often have additional responsibilities outside of their education, such as family or work commitments; and they may face unique emotional challenges related to returning to education later in life or managing multiple responsibilities. Based on these implications, nurse educators need to be flexible, empathetic, and responsive to the unique needs and circumstances of older students.

Butler and Ardary (2020) used a qualitative descriptive approach to describe the tutoring experiences of at-risk students. The study employed purposive sampling to

recruit six participants with a range of four to twenty-five years of experience in nurse training. The researchers collected data using face-to-face and audiotaped telephonic interviews. The interviews sought participants' experience in mentoring at-risk students, strategies they utilised to mentor and tutor the students, and strategies that proved to be effective. Two researchers analysed the interviews for rigour. Three themes emerged from the analysis. Nurse educators disclosed that initially, they identified the issue and conducted an analysis. Subsequently, they devised and tailored strategies that could assist the students while also providing additional practice work for them.

The first theme required the nurse educator to analyse individual students' learning styles and cognitive abilities to read and understand what was required by the questions. Based on the differences in learning styles identified by Riley and Fearing (2009), nurse educators developed various assessment strategies for mentoring students. As mentors, the educators had to develop strategies to deal with anxiety associated with the fear of failing and discontinuing studies. Early assessment and diagnosis of anxiety were beneficial to both the mentor and the mentee. Nurse educators offered counselling and assistance to students who felt overwhelmed by the demanding nature of nursing modules. They allowed students to express their concerns and supported them in a friendly and non-judgmental manner. The participants echoed that, based on their experiences of working with students, giving them more work to do was dependent on the level of motivation within the student. The Butler and Ardary (2020) study's limitation is its lack of background information on student characteristics, which hinders the generalisation of findings to a similar population in other settings.

### **Mentoring Student Nurses during the COVID-19 Crisis**

Mentoring student nurses during the COVID-19 crisis presented unique challenges and opportunities. With the closure of many clinical settings and schools or restrictions on student placements due to the pandemic, nurse educators have had to rapidly adapt to remote learning environments. This shift necessitated that mentors effectively utilise virtual platforms to provide ongoing support and guidance to student nurses. Singh and Singh (2020) highlight that nursing students, already disengaged from their traditional face-to-face education routine, require the development of new teaching strategies to facilitate effective learning experiences in the virtual environment. As the pandemic placed significant stress on healthcare workers, including student nurses, nursing lecturers played an important role in offering emotional support to students. Their primary role was to help students cope with anxiety, fear, and uncertainty while navigating their education and clinical experiences during this challenging time.

Sacco and Kelly (2021) conducted a study to investigate the experiences of nursing faculty in the United States (US) during the COVID-19 pandemic. The United States experienced a COVID-19 death toll that exceeded one million. All states issued a stay-at-home order and suspended all essential devices. The conditions prompted nursing education to turn to unfamiliar models of ensuring continuity of education as the lockdown duration was unpredictable. There was a need to provide virtual emotional and academic support to students affected by the lockdown. The study utilised a quantitative descriptive approach. Nurse educators who taught undergraduate and postgraduate

students were the population of interest. Because there was a strict lockdown, the study employed a snowballing technique. The researchers reached participants using emails and social media pages such as Facebook, Twitter, and WhatsApp to call for participation and identify other potential participants. Nursing groups such as Nurse Academia and the American Association of Colleges of Nursing helped identify and contact potential participants. The research included 159 participants from various regions of the United States who received the online questionnaire. The 50-item Likert scale gathered data on participants' experiences, including institutional academic support during the transition to online learning, the ability to support and mentor proficient students, levels of burnout, well-being, and satisfaction with online teaching.

The quantitative results showed that the majority of nurse educators experienced a change in their teaching styles because of online learning. They had to make changes to their online presentations. As they taught the same modules face-to-face and online, the academic load remained the same. Educators reported a reduced ability to support their students during virtual teaching. Due to the diverse learning styles of students, online learning does not allow for individual considerations, leading to a reduction in emotional support, modelling, and coaching. The researchers provided a burnout scale for the participants to rate their well-being experiences during online teaching. The Likert scale had a mean score of three out of five. Participants acknowledged that they were under stress and experienced burnout due to not being able to fully reach and support student nurses in the usual manner.

However, about two-thirds of respondents indicated that they experienced satisfaction in the way they reached their students. Eighty-seven per cent of the faculty felt that the restrictive measures of COVID-19 greatly affected their role as mentors, which included advising, practical demonstrations, and role modelling. The majority of students, with the exception of professional Masters Students withdrew from the clinical area, compromising the clinical role of mentors. The burnout and stress experiences were not dependent on my years of experience as a nurse educator.

From the qualitative analysis of open-ended questions, six themes emerged. The first theme described organisational and administrative support. Nurse educators were frustrated by rapid changes in policies, fragments, and sometimes contradictory communications. Despite the challenges, nurse educators with experience in online teaching or learning expressed satisfaction with the support they received from the administration, although the percentage was lower than that of those without experience. Their adaptation to the online platform and utilisation of its features to ensure positive learning outcomes was quicker and easier than those of their colleagues. Faculty members who struggled with online teaching feared for their jobs because of the freezing of posts and the uncertainty of COVID-19.

The second theme detailed the current status of the workload resulting from online teaching. The nurse educators experienced a double-to-triple workload compared to traditional face-to-face teaching. The supervision of online instruction, especially for part-time lecturers, resulted in certain faculty members spending a significant portion of their time online. Furthermore, due to the geographical dispersion of students, all group or

classwork must be conducted online to ensure everyone's participation. Furthermore, owing to the difficulties posed by the new learning platforms, educators found themselves dedicating additional time to one-on-one sessions with students, providing support and coaching on the use of online learning systems.

The third theme focused on experiences related to work and life. Nurse educators felt guilty because they were not able to meet with their students. Distant learning prevented them from role modelling through actions, body language, and attitudes. Simultaneously, the risk of meeting students puts their lives in danger due to the COVID-19 virus and potential violations of its restrictions. The extended hours of teaching theory and clinical practice in a simulated online environment led to exhaustion. Those with children found it challenging to balance their attention between general household chores and home-schooling their children when working from home.

The fourth theme detailed the feedback students provided. Students expressed apprehensions and anxieties about the decision to pursue nursing as a career, particularly given nurses' role as frontline healthcare workers caring for COVID-19 patients. Students were afraid of death due to virulent diseases, especially COVID-19. Nurse educators felt overwhelmed and were genuinely concerned; they therefore spent much time counselling and providing emotional support to prevent student attrition. Other concerns arose from the dependence on technology in teaching and learning, as other students were unable to fully access online learning. Regardless of the perceived problems, nurse educators provided unwavering support to the students. They expressed feeling proud of the

students because of their resilience in participating in online lectures and continuing with their studies. Nurses are known for mentoring each other on resilience and adaptive skills.

Theme five describes the experiences of nurse educators in instilling resilience and adaptation in their students. Faculty commitment enabled them to change teaching strategies to suit online learning; they explored new opportunities to upload simulations that helped students feel like they were in a real classroom situation. They would post materials, such as problem-solving scenarios, and students would respond via the same platforms.

The final theme outlined the suggestions that the participants put forward. The participants concurred that COVID-19 was merely one of the challenges, but in nursing education, we must tackle the concerns of minority groups to ensure equal opportunities for nursing faculty. Sacco and Kelly (2021) conclude that nursing faculty need to embrace virtual teaching and learning environments. The development of standards and best practices is essential to reducing stress and burnout. The authors found that strengthening virtual mentoring is necessary to boost resilience among students and nurse educators. The authors caution that while the impact of COVID-19 stress may not be immediately apparent, it could potentially manifest in the future as a shortage of nurses and nursing faculty.

### ***Nurse Educator Experiences of Face-to-Face and Virtual Mentoring***

According to Borup et al. (2018), enrolment in online nursing courses is growing significantly in the developed world because of the increasing use of technology.

However, the COVID-19 pandemic has facilitated online migration in some parts of the world. The mandate for nurse educators includes facilitating interactions during online learning, fostering caring relationships, motivating students, and organising and managing learning. Robinson et al. (2012) identify key components of e-mentoring in nursing, where nurse educators and nurse mentors need to use reflection to provide effective mentoring experiences to students. Mentors need to help students feel valuable during online learning, just as they need to respond to students' emotional or affective problems during face-to-face learning. Learning has to be reciprocal, where the educator and the student have enough time to share experiences and viewpoints in a relaxed and non-judgmental environment. Nurse educators rely on the knowledge of the different learning styles of students to provide strategies that accommodate every student and encourage participants.

Despite nurse educators' experiences with face-to-face mentoring, Shrestha et al. (2009, as cited in Borup et al. 2018), note that there are subtle differences in the roles of the mentor and mentee in online mentoring relationships compared to face-to-face mentoring relationships. Therefore, the author posits that a nurse educator who excels in managing face-to-face mentoring relationships cannot necessarily excel in online mentoring. For example, online mentoring relies heavily on writing emails and messages. Some educators may have difficulties keeping up with the pace of responding to online questions during lectures. Borup et al. (2018), in their review of students' perceptions of online teachers and on-site mentor instructional support, noted that educators had concerns over the geographical distance and barriers of face-to-face learning that



interfered with emotional bonding with students. Without face-to-face interaction, mentees are unlikely to enjoy the full benefits of mentoring.

Mentors indicated that they directed their efforts towards orienting students to online learning environments and addressing any issues students encountered when accessing online lectures and materials. Borup et al. (2018) also observed that while the initial two to three weeks of online instruction were challenging, both learners and educators gradually adapted to the online platforms. Educators were able to provide encouragement, monitor student progress, and administer online tests as formative assessments. The study suggested the development of online mentoring frameworks to ensure consistent learning experiences for students. Additionally, the study encouraged mentors to serve as online advisors for students who struggle with the demands of online learning, in response to student's concerns about the potential for high attrition rates due to low levels of self-directed learning. The study also recommended that faculty members integrate online orientation units to acquaint students with the challenges of online learning.

### **Relevance of the CA Model in Mentoring Students**

Terpstra and King (2021) argue that the CA may be a missing link in mentoring frameworks, which could make mentoring beneficial to both the student and the educator. The authors also consider mentoring to be a method that provides individualised learning opportunities that impart knowledge and facilitate experimental learning with expert feedback and observation. Nursing education is one of the professions that uses

simulation-based education (SBE) to teach students clinical skills. According to Kumar et al. (2018), the primary goal of SBE is to enhance processes and systems in the workplace, making it a valuable tool for enhancing skill learning in nursing. Simulation-based learning offers numerous benefits for mentoring nursing students, including enhanced clinical skills, critical thinking development, and preparation for real-world practice. Mentors play a vital role in guiding students through simulation experiences, providing feedback, and facilitating learning and growth.

Terpstra and King (2021) also point out that knowledge and the use of adult learning principles may blend with the mentorship model grounded in cognitive apprenticeship. People generally perceive adult students as goal-oriented and practical, emphasising the benefits of the learning activities that guide them. Another important principle of adult learning is that adults are motivated to explore new ways of learning and develop new ways of doing things. They are intrinsically motivated and driven by the benefits of the latest information, which helps them achieve goals. Kumar et al. (2018) add that adults value the role mentors play in their journey and appreciate learning by example to avoid mistakes. Simulation facilitation mentorship requires nurse educators to have a skill in facilitation strategies used in simulation-based education, scenario design, and simulation operations to make the learning as real as possible. According to Collins (1991) and Shaikh (2017), the cognitive apprenticeship steps of modelling, coaching, scaffolding, articulation, reflection, and exploration can be applied to online and remote learning to provide practical experience to students who are separated from their educator.

## Summary

This chapter presented an in-depth and broad review of the literature on the concept of mentoring, including traditional mentoring and virtual mentoring. The chapter also detailed the application of the CA model's components to student mentoring. Cooke et al. (2012) designed the SPIDER framework to guide the search strategy for the reviewed articles, focusing on three variables of interest: the sample, the phenomenon of interest, and the evaluation. The researchers extracted studies using numerous search engines and analysed them using the PRISMA format. The review covered thirty articles published between 2015 and 2021 under selected subtopics, citing additional supporting older sources.

The study investigated nursing students' and nurse educators' experiences with virtual mentoring and compared them to face-to-face ones. Nursing, as a profession, adopted the traditional apprentice style of nurse training from the Nightingale era, where students trained in hospitals under the guidance of doctors and senior nurses. The apprentice style was more inclined towards skill acquisition, providing services while in training, and making sure the student was ready to enter the profession immediately. Students received a minimum wage in exchange, which motivated them to enter the nursing profession. The nursing profession's watchdogs, such as the Nursing and Midwifery Council and the International Council of Nurses, reviewed the status of nursing education in the mid-20th century and recommended that nurses train at universities using a higher education approach. They increased the theoretical hours to balance the

practical component. According to Collin et al.'s (1989) cognitive apprenticeship argument, the shift in nursing education meant that the traditional apprenticeship style of mentoring needed to shift to a more cognitive approach.

Collins et al. (1989) developed the teacher-centred CA model using knowledge from cognitive psychology, which describes how humans perceive and process information during learning. The argument was to make the teacher's thinking visible to the student. The transition from traditional face-to-face mentoring, which relied on the conventional apprenticeship model, to online mentoring, which emphasises cognitive abilities to mentor students in virtual learning environments, prompted the use of the CA framework in this study. Both O'Brian and Thompson (1992) and Braungart and Braungart (2019) supported the adoption of the CA model of learning in higher education. They concur that health sciences students are not passive recipients of information, but they need active engagement that enables them to become scientifically productive in their field of study.

Lyons et al. (2017) further supported the role of CA in learning, emphasising its capacity to stimulate abstract thinking applicable to real-world scenarios. The researcher selected the CA model to investigate the experiences of nursing students and nurse educators in both face-to-face and virtual mentoring, given the objective of this research. The researcher chose this model because it integrates vocational and apprenticeship training styles in nursing, offering valuable insights into mentoring experiences on both platforms. A review of Collins et al.'s (1989) model showed that nursing education could benefit from using the four dimensions in the teaching and learning processes. The model

emphasises that educators should craft and select teaching content based on the student nurse's level of training. The educator selects concepts and facts for learning, employs heuristics or mental shortcuts to formulate abstract ideas, and chooses learning strategies to guide the student's learning.

Teaching methodologies in CA use modelling, coaching, scaffolding, articulation, reflection, and exploration to promote the development of expertise in a student. Nursing education is a complex field that needs proper sequencing of learning experiences, from simple to complex. The increasing diversity enables students to transition from the known to the unknown and use their knowledge in a variety of contexts. The sociology dimension focuses on supporting and introducing nursing students to the values, ethics, and beliefs that guide nursing practice. Researchers found that sociology enhances students' ability to cope with the stress of the nursing profession and reduces student attrition.

The two articles reviewed by Olurunfemi (2019) elaborated on mentorship as a hierarchical relationship in which older and more senior nurses have the responsibility to mentor junior and student nurses. Nurses who are role models typically prepare their successors to take over their offices upon retirement or leaving the job. Researchers discovered that nurturing plays a crucial role in providing novices with a suitable environment that fosters professional growth. Friendship was also another view of mentoring in nursing, but it did not apply to nursing education. It was more applicable to co-workers than to lecturer-student relationships.

Collins et al. (1991), Lyons et al. (2019), and Braungart and Braungart (2019) explained that role modelling serves the same purpose as the CA and the traditional

apprenticeship model. Knowledge includes theories about the nursing profession's values, attitudes, and beliefs. Mentors serve as inspirational figures who guide and support students on their journey to becoming competent, compassionate, and confident nurses. Continuous communication, friendliness, goal setting, and a clear evaluation criterion strengthen mentoring relationships in nursing. The way nurses view and use mentoring in the nursing profession shapes how it is defined. Overall, Searle (2004) emphasised mentoring as a relationship that allows a novice and an experienced person to share skills and knowledge. Knowledge includes theories about the nursing profession's values, attitudes, and beliefs. Mentoring in nursing education has several benefits, including enhancing teaching and learning strategies and providing emotional, physical, and existential care to students.

The implementation of mentoring in nursing has a wide range of variability. According to Kuperminc's (2021) literature, nurse educators have the option to utilise different mentoring strategies such as group, one-on-one, peer, and distance mentoring. Typically, the mentee's specific needs determine the chosen model. Recognising the significance of mentoring in nursing and nursing education, the World Health Organisation (WHO) developed nurse educator core competencies in 2018. These skills aim to ensure that nurse educators effectively mentor students in both classroom and clinical settings. Mentoring in nursing involves using a face-to-face approach. Lasater et al. (2021) discovered that mentorship is necessary during emergencies like the ongoing COVID-19 outbreak when children are isolated from their teachers.

By comparing the conventional apprentice model with the CA model of mentorship, this shift in nursing education challenges the belief that nurses are ready to join the workforce just as students. Once students have gained the requisite skills, we no longer perceive them as mere hands-on learners. The higher education strategy aims to achieve a balance between academic knowledge and practical experience, in accordance with the nursing education changes advocated by the Institute of Medicine (2018) goals. While there are similarities between mentoring in the traditional apprenticeship model and the CA model, the CA model is more rigorous, particularly in higher education. It incorporates the principles of adult learning to give adult students more autonomy, and educators utilise various methodologies such as modelling, coaching, scaffolding, articulation, reflection, and exploration to create meaningful learning experiences for students. The conventional perspective on apprenticeships prioritises the development of a proficient worker rather than a nurse who engages in critical thinking and delivers evidence-based practice. The implementation of the CA model in nursing education, particularly online learning, has demonstrated its efficacy as an effective mentoring tool.

Jafaru et al. (2018) confirmed the importance of mentoring in nursing education. Professional continuous development is based on mentoring to ensure nursing personnel keep up with current trends in nursing. Riley and Fearing (2009) assert that educators can use mentoring to develop teaching and learning strategies for both face-to-face and online instruction. The comparison of Riley and Fearing's (2009) findings with Collins et al.'s (1991) CA model reveals that nursing education can enhance learning experiences by creating diverse teaching strategies for students with varying learning styles in both

face-to-face and online learning. Nursing is a profession that strives for the handover of responsibilities, values, and beliefs; therefore, Dimitriadou et al. (2015) affirm the position of mentoring to boost the self-esteem of novice nurses. The cognitive apprenticeship model, which fosters idea-sharing and a more collaborative and transformative relationship between the mentor and mentee, has the potential to overcome the bullying culture inherent in traditional mentoring relationships. De Swardt et al. (2017) also acknowledge the benefits of mentoring as a means of socialising student nurses with the world of professional nursing. He further traced the socialisation process from the classroom to the clinical area. The findings elaborated on the impact of the environment on student nurses' socialisation. The research findings also have a bearing on Collins et al.'s (1989) teaching methodology, where the authors pointed out that the social environment should be conducive enough and supportive of learning. John et al. (2020) argued that providing support during clinical attachment fosters a sense of belonging to the profession.

Having exhausted the concept, models, and benefits of mentoring in nursing, it was noted that virtual mentoring can also be applied in nursing during online learning, and the concept of its use is the same; the only differences are the geographical distance and communication medium. Virtual mentoring uses technology-driven mediums to enable mentors and mentees to communicate via emails, Skype, WhatsApp, virtual learning environments, and many others. According to Burns (2011), nursing students and nurse educators must view virtual learning as the same as learning in a brick-and-mortar classroom to leverage the strength of technology during the COVID-19 crisis.



According to the chart features described by Garringer (2019), it is possible to mentor a student effectively online and share the same feelings and attachments as in face-to-face mentoring. Despite the effectiveness of virtual mentoring, Iqbal (2020) emphasises the need for institutions to conduct virtual programmes in environments where students have internet access and understand how to navigate virtual platforms.

When it comes to virtual learning, nursing education should not rely solely on the COVID-19 crisis to engage in virtual learning, only to revert to the traditional face-to-face model later on. The study by Yangoz et al. (2017) demonstrated that nursing can learn from other disciplines that train skills and trades to use technology and move forward. Yangoz et al. (2017) found that most students were pleased with the flexibility of online learning and the relationships they built with their lecturers. The studies revealed that students receiving virtual teaching and mentoring outperformed those receiving traditional face-to-face instruction due to the self-directed learning approach inherent in virtual learning. The study challenged nursing education institutions to develop teaching strategies that introduce the student to a near-real classroom situation. The CA model can overcome these challenges by providing individualized student support that caters to students' diverse learning styles.

Although virtual and face-to-face mentoring serve the same purpose, Neely et al. (2017) state that building relationships at the undergraduate level may start with face-to-face interactions. Virtual mentoring overcomes barriers such as gender differences, hierarchical relationships, and generational gaps. Researchers found that extrovert personalities positively contribute to the development of effective virtual mentoring

relationships. Reviewing Clement's (2018) study shows that the traits of responsibility, motivation, and commitment, along with the fact that virtual mentoring is voluntary, are similar to Neely et al.'s (2017) findings that personality has a big impact on starting and keeping up virtual mentoring relationships.

Tinoco et al. (2020) provide an argument that other disciplines in higher education, other than nursing education, have used virtual mentoring, which justifies research that aims to enhance our understanding of virtual mentoring in nursing. Doner et al. (2020) highlighted a gap in the literature, noting that while numerous studies exist on mentoring in nursing, few have specifically addressed virtual classroom mentoring. This gap in research underscores the importance of studies like the present one, which aims to explore the virtual mentoring experiences of both students and nurse educators. In their study, Donar et al. (2020) found that students reported positive experiences with virtual mentoring, including receiving professional support, feeling safe, and benefiting from the non-judgmental approach of online mentors. These experiences, such as developing reflective and problem-solving skills, may align with the principles of the cognitive apprenticeship model proposed by Collins et al. (1989), although Donar et al. (2020) did not explicitly reference this model in their study.

Booth et al. (2021) also expressed concern about the slow adaptation of the nursing profession to the digital realm. Nurse leaders attribute the slow pace to the nursing profession's subservience to other medical professions, waiting for professional bodies like the Institute of Medicine to initiate online instruction. Booth et al. (2020) justify the existing inequalities between developed and developing countries, which contribute

to a slower adaptation to online learning. This is particularly evident as students in underdeveloped nations may face challenges such as limited internet access, a lack of necessary technology, and financial constraints hindering their ability to purchase laptops or smartphones due to poverty. Conversely, Marcillo et al. (2020) highlight that nursing faculty may find themselves transitioning to online learning without adequate preparation. Their study reveals that students were primarily motivated to persevere through online learning due to their determination to complete their education, despite facing fears of failure and uncertainty about recognition post-graduation.

Although there were challenges with virtual mentoring, Borus et al. (2018) noted that students accustomed to face-to-face instruction still performed well in online learning and expressed that the flexibility associated with online learning was positive. Students missed verbal cues and communication styles that conveyed nonverbal messages during virtual interactions. The nursing faculty lamented the lack of knowledge about their roles during mentoring, as well as the absence of clear frameworks that defined their roles and how they evaluate mentoring goals. Role modelling appeared to be the most straightforward part of mentoring. Nurse educators expressed negative attitudes towards students who lacked self-directed learning and motivation. Most nurse educators require mentorship to effectively mentor students. Nurse educators have not extensively explored online mentoring for academic excellence, but Butler and Ardary (2020) highlight the importance of identifying student learning challenges and preferences and guiding them towards academic success. The authors pointed out that they can apply the findings to mentor students amidst crises marked by emotional stress and uncertainty. In online

learning environments, nurse educators can effectively assume mentoring roles using CA.

## **CHAPTER 3: RESEARCH METHODS**

### **Introduction to the section**

The purpose of this study was to explore the virtual mentoring experiences of nursing students and their lecturers within the context of nursing education and perform a comparative analysis of virtual and face-to-face mentoring. Virtual mentoring, defined as the remote provision of guidance, support, and professional development through digital platforms, has emerged as a prominent feature of contemporary nursing education. This shift has been particularly pronounced amidst recent technological advancements and the widespread adoption of online learning modalities. The COVID-19 pandemic precipitated an abrupt transition from face-to-face instruction to online learning, which underscored the need to understand and adapt to the challenges posed by virtual mentoring.

Drawing upon insights gathered from a comprehensive literature review, it became evident that online learning represents a relatively novel phenomenon, especially within undergraduate nursing education. The literature also sheds light on the myriad challenges encountered in the delivery of online lectures, the use of online learning management systems (LMS), and the inherent shortcomings of technological infrastructure. Notably, these challenges extended beyond a specific geographic location, affecting various institutions training Bachelor of Nursing students in Namibia. Therefore, the principal aim of this study is to illuminate the virtual mentoring experiences amidst the absence of face-to-face interactions between nursing students and their lecturers. By exploring these

experiences and conducting a comparative analysis between virtual and face-to-face mentoring, this research seeks to provide valuable insights into the effectiveness, challenges, and potential improvements of virtual mentoring within nursing education. Through this endeavour, we aim to contribute to the ongoing discourse surrounding innovative pedagogical practices and the evolving landscape of nursing education in the digital age.

This chapter examines the research methods used to effectively address the first chapter's research objectives. Given the nature of the phenomenon under investigation, it was imperative to adopt an approach that prioritised understanding the experiences from the participants' perspectives. The chapter also provides an in-depth examination of the research strategies, research design, and research methodology used in the study. As noted by Mishra and Alok (2017), research methods encompass a wide array of techniques and approaches employed in the research process. This term encapsulates the systematic execution of the research process, from identifying the research problem to formulating recommendations and elucidating the research strategy, research design, and research methodology.

Research methods offer a structured framework for gathering data pertinent to the research questions or hypotheses, as highlighted by Walia and Randhawa (2020). Whether it involves surveys, experiments, interviews, observations, or other techniques, research methods help researchers systematically gather the information they need. Research methods play a pivotal role in ensuring the validity and reliability of data collection processes by implementing standardised procedures, controls, and

measurement tools. These methods enable researchers to collect empirical evidence, which they can systematically analyse to answer research questions or test hypotheses. By adhering to rigorous methodologies, researchers can generate credible findings that enrich the existing body of knowledge in their respective fields. According to Mishra and Alok (2017), meticulous research methods are critical for mitigating researcher bias, which may stem from various sources such as sampling techniques, measurement tools, or researcher influence. The selection of appropriate research methods not only influences the type of data collected but, also shapes the analytical techniques applied. By employing suitable methods, researchers can guide the data analysis process and derive meaningful insights from the collected data. Furthermore, ethical considerations are paramount throughout the research process. The research methods integrate ethical principles like informed consent, confidentiality, and protection of participants' rights to guarantee that the study obtains its findings ethically. Overall, the discussion of research methods serves to uphold the integrity and credibility of the research findings while adhering to ethical standards.

This section examines three key components of the research methods: the research strategy, the research design, and the research technique. There are several research strategies, designs, and methodologies that researchers can employ. According to Clark et al. (2021), a research strategy is a general approach to conducting research, sometimes referred to as a research approach. There are three main research strategies that researchers can use: quantitative, qualitative, and mixed methods. A research strategy dictates the research design's selection. Bowen et al. (2017) defined a research

design as a conceptual structure that guides the research's conduct. A research design answers the inquiry of what, where, when, and how much. According to Bryman (2012), a research design is a framework of data collection activities that reflect a decision and priority given to a range of dimensions in the research process. Bowen et al. (2017) further emphasised that the research design acts as a bridge connecting the research purpose with the research methodology. Researchers have several research designs available, depending on the strategy used. Researchers can choose to use experimental, quasi-experimental, correlational, longitudinal, cross-sectional, retrospective, case-control, sequential, or factorial designs.

Research methodology adheres to the chosen research design, substantiating the methods for data collection and analysis. Mishra and Alok (2017) define research methodology as an approach that tackles research issues. Sampling techniques, data collection procedures, research tools, and data analysis procedures all contribute to research issues. A research methodology serves as a link from problem or research gap identification to research gap closure.

The elucidation of the research methodology lays the foundation for examining the sampling methods and techniques employed in this study. Clark et al. (2018) explicate that the population encompasses all the units from which the sample originates. In this study, the population comprises nursing students and their lecturers, who serve as the representative groups for data collection to meet the research objectives. It is essential to understand the intricacies of sampling techniques to ensure that the selected sample is



representative of the broader population and yields meaningful insights into the research questions at hand.

The strategy cannot be divorced from the purpose of the research and sampling criteria, as it informs the sampling procedures in terms of sampling technique and sample size. Dawadi et al. (2021) affirm the crucial role of the research design in delineating population and sampling considerations. For example, an experimental design necessitates the identification of both a control group and an experimental group, whereas a case study entails the selection of cases from a specific population or organisation of interest. This stresses the importance of aligning the research design with the specific objectives and methodology of the study. Conversely, the research methodology guides the selection of data collection tools and the process of gathering data from a sample. For research purposes, various research materials and instruments exist, with their selection contingent upon the chosen research strategy. For example, the qualitative strategy uses inductive tools, while the quantitative strategy uses deductive tools. The goal of accurately selecting and aligning tools with the research strategy, design, and methodology is to effectively address the research question, fulfil the research purpose, and uphold the validity and reliability of the research findings. This meticulous process ensures that the chosen tools are well-suited to the study's objectives and contribute to the robustness of the research outcomes. Clark et al. (2018) contend that the methodology also guides the choice of tools, including questionnaires, interviews, observations, and checklists.

This chapter also discusses the ethical assurances observed during sampling, data collection, data handling, and data analysis plans. This study acknowledged that research with human subjects is a sensitive bioethical issue. The study respected the biopsychosocial, cultural, and spiritual beings of the participants, despite not involving any biologically invasive procedures. According to Resnick (2018), the goal of research is to improve human well-being. The ethics of conducting research serve as a watchdog to protect human subjects and uphold researchers' moral obligations. Research ethics also uphold generally accepted and well-considered principles and norms in society (Sandu et al., 2019). Throughout this research, the examination of ethical considerations encompassed all principles grounded in human moral philosophy, guided by the study's purpose and objectives.

The final section of the chapter outlines the procedures for data collection and the analysis plan. As previously stated, a comprehensive research methodology necessitates a detailed delineation of both the data collection tool and the data collection procedures. Researchers can use a variety of data collection tools identified by Clark et al. (2018). However, not every research tool is suitable for a particular research project. The distance between the problem identified and the accurate findings depends on the data collection tools' accuracy. This research characterised the selected data collection tools according to their suitability for the study.

## **Research Approach and Design**

### **Research Strategy**

This research study employed a mixed-methods (MM) research strategy. A mixed-methods research strategy integrates both qualitative and quantitative research designs, aiming to leverage the unique strengths of each approach (Polit & Beck, 2017). According to Creswell and Clark (2018), MM research is characterised by the inclusion of at least one qualitative and one quantitative strand within a single research study. A researcher can choose to give both the qualitative and quantitative strategies equal weight. In a single study, quantitative data can carry more weight than qualitative data, and qualitative data may also carry more weight than quantitative data. The determination of priority is dependent on the nature of the study's objectives and the effort to address the research questions. Additionally, sequencing represents another variable in MM research. Creswell and Clark (2018) argue that researchers can collect both quantitative and qualitative data simultaneously, either by prioritising the collection of qualitative data or vice versa. The choice of sequencing is determined by the level of interactions between the qualitative and quantitative strands in the research, their priority and timing, and the researcher's method of mixing the strands (Tashakkori et al., 2020).

According to Clark et al. (2018), qualitative research has its roots in the interpretive and constructivist paradigms, which believe in multiple realities of the world. Mohajan (2018) argues that the rationale behind the qualitative approach emerged from discussions among historians and philosophers, including Dithely (1833–1901), anthropologists like Mainowski (1920), Mead (1935), and social scientists such as Park

and Burgess (1925). They argue that social sciences research needs not to imitate a natural sciences positivist approach to research but instead should emphasise empathetic human understanding of feelings, experiences, and how human beings interpret them. The qualitative phase of the research is inductive, allowing data collection and sampling techniques that explore experiences as subjective phenomena (Tashakkori et al., 2020). The philosophical underpinnings of both qualitative and quantitative research designs, combined with their synergistic strengths, shaped the research strategy selection. Dawadi et al. (2021) justify the use of the MM strategy when the research aims to uncover multiple realities.

The quantitative strand serves to compare virtual and face-to-face mentoring experiences. According to Dawadi et al. (2021), the positivist paradigm guides the quantitative approach. The paradigm holds that the senses can affirm only confirmed knowledge as knowledge. It emphasises the objective and empirical investigation of observable phenomena. Therefore, systematic observation and measurement lead to the acquisition of knowledge through systematic observation and measurement. Researchers employing the quantitative approach collect verifiable, quantifiable, and proven facts. Brink et al. (2018) assert that the quantitative strategy utilises techniques like surveys, experiments, and statistical analysis to gather and evaluate data. These methods allow researchers to quantify variables, measure relationships, and draw generalisable conclusions.

The decision to employ a MM research approach stemmed from Fischler's (2018) assertion that a combination of qualitative and quantitative data offers a deeper

comprehension of the research issue, thus advocating for the adoption of mixed methods. Creswell and Clark (2018) echo this viewpoint, advocating for MM in situations involving diverse realities and perspectives, regardless of bias, underscoring its relevance for researchers. The versatility of the MM strategy is evident when researchers need to supplement a qualitative study with quantitative analysis, or vice versa. According to Fischler (2018), one of the best things about MM strategies is that they can combine numerical and textual data, which helps researchers understand the topic better than if they only used qualitative or quantitative methods. The interpretive paradigm, which emphasises understanding the meanings and descriptions of virtual mentoring experiences, guided the decision to explore the experiences of students and their lecturers.

Polit and Beck (2017) acknowledge the importance of choosing a qualitative approach to explore experiences, highlighting that the ontological underpinnings of qualitative research stem from the perception of reality. The authors further emphasise that individuals subjectively and cognitively construct the truth; therefore, they deem such an approach appropriate for investigating phenomena from the perspective of those experiencing them. Furthermore, this highlights the epistemological stance of qualitative researchers, emphasising how an individual's worldview influences the interpretation of subjective phenomena such as emotions and experiences. Based on this premise, Polit and Beck (2017) argue that qualitative researchers seek to conduct inquiries rooted in the perspectives and realities of participants, including those realities not initially discernible

at the outset of the research. This research's quantitative dimension deals with the quantification of the collected data and its analysis using statistical approaches.

In this study, qualitative data collection allows for a deep exploration of the nuances, complexities, and contextual factors surrounding virtual mentoring experiences. Interviews and focus group discussions uncover the subjective experiences, perspectives, and challenges faced by participants in Namibia's unique educational and cultural context. On the other hand, the researcher used the findings from the qualitative phase to develop quantitative instruments that are relevant, comprehensive, and grounded in the participants' experiences. This approach increases the validity and reliability of the quantitative data collected in the subsequent phase. The quantitative data also provides measurable evidence about the prevalence and patterns of virtual mentoring experiences, such as the frequency of interactions, types of technologies used, and general satisfaction levels among participants. This iterative process leads to the development of well-grounded theories and practical recommendations. In addition, utilising both quantitative and qualitative methods allows for triangulation, which enhances the validity and reliability of the findings. By corroborating data from multiple sources, the researcher gains a more robust and credible understanding of the virtual mentoring experience. A mixed-methods approach makes sure that the study covers both the big picture and the specific factors that affect virtual mentoring in Namibia. This is because the country's technology, educational practices, and cultural factors may be different from those in other places.

Polit and Beck (2017) identified five approaches for quantitative research designs, which researchers can adopt based on the nature of their inquiry. Researchers can choose a descriptive approach, surveys, experimental, causal-comparative, or correlational research. This research employed the descriptive approach, enabling the respondents to describe their experiences and align with the qualitative strategy through the use of numerical data and statistical analysis. Grey et al. (2017) point out that descriptive research enables the collection of data to test hypotheses. This study used a comparative approach to compare virtual and face-to-face mentoring experiences.

This research developed hypotheses to empirically validate the theoretical constructs discussed in the literature review. As the traditional mentoring model gives way to the cognitive apprenticeship model, this study aimed to contribute evidence that could enhance mentoring knowledge and practices through hypothesis testing. Clark et al. (2018) assert that the deductive nature of quantitative research enables the testing of theories through the quantification and objective interpretation of collected data.

## **Research Design**

A research design is a conceptual blueprint that lays out the procedures followed during research studies. The procedures act as plans for data collection, analysis, interpretation, and reporting (Tashakkori et al., 2020). This idea guides the selection of a research design, which prioritises the dimensions of the study to illustrate the relationships between variables. The potential generalisation of research findings and the

interconnected nature of the social phenomena under study also play a crucial role. Mohajan (2018) identified seven research designs that fall under the qualitative strategy.

The designs include narrative, phenomenology, grounded theory, action research, ethnography, historical, and case study designs. The design choice is dependent on the study's purpose. Polit and Beck (2017) classify quantitative designs as experimental and non-experimental with their sub-designs. Experimental designs include both true experimental and quasi-experimental designs. Non-experimental methods include descriptive, survey, correlational, comparative, retrospective, and predictive designs. The authors also included case studies, historical studies, and action studies as non-traditional designs in quantitative research. This study employed a case study design due to its feasibility in both qualitative and quantitative research methodologies.

Research on specific individuals, families, groups, institutions, or communities is known as a case study design (Polit & Beck, 2017). Dawson et al. (2021) suggest that one can choose the case study research design based on the study's characteristics and disciplinary orientation. Researchers who aim to fully explore research questions and achieve study goals also prefer case studies because they facilitate in-depth exploration, interpretation, and description of the studied phenomenon in a context-sensitive manner. According to Yin (2018), case studies have the strength of addressing validity and reliability issues to establish data collection procedures and instrument selection in the study.

Dawson et al. (2021) delineate the categorisation of case study designs into three distinct orientations: ethnographic, sociological, and psychological. The ethnographic



orientation entails the examination of behavioural patterns, lifestyles, and customs within a specific group. Yin (2018) further elaborates that researchers immerse themselves in the research context to obtain a comprehensive understanding of the group's perceptions and interpretations. On the other hand, historical orientation involves tracing the development of events, organisations, and programmes over time. Researchers conduct document reviews, observations, and interviews to compile a valid chronological account of these events.

This study aligns itself with the psychological orientation, as it draws upon the cognitive apprenticeship model as its conceptual framework. According to Dawson et al. (2021), the psychological orientation focuses on investigating individuals within programmes, organisations, and events using relevant theories and concepts. This orientation incorporates theories of human behaviour, such as Piaget's theory, which elucidates human learning processes. Based on the psychological orientation, the researcher believed that exploring virtual mentoring experiences among nursing students and their lecturers was feasible in the qualitative phase. In the quantitative phase, the orientation also allowed for comparison of face-to-face experiences with virtual mentoring. People believe that mentoring is a highly subjective cognitive experience that is impossible to quantify. Furthermore, the case selection rationale justified the choice of case study design in this research. According to Yin (2018), the justification of case selection depends on whether the researcher uses an intrinsic, instrumental, or collective approach. Researchers use the intrinsic approach to case studies to gain deeper insights into a person, group of people, or organisation, aiming to investigate an existing

phenomenon (Dawson et al., 2021). The authors defined instrumental case studies as studies aimed at gaining deeper theoretical insights into problems or questions, rather than focusing on the individuals or organisations under investigation. This study used a collective approach to explore student and nurse educator experiences as a whole, while also drawing on literature to help conceptualise the cognitive apprenticeship model in virtual mentoring. Drawing from the collective case study descriptions, the employment of a collective approach raises expectations that the results could support the application of the CA model in nursing education's virtual learning and mentoring. The researcher anticipates that the case study approach will provide useful insights into how nurse educators can effectively make their cognitive processes clear to students during virtual mentoring sessions.

## **Research Methodology**

Research methodology focuses on population sampling criteria and size, data collection methods, data processing, and data analysis. According to Rashid et al. (2019), there are several research methodologies that researchers can use. The first methodology is known as the convergent parallel design. In this design, researchers gather quantitative and qualitative data separately, frequently from distinct subjects or sources, and analyse them independently. The goal is to provide a comprehensive understanding of the research subject by analysing it from a variety of perspectives. Upon completion of each study, researchers compare and contrast the results to identify any similarities or differences. This strategy allows researchers to obtain a more

comprehensive and precise understanding of the phenomenon under study by triangulating multiple forms of data.

Secondly, researchers may opt for explanatory sequential designs. This design first collects and analyses quantitative data and then proceeds to collect and analyse qualitative data. The researcher performs quantitative analysis to discern patterns, relationships, or trends within the phenomenon under study. The researcher then uses the insights gained from the quantitative analysis to shape the qualitative phase. This qualitative component aims to delve deeper into the phenomenon by exploring the underlying reasons, meanings, or contexts behind the quantitative findings, thereby enriching the overall understanding of the research topic. Fischler (2018) argues that this design is suitable for research that is more quantitative than qualitative, as well as when new questions arise from the quantitative data. The method's strengths lie in its alignment with the post-positivist paradigm, which allows for the incorporation of emerging philosophies like constructivism. However, it requires time to effectively follow up with participants and address challenges related to determining which questions to pursue further.

Exploratory sequential design is the third methodology to be considered. Creswell and Clark (2018) advocate for the researcher to commence the exploration of a research topic by gathering and analysing qualitative data. This qualitative phase employs diverse data collection techniques, such as interviews, observations, or document analysis, to acquire comprehensive and nuanced information about the research topic. The quantitative phase aims to test hypotheses or generalise findings from the qualitative

phase to a larger population. The researcher gathers quantitative data through methods like surveys or experiments and then performs statistical analyses to pinpoint patterns, relationships, or trends within the data. According to Edmond and Kennedy (2017), the qualitative dimension of the MM investigates the phenomenon, and the quantitative dimension validates it in succession. As the methods complement each other, the collected data is more versatile.

Creswell (2013) asserts that the constructivist approach, which involves building a data collection instrument to gather quantitative data, initiates the philosophical assumptions of exploratory design. The research shifts to a post-positivist orientation to accommodate quantitative data collection, analysis, and hypothesis testing. The strengths of quantitative data, such as their validity and reliability in terms of objectivity, complement the subjectivity of qualitative results, which can be challenging to verify. Fischler (2018) cautions that researchers using the exploratory sequential design should exercise caution in developing a research instrument that is both valid and reliable for the study. They should allocate sufficient time to align the timing of the qualitative and quantitative phases.

The fourth methodology is embedded design. Rashid et al. (2019) describe the embedded methodology as integrating both qualitative and quantitative data collection and analysis within a single overall study. This design nestles or implants one type of data collection and analysis within the other, enabling a more comprehensive understanding of the research topic. The analysis and interpretation of data occur simultaneously. Explanatory approaches with pre- and post-test data, correlational approaches requiring

cross-over, and factorial designs employ embedded design, according to Creswell and Clark (2018). Fischler (2018) argues that the rationale for embedded designs is to measure improvements after an intervention, explain reactions in experiments, and improve the recruitment of research participants.

Lastly, there is the explanatory design. Polit and Beck (2017) define an explanatory research design as a methodology used in social science research to explore causal relationships between variables. This design aims to understand why a particular phenomenon occurs by examining the relationships between distinct factors. An explanatory sequential mixed design collects quantitative data, followed by qualitative data. Essentially, the researcher uses qualitative data to explain quantitative findings.

Drawing from the previously discussed research designs, this study employed the exploratory sequential design. The opportunity to initially probe into the subjective experiences of student nurses and nurse educators motivated the decision. The exploratory qualitative phase allowed the researcher to probe deep into the complexities of mentoring experiences, exploring the perspectives and perceptions of both nursing students and lecturers regarding virtual mentoring. The qualitative phase's exploration allowed the researcher to comprehend the contextual factors shaping virtual mentoring experiences in the classroom context and formulate testable hypotheses. Before devising the quantitative instrument, the researcher anticipated the likelihood of new inquiries arising from the qualitative interviews.

## **Population and Sample of the Research Study**

Sampling is one of the methods researchers use to optimise the use of resources (Brink et al. 2018). The authors define sampling as a critical process involving the selection of representative samples from a population to gain insight into the phenomenon under scrutiny. Onwuegbuzie and Collins (2007) cite the definition from the American Heritage College Dictionary (2004), defining sampling as the selection of a portion that mirrors the entire population. The quality of inferences drawn from research findings hinges significantly on the sampling process. According to Teddlie and Yu (2007), sampling allows researchers to create a sample that accurately addresses their research questions. Researchers, according to Bryman and Bell (2018), need to determine the sample size, which refers to the total number of participants in a study, and the sampling scheme, which describes the process of recruiting participants. Before going into the details of the sample size and scheme, it is important to look at the population under study where the sample was drawn.

The population refers to the complete assembly of individuals or objects under the researcher's scrutiny (Brink et al., 2018). According to Polit and Beck (2017), the target population of a research endeavour must align with the specific criteria under investigation. The characteristics of the population set boundaries for participants. According to Creswell (2013), researchers may not always access the entire population and may sample from an accessible population, referred to as the study population, as long as the defining characteristics are present in the population. According to Brink et al. (2018), researchers must specify the population's inclusion criteria or eligibility by laying

out distinguishing descriptors. Such descriptors will inform the researcher to lay out or exclude some individuals or objects from the population, referred to as the exclusion criteria.

This research's population is student nurses who are in their 3rd and 4th-years of doing a Bachelor's in Nursing Science together with their lecturers. The target population is students, and lecturers are from three universities: the Welwitchia Health Training Centre (WHTC), the University of Namibia (UNAM), and the International University of Management (IUM). The criteria for eligibility were that one must be a 3rd or 4th year student pursuing a bachelor's degree. The targeted lecturers were those who taught in the Faculty of Health Sciences during the bachelor's degree programme. The criterion required all participants in both groups to have participated in both face-to-face and online learning sessions.

The reason for opting for 3rd and 4th-year classes was that both cohorts had prior exposure to in-person instruction and mentoring in 2019, predating the COVID-19 lockdown enforced in March 2020. Brink et al. (2018) outlined the criteria that excluded those students and lecturers lacking this prior experience. Consequently, Brink et al. (2018) excluded individuals who were first-year students in 2020 and are currently in their second year, as well as the classes of 2021, from both face-to-face and online instruction and mentoring. Thus, they lack the depth of experiential insight and capacity to offer qualitative and quantitative data when compared to those with exposure to both face-to-face and virtual mentoring experiences.

## **Sample Design**

Polit and Beck (2017) define a sample design as a definite plan the researcher uses to obtain a sample from a given population. Researchers follow the plan's sampling techniques and procedures when selecting research items or participants. Researchers can use two sampling designs or approaches. Brink et al. (2018) define these as probability and non-probability sampling. The research strategy does not separate sampling approaches. The qualitative strategy is synonymous with non-probability sampling techniques, while the quantitative strategy uses probability sampling. The research methodology can suit several approaches under each sample design. Polit and Beck (2017) outlined non-probability sampling techniques, which encompass convenience sampling, purposive sampling, and snowball sampling. Purposive sampling employs methods such as random sampling, systematic sampling, cluster sampling, and stratified sampling. This study adopted both probability and non-probability sampling designs under the MM strategy.

## **Sampling Frame**

Qualitative and quantitative researchers approach sampling differently (Ishak & Bakar, 2014). For quantitative researchers, the goal of sampling is to get a representative sample from the entire population that will allow generalisation of the research findings. Conversely, qualitative researchers disregard statistical analysis and concentrate on gathering specific instances, occurrences, or behaviours that aid in clarifying or improving their understanding of the phenomenon under investigation. Creswell (2013) posits that



qualitative research sampling intentionally selects case units that shed light on the social life or phenomenon under study, disregarding sample size and representativeness. Brink et al. (2018) define a sampling frame as a comprehensive roster that includes all elements within the population that form the study sample. The researcher gathered a list of 3rd and 4th-year students and lecturers from the three participating institutions. The list had official emails and contact numbers of class representatives for the student population. During the qualitative phase, the researcher used a sampling frame to facilitate the organisation of interviews and focus group discussions. Additionally, it allowed for the determination of the sample size required for the quantitative phase.

## **Sample**

Sample selection followed the MM strategy and the case study approach. As highlighted by Teddlie and Yu (2007), MM sampling strategies involve choosing units or cases for a research study using both probability and non-probability sampling methods. Non-probability sampling aims to enhance external validity, while purposive sampling strategies aim to bolster transferability. As outlined in the methodology section, the study employed an exploratory sequential design, beginning with the qualitative phase and then transitioning to the quantitative phase for comparative analysis. Sampling in the qualitative phase utilised Teddlie and Yu's (2007) taxonomy of sampling strategies in MM research. The researcher used purposive sampling to recruit both student nurses and nurse lecturers for the qualitative phase. Purposive sampling, as described by Brink et al. (2018), involves the intentional selection of participants who exhibit typical characteristics

of interest based on the researcher's judgment. According to Baran and Jones (2020), purposive sampling entails deliberately selecting specific settings, individuals, or events that provide unique information not obtainable through other sources. The decision to use purposive sampling was based on the researcher's assessment of what constitutes credible data from an information-rich sample and achieving data saturation.

Given the large student population and Stewart and Shamdasani's (2015) guidance, the researcher organised six focus group discussions, each consisting of eight to twelve students. Thus, the researcher treated the three participating institutions as clusters. The gatekeeper provided lists of third- and fourth-year students and approached them voluntarily to participate in the study. Purposive sampling among students aimed to gather rich data until they reached data saturation. According to Stebbins (2001), the traditional way to determine sample size and theoretical saturation in qualitative research is to look for the point at which no new information arises from adding more cases. This signifies that the data has reached saturation when the sample is more homogeneous.

This study applied Teddlie and Yu's (2007) Level IV taxonomy of sampling methods. The sampling of students followed a three-step process: first, students were purposefully selected; second, six clusters were formed, with three clusters for 3rd-year students and three for 4th-year students; finally, twelve participants for each focus group discussion were randomly selected from each class using the fishbowl technique. All selected students were added to a WhatsApp group to coordinate the scheduling of the focus group discussions.

In the qualitative phase, convenient sampling was used to recruit nurse lecturers. The three participating institutions were treated as clusters, and participants were drawn from each cluster conveniently. Researchers use convenience sampling, as defined by Teddlie and Yu (2007), to draw samples that are both easily accessible and willing to participate in a study. Brink et al. (2018) define convenient sampling as accidental or readily available sampling. The gatekeeper provided a roster of lecturers in the nursing department to facilitate their easy contact and identification. Additionally, contact details, including telephone numbers, were supplied for all lecturers teaching 3rd and 4th-year students. Convenient sampling was adopted to engage available lecturers who were not occupied during the data collection period and were accessible to provide their experiences from each institution. Data collection continued until saturation was achieved.

For lecturers, the quantitative phase of the research utilised total population sampling. The total number of lecturers was sixty-four. Participants were provided with a quantitative follow-up questionnaire to make a comparison of face-to-face and virtual mentoring experiences. Total population sampling is a type of purposive sampling technique where a researcher chooses to examine the entire population that has a particular set of characteristics (Feldmann, 2014). The reasoning behind the total population sampling for lecturers stemmed from the fact that UNAM and IUM had fewer than thirty lecturers, except WHTC, which had 36 lecturers. According to Sugiyono (2007, as cited in Mutaqin, 2017), where the total population is less than one hundred units, total population sampling is ideal. The benefit of employing total sampling in the quantitative

phase was its capacity to allow for analytical generalisations of the studied population, despite being a form of purposive sampling.

### **Sample Size Determination: Students.**

For this part of the study, the minimum sample size (n) required, was calculated using Dobson's formula as:  $n = \frac{(Z\alpha)^2 \times p(1-p)}{e^2}$  Where p is the expected proportion that will report that there are high levels in terms of satisfaction with a given live or virtual teaching method,  $Z_\alpha$  are values of standard normal distribution at  $\alpha$  level of significance, e is the maximum tolerable error for the prevalence estimate. Assuming that p=50%, and that the size of the sampling frame is large, the minimum sample size required a 5% level of significance and 5% maximum tolerable error was 384 participants from a population of 770 students supplied by the gate keepers of the three institutions.

Sample size calculation for students;

$$n = \frac{(Z\alpha)^2 \times p(1-p)}{e^2}$$

Where:

- $Z_\alpha$  Is the Z-score corresponding to the desired confidence level (which is 1.96 for a 95% confidence level)
- p is the estimated proportion of the population (expressed as a decimal)
- e is the margin of error (expressed as a decimal)

$$n = \frac{(1.96)^2 \times 0.50 \times (1 - 0.50)}{0.05^2}$$

$$n = \frac{3.8416 \times 0.50 \times 0.50}{0.0025}$$

$$n = \frac{0.9604}{0.0025}$$

$$n \approx 384.16$$

### **Materials/Instrumentation of Research Tools**

According to Brink et al. (2018), research materials refer to the physical resources or items used in a study, such as questionnaires, interview guides, and surveys. Instrumentation refers to the designed tools or instruments used to collect data. Researchers should carefully design the tools to ensure the validity and reliability of the data collected. Creswell and Clark (2018) assert that MM research not only combines data collection instruments but also requires them to be conversant with each other.

This researcher used both qualitative and quantitative data collection instruments. During the qualitative phase, the researcher employed interview techniques with the aid of interview guides to collect data. Magnuson and Marecek (2015) assert that interview guides are adaptable tools that researchers can customize to meet specific research objectives and participant characteristics. They contribute to maintaining consistency across interviews and offer a framework for researchers to collect comprehensive data pertinent to their research inquiries. A well-crafted interview guide typically includes an introduction elucidating the interview's purpose, an icebreaker to initiate conversation, main questions along with probes to investigate deeper, and concludes with a summary and a gesture of appreciation to thank the participants.

According to Taherdoost (2022), a questionnaire serves as a systematic data collection instrument employed to gather information from individuals or groups in a structured manner. It comprises a sequence of inquiries formulated to solicit precise responses pertaining to a specific subject matter or research aim. Polit and Beck (2017) contend that questionnaires are handy and effective tools for collecting structured data across a wide range of research disciplines and settings. When designed and implemented thoughtfully, they can yield valuable insights and contribute to evidence-based decision-making. Taherdoost (2022) mentions that researchers can develop either structured, unstructured, or quasi-structured questionnaires depending on the purpose of the study. A structured questionnaire entails a predetermined format comprising closed-ended questions necessitating concise responses from the participants. Conversely, unstructured questionnaires, typically employed in interviews and focus group discussions, feature open-ended or opinion-based queries. Quasi-structured questionnaires incorporate both closed and open-ended questions.

According to Elangovan and Sundaravel (2021), a questionnaire's strengths as a data collection tool are that it collects data from a large population with limited cost and time, provides convenience, and ensures anonymity. Oppenheim (1966, as cited in Beatly et al., 2020) suggested that individuals with the ability to write in plain English and possess common sense can create a well-crafted questionnaire instrument. Beatly et al. (2020) argue that while this notion may hold in contemporary times, advancements in quantitative research have led to the evolution of survey question design. There has been

progress in crafting survey questions in the social and health sciences to fulfil the need for empirical evidence in research.

### **Focus Group Discussions**

Various authors provide differing definitions of the focus group discussion (FGD) technique; however, all definitions converge to underscore the significance of this method in gathering data from a group of individuals simultaneously. A focus group discussion is a qualitative research technique that produces non-numeric data (Manu, 2018). Secil and Kwestan (2021) describe a focus group discussion as a tool for gathering participants' attitudes, perceptions, knowledge, experiences, and practices, which they share through interactions with diverse individuals. Conversely, Polit and Beck (2017) characterise focus group discussions as data collection techniques wherein a chosen group engages in in-depth discussions about a specific topic or issue of interest, facilitated by a professional or external moderator. A definition by Hennick (2014) purports that a focus group discussion is a meeting of a group of people to deliberate on a specific topic. Pre-selected participants who share a common identity or interest form the group. A moderator mediates their interactions.

The data collection method is qualitative and derives its name from the fact that it focuses on specific issues. Researchers collect data either interactively or through issue discussions with a group of people. According to Nyumba et al. (2018), focus group discussions are helpful when the researcher intends to collect and understand social issues, such as human experiences. The technique bridges scientific data with local

knowledge and aims to uncover people's knowledge, experiences, and perceptions about an issue. The focus group discussion facilitated the exploration of virtual subjective mentoring experiences from each student's perspective.

The moderator used a script of ten open-ended questions as an informal questionnaire guide to steer the discussion, considering the mixed-methods approach and objectives of this research. These questions, developed by the researcher, were based on the CA model, which served as both the guiding theoretical and conceptual framework for this study. Additionally, Shaikh's (2017) roles as a nurse educator and mentor were incorporated to explore how cognitive and metacognitive processes were utilised during virtual mentoring.

Barbour's (2018) suggestion that group dynamics and collaborative interactions among participants are crucial for generating qualitative data influenced participant selection. Barbour (2018) also emphasised that group dynamics foster a sense of camaraderie among participants, leading to discussions that often converge towards a consensus on the topic. However, Brink et al. (2018) argue that while promoting group homogeneity is advisable, including individuals from diverse institutions can yield unforeseen outcomes. For instance, people from different backgrounds may experience the same phenomenon differently, offering varied and broad perspectives that result in robust and meaningful findings. To maximise the richness of the discussion, 3rd and 4th-year students were purposefully mixed in each focus group, allowing for a broad sharing of experiences with virtual mentoring. This blend also ensured that participants felt



comfortable and free to express their views, reinforced by the group's rule that there were no right or wrong answers.

The open-ended questions aimed to explore students' experiences with virtual mentoring, focusing on aspects such as teaching content, methods for promoting expertise, the sequencing of learning activities, and promoting socialisation. The heterogeneous group's goal was to uncover a range of experiences and perspectives on virtual mentoring beyond a consensus. Baillie (2018) argues that focus group discussions emerged as researchers challenged the traditional one-on-one interviews to build upon their weaknesses. According to Hennick (2014), the advantage of interviewing a group of people is that the technique is nondirective; it shifts attention away from the interviewer's dominance. The interviewer assumes the role of moderator, allowing the moderator to incorporate the questions into a discussion. Furthermore, Mohajan (2018) asserts that the shift from interview to discussion element enables the participants to be in control of the issues raised during interactions, as they will not be responding directly to the interviewer but rather interacting and sharing ideas amongst themselves. Spontaneity is likely to come from discussions other than interviewer-directed interactions, as some members of the focus group discussion take up the interviewer role.

The focus group discussions consisted of six to twelve participants per group, with one group consisting of only five participants. Barbour (2018) refers to this as a mini-group. The author posits that provided participants have sufficient time and opportunity to share their experiences, the smaller the group should be, the more experience and knowledge they have on the given subject. The focus group discussions lasted between

thirty and forty minutes. Data saturation was reached after five focus groups were conducted, as data collection and interpretation were done simultaneously. According to Carlsen and Glenton (2011), the concept of data saturation means reaching a point where subsequent focus group discussions do not yield any new points, which is therefore an indication that data collection has ended.

### **Lecturer Interviews**

The interviews were used to collect data from nurse lecturers because their smaller numbers compared to students made it important to understand their individual mentoring experiences. Salmons (2014) defines e-interviews, or online interviews, as any dialogue conducted for data collection, whether verbal or written, between the interviewer and the interviewee using computer-mediated technology. Pope and Mays (2020) add that research interviews, although they may appear as casual exchanges or short message services (SMS) via telephone, are planned events. The rule of thumb is that if the data collected is used in research, the interview must adhere to ethical principles.

Bennito-Montaguit (2011, as cited in Salmons, 2014) notes that online interviews are multimodal, integrating written chats, comments, voice dialogues, live videos, and photographs. This multimodality challenges researchers to expand their toolbox to find techniques that align with their research purpose and design. According to Pope and Mays (2020), various tools are available for collecting data through online interviews, often surpassing traditional face-to-face methods. If the mapping is significant, locative technologies like Global Positioning Systems (GPS) can complement online interviews.

Pavaresh-Masoud and Varaei (2018) highlight the power of technology in video conferencing to bridge geographical distances, affirming the use of online interviews to examine qualitative phenomena such as attitudes, opinions, beliefs, and experiences. Online interviews can be conducted simultaneously, synchronously, or asynchronously. Synchronous interviews involve live dialogue between the interviewer and the interviewee, while asynchronous interviews allow the interviewer to send voice-recorded or written questions to the respondent, who responds at a later time.

The framework for e-interviewing established by Salmons (2014) served as a reference in selecting online interviews as the data collection method and guiding the interview process throughout the research. The first consideration was to ensure that the research's purpose and design aligned with the chosen data collection tool. Given the aim of exploring virtual mentoring experiences, the tool consisted of open-ended questions similar to those discussed during focus group discussions to explore virtual mentoring experiences. These open-ended questions allowed lecturers to describe their mentoring experiences and the associated emotions in detail.

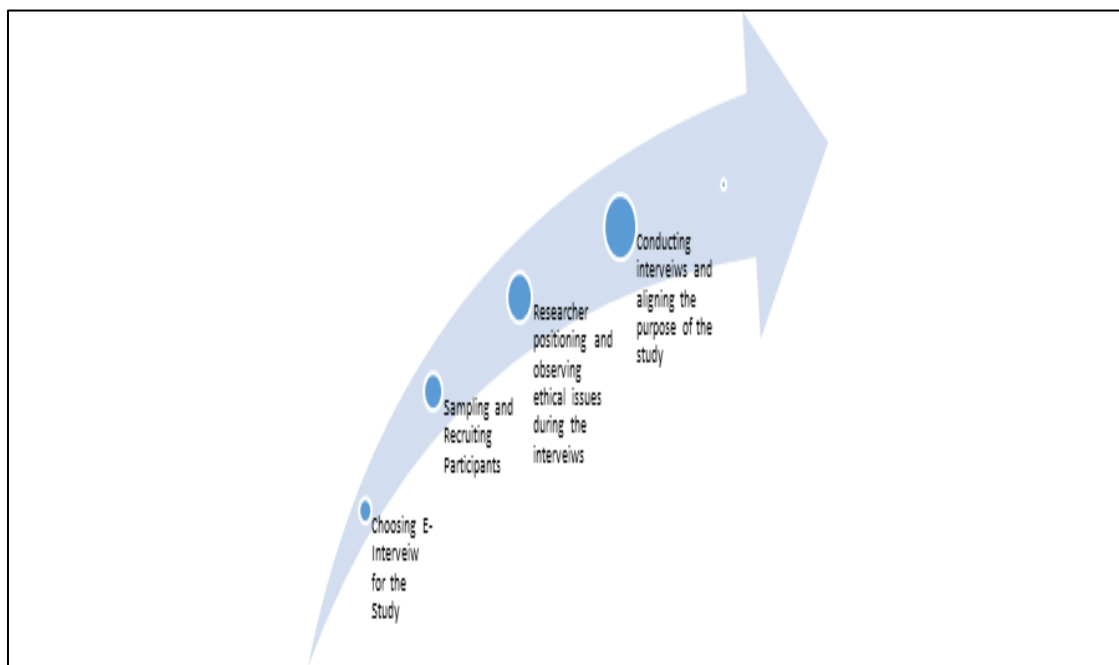
A moderator conducted the interviews, selecting a time when each lecturer felt ready and comfortable to participate. The moderator informed all interviewees about the session recordings and assured them of their anonymity without mentioning their names. This approach ensured that participants could share their experiences openly and candidly, contributing rich, qualitative data to the study.

Salmons (2014) notes that e-interviewing is valuable for studies aimed at exploring, proving, and generating theory. The rationale for choosing e-interviews in this

study stemmed from its goal of exploring virtual mentoring experiences. Since e-interviews occur in the same virtual setting as virtual mentoring, they provide valuable insights into the technological patterns used by lecturers and enhance effective communication. E-interviews also proved to be time-saving and convenient for nurse educators, who often have busy schedules and are geographically dispersed, unlike students who may engage in group experiences.

**Figure 3.1**

*Online Interview Framework*



*Note: Adapted from the E-interview Research Framework for Understanding E-interview Research by Salmons (2014).*

The moderator scheduled appointments at the lecturers' convenience and conducted them through mobile phones. Interviewing nurse lecturers in their own

comfortable spaces allowed them to reflect on their mentoring practices and their experiences with mentoring relationships during online teaching. This approach aligned with the epistemological basis of mentoring in the nursing profession, as it allowed lecturers to draw upon their face-to-face mentoring experiences to gain insights into the new phenomenon of virtual mentoring inherent in online learning.

The flexibility of mobile phones, equipped with automatic recording applications, influenced the style and medium of interviews. The researcher also used a separate recorder as a backup. Pope and Mays (2020) assert that recording qualitative interviews is essential for precise transcription and analysis, whether conducted manually or through software. This ensured that the data collected was reliable and comprehensive, contributing to the study's objectives of exploring and understanding virtual mentoring experiences. Salmons' (2014) framework also emphasises the researcher's position during e-interviews, describing two primary roles: the etic and emic positions. In the etic position, the researcher remains detached from the data collection process, observing from an outside perspective. In the emic position, the researcher is an active participant in the case. Salmons (2014) likens the researcher's role in explorative research to that of a miner. In e-interviewing, the researcher can take on both roles, sharing the characteristics and experiences of the research phenomena while not contributing to the data itself.

This dynamic, pendulum-like role allows the researcher to initiate and sustain interaction by posing questions from the interview guide and using follow-up inquiries and encouragement. The mining role involves extracting facts and experiences from the

interviewees. The synchronous nature of telephonic conversations ensures effective communication and convergence throughout. The selection of unstructured interview questions was tailored to accommodate the telephone format, promoting a seamless and organic conversation. Salmons (2014) advises that while text-based questions can be tiresome for participants, free-flowing recorded telephonic conversations are more effective. This approach not only ensures participant comfort but also enhances the richness and depth of the data collected. By adopting this flexible and interactive interviewing style, the researcher can gather comprehensive insights into the virtual mentoring experiences of nurse lecturers.

### **The Questionnaire**

Survey participants respond to a series of statements or questions presented in the form of text-based instruments by marking a page, writing a number, or checking a box on paper or online (Brown, 2001, as cited in Dornyei, 2007). Questionnaires are the most common data collection instruments in quantitative research. This study utilised a questionnaire originally devised by Tiew et al. (2017). The researcher examined Shaikh's (2017) framework for mentoring in nursing education, the cognitive apprenticeship model, and the conceptual framework to extract insights into the meaning of mentoring experiences. The application of theoretical triangulation was tailored to accommodate virtual mentoring experiences in the quantitative phase. The researcher used theoretical triangulation to incorporate diverse viewpoints from three different sources to evaluate measurable aspects of virtual mentoring experiences.

Tiew et al. (2017) developed and tested an instrument that measured graduate nurses' perceptions of a structured mentoring programme in Australia. A pre-test-post-test interventional design was implemented for the study. The authors conducted a thorough review of the literature on mentoring programmes and subsequently devised a 10-item instrument, which underwent scrutiny by subject experts before testing. The instrument was administered to eighty-three graduate nurses selected through convenience sampling at the National University Hospital. Psychometric evaluation of the instrument assessed internal reliability, stability, content validity, and factor analysis. The test revealed a content validity of at least ninety per cent across all items, as determined by correlation coefficients.

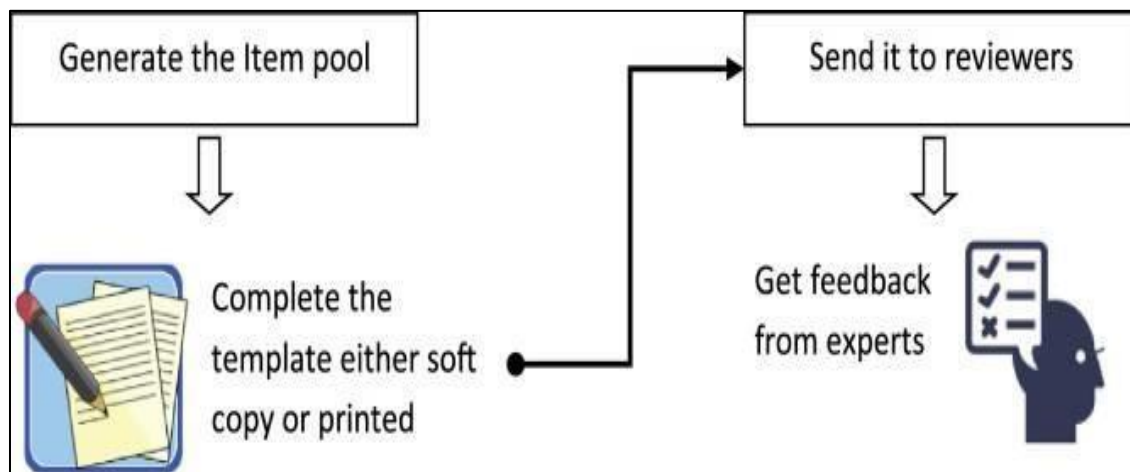
Permission was sought and obtained from the authors to utilise the NUH-ME tool, which had been previously tested and validated, thus streamlining the research process and conserving resources. In this research, the original questions were adapted and modified to indicate student nurses and nurse educators, respectively. The adaptation allowed the respondents to make a comparison of face-to-face and virtual mentoring using the tool in the quantitative phase. The questions were used to develop a five-point Likert scale that was administered to students and lecturers. The researcher wrote clear and concise statements that respondents could easily understand. Each statement conveyed a distinct viewpoint concerning face-to-face and virtual mentoring experiences. The scale had options such as 'Strongly Disagree,' 'Disagree,' 'Neutral,' 'Agree,' and 'Strongly Agree'.

The process of refining the adapted instrument drew inspiration from Elangovan and Sundaravel (2021) assertion that to ensure the quality of the tools employed, researchers should rely on previously validated instruments.

The validation process followed the steps by Elangovan and Sundaravel (2021) as illustrated below:

**Figure 3.2**

*Guide to Development of an Adapted Tool*



*Note: Adopted from: Method of Preparing a Document for Survey Instrument Validation by Experts Elangovan & Sundaravel (2021).*

The questions on face-to-face mentoring were translated verbatim to virtual mentoring to allow statistical comparison. The responses from the Likert scale were used to test if there were substantial variances observed in the mentoring experiences between nursing students and their lecturers in virtual and face-to-face settings or if there were no significant differences in virtual mentoring and face-to-face mentoring experiences among



nursing students and their lecturers. Five subject-matter experts received the instrument as a soft copy for review and expert opinions. Elangovan and Sundaravel (2021) developed a prototype form for expert validation of a survey instrument. Five experts validated the instrument, with one suggesting minor adjustments to rephrase question three (3) on the lecturers' questionnaire. The questionnaire underwent a pre-test involving three lecturers and five students to detect any ambiguities, confusing items, or wording issues. The pre-test feedback guided the revision of the questionnaire, leading to its adoption.

### **Operational Definition of Variables**

Brink et al. (2018) define research variables as properties or characteristics of objects, persons, or situations that change. A variable denotes any condition capable of undergoing variation or alteration in quantity or quality. Variables may exist in singular or multiple forms, exemplified by gender, which can manifest as either female or male. Another feature of variables described by Polit and Beck (2017) is that they can be either qualitative or quantitative. Qualitative variables differ in kind. They are answered with the how, what, and when questions. Quantitative variables differ in amount. Mixed-methods researchers use both qualitative and quantitative variables. Obiodun-Oyebanji (2017) refers to qualitative variables as discrete or categorical variables. One cannot quantify, assign a number, or assign distinct values to the variables. They can be identified in terms of their descriptive categories. Such variables can further be classified as nominal variables—which describe the characteristics of sameness; ordinal variables—which

describe the order or ranking of a variable; dichotomous variables, which can have two levels; and polychotomous variables, which assume two or more categories of subsets.

Quantitative variables are also called continuous or measurable variables. Bryman and Bell (2018) point out that continuous variables take infinite values. The author identified the sub-types of quantitative variables as interval variables—measuring size of intervals between subsets and ratio intervals—measuring magnitude and order of subsets.

In research, there are two distinct types of variables: independent and dependent variables. Flannelly et al. (2014) define the independent variable as the one that aims to influence the dependent variable. During research or experimentation, the researcher controls the behaviour of the independent variable, which initiates changes that affect a situation, person, or object defined as the dependent variable. Thus, the action of the independent variable determines the behaviour of the dependent variable. This relationship between the independent and dependent variables represents a cause-and-effect dynamic (Polit & Beck, 2017). In this study, mentoring served as the independent variable, manifesting in two forms: face-to-face mentoring and virtual mentoring. The dependent variables were the qualitative experiences of both 3rd and 4th-year student nurses and nurse lecturers. The research posited that the mentoring platforms—whether face-to-face or virtual—would impact the mentoring experiences of student nurses and nurse lecturers. This assumption is based on the idea that the mode of mentoring can significantly shape the perceptions, interactions, and overall experiences of both mentors and mentees. By exploring these experiences, the study aimed to understand how

different mentoring environments influence the educational and professional development of nursing students and educators.

## **Mentoring**

Mentoring is a qualitative nominal variable that is described in terms of its two forms: virtual and face-to-face mentoring. Mentoring is a dependent variable. Mentoring is a common practice in many disciplines, where a senior and more experienced individual mentors an inexperienced junior individual known as a mentee or protégé (Mullen and Klimaitis, 2019). Various disciplines offer distinct perspectives on mentoring. What is particularly intriguing is that, despite the diverse definitions and approaches to its implementation, mentoring shares a common origin across disciplines. The act of mentoring originated from the character of Mentor in Homer's *Odyssey*, dating back to 3000 years ago. Mentoring is based on the history of *Odyssey*, Mentor, and Telemachus' relationship during the Trojan War that occurred in ancient Greece.

This concept views mentoring as a developmental relationship where a more experienced or knowledgeable individual (the mentor) guides, supports, and advises a less experienced or knowledgeable individual (the mentee) to foster their personal and academic growth. Mentors share knowledge, skills, and experiences, as well as offer encouragement, feedback, and constructive criticism to facilitate the mentee's learning and development. Kram (1985, as cited in Mullen and Klimaitis, 2019) points out that a mentor is an individual who provides support, guidance, and advice to an inexperienced individual. A mentor acts as a teacher, friend, advocate, and facilitator. Woolnough and

Fielden (2017) narrowed down the concept of mentoring in nursing and defined it as a practice in which a more experienced professional lends a helping hand to a young, aspiring person within the context of a one-to-one relationship. The relationship's goal is to advise, teach, sponsor, guide, and assist the mentee in his or her career as a professional nurse

To gain deeper insights into mentoring within the nursing profession, Woolnough and Fielden (2017) contend that the organisational culture significantly influences how the concept of mentoring is defined and perceived. Clement (2018) and Van Oosthuizen et al. (2015) researched mentoring practices in nursing education and found a consensus on the definition of mentoring in the nursing context. Both studies concur that the essence of mentoring revolves around a relationship between two individuals, where one possesses greater rank, experience, and/or expertise. This individual, referred to as a mentor, assumes the role of guiding, counselling, and assisting others in their professional and personal development. The mentor entrusts the individual of lower rank, often referred to as a mentee, protégé, intern, apprentice, or stagiaire, with the power to cultivate their optimal potential. Woolnough and Fielden (2017) assert that the term 'mentee' is preferable as it embodies the ability of individuals to foster their growth more effectively compared to alternatives such as protégés, apprentices, and interns. In a classroom situation, the mentees' love for learning motivates them to independently seek academic advice and intellectual guidance. In addition, Kilgallon and Thompson (2012) argue that the student pays attention to the mentor's writing, communication skills, body language, and interpersonal relationships on campus and beyond. This perspective

concurr with Searle (2004), who argued that mentoring helps students acquire resilience, ethics, and other overt skills from their mentors. Subconsciously, the mentor and the mentee share these overt skills. The definition best fits the cognitive apprenticeship model's theoretical framework, which emphasises making thinking visible to the student. Kilgallon and Thompson (2012) gave dimensions that help understand the meaning of mentoring in nursing. The dimensions included a mentor using experiential learning and reflective practice, the application of different learning styles and teaching theories, competency and capability, health improvement, and career development.

Based on these definitions, this research considered the various dimensions of mentoring in nursing and nursing education. According to Shaikh (2017), mentoring in nursing education diverges from the traditional clinical mentoring perspective, which primarily emphasises the nurse educator's role as a mentor. Traditionally, the focus of mentoring was on clinical settings, utilising the apprenticeship model of training. In contrast, Shaikh (2017) highlights that mentoring in nursing education focuses on transferring knowledge and skills to student nurses. It also emphasises the relationship during teaching and learning, which involves constant feedback, evaluation, psychological support, and role modelling.

Classroom mentoring in nursing education aims to instil professional ethical values and supports research to facilitate professional growth. This approach not only equips students with the necessary clinical skills but also nurtures their overall professional development. The emphasis on a supportive mentor-mentee relationship helps students navigate the complexities of their education and future careers, fostering resilience,

ethical behaviour, and a commitment to lifelong learning. By integrating these elements, mentoring in nursing education becomes a holistic process that supports both the academic and personal development of student nurses.

For the purposes of this study Shaikh's (2017) definition of mentoring in nursing education has been adopted. The definition is used for both virtual and face-to-face mentoring or it is a variable that remains the same across platforms. Shaikh (2017) defines mentoring in nursing education as

‘a dyadic, long-term and reciprocal process between nurse educator and nursing student that facilitates knowledge and skill acquisition by a student while the nurse educator provides psychosocial and emotional support with the aim of fostering both personal and academic development for effective role change into the nursing profession’.

### **Face-to-face Mentoring**

The mentoring variable takes two forms: face-to-face and virtual mentoring. According to Kurt et al. (2022), face-to-face mentoring involves direct, in-person interactions between the mentor and mentee. This type of mentoring typically involves regular meetings or sessions held in a physical setting, such as an office, classroom, or community space. During these meetings, the mentor and mentee communicate, exchange information, and engage in various activities aimed at achieving the mentee's personal or professional development goals. Wynn et al. (2021) argue that nursing students see and learn how to manoeuvre a nursing skill and function in their learning environment through role modelling and coaching. The support students receive from

their assigned mentors consolidates the knowledge and skills taught in the classroom. The advantage of face-to-face interactions is that when a mentee sees how a mentor reacts and interacts with them and others through a variety of experiences, mentors demonstrate what it is to be a mentor and should be transparent in the behaviours they demonstrate to mentees. In addition, Searle (2004) points out that mentee-mentor interactions in nursing education allow the transmission of covert skills such as resilience, passion, empathy, and the desire to be successful in the profession to the student nurse. Mentoring relationships help to increase student retention and reduce student attrition.

In this study, face-to-face mentoring is defined as:

‘A relationship between the mentor and mentee, in the same organisation where they have the opportunity to meet in-person, allowing a more meaningful connection to develop, that promotes engagement with trust and undivided attention to the mentee’.

### **Virtual Mentoring**

Virtual mentoring, also known as e-mentoring or cyber mentoring, is defined as the use of electronic communication to facilitate a mentoring relationship between a mentor and a mentee (Nowell et al., 2017). This form of mentoring utilises online platforms, such as video conferences, to ensure constant and effective communication. Nowell et al. (2017) emphasise that distance mentoring allows for continuous interaction despite geographical separations. According to Figueroa (2017), virtual mentoring involves using a computer interface to connect with another party, underscoring the importance of communication in this format, similar to face-to-face mentoring. Effective communication

is critical to the success of virtual mentoring relationships. Tiew et al. (2017) highlight the significance of employing advanced technology to ensure effective communication. They argue that improvements in technology, such as video conferencing, can provide experiences that are comparable to traditional face-to-face mentoring. The enhanced capabilities of modern technology enable mentors and mentees to engage in meaningful interactions, fostering the same level of connection and support as in-person mentoring. The ability to use high-quality video, audio, and interactive tools makes virtual mentoring a viable alternative to traditional methods. It offers flexibility and accessibility, allowing mentors and mentees to connect at convenient times and from different locations. This adaptability is particularly beneficial in today's fast-paced and globally connected world.

This study adopted Clement's (2018) definition of virtual mentoring in nursing education. Mentoring is:

'Pairing a novice student with a nurse educator with extensive experience who interacts through the internet to provide individualised academic support, motivation, and emotional support'.

Online exchanges may occur via digital platforms such as Google Hangouts, Skype, Microsoft Teams, Zoom, and others. Shaikh (2017) outlines that when educators fully understand their main responsibilities in mentoring, they can achieve optimal outcomes from virtual mentoring.



## Experiences

This research focused on exploring the mentoring experiences of student nurses and their lecturers. The experiences of mentoring are dependent on the platform used; therefore, experiences are the dependent variables. The Merriam-Webster dictionary (n.d.) defines experience as 'a personal knowledge about the world gained through direct, first-hand involvement in everyday events rather than through representations constructed by other people'. Such experience can further be referred to as knowledge of people gained from direct face-to-face interaction rather than through a technological medium. Daher et al. (2017) argue that the dictionary meaning of experiences trivialises their broadness, especially in qualitative research. Experiences in qualitative research have a broad and rich meaning, covering phenomenological and hermeneutic meanings that show a holistic view. The authors further describe experience as a necessary and sufficient piece of knowledge in the human sciences. The knowledge is relevant because an individual's lived experience of being in society provides no more clarity than the experience it already contains. The authors argue that experience is defined in terms of the meaning a person gives when faced with objects and world situations.

For the purposes of this research, the definition of experiences by Daher et al. (2017) was used. Mentoring experiences imply;

'Personal meanings ascribed and accumulated and reported by the student nurses and nurse lecturers as a result of interactions during face-to-face and virtual learning. The given meaning is as a result of reflective thinking about the former'.

## **Study Procedures and Ethical Assurances**

Study procedures refer to the specific steps or activities undertaken during the research process to address research questions or objectives (Brink et al., 2018). This section delves into the ethical procedures implemented throughout the entire study period. The UREC granted this study provisional permission in November 2021, and after refining the data collection tools, the UREC committee granted full approval in March 2022. The researcher adhered to stringent ethical procedures during data collection, given that the study involved student nurses and nurse lecturers, to prevent deception and ensure the voluntary participation of all participants.

## **Significance of the Informed Consent**

The informed consent process is a crucial aspect of research ethics, serving to protect the rights, autonomy, and well-being of research participants. Resnick (2020) purports that obtaining informed consent is a fundamental ethical principle in research, reflecting a commitment to honesty, transparency, and integrity in the research process. It demonstrates researchers' respect for participants as autonomous individuals, as well as their willingness to prioritise participants' well-being and rights. According to Manandhar and Joshi (2020), consent is a process of information sharing between the researcher and participants. It furnishes sufficient and lucid details about the study's nature and purpose, the questions it aims to address, and the expectations placed on the participants. Informed consent acknowledges individuals' right to self-determination and ensures that they are not coerced or unduly influenced into participating against their will.

It also protects the participants' rights, including the right to privacy, confidentiality, and freedom from harm. By disclosing relevant information about the research purpose, procedures, risks, and benefits, participants can make informed choices that align with their values and preferences.

Manandhar and Joshi (2020) found that the informed consent met all three criteria. The consent assured participants of their right to voluntary participation, without coercion. According to Resnick (2020), voluntary participation in informed consent is a principle that liberates individuals to choose whether or not to participate in a research study without any undue influence or pressure. It underscores the importance of respecting individuals' autonomy and decision-making capacity regarding their involvement in research. The consent also considered the capacity of the 3rd and 4th-year student nurses and their lecturers to understand the nature and purpose of the study. The study accounted for the participants' sound mental status and their ability to read, agree, and sign the consent form. All participants were above the legal age; they were all eighteen years and older. The researcher also considered the participants' familiarity with the subject matter, anticipating them to provide detailed information.

The consent form included the researcher's name and the study institution. The researcher also provided a briefing on the potential benefits of nursing education and explained the study's objectives. The researcher ensured transparency by furnishing truthful information about the study and clarifying participants' expectations, thus eliminating any potential for deception. The researcher provided participants with the flexibility to sign consent forms at their convenience, especially for self-administered and

online questionnaires. Before conducting all interviews and focus group discussions, the moderators sought verbal consent. All interviews began with a brief introduction by the moderator, the research purpose, the interview rationale, and the expected duration. The moderator proceeded with the interview after the respondents were satisfied with the briefing.

### **Confidentiality**

The concept of confidentiality, according to Brink et al. (2018), is based on respect for an individual's autonomy. According to Resnick (2020), confidentiality in research is vital for protecting participants' privacy, upholding ethical standards, and maintaining trust between researchers and participants. It requires adherence to principles and the implementation of appropriate practices to safeguard sensitive information throughout the research process. Confidentiality is crucial for building trust between researchers and participants. Confidentiality fosters an environment where individuals feel free to divulge honest and accurate information without fear of identity disclosure. Although the consent form required the participants to print their name and sign, confidentiality in this research means that identifiable data collected from the respondents will not be used for any other reasons except this research and will not be disclosed without the participant's permission. To ensure participant anonymity, we presented qualitative data using pseudonyms. The researcher also took measures to uphold privacy throughout the data collection procedure. According to Kamanzi and Romania (2019), privacy in recorded data represents the researcher's ability to store and protect large electronic data. The

researcher encrypted all recorded material from the focus group discussions and interviews, securing access with a password.

### **Reducing Harm**

The researcher took careful measures to minimise harm to participants. Fleming and Zegwaard (2018) assert that harm during data collection can impact both individuals and institutions, encompassing physical injuries and the depletion of resources like time or money. Emotional harm can occur when participants feel uncomfortable during interviews or group discussions. Additionally, misrepresentation of facts can damage the reputations of individuals or institutions. To ensure ethical integrity, the researcher sought and obtained ethical clearance from the gatekeepers of all participating institutions before accessing individuals. All three institutions granted permission to conduct the research. The gatekeepers provided the nursing faculty's names, phone numbers, and email addresses, as well as student representatives' contact numbers for each group of students. The researcher informed participants about the expected duration of the focus group discussions and online interviews to minimise discomfort and time loss. To ensure transparency and ethical adherence, the researcher made the gatekeeper available to participants as a point of reference before data collection began.

### **Data Collection Steps**

This study employed a mixed-methods approach with an exploratory sequential design and a case study strategy to collect data from three institutions that train Bachelor

of Nursing Science students in Namibia. The researcher used triangulation to gather data from multiple sites, using a variety of data collection techniques. Achterberg (1988, as cited in Dawadi et al. 2021) recommends sequential combinations that prioritise qualitative data collection over quantitative data collection. These techniques allow for the use of detailed qualitative data to formulate quantitative questions. The researcher conducted qualitative interviews and focus group discussions first to answer the research questions, which informed the development of a questionnaire for the quantitative phase. The researcher collected data from 3rd and 4th-year nursing students who had experienced both face-to-face and virtual mentoring. Additionally, the researcher gathered data from nursing lecturers at the same institutions, all of whom had experience in both face-to-face and virtual learning environments. This comprehensive approach ensured a rich and nuanced understanding of mentoring practices in Namibia's nursing education context.

### **Development of Interview Guides**

The data collection steps were based on Creswell and Clark's (2017) description of an exploratory sequential design, as the study used a sequential mixed method design. The first step involved developing interview guides for both the focus group discussions and telephonic interviews. The CA model by Collins et al. (1989) and the concept of mentoring in nursing education by Shaik (2017) were used to develop open-ended questions for both groups to allow theory triangulation. Cohen et al. (2000, as cited in

Noble and Heale, 2019) define theory triangulation as the use of multiple theoretical schemes to interpret a phenomenon.

The researcher adhered to the principles of the cognitive apprenticeship model, using it as both a theoretical and conceptual framework for the study. The researcher formulated and adjusted questions to cater to virtual mentoring experiences within online learning environments, ensuring they aligned with the mentoring role in nursing education. To maintain inclusivity and fairness, the researcher crafted these questions to mitigate gender and racial biases. In developing the questions, the researcher paid particular attention to the cognitive apprenticeship model's emphasis on making thinking visible, which is crucial for effective mentoring. The questions aimed to elicit detailed responses about the strategies and processes used in virtual mentoring, allowing participants to share their experiences comprehensively.

### **Selecting and Training Moderators**

Nyumba et al. (2018) assert that moderators for focus group discussions should be professionals who are curious and open-minded. Gundumogula (2020) further emphasises that a moderator must have experience in the research field. Core competencies for a moderator include strong listening and communication skills, ease with group processes, a sense of humour, and a friendly demeanour. In this study, the researcher recruited a young social worker as a moderator to make students feel more comfortable and open during discussions. The researcher provided the moderator with detailed explanations of the research objectives and the purposes of the focus group

discussions and interviews. To ensure that the moderator was well-prepared, the researcher rehearsed the questions from the focus group and interview guides with her.

To ensure high-quality data collection, the moderator first moderated a pilot study group in the researcher's presence. This allowed the researcher to provide feedback and ensure the moderator was confident and effective in her role before conducting the actual study. This careful preparation ensured that the moderator could facilitate discussions smoothly, fostering an environment where participants felt free to share their experiences openly and honestly.

### **Conducting Interviews**

Before scheduling and organising focus group discussions and interviews, the researcher distributed an authorised digital copy of the consent form to all participants. The form outlined the researcher's identity, the research objectives, and the participants' expectations, thereby mitigating any potential issues of deception and ensuring that participation was voluntary. Before signing the consent form to participate in the study, participants had the opportunity to review and understand the research's purpose. Additionally, after reviewing the consent form, the majority of nursing lecturers provided verbal consent, and the researcher arranged and carried out telephonic interviews at their preferred times. The researcher also kept the interviewees comfortable by informing them of the expected duration of the focus group discussions and interviews. The moderator controlled the flow of the group discussion to observe the duration of the interviews and focus group discussions.



The gatekeepers' delay in responding led to the collection of qualitative data from March 3, 2022, to April 28, 2022. The gatekeepers provided the phone numbers of the student representatives for each class of 3rd and 4th-year students from each participating institution. The researcher scheduled focus group discussions for the students' convenience. To facilitate scheduling, the researcher created a WhatsApp group for each team. The researcher recorded six group discussions that took place via Zoom. Each focus group consisted of five to twelve participants, and the discussions lasted between 30 and 40 minutes. During the discussions, the researcher probed into topics such as online teaching content, lecturers' methods to foster expertise, the order of learning activities to prepare students for clinical practice, and strategies for promoting socialisation. The researcher attended all focus groups to observe the flow of conversations, note special points, assist in probing, and manually transcribe the discussions. The researcher had securely stored all recorded Zoom sessions.

For the interviews with nurse lecturers, the researcher called them to schedule a convenient time for each interview to take place in their own comfortable spaces. The researcher also recorded these interviews and securely stored them in a designated folder. This approach ensured that both students and lecturers could participate without added stress or inconvenience, facilitating a smooth data collection process and rich, detailed insights.

## **Data Collection and Analysis**

The section outlines the data collection and analysis plan, which aligns with the previously discussed research design and approach. Additionally, it highlights the meticulous planning involved in minimising bias and ensuring data validity and reliability. Furthermore, it elucidates the analysis plan, detailing the systematic procedures used to interpret the collected data based on the research goals.

## **Qualitative Data Management and Analysis Plan**

According to Denzin and Lincoln (2017), qualitative data management is about organising the collected data to give it meaning. It entails analysing respondents' texts and arranging them into categories that represent the participants' experiences. Recurring themes or repeated categories are essential in validating qualitative data.

Qualitative data from this research was gathered using focus group discussions with 3rd and 4th-year students and telephone interviews with lecturers. The researcher first transcribed the data verbatim and then cleaned them by repeatedly playing the audio to ensure accuracy before entering them into NVivo. Qualitative data analysis was done following Nowell et al.'s (2017) steps of qualitative data analysis. The steps start with familiarising with the data, creating initial codes, theme searching, theme reviewing, and finally defining the themes. A guide to cross-sectional qualitative data analysis by Olsen (2004) was also utilised.

## Quantitative Study Variables

**Quantitative Study Variables.** The following variable information and the proposed scales of measurement presented in Table 3.1 were collected from each participant of the study for the purposes of the quantitative research questions. These variables were regarded as important to study based on the literature review and the adapted NUH-ME tool developed by Tiew et al. (2017).

**Table 3.1**

*Data Collection Variables for the Quantitative Research Questions*

<b>Variable</b>	<b>Scale</b>
Gender	Nominal, independent
Age	Ratio, independent
Year of study	Ordinal, independent
Institution	Nominal, independent
Virtual platform	Nominal, independent
Indicators for opinion on virtual mentoring	Likert scale, dependent
Indicators for opinion on face-to-face mentoring	Likert scale, dependent

The researcher based the formulation of data collection variables for the qualitative study on theory triangulation. Turner and Turner (2007) highlight a strong element of theoretical triangulation in the development of questionnaire instruments and the mentoring evaluation tool. The researcher reviewed these instruments to derive questions for the focus group discussions with student nurses and interview guide questions for lecturers in the qualitative phase, which subsequently informed the development of the questionnaire for the quantitative phase.

### **Data Collection Procedure**

During data collection, qualitative variables were coded using numerical values, while quantitative variables were recorded as actual values. Some quantitative variables were categorised as necessary. A pilot study was conducted to assess the efficiency and validity of the data collection tools. The researcher selected ten (10) participants, consisting of three lecturers and seven student nurses, for the pilot study. The participating lecturers underwent interviews, which were recorded for analysis. In the meantime, the moderator conducted a focus group discussion with the students, where they discussed the questions and recorded the sessions. Before the final data collection, the researcher used the results of the pilot study to refine and update the data collection tools, particularly where the pilot study participants indicated ambiguity. In the quantitative phase, nursing students and their lecturers responded to the survey questionnaire using an online Microsoft form and self-administered questionnaires. Each student representative was provided with self-administered questionnaires to distribute among 3rd and 4th-year students, and their responses were collected in person.

**Data Management and Cleaning.** All data collected online and on paper were electronically stored using Epi-info software package. Data exploration was done in Stata software packages to check for data collection or entry errors, missing data or possibilities of the existence of outliers. Appropriate methods were applied to missing data and outliers depending on the nature of the distribution of the data.

For the qualitative research questions, the first step was to review the research questions to ensure if it was very clear and so as to import them into NVivo for easy reference. After that, transcripts were read and summary memos were written. Key points were noted and written down. Reviewed and summarised data were used to create a research journal as a memo and write up the key issues coming out from the interviews. Priori codes were used and themes were identified under each priori code. Coding for the broad topic areas or the themes then followed.

During the analysis process, three approaches were employed, which include:

- a. Literal, which makes use of the exact particular language or grammar by the study participants;
- b. Interpretive, which involves making sense of research participants' accounts, so that the researcher attempts to interpret their meaning; and
- c. Reflexive, which is an approach which attempts to focus attention on the researcher and her or his contribution to the data creation and analysis process.

All the three methods were tested and the best or a combination of these methods were applied for final analysis depending on the structure of the distribution of the data. All data analysis for the qualitative research questions were performed using NVivo software package.

## Statistical Analysis

For the quantitative research questions, a Relative Implementation Index (RII) was used to calculate opinions of students and lecturers. The formula used was:

Relative Implementation Index =  $\Sigma W / (A * N)$ , where W is the weighting given to each indicator ranging from strongly disagree (1) to strongly agree (5), A is the highest weight, that is, 5 in this case, and N is the total number of indicators assessed. According to Azman et al. (2019) the RII has been widely used in research to assess responses that are measured on Likert scale [1–5]. In this particular case, a higher RII for a given component (face-to-face or virtual component) means the participant has a strong opinion in favour of the particular component, compared to a participant with a lower relative implementation index which implies a weak opinion for the same given component.

Descriptive analysis of data analysis techniques was used to explore the nursing student's experiences during virtual mentoring and also to explore the nursing lecturer's mentoring experiences during online learning. The mean, standard deviation, median and interquartile ranges were used to summarise quantitative data respectively where appropriate. The student t-test was used to compare the RII scores for both the virtual mentoring experiences and face-to-face mentoring experiences of nursing students over the demographic variables. The lecturer t-test was also used to compare the RII scores for both the virtual mentoring experiences and face-to-face mentoring experiences of nursing lecturers over the demographic variables. A multiple regression was used to determine the association between both the virtual mentoring experiences and face-to-face mentoring experiences of nursing lecturers' relative importance index scores with

the demographic variables whilst adjusting for confounding factors. All the quantitative data analysis including the statistical tests were carried out using STATA software package. All statistical tests of the hypotheses were concluded at the 5% level of significance. Results were reported using numerical figures and were presented in tables. Some of the results were presented using graphical techniques such as pie charts and bar graphs.

## **Summary**

This chapter discusses the research methods used in this study. Research methods is a term that encompasses a research strategy, a research design, and a research methodology. Mishra and Alok (2017). The discussion started with a detailed description of the research strategy and its advantages. The research strategy of choice was the mixed-methods approach. The advantage of the mixed-methods approach was its ability to combine the qualitative and quantitative approaches (Brink et al., 2018). The mixed-methods strategy was justified by the study's purpose, which was to investigate the virtual mentoring experiences of 3rd and 4th-year students and their lecturers. The research also sought to find out how students and lecturers compare face-to-face and virtual mentoring experiences; therefore, there was a need for the quantitative strand. The qualitative design has its roots in the interpretive paradigm, allowing student participants to describe mentoring experiences as they subjectively experienced them (Clark, 2018). Conversely, the positivist paradigm underpins the quantitative strand, emphasising the importance of fact-gathering to validate, authenticate, and demonstrate knowledge. The

research aimed to reveal various realities within virtual mentoring experiences, leading to the application of mixed-methods strategies to enhance comprehension of reality (Brink et al., 2018).

The research strategy provided a pathway to discuss the research design. Tashakkori et al. (2020) defined the research design as an outline of procedures followed during the collection of qualitative and quantitative data. Both the interpretivist and positivist paradigms align with the procedures, respectively. Data collection and analysis procedures follow the priorities assigned to the research strategies. For instance, quantitative data collection procedures precede qualitative data collection procedures.

According to Brink et al. (2018), each research strategy strand encompasses several designs. Depending on the purpose of their study, researchers can choose from a wide range of research designs. A qualitative research strand may take the form of a case study, phenomenological, or narrative approach. When researchers use qualitative data to generate theories, they follow the grounded theory design. Retrospective studies are historical, while investigations focused on people's cultures are ethnographical.

A definition of a research design reveals that it encompasses the plan to tackle the research question (Polit & Beck, 2017). The procedures followed during data collection, analysis, and interpretation answer the research question. Tashakkori et al. (2020) also pointed out that a research design is based on priorities given to the dimensions of the research study. It describes connections between variables, possible generalisations of research findings, and the interconnectedness of the social phenomena being studied. The design choice was also based on Yin's (2018) argument that historical case studies



allow descriptions of evolving events. This research considered adopting the case study design as it sought the virtual mentoring experiences of three institutions that train the Bachelor of Nursing Science degree in Namibia. The study treated the participating institutions as examples. All three institutions migrated to online learning during the COVID-19 pandemic, and thus, all had phenomena of interest in common.

On the other hand, the quantitative strand includes true experimental and quasi-experimental designs, as well as sub-designs. The positivist paradigm aligns with experimental designs, which aim to measure and validate facts (Polit & Beck). Most data collection procedures use surveys, which are descriptive, comparative, predictive, and retrospective. To compare virtual and face-to-face mentoring experiences, this study used comparative orientation.

As a sequel to the study design, the chapter discussed the research methodology. The research procedures stated in the design justify the sampling techniques, data collection methods, tools, and analysis. Rashid et al. (2019) describe several research methodologies that are at the disposal of mixed-methods researchers. The methodology illuminates the purpose. For example, one may choose an explanatory method to explain phenomena or an exploratory method to explore issues. Convergent or sequential techniques define the data collection method, whether it's in parallel or sequentially. This study employed an exploratory sequential methodology, which facilitated the collection of qualitative data, followed by quantitative data and analysis. To understand virtual learning and face-to-face mentoring experiences, the study used pre-developed hypotheses. Therefore, the exploratory sequential strategy facilitated the initial collection of qualitative

data, which subsequently guided the creation of a quantitative tool for comparisons and hypothesis testing.

The research methodology section also detailed the sampling methods employed for approaching and enrolling participants. The target population consisted of nursing students in their third and fourth years, as well as nursing lecturers. Brink et al.'s (2018) definition of sampling guided the use of purposive sampling in the qualitative phase and probability sampling for students in the quantitative phase. The researcher ensured that the participants possessed intriguing attributes, specifically, they had experience in both traditional face-to-face mentoring and virtual mentoring. Researchers derived the representative sample from the entire population using Dobson's formula for determining sample size. They calculated the sample size for 3rd and 4th-year students using the list of student numbers from each class provided by the gatekeepers. During the quantitative phase, they employed total population sampling in lectures, adhering to Feldmann's (2014) recommendation to consider the entire population for quantitative data collection if the target population is less than 100 and manageable.

The sampling frame was also discussed and how the potential participants were approached. In the qualitative phase, use of purposive sampling was discussed with its merits in selecting participants that are rich sources to participate in focus group discussions and online interviews (Teddlie & Yu, 2007). Purposive sampling also justified the inclusion and exclusion criteria followed by the researcher. For example, purposefully targeting 3rd and 4th-year student nurses was to get rich data on mentoring experiences. The groups of students have experience on both face-to-face and online learning. First

and second year student nurses were deliberately excluded as they enrolled in 2020 and 2021 respectively. They were not rich data sources. Total population sampling was also briefly discussed for the quantitative phase to allow large amount of data to be collected for comparisons and hypothesis testing. In summary, the sampling techniques employed were for the qualitative and quantitative approach to accommodate the mixed methods strategy.

The three institutions were treated as clusters where probability sampling techniques were used. The fishbowl technique was used to select participants for the focus group discussions. Lecturers were conveniently selected to participate in telephonic interviews. The data collection materials and strategies were also discussed. Focus group discussions were used to collect qualitative data from the student nurses. The focus group discussion method was chosen due to its several advantages. Polit and Beck (2017) argue that focus group discussions bring about in-depth discussions that yield rich data on experiences. The interactive nature allows the respondents to relax and explain the phenomena under discussion in their understanding. The focus groups were heterogeneous, mixed 3rd and 4th –years to allow vast sharing of experiences.

Lecturer interviews were guided by Salmon (2014) e-interview framework for the online qualitative data collection. The lecturer interview guide consisted of open-ended questions that were developed with the guidance of the cognitive apprenticeship model and Shaikh (2017) roles of a nurse educator in mentoring. Lecturers were approached conveniently and interviews scheduled at their convenient time. All respondents were

informed that the discussions and interviews were recorded and would be kept safe for confidentiality.

The chapter also included a section on the operational definitions of the main variables. The study identified two forms of mentoring as independent variables: face-to-face or in-person mentoring and virtual mentoring, which occurs remotely through the use of communication technology. The experiences of nursing students and their lecturers were identified as dependent variables. The experiences depended on whether they engaged in face-to-face or virtual mentoring activities. All experiences were defined as meanings constructed by the respondents after exposure to mentoring.

The ethical implications of the research were also discussed. This study involved human subjects, therefore, the informed consent was significant, including issues of privacy and confidentiality. The informed consent served to clarify the study's purpose, the respondents' expectations, and the researcher's expectations of them. Manandhar and Joshi (2020) set the criteria for discussing informed consent. The consent included a clause for voluntary participation, used simple and plain language that participants understood, and eliminated deception. The principle of respect for others was also observed. Respecting participants' confidentiality and privacy during sampling, data collection, storage, and reporting. During or after data collection, no information was identifiable to the respondent. The researcher discussed the respondent's comfort and conducted a debriefing on the duration of the interview, as well as the use and storage of data during and after the study.

Lastly, the chapter described the data analysis plan. The qualitative data analysis plan was developed using Nowell et al.'s (2017) qualitative data analysis steps. All transcribed material was entered electronically into NVivo for easy identification of themes. The quantitative data was entered into the STATA statistical package for easy analysis to generate meaning. The Relative Implementation Index formula for comparative analysis and hypothesis testing was used to identify and rate respondents' opinions on their satisfaction with mentoring experiences and the used platform.

## CHAPTER 4: FINDINGS

### Introduction to the Section

Mentoring relationships can be immensely rewarding for both the mentee and the mentor. Several authors (Clement, 2018; Woolnough & Fielden, 2017; Shaikh, 2017; Figueroa, 2017) concur that mentoring provides opportunities for both the student and the lecturer to learn from each other. In nursing education, virtual mentoring is a new practice that has allowed student nurses and nurse educators to gain new insights into mentoring using digital technology. Although graduate nurses have experience with virtual mentoring, it is still at its roots with undergraduate nursing students (Clement, 2018). The internet makes it possible for more connections among people of diverse backgrounds through the use of social and business applications. There are a variety of applications that make distance communication possible using the internet. Communication media such as Skype, WhatsApp, LinkedIn, WeChat, Zoom, Viber, Twitter, Google Meet, Meta, and many others make distance communication possible. The goal of this study was to understand the mentoring experiences of nursing faculty and their students during online learning endeavours, with a focus on their efforts to establish relationships in the virtual environment. The study also did a comparative analysis of virtual and face-to-face mentoring experiences. A review of related literature (Clement, 2018; Riley & Fearing, 2009; Smith et al., 2018; Wynn et al., 2021) affirms mentoring as the backbone of the nursing profession. The primary goal of virtually mentoring a student is to provide support, coach, train, and motivate them to learn.

Undoubtedly, the evolution of technology is reshaping traditional instructional methods within nursing schools, ushering in contemporary trends in teaching and learning. Nurse researchers such as Clement (2017) and Morin (2020) underscore the critical role of nursing education institutions in proactively integrating innovative instructional techniques and mentoring strategies. The primary objective of virtual mentoring for students is to offer support, guidance, training, and encouragement in their learning journey. Despite the absence of formal mentoring frameworks in many nurse training institutions, mentoring naturally takes place alongside the teaching and learning process (Smith et al., 2018). This highlights the importance of adapting to technological advancements and fostering effective mentorship practices within nursing education.

Virtual mentoring combines traditional individual and group mentoring practices with modern digital platforms, according to the literature examined. The nursing field has traditionally benefited from the conventional method of training nurses through apprenticeships, both in classrooms and clinical settings. However, in the 21st century, technological progress has led most educational institutions to transition to online learning, spurred by factors such as COVID-19 restrictions and advancements in technology. As a result, face-to-face mentoring is no longer practical for online education, and the traditional apprenticeship model for nursing training is no longer applicable.

Given the training models employed, nurse lecturers have significant experience with face-to-face mentoring. However, online learning challenged their mentoring skills and practice during virtual interactions with students, as noted by Morin (2020). On the other hand, 3rd and 4th-year students experienced face-to-face classroom mentoring

when they were first and second years. This study provided the student nurses with the opportunity to narrate their virtual mentoring experiences through online focus group discussions and nurse lecturers through online interviews. Both participant groups used reflective skills to compare virtual mentoring and face-to-face mentoring during the quantitative phase.

The chapter commences by addressing the reliability of the data gathered from participants across both qualitative and quantitative phases. The discussion employs a mixed-methods strategy, sequentially discussing qualitative data before moving on to quantitative data. Issues of trustworthiness cannot be overemphasised in the qualitative strand, as they give credibility and recognition to the study. On the other hand, trustworthiness in the quantitative strand gives a study's findings validity and reliability. This chapter provides a detailed discussion of the measures taken to ensure the study's trustworthiness.

By examining reliability, the researcher can assess the consistency and dependability of the data across different methods and ensure that the conclusions drawn are robust and trustworthy. Given the inherent complexity of mixed-methods research, which employs multiple data sources and analysis techniques, addressing reliability concerns enhances the overall rigour and quality of the study. It also allows transparency in addressing any potential biases or inconsistencies in their data collection and analysis processes, thereby increasing confidence in the study's results and interpretations. In this study, discussing reliability issues helps to strengthen the methodological integrity and credibility of the research findings. The sequence of the research questions led to the



presentation of a detailed report on the research findings. The primary qualitative inquiry addressed the principal aim of the research project, focusing on the virtual mentoring encounters of student nurses and nurse educators. The subsequent sub-questions conducted a comparative analysis of virtual and in-person mentoring experiences, based on the following hypotheses.

H1<sub>0</sub>. There were significant differences in virtual and face-to-face mentoring experiences of nursing students.

H1<sub>a</sub>. There were significant differences in virtual mentoring and face-to-face mentoring experiences of nursing students.

H1<sub>0</sub>. There were no significant differences in virtual and face-to-face mentoring experiences of nursing lecturers.

H1<sub>a</sub>. There were significant differences in virtual and face-to-face mentoring experiences of nursing lecturers.

The presentation of the research results integrated findings from both the qualitative and quantitative strands of the study. The researcher conducted a sequential presentation that delineated each set of findings and highlighted points of convergence or discord between them. The researcher integrated triangulation to compare and contrast findings from different methodological approaches, thereby validating or corroborating the results and highlighting the complementary nature of qualitative and quantitative data in the study. Illustrative quotations and examples from qualitative data were incorporated to help bring the findings to life and provide context for quantitative

results. This allows readers to connect with the data on a deeper level and enhances the credibility of the findings.

This enabled the researcher to align the data presentation and analysis with the study's purpose and the sequential answers to the research questions. The section on evaluation of findings discusses the meaning of qualitative and quantitative data. A question-by-question discussion was conducted to comprehend the participants' interpretations of virtual mentoring. Quantitative results may also reveal conflicting views among student nurses and nurse lecturers. The researcher used visual aids such as tables, charts, and diagrams to present quantitative data clearly and concisely. Visual representations of themes or patterns identified in the data supported the qualitative findings. The evaluation of the findings also serves as a basis for the discussion of the implications of the study's findings, looking at the significance of the study and its potential limitations.

### **Trustworthiness of Data**

Criticisms of the qualitative research approach in producing credible results challenged qualitative researchers to find ways of establishing the trustworthiness of their studies. The nature of qualitative data is highly subjective, and the data cannot be measurable or verified to cause dependability problems (Polit & Beck, 2017). Qualitative data such as experiences, opinions, feelings, and emotions may interfere with common interpretations from different people. Lincoln and Guba (1985) established four criteria that qualitative researchers must meet to ensure the trustworthiness of their research

findings. Credibility, dependability, transferability, and confirmability were identified as key determinants of trustworthiness. In qualitative data, trustworthiness indicates validity. It guarantees that the researcher's interpretation of the qualitative data accurately reflects the observed phenomena (Polit & Beck, 2017). Nowell et al. (2017) view trustworthiness as a way of persuading those who read the research that it is worthy of attention. Qualitative research that fulfils the criteria is considered trustworthy due to its findings, conclusions, and recommendations.

At various stages of the research process, the methodological integration of qualitative and quantitative methods can strengthen the data's trustworthiness. This integration helps to provide a more comprehensive understanding of the research problem by capturing diverse perspectives and allowing for cross-validation of findings. As mentioned in the previous chapter, this research used both qualitative and quantitative strategies to gain a comprehensive understanding of mentoring experiences from both research strands. The qualitative strand allowed the researcher to gather unmeasurable and unquantifiable data on the experiences of both the students and nurse lecturers regarding virtual mentoring. Therefore, both quantitative and qualitative data were important in understanding virtual mentoring experiences and how each group of participants compared them to face-to-face mentoring to produce trustworthy results.

Cypress (2017) equates validity, which is more prevalent in quantitative research, with rigour in qualitative research. Validity and reliability measure rigour as the exactness, quality, or truthfulness of a research study. Although trustworthiness and validity seem to overlap, Tong et al. (2012) differentiate the measures of quality in qualitative and

quantitative research approaches based on the philosophical assumptions of each design. The research purpose and methodological approaches used during sampling, data collection, and analysis primarily cause the differences.

### **Credibility**

According to Polit and Beck (2017), credibility pertains to confidence in the truth. It answers the question: How is the interpretation of the data credible? Lincoln and Guba (1985) asked, 'How congruent are the qualitative research results with reality'? In other words, although qualitative research collects subjective data that is impossible to quantify, its results should show consistency and alignment with the phenomenon under investigation, as well as with other studies carried out on similar subjects. Nowell et al. (2017) contend that readers who have first-hand experience of the phenomenon under study are the ones who establish the truth. Therefore, the author defined credibility as the degree of similarity between the respondents' answers and the data they present and interpret. Lincoln and Guba (1985) postulated several strategies to ensure the credibility of a research study. Among the measures are persistent observation, prolonged engagement, peer debriefing, and triangulation. Persistent observation is defined as the researcher's focus on the phenomena under study (Polit & Beck, 2017). The authors also clarify that prolonged engagement is the researcher's active involvement in data collection aimed at fostering trust and comprehensively grasping participants' perspectives on the phenomena under examination. To ensure credibility, the researcher employed four strategies: prolonged engagement, peer debriefs, member checking, and

triangulation. The researcher did more than one focus group discussion with 3rd and 4th-year student nurses. The researcher was also present in all focus group discussions to note down responses and ask follow-up questions. Over six lecturers from each participating institution were interviewed to enhance the understanding of the data by exploring more variances. This approach also deepened the understanding of the concept of data saturation. Saunders et al. (2017) describe data saturation as a principle in qualitative research, indicating that no further data collection is required when additional data no longer yield new insights. If no new issues arise, it justifies the cessation of data collection.

Terrell (2016) argues that persistent observation provides evidence of credibility, as prolonged engagement with the data ensures a broader timeline and understanding of the data. To capture every record, the researcher listened to the recorded interviews at least three times during transcription into the journal. During focus group discussions, the researcher performed member checkpoints that required clarification and follow-up. The same technique was used in lecturer interviews to ensure clear understanding. Lincoln and Guba (1985, p. 239) argued that "member checks are the single most critical technique for establishing credibility." To elicit the interviewee's exact meaning, the researcher conducted member checks on points that lacked a clear explanation or clarification.

Triangulation was achieved in several ways. First, the study included representatives from all institutions that train for Bachelor of Nursing Science degrees, thereby collecting data from multiple locations. Second, a combination of 3rd-year and

4th-year students was included as participants, ensuring comprehensive representation from each academic level. Also, lecturers were interviewed from all participating institutions to produce findings that are a true representation of the data from all the institutions. Third, data triangulation was ensured by using three data collection techniques on the same phenomenon: interviews, focus group discussions, and questionnaires.

On peer debriefing, the researcher recognised the importance of passing the research instruments to the supervisor and subject experts to validate before using the instrument to collect data. Following data collection, the researcher shared the results and findings with the research supervisor, who provided feedback on the accuracy of the identified themes and subthemes.

### **Transferability**

Nowell et al. (2017) define transferability as the ability to generalise or apply qualitative research findings to a different group of individuals experiencing the same phenomenon. Tong et al. (2012) point out that, to achieve transferability, the researchers should include an adequate representative sample and specify the length of the data collection time so that they get thick descriptions of the phenomenon. All institutions that train Bachelor of Nursing Science degrees were involved in this research, with over 380 students and fifty-one lecturers participating to ensure the collection of rich data. Adequate time was allocated for the data collection phase, which was done over three months. The average interview time for lecturers was about eleven minutes, and focus

group discussion time averaged forty minutes to allow for in-depth descriptions of experiences and member checking.

### **Dependability**

Lincoln and Guba (1985) identify dependability as a third measure of trustworthiness. Tobin and Begley (2004, as cited in Nowell et al., 2017) assert that the reader judge dependability based on the logical, traceable, and well-documented research steps a researcher follows during their inquiry. The authors add that the research's readers typically evaluate its dependability based on the clear process followed. Polit and Beck (2017) contend that while determining dependability in qualitative research can be challenging, audit trails can serve as a demonstration. Audit trails analyse the researcher's viewpoint to assess the dependability and verifiability of the researcher's decision-making process and its capacity to produce consistent results that are in line with the reader's audits. For this study, the accuracy of the researcher's lens depended on how the researcher was able to understand the descriptions given by the participants about their mentoring experiences based on the experience as a nurse educator. To ensure compliance with the accepted standards of a mixed-methods design and the explorative sequential approach, the supervisor conducted an audit trail.

### **Confirmability**

Confirmability refers to the extent to which the research was objective during data interpretation (Lincoln & Guba, 1985). Miles et al. (2013) assert that confirmability in

qualitative research ensures the data-supported findings, conclusions, and recommendations of a study. Nowell et al. (2017) concur, stating that the establishment of confirmability occurs when the criteria for credibility, transferability, and dependability are satisfied. It denotes precision and accuracy. The researcher used an audit trail to ensure confirmability. Polit and Beck (2017) define an audit trail as a detailed description of the steps followed in data collection and reporting. The data was shared with peers to ensure that the transcripts accurately captured the verbatim responses from the participants. The supervisor's audit trail ensured confirmability. The supervisor received recorded audio from focus group discussions and interviews to verify the authenticity of the recorded information, and they used the reflective journal to compare it with the documented information.

### **Reliability and Validity of Data**

Reliability and validity are critical aspects of research and necessary components of quality (Cypress, 2017). Based on Tong et al.'s (2012) description, validity in the quantitative approach equals credibility in the qualitative strand. According to Cypress (2017), validity is defined as the measure's accuracy. It signifies the accuracy with which an instrument or tool measures its intended subject. The author further points out that validity strengthens the research conclusions and recommendations. Although reliability and validity both measure the quality of a research study, Cohen et al. (2018) elucidate the distinction by stating that while reliability can exist independently of validity, reliability is a prerequisite for validity. Validity is measured in terms of content, criterion, and



construct validity, while reliability is concerned with the homogeneity of the items on a scale, stability of the instrument, and equivalence or consistency among responses (Polit & Beck, 2017). Cohen et al. (2018) define content validity as the magnitude to which a questionnaire accurately measures all aspects of a construct. To ensure content validity, the researcher adopted a tool developed by Tiew et al. (2017). The tool was tested and retested for internal validity using Cronbach's alpha method and was found to have a 0.92 index, indicating excellent internal consistency. All ten aspects of mentoring in the adopted tool were covered. The adoption of the tool was aligned with mentoring in nursing education and in a classroom setup to find out how the student nurses and their lecturers compare their virtual mentoring experiences to face-to-face mentoring experiences.

Polit and Beck (2017) point out that a subset of content validity is face validity. Subject experts validate research instruments to ensure they accurately measure their intended objectives. Five subject experts evaluated the adopted tool and made adjustments based on their recommendations. The adoption of a previously tested instrument by Tiew et al. (2017) answered the criterion of validity. Cohen et al. (2018) define criterion validity as the degree to which an instrument is similar to other instruments that measure the same variables. The author further points out that criterion validity can be either concurrent validity or predictive validity. The researcher employed the concurrent validity approach to assess students' face-to-face and virtual mentoring experiences, as concurrent validity deals with the current setting. Questionnaires were administered concurrently with Section A, seeking opinions on virtual mentoring, and Section B, seeking opinions on face-to-face mentoring experiences.

**Internal Validity**

Cohen et al. (2018) define internal validity as the extent to which the study results are congruent with the population under study. It is ensured by eliminating possible errors during data collection. Polit and Beck (2017) contend that achieving external validity requires establishing internal validity first. As pointed out earlier, the study used an adopted instrument to ensure validity. The quantitative phase's sampling procedures—random sampling of the student population and total population sampling of lecturers—ensured representativeness and adequate data collection. According to Mutaqin (2017), a sample size of 384 is considered large enough and provides an acceptable margin of error to make inferences from 3rd and 4th-year nursing students. Total population sampling was conducted for the lecturers, following Feldmann's (2014) recommendation that when a sample size is fewer than one hundred and is easily accessible, this approach is appropriate.

**Generalisability**

Polit and Beck (2017) define generalisability as the extension of research results and conclusions from a sample population to an entire population. Generalisability in quantitative research denotes transferability in qualitative research. To ensure representativeness in a study, the researcher used three factors: sample size, sampling procedures, and participation rate. The researcher ensured that the research findings were generalisable by using random sampling with the student population and focusing on three schools that train students for the Bachelor of Nursing Science degree. Also,

students and lecturers were sampled from three institutions to capture variability and enhance the generalisability of findings across different contexts.

## **Reliability**

Based on Cohen et al.'s (2018) elucidation of validity and reliability, it is apparent that a study that lacks reliability cannot produce valid results. Polit and Beck (2018) define reliability as a measure of the consistency of a research instrument or tool to produce the same results at repeated times. Brink et al. (2018) define reliability as the degree to which an instrument consistently yields reliable results. The definitions indicate that we measure reliability based on the homogeneity of items on a scale, the stability or consistency of results using the same instrument, and equivalence, which signifies consistency among responses. The lower the instrument's reliability, the more errors and less equivalence it produces.

As pointed out earlier, the researcher ensured reliability by checking and making sure that all items on the questionnaire measured mentoring experiences to ensure homogeneity. The instrument was pilot-tested to ensure that respondents understood the questions clearly and made the same interpretation to ensure equivalence. The researcher split the questions into sections, where, for example, the first question measured experience with the teaching content with its sub-questions. Also, the questionnaire had two parts where both lecturers and students gave their opinions on a Likert scale on virtual mentoring and face-to-face mentoring separately. According to Brink et al. (2018), separating virtual and face-to-face opinions allows a clear comparison

of the consistency of responses. The psychometric 5-point Likert scale provided respondents with a range of opinions to choose from: strongly agree, agree, neutral, disagree, and strongly disagree. The neutral role was to balance opinions about either virtual or face-to-face mentoring experiences. According to Joshi and Pal (2015), the neutral option balances the scale, giving respondents independence to choose from given options while avoiding situations where participants give random answers.

### **Objectivity**

The concept of objectivity in research calls for researchers to uncover the truth without contaminating it. Polit and Beck (2017) view objective studies as research that is unbiased, factual, real, and unaffected by moral, social, economic, and political influences and values. Purdy (2020) advises that to ensure objectivity, researchers should not begin the research with preconceived ideas of what the results will be. The author further clarifies that researchers use faithfulness to facts and value freedom to ensure objectivity. The positivist paradigm holds that researchers should detach during data collection to ensure objectivity. Polit and Beck (2017) argue that the involvement of a researcher reduces objectivity, as personal motives may diminish the value of evidence. During data collection, the researcher focused on the data to ensure value-free reporting. Nursing students and lecturers were given questionnaires to fill out privately at their own pace to eliminate the researcher's influence. Although objectivity is more recognised in quantitative research, it is also applicable in qualitative research. Factors such as the

researcher's position, experience, and interviewer bias can interfere with objectivity in the qualitative phase, thereby reducing confirmability.

**Figure 4.1**

*Measures of Quality in Qualitative and Quantitative Research*

Qualitative Research	Quantitative Research
<ul style="list-style-type: none"> <li>• Credibility</li> <li>• Transferability</li> <li>• Dependability</li> <li>• Confirmability</li> </ul>	<ul style="list-style-type: none"> <li>• Internal Validity</li> <li>• Generalisability</li> <li>• Reliability</li> <li>• Objectivity</li> </ul>

*Adopted from: Enhancing Transparency in Reporting Synthesis of Qualitative Research; Tong, Fleming, McInnes, Oliver and Craig (2012).*

## Results of Findings

### ***Qualitative Results***

The qualitative phase collected data to answer the question, 'What are the experiences of virtual mentoring among 3rd and 4th-year nursing students and their lecturers in institutions in Namibia? Online focus group discussions were conducted first to gather the in-depth experiences of student nurses using an interview guide. Data from lecturers was collected using telephone interviews. Two separate interview guides were developed: one for students and one for lecturers. To answer the main research question, two sub questions were formulated as follows:

RQ1a. How do 3rd and 4th-year students describe their experiences as mentees during virtual mentoring?

RQ1b. How do lecturers describe their experiences as mentors during virtual mentoring?

Steps in Qualitative Data Analysis. Priori codes, extracted from the focus group discussions and interview guides, were assigned to data from both groups of respondents. All codes were developed using the cognitive apprenticeship mentoring approach. Costa (2020) elucidates that one can develop priori codes, also referred to as deductive or anchor codes, from the research question, theoretical framework, or study title. Priori codes were used to link significant statements identified during the thematic analysis stage to the anchor codes. The coding strategy employed was based on Saldana's (2016) coding strategies. Saldana (2016) argues that a researcher may choose to use descriptive coding, which describes situations. This research used descriptive priori codes derived from the cognitive apprenticeship model of mentoring. Descriptive codes offered the advantage of harmonizing qualitative questions with the theoretical framework, enabling the quantitative phase to test hypotheses. Furthermore, using a priori codes facilitates the identification of patterns and recurring themes within the data. By categorising the data according to predefined concepts or themes, researchers can more readily discern similarities and differences across responses, enabling the identification of overarching themes that characterise participants' perspectives or experiences.

The priori codes identified under virtual mentoring experiences were;

Code 1- Teaching content

Code 2- Student expertise

Code 3- Socialisation

Code 4- Fading

Code 5- Opinions

All focus group discussions were transcribed verbatim on a notepad before being imported into NVivo for analysis. The data analysis followed the thematic analysis phases outlined by Nowell et al. (2017) and Braun and Clarke (2006). According to Nowell et al. (2017), the stages of qualitative data analysis offer researchers a robust framework that ensures rigour, transparency, and systematic analysis, ultimately improving the quality of qualitative research. The stages identified in their order are:

- a) Familiarising with the data
- b) Creating initial codes
- c) Theme searching
- d) Theme reviewing and
- e) Defining and naming themes

During the first phase, the researcher became familiar with the data. According to Braun and Clarke (2006), prolonged researcher engagement with the data ensures that the researcher becomes familiar with the data and has an idea of its structure. Audio tapes were played and replayed during transcription to ensure that description details

were not missed. The transcribed participants' own words were entered in NVivo for easy identification of the codes and subthemes.

In developing the themes from the transcribed focus group discussions, a systematic approach was adopted, wherein the data were organised according to priori codes. The researcher established these priori codes based on predefined categories derived from the research questions or theoretical frameworks. By arranging the data under each priori code in a sequence corresponding to the order of questions posed during the focus group discussions, the analysis process aimed to maintain coherence and alignment with the research objectives. For instance, we recorded all discussions under teaching content for all focus group interviews in the diary for easy reference. The texts were read under each a priori code to identify some familiar words used by participants when they described their mentoring experiences.

For example, under the priori Code 1 the first question was:

'What do you think about the content taught online'?

According to Costa's (2020) guide to coding the texts, interviews and student focus group discussions produced a second set of codes called the posteriori codes. The significant statements verbalised by the respondents were matched with each priori code according to their frequency to identify emerging themes under each code.

### **Student Focus Group Discussion Findings.**

*Characteristics of Study Participants in Focus Group Discussions.* Fifty-two students were involved in six individual focus group discussions with an average of eight students



per group. Thirty-five (66%) were females and seventeen were males (34%). Participant's ages ranged from 21 to 36 years with the median age of 24. Two groups were drawn from each of the participating institutions, that is, IUM, UNAM, and WHTC.

**Table 4.1**

*Thematic Analysis of Student Nurses Mentoring Experiences*

Themes	Subthemes	Data linked code
Preparation of online teaching content	<ul style="list-style-type: none"> <li>• Use of slides, diagrams, pictures and videos make thinking visible.</li> <li>• Optimising engagement and effectiveness in virtual learning</li> </ul>	Code 1
Promoting independent learning	<ul style="list-style-type: none"> <li>• Promotion of self-directed learning despite limited IT support</li> <li>• Nurturing critical thinking</li> <li>• Clear and simple objectives</li> </ul>	Code 2
Fostering socialisation	<ul style="list-style-type: none"> <li>• Building interpersonal relationships</li> <li>• Encouraging collaborative learning</li> </ul>	Code 3
Lecturer support	<ul style="list-style-type: none"> <li>• Guidance and psychological support through feedback</li> <li>• Sustained support</li> </ul>	Code 4
Use of videos during live lectures	<ul style="list-style-type: none"> <li>• Strengthening institutional support for successful mentoring relationships</li> <li>• Importance of nonverbal communication in mentoring</li> </ul>	Code 5

**Description of themes.** Theme 1: Preparation of online teaching content

In terms of the content taught online, most of the participants, more than 50%, commented that the content was prepared the same way as in face-to-face teaching.

Quotes:

*FGD 1: Student C: “All I would say about the content is that it was just the same as in class. For my experience, I don’t feel like or did not see any difference because the slides were the same”*

*FGD 2: Student B: “The content was the same but the only problem was the interaction”.*

*Student D “I observed that the lecturers were on a marathon too so we would cover a lot of content in a short period of time”.*

*FGD 5: Student J: “I feel the content was the same as in face-to-face, the presentation is what differed”*

*Student E: “I think the content was the same except that it was delivered using a new platform”.*

Subtheme 1: Use of slides, diagrams, pictures and videos make thinking visible

In terms of methods that lecturers employed to make their thinking visible to students, most of the study participants, about 75%, appreciated the use and upload of slides or videos as good methods. Others highlighted the effective use of images and diagrams, as well as the practice of posting questions on virtual platforms. The overarching theme underscored the significance of preparing online content, while subthemes suggested a hasty coverage of some content, leading to limited comprehension. However, the incorporation of videos, images, and pre-recorded lectures

proved beneficial in enhancing content understanding. This was illustrated by the following quotes:

*Quotes:*

*FGD 1 Student K: “we had a lot of videos posted for us to download”.*

*FGD 1 Student E: “the fact that when they are presenting you could see the slides was better”*

*FGD 2 Student F: “Also using pictures and diagrams was good”*

*FGD 4 Student C: “The slides were creative with more pictures and sometimes short videos some lecturers were explaining very well that you can create images of what they are saying and it was easy to follow”.*

*FGD 6 Student B: “they uploaded some videos on Big Blue Button for us to watch later. Sometimes we had short pre-recorded videos”.*

Sub theme 2: Optimising engagement and effectiveness in virtual learning

In terms of adequate preparation for migration to online learning, participants reported that some of the things were hard to learn on their own, and they were not prepared for online methods of learning. Lack of preparation made engagement with lecturers difficult. Students mentioned that the orientation provided was inadequate. Others mentioned a lack of resources, such as laptops or phones compatible with the virtual platforms, which made virtual learning difficult, forcing them to buy new gadgets.

Quotes:

*FGD 2 Student C: "On my side I would say we were not prepared. Remember this thing came suddenly that we had no option but to just try to do it".*

*FGD 3 Student A: "I wouldn't say we were prepared, were told to download the Teams app and you learn to navigate on your own".*

*FGD 4 Student C: "We were given orientation but I cannot say it was adequate".*

Theme 2: Promoting independent learning

Navigating the path to self-reliance was a challenge for most students, as they needed to develop skills for independent learning. This theme encapsulates the journey of students as they develop the skills, mindset, and resources necessary to become independent learners. Despite the promotion of self-directed learning, students expressed a lack of support from the information and communication technology (ICT) offices.

Other issues raised included the fact that the support team rarely responded to complaints, which made things difficult for them. In terms of promoting independent learning, some participants expressed difficulty striking a balance between their responsibilities at home and their schoolwork, resulting in them dedicating a significant amount of time to social media and socialising with friends. Conversely, others disclosed that they frequently missed lectures due to boredom and unclear communication from some lecturers. Others believed that their education instilled in them the responsibility to

strive for excellence and accomplish their objectives. Some students believed that difficulties stemmed from incomplete explanations of other tasks. Students failed to learn effective study techniques such as leveraging available resources, cultivating self-discipline and perseverance, overcoming obstacles, and seeking assistance when needed.

The experiences are supported by the following quotes:

*FGD 1 Student H: "Not really, some of the things were hard to learn on our own. That's why sometimes you would struggle to access online materials sent by the lecturer or sometimes joining a live lecture".*

*FGD 6 Student C: "Remember this thing came suddenly that we had no option but to just try it".*

*Student E: We were unfortunate because we were the first groups affected by it, so even our mentors were learning, everyone was finding their way through everything online".*

*FGD 2 Student A: "I feel like we were given the chance to step out of our comfort zones because we needed to make sure we read even if there is no lecturer who would ask you".*

*Student G- "I am happy that we experienced what other universities do with online leaning".*

*Student D- "It taught us responsibility of pushing ourselves to be the best and achieve our goals. You could take time to read slides and watch videos that the lecturers sent".*

*Student C: "We really matured to be real adult learners as we became self-directed".*

*Student L- "I learnt how to plan my activities even if I am home to make sure that I don't miss lectures".*

*FGD 3 Student I: "We were given a lot of homework"*

*FGD 4 Student B: Through assignments, I guess".*

*FGD 4 Student F: "Our lecturers gave us a lot of homework which kept us busy".*

*FGD Student D: "I feel that lecturers seemed to care about their own time more than being with students".*

*Student C: "It was hard for me to pay attention to conversations because some lecturers were not clear".*

## Subtheme 2: Nurturing critical thinking

Participants observed that mentors used questioning techniques related to the discussed topic in their mentoring of problem-solving and critical-thinking skills. Nevertheless, they emphasised the importance of practical application, even with the availability of slides or videos. On the other hand, some individuals felt that the

effectiveness was limited due to the simplicity of some scenarios, although they acknowledged the value of online tests. Others claimed they had problem-solving tests and assignments. The students had this to say:

*Quotes:*

*FGD 1 Student B: "Lecturers used questions; I mean problem-solving questions".*

*FGD 2 Student E: "We were given problem-solving tests and assignments".*

*FGD 3 Student D: "We had problem solving tests and assignments".*

*FGD 4 Student A: "Yes, because we were given the same scenarios as in face-to-face".*

*FGD 5 Student B: "We were given work like case studies to work on and present, I mean questions that do not have a definite answer".*

*FGD 1 Student B: "We need to practice skills".*

**Subtheme 3: Clear and simple objectives**

The time management revealed that lecturers rushed to cover their content, regardless of the student's understanding, and did not entertain questions or take time to respond to comments in the comment section. Others complained that the lecturers provided too much information on the slides. Others expressed difficulty receiving mentorship from unfamiliar individuals who may not fully comprehend their challenges, particularly in terms of connectivity. Other students pointed out that attending an online

lecture from home can be quite distracting. The students also noted that other lecturers could not express themselves clearly, and they would not hear what they were saying. Students expressed their experiences using the following quotes:

*FGD 1 Student B: "Objectives were met especially from the lecturer's side".*

*Student F: Personally, I am not a theory person, so I missed a lot of lectures because I felt they were boring. It was hard for me to pay attention to conversations because some lecturers were not clear, the way they talk sometimes very low and some of the words were not clear, so I would just log in and go".*

*FGD 3 Student B: "Others were just very fast and did not attend to questions".*

*FGD Student B: "Objectives were clear and most of the times were met".*

*FGD 6 Student C: "I think we managed to cover all objectives".*

### Theme 3: Fostering socialisation

The lecturers' methods for fostering group cohesion and a sense of belonging among students revealed that remote learning encouraged students to manage their responsibilities both at home and in school by creating their schedules.

#### Subtheme 1: Building interpersonal relationships.

Students reported that engaging in informal discussions and group chats on social media platforms fostered connections between students and mentors. They got support and encouragement from peers and lecturers, which built rapport and trust among the groups. Other students reported that lecturers would call them by name during live



lectures, which made them feel like they were part of the group and had a sense of belonging. The student's experiences were expressed using the following quotes:

*Quotes:*

*FGD 2 Student 4: "We used group work, but it was usually creating them as friends. But also, WhatsApp groups were available".*

*FGD 3 Student E: "Most of it was not lecturer initiative, we grouped ourselves so that we discuss and read".*

*FGD 4 Student D: "Other lecturers would call us by names. We had a lot of group discussions where we gave feedback to the lecturer through WhatsApp or email"*

*FGD 5 Student D: "We were able to make some group discussion using zoom or google meet.*

*FGD 6 Student A: "I think by group work, I guess".*

## Subtheme 2: Encouraging collaborative learning

Students mentioned that they would consult classmates through WhatsApp groups to ask for other things they did not understand, but lecturers did not bother to know whether pupils had study groups or not. Others mentioned that they had to form WhatsApp groups by themselves for discussions.

Quotes:

*FGD 2: Student G: “We formed groups which we created as friends so that we support each other. WhatsApp is very user friendly, we put our lecturers in so that they guide and support us”.*

*FGD 3: Student D: “At times lecturers would send questions in our WhatsApp group for discussion”.*

*Student A: We got some reading materials too that we downloaded and discussed in groups”.*

Theme 4: Lecturer support

In terms of how the mentor provided feedback and support on assignments given, students mentioned that sometimes they just received marks for tests, but there were no comments as to where they did well or when they needed to improve. At times, they received no feedback at all, and the lecturer would inform them that they didn't receive any marks because their assignment didn't process correctly. Others reported that they received feedback, but the lecturers were not commenting much on their work. Some students expressed that the majority of lecturers offered generic feedback, highlighting areas they needed to enhance collectively, rather than individually during face-to-face sessions. However, this feedback was inconsistent, and occasionally, the lecturer would bring up a forgotten assignment from the previous semester. Twenty per cent of students felt that they were on their own; therefore, they lacked emotional support and guidance.

Subtheme 1: Guidance and psychological support through feedback

*Quotes:*

*FGD 2: Student G: "Sometimes we received marks but there will be no comments. Others received no marks and the lecturer would just say, I have no marks for you because your assignment did not go through".*

*FGD 3 Student A: "I felt like I was on my own".*

*Student B: "Sometimes we missed that psychological and emotional support and we ended up learning by trial and error".*

*Student C: Some lecturers gave feedback but some we just received marks with no comments, so it was difficult to know where you are wrong and where you need to refine".*

**Subtheme 2: Sustained support**

Regarding sustained support, students mentioned that some lecturers, despite reducing direct involvement, remained available for consultation and support. This ensured that students could seek guidance when needed, maintaining a balance between independence and mentorship. However, other lecturers failed to address their concerns or provide links for additional reading. Students also echoed that clinical attachment allowed them to put theory into practice, although lecturers did not follow them up frequently because of COVID-19 restrictions. The students expressed the following viewpoints:

*FGD 4 Student C: “To add on, we interacted a lot with lecturers when they came for clinical supervision so we took the opportunity to learn as much as possible”.*

*FGD 5 Student A: “I would say I used a lot of reflecting thinking especially when I watched videos”.*

*Student C: “Our lecturers guided us on how to use practical books”.*

*FGD 6: Student B: “I feel feedback and support was limited because most lecturers were more focused on finishing than student understanding, so, it’s like you have to figure it on your own”.*

#### Theme 5: Use of videos during live lectures

Most students emphasised the importance of using videos during live lectures, ICT support, and balanced lecture content for virtual mentoring. Using videos during live lectures enhances engagement and understanding by providing visual learning opportunities and practical demonstrations, making content more accessible and inclusive for diverse students. The theme led to a discussion on the comparisons between face-to-face and virtual mentoring. The students reported that face-to-face lecturers provided time for bonding, that the relationship was genuine, and that they could receive guidance at any time. In the online setting, it seemed that the instructors primarily focused on finishing the course material and conducting tests and examinations. Other students felt that face-to-face mentoring was better than virtual mentoring because they had adequate contact time with lecturers. Some felt that face-to-face communication remains particularly good, but it is not bad to learn new practices because that is where we are

going. Others rated that the ideal structure should have been face-to-face at 70% and virtual at 30%. The expressions were as follows:

*FGD 1 Student C: "Face-to-face mentoring was better for me because lecturers gave us time".*

*FGD 3 Student F: "Face-to-face remains very good, but it is not bad to learn new practices. Lecturers need to use videos so that it feels real".*

*FGD 4 Student I: "If I would rate, face-to-face will be 70% and virtual 30%".*

*FGD 5 Student A: "To me they are the same, it only depends on the approach of the lecturer. Some lecturers are just good role models from the way they talk, display knowledge and general conduct, but videos will be more intimate".*

*Student C- I support student A because a relationship can be formed anyhow but, constant communication will make the student not to feel isolated".*

*FGD 6 Student F: "It's only that I don't know exactly the content of mentoring but I got the attention I needed from my lecturers. It only needs the student to be aware of your needs so that you approach the lecturer if you have difficulties.*

*Student B- "I agree, we just need to be supported and we need more videos than recorded material".*

*Student E- "I think it was quite a nice experience. We can continue with some modules online; it saves a lot of time of going to school".*

*Subtheme 1: Institutional support should be strengthened for success of mentoring relationships.*

Subtheme 1: Strengthening institutional support for successful mentoring relationships

Students lamented the lack of support from the institution as they 'felt alone'. In terms of alternative approaches to virtual mentoring, some students believed they needed instruction on how to use online learning. Others felt that online learning and mentoring were good for short modules, as well as for lecturers with information and communication technology skills. Most students reported that there was a need to use videos so that they could communicate face-to-face with lecturers. Students were positive that, given the time and improvements in its use, virtual mentoring would be the best interface, and they could be comfortable with it. Others highlighted WhatsApp's exceptional ability to maintain communication, emphasising the importance of keeping all media channels open for mentor-student communication.

A substantial number of students mentioned that lecturers needed to be more creative, especially in the choice of videos they uploaded to the learning management system. Some videos were excessively lengthy, exhausting their data upon download. There is also a need to improve the use of examples, as these practical examples aid in understanding concepts. There were also suggestions that lecturers should consider using simple language with clarity to make students understand and apply new concepts. Most lecturers seemed to assume that students already knew what they were teaching,

with no room for coaching or asking for student feedback. The students' suggestions were as follows:

*FGD 1 Student B: "the relationship was real; you could feel that you get guidance anytime but online it seemed like lecturers only cared about finishing and setting examinations. They should give us time to understand the concepts".*

*FGD 3 Student D: "Yes, given time and improvements on its use we can be comfortable with it".*

*Student G: "as you said in the introduction, relationships can be formed using online media and they can also be maintained, WhatsApp was very good to maintain communication. I feel all media should be open for communication with our mentors".*

*FGD 4: Student F: "Lecturers need to be more creative especially choice of videos, give practical examples".*

*FGD 5: Student F: "I think online learning management systems need to be part of the computer module so that students are taught and practice on how to use Moodle, Teams, Big Blue Button, and others".*

*Student A: "I also feel the same, if we were adequately prepared, we could use it far much better".*

## Subtheme 2: Importance of nonverbal communication in mentoring.

Students expressed concern of the use of video conferencing. They valued the use of non-verbal communication in mentoring as they felt that it taught them communication skills and basic ethics.

### *Quotes:*

*FGD 2; Student H: "They should teach us on how to use the online learning platforms".*

*Student G: "We need to use videos so that we communicate face-to-face with our lecturers and see the nonverbal communication".*

*FGD 5: Student A: "As for me, I think my lecturer is a role model so it is important for me to emulate how they talk, walk, display knowledge and general conduct when they are teaching".*

## **Lecturer Interview Findings.**

*Characteristics of the Study Participants in Individual Interviews.* Eighteen lecturers participated in individual interviews; 27% were males. Their ages ranged from 26 to 59 years, with a median age of 46. The experience ranged from 2 to 23 years, with the median being 3 years. Twenty-two per cent of lecturers were employed by IUM, 33 % by UNAM, and 44 % by WHTC.



**Table 4.2***Thematic Analysis of Nursing Lecturers' Virtual Mentoring Experiences*

Themes	Subthemes	Data linked Code
Proper planning of objectives and content of lecture is important to make students grasp the content taught.	<ul style="list-style-type: none"> <li>• Utilisation of visual aids</li> <li>• Enhancing cognitive processes</li> </ul>	Code 1
Problem-solving questions and practical scenarios promote student expertise and critical thinking.	<ul style="list-style-type: none"> <li>• Coaching and guidance</li> <li>• Promoting understanding</li> </ul>	Code 2
Giving group work is a way of promoting a sense of belonging among students and socialisation.	<ul style="list-style-type: none"> <li>• Facilitating collaborative learning</li> <li>• Cultivating a sense of belonging</li> </ul>	Code 3
Mentoring is a long-term relationship	<ul style="list-style-type: none"> <li>• Goal-oriented mentoring</li> <li>• Continuation beyond goals</li> <li>• Role modelling</li> </ul>	Code 4
Learning how to form and maintain mentoring relationships online is important for virtual mentoring	<ul style="list-style-type: none"> <li>• Institutional support</li> <li>• Challenges and opportunities</li> </ul>	Code 5

**Description of Themes.** Theme 1: Proper planning of objectives and content of the lecture is important to make students grasp the content taught.

In terms of preparing online teaching content, about 7 participants (n = 7; 38.8%) reported that they prepared their lectures the same way they did for face-to-face teaching. About 6 (n = 6; 33.3%) participants revealed that they created slides, recorded videos of themselves teaching, and uploaded them to virtual platforms such as MS Teams, Moodle, and Big Blue Button. About 6 (n = 6; 33.3%) participants reported that they adopted the use of charts and pictures to aid their teaching method. About 6 participants (n = 6; 33.3%) revealed that they checked or made teaching objectives very clear. Most of the participants, about 10 (n = 10; 55.5%), reported that they would ask or invite questions

as a follow-up on the covered content to ensure students master or grasp it. Only two participants ( $n = 2$ ; 11.1%) revealed that they uploaded slides and posted videos on virtual platforms for students to watch at their convenience. Others mentioned that they would use frequent group or class discussions to keep students engaged and encourage teamwork. They set clear and simple objectives. They set clear and simple objectives.

Regarding the use of visual aids, lecturers said that during preparation of online teaching content, they incorporated videos, slideshows, pictures, and diagrams to facilitate understanding and comprehension.

*Quotes:*

*Lecturer 2: "I prepared my slides the same as I do for face-to-face teaching. I mean lecture planning. I then uploaded my slides in the Microsoft Teams platform. When I am teaching my slides would be displayed in my screen and visible to student's screens and we discuss the content".*

*Lecturer 7: "My slides were simple and not congested: I just wanted my students to follow the content easily, it is very difficult to connect with students using a new interface at the same time you load them with too much content".*

*Subtheme: Visual aids such as videos, slides, pictures and diagrams enhance making thinking visible.*

Subtheme 2: Enhancing cognitive processes

Regarding making thinking visible, lecturers mentioned that they used slides, videos, diagrams and pictures and posted the material on the Learning Management System (LMS) to make thinking visible to students. Visual aids were used to clarify concepts, illustrate complex ideas, and promote deeper cognitive engagement.

*Quotes:*

*Lecturer 3: "I think I tried to make it more visual as I can specially to make the interactions similar to face-to-face".*

*Lecturer 4: "Basically, I try to incorporate the psychological component whereby I create videos of what I want to teach. I also download videos that I post to the students later in the Microsoft teams and also give slide shows".*

*Lecturer 5: "Well, I used charts and pictures they need to see".*

*Lecturer 10: "I then prepared slides which I included more pictures and illustrations to capture the interest of the students during presentation".*

Theme 2: Problem solving questions and practical scenarios promote student expertise and critical thinking

In relation to mentoring students in critical thinking and problem-solving skills during virtual instruction, about 13(n=13; 72.2%) lecturers reported to have made use of assignments, asking questions, giving practical examples or work scenarios that improved the students' problem-solving skills. Others reported that they uploaded pre-recorded lectures or displayed slides and also involved discussions.

### Subtheme 1: Coaching and guidance

Some lecturers pointed out that they provided individualised feedback and support to students during class presentations to enhance their skills and confidence.

#### Quotes:

*Lecturer 2: “So, you see, what I experienced is that virtual learning is not as detailed as face-to-face learning, so what I usually did is like, I present and I give time for discussion during the lecture. At the end of each lecture, I gave students homework or assignment and coach them on how to do it. I did not get into any mentoring details online because there is no way I could spend 2 hours with students online”.*

*Lecturer 3: “Ok, what I tried to do is, for example give them questions where they are forced to think outside the box. It’s like, I give them a task where they cannot just google answers from the internet or find straight answers in a textbook or study guide”.*

*Lecturer 4: “With critical thinking, I would say it was challenging especially the mentoring part. However, I used a lot of probing. Normally students will log in and expect you to just lecture, so I would ask a lot of probing questions calling out their names to participate and give guidance. They knew that if they don’t answer a question, I will later give a scenario based on the question and ask them to go work on it and come back to present”.*

*Lecturer 9: “I put activities and some quizzes at intervals during teaching so that I assess their reflective thinking skills. I would pose scenarios to assess problem solving skills”*

*Lecturer 10: “I give them quizzes. I also give them activities to work on at their own time, they present and I give feedback”.*

*Lecturer 16: “I gave them to work on scenarios taken from real life and gave feedback”.*

#### Subtheme 2: Promoting understanding

Most of the lecturers, about 15 ( $n = 15$ ; 83.3%), revealed that they provided individual assignments, tasks, or group activities and asked students to present individually or in groups. Other lecturers reported that they uploaded videos and also encouraged students to study on their own. In terms of the sequencing of learning activities to ensure a continuous flow of information, all the participants mentioned that they made the lecture objectives clear and easy to follow. They made sure to cover the objectives in detail. Almost all lecturers mentioned that they promoted independent learning by giving assignments. Lecturers provided students with the chance to present in class and guided them on how to respond to various questions.

#### *Quotes:*

*Lecturer 1: “What I usually did was; I choose a particular topic that I don’t want to cover, I break it down and give students subtopics to work in groups. I then allocate*

*a lecture for presentations. I guide them and make corrections so that they work on them and submit for marking”.*

*Lecturer 6: “It was more of giving them tasks to work on then present or post them to my email for marking then I give feedback”.*

*Lecturer 10. “It was more of giving them tasks to work at their own time and come to present”.*

Theme 3: Giving group work is a way of promoting a sense of belonging among students and socialisation.

On issues to promote group cohesion and a sense of belonging among students, 17 (n=17; 94.4%) of the lecturers mentioned that they provided tasks or problem-solving scenarios for students to work in groups using platforms such as WhatsApp group, Moodle and Big Blue Button and encouraging them to share ideas.

#### Subtheme1: Facilitating collaborative learning

Lecturers pointed out that they organised group work activities to encourage students to work together towards common goals, fostering collaboration, teamwork, and mutual support. The responses were as follows:

*Lecturer 2: “I think giving group work is a way of encouraging students to work as a group”.*

*Lecturer 3: “Oh, I think by group work”.*

*Lecturer 4: "Like I mentioned earlier, Microsoft Teams platform allows the lecturer to create breakout rooms where students can discuss tasks in groups".*

*Lecturer 5: "I understand group cohesion as mixing students who are different to form a group".*

*Lecturer 6: "Students were given tasks to work in groups and share ideas".*

*Lecturer 11: "Oh, I think by group work. I gave them a lot and encouraged them to participate in their groups".*

*Lecturer 12: "I used a lot of group discussion".*

*Lecturer 13: "Group work was very effective as students will group for 5 to 10 minutes discussing a question".*

*Lecturer 14: "I gave a lot of work for them to work in pairs and groups".*

*Lecturer 17: "Students were given tasks to work in groups and present".*

*Lecturer 18: "I used group activities more".*

*Lecturer 19: "I used a lot of group discussion".*

**Subtheme 2: Cultivating a sense of belonging**

In addition to group work, lecturers created opportunities for students to connect with their peers through WhatsApp groups, promoting a sense of community, inclusivity, and belonging within the classroom environment. Lecturers acknowledged that the

WhatsApp platform enabled them to keep in touch with students for support, information sharing and guidance.

*Quotes:*

*Lecturer 5: "When lectures end, I usually send short answer questions to my students and they respond, I comment".*

*Lecturer 6: "I was in a WhatsApp group for every group of students I taught. That is where I usually posted other material for them to read other than Teams. WhatsApp is readily accessible to almost all students".*

*Lecturer 15: "Sometimes when I come across an interesting question, I would post it on the WhatsApp group and we discuss it".*

Theme 4: Mentoring is a long-term relationship

Regarding the fading and termination of mentor-student relationships, the lecturers expressed their belief that mentoring should be a continuous activity throughout the student's educational journey. Most lecturers mentioned the importance of setting mentoring goals to help students achieve their learning objectives. Lecturers believed that, as senior professionals, they had a duty to mentor even nurses in the clinical area.

Subtheme 1: Goal-oriented mentoring

Eleven participants said that they provided mentoring support until the end of the semester, coinciding with students' examination success, graduation, or satisfactory evaluation. On the other hand, four lecturers revealed that they ended their mentoring



once they achieved all the objectives, with the belief that the mentoring relationship should last forever. This is what the lecturers said;

*Lecturer 4: "Oh, I tried to support students. I continue until they write their examination and pass that way, I can terminate the relationship".*

*Lecturer 7: "I gave much of my time in providing support to the students even after hours. I terminate the relationship after they passed my module".*

*Lecturer 16: "I provided guidance to tasks given, on how they answer questions and also gave them examination practice questions. If students pass that means you can terminate the relationship, for clinical part it continues because you want the student to master a skill".*

#### Subtheme 2: Continuation beyond goals

In terms of their fading, some lecturers said that mentoring relationships extend beyond the attainment of initial goals. They said that as lecturers they provide ongoing support, professional development, and personal growth opportunities to students and qualified nurses.

#### Quotes:

*Lecturer 8: "We do not terminate a mentoring relationship with students neither with other junior nurses in the profession".*

*Lecturer 10: "I gave my students a lot of support. So, I think it is not ideal to terminate a mentoring relationship before goals are met".*

*Lecturer 12: "I gave a lot of support. I do not terminate a mentoring relationship. It just fades away when a student passes and moves to the next level".*

*Lecturer 13: "I still role model my students by supporting them and encouraging them".*

### Subtheme 3: Role modelling

Lecturers admitted that they are role models for students during online learning interactions, approximately 12 (n = 12; 66.6%) participants reported positive experiences in mentoring the students and providing them with adequate guidance towards their study areas. Conversely, 6 (33.3%) participants reported negative experiences, revealing that providing mentoring online was more challenging compared to a face-to-face approach. However, lecturers acknowledged that they remain mentors for their students and practicing nurses. Their experiences are illustrated below:

#### *Quotes:*

*Lecturer 3: "To be honest, I think I tried especially in guiding, the other affective parts are difficult to tell. I continue mentoring them, especially during clinical practice".*

*Lecturer 5: "I was available for student consultation anytime. I feel I mentored them".*

*Lecturer 6: "I guess I provided the support. I think the mentoring relationship should not be terminated because as a senior professional, I still mentor practicing nurses"*

Theme 5: Learning how to form and maintain mentoring relationships online is important for virtual mentoring.

All lecturers (100%) mentioned that learning how to form and maintain mentoring relationships online is crucial for the success of virtual mentoring initiatives. In the digital age, where remote communication and collaboration have become increasingly prevalent, mastering the art of virtual mentorship is essential for both mentors and mentees.

#### Subtheme 1: Institutional support

Some lecturers mentioned that institutional support during virtual mentoring plays a critical role in facilitating effective mentorship relationships and promoting a positive learning environment. Lecturers mentioned that institutions need to provide reliable internet connections, appropriate software platforms, and technical support to ensure that both mentors and mentees can engage in virtual interactions without disruptions as evidenced by the following quotes:

*Lecturer 3: "We need smooth internet facilities in order to stay in touch with the students".*

*Lecturer 5: "Some challenges are beyond lecturer control such as internet connectivity and availability of data for students".*

*Lecturer 7: "Both the student and us need to be trained on how to use the Learning Management Systems. I am sure it can work".*

*Lecturer 19: "Mentoring is the same, we need to cultivate a good non-threatening environment that encourages continuous flow of information between the mentor and mentee".*

#### Subtheme 2: Challenges and opportunities

In terms of comparing the virtual to face-to-face mentoring experiences, most of the lecturers, about 12 ( $n = 12$ ; 66.6%), felt that it was difficult to teach or connect with participants you could not see and that students could have distractions and social problems that a lecturer could not see, while some revealed that they enjoyed online learning. Regarding the necessity of online mentoring using a unique approach, approximately 10 ( $n = 10$ ) participants indicated that they needed to enhance their skills in online teaching.

#### Quotes:

*Lecturer 2: "Oh! It was quite an experience, though not the best but we are still learning. The most disappointing part is to talk to an audience you do not see and therefore mentoring them becomes difficult".*

*Lecturer 3: "I think virtual mentoring lacks the affective part that usually strengthens mentoring relationships".*

*Lecturer 4: "We are still learning how to make meaningful relationships".*

*Lecturer 5: "I enjoyed face-to-face mentoring. I could pick up negative behaviours from students without even asking what is wrong. Non-verbal cues displayed for*

*example a student who may come in class drunk, or unkempt showing other social problems that needed intervention. But virtually that part is not there. Also, we use facial gestures to emphasise points and to show emotions. At home students have so many distractions which may make mentoring less effective”.*

*Lecturer 9: “Face-to-face is usually satisfactory because we can even tell change of behaviour”.*

*Lecturer 14: “I can say that mentoring is more effective when you can see and read non-verbal communication. So that is the aspect lost where we need to improve”.*

*Lecturer 2: “We need to first refine our skills of online teaching so that we may be able to mentor students effectively”.*

*Lecturer 11: “We need the skills to motivate students to participate”.*

*Lecturer 18: “Online communication needs a lot of responsibility, self-discipline, that is giving students time and support they deserve and motivation”.*

## **Quantitative Results**

In this comparative analysis, the study aimed to explore and compare the experiences of nursing students and their lecturers in virtual mentoring versus face-to-face mentoring settings. The field of nursing education relies heavily on mentorship to facilitate the development of clinical skills, critical thinking abilities, and professional competencies among students. Nursing education has traditionally primarily used face-

to-face mentoring. However, with the advent of technology and a growing demand for flexible learning options, virtual mentoring has emerged as an alternative approach.

Furthermore, we will explore the transition to virtual mentoring, particularly in response to external factors like the COVID-19 pandemic that influenced the pedagogical practices and professional experiences of nursing lecturers. By comparing and contrasting the two mentoring approaches, the analysis provided insights that can inform best practices, policy decisions, and future directions in nursing education and mentorship. Through this analysis, a deeper understanding of the evolving landscape of mentorship in nursing education and its implications for teaching, learning, and professional development in the field is sought.

This section conducted a quantitative comparative analysis to examine the effectiveness and differences between virtual mentoring and face-to-face mentoring approaches. By systematically comparing key metrics and outcomes across both modalities, the study aimed to gain insights into their respective strengths, limitations, and overall impact on mentees' learning experiences and outcomes.

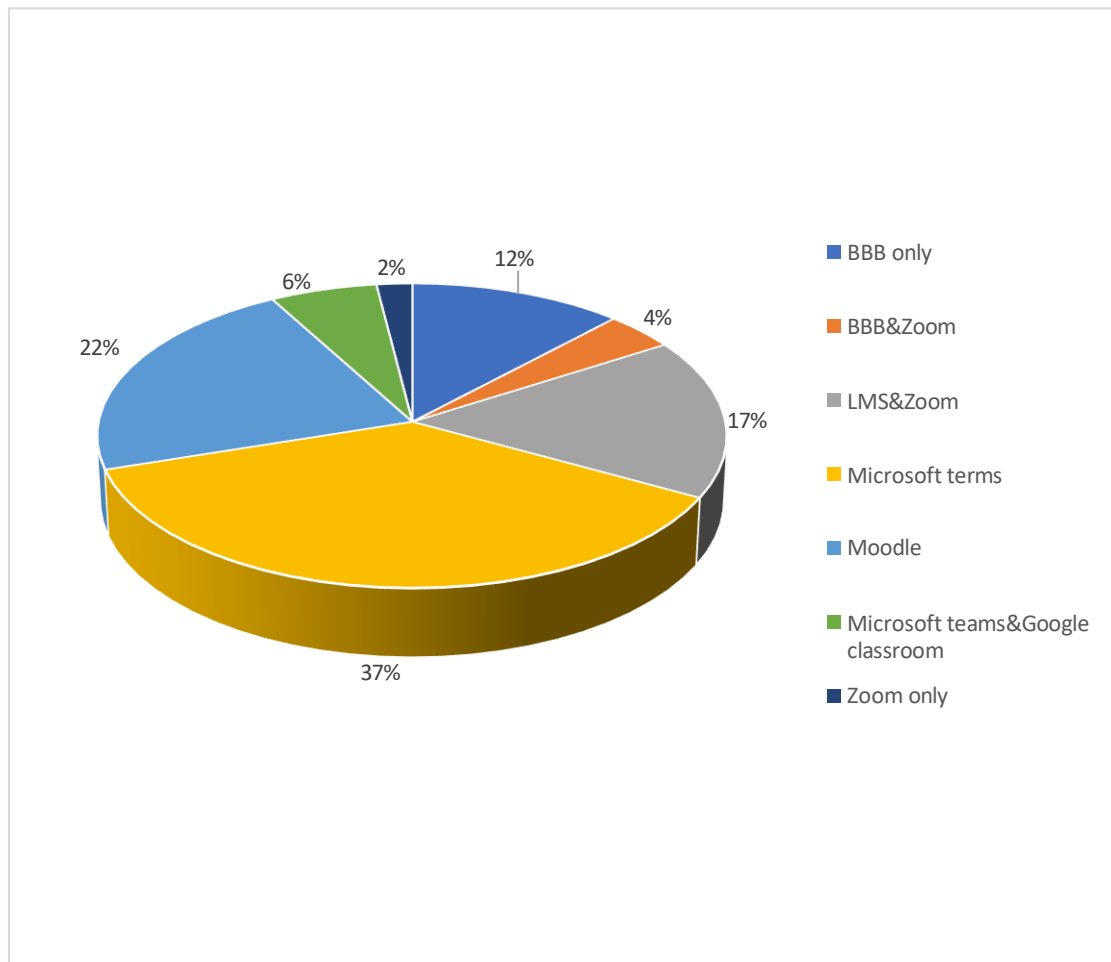
Through rigorous statistical analysis, the researcher sought to uncover trends and significant differences that can inform best practices in mentoring delivery and optimise support for mentees in nursing education. The analysis is based on the proposed hypothesis and the opinions of nursing students and lecturers on virtual and face-to-face mentoring experiences.

**Table 4.3***Descriptive Statistics for General Variables of the Study (Students)*

<b>Variable</b>	<b>Response</b>	<b>Frequency</b>	<b>Percentage</b>
Gender	Male	74	35%
	Female	137	65%
			<b>100%</b>
Year of study	Third Year	120	57%
	Fourth Year	91	43%
			<b>100%</b>
Institution	IUM	42	20%
	UNAM	80	38%
	WHTC	89	42%
<b>Total</b>		<b>211</b>	<b>100%</b>

Table 4.3 shows that 211 students completed the quantitative questionnaire. The response rate was 55%. About 65% (N=137) of the overall study participants were females.

The mean age of students was 34 years. About 43% (N=91) were in the fourth year of their studies while 57% (N=120) were in the third year of their study. About 20% (N=42) of the study participants were enrolled at IUM, 38% (N=80) at UNAM, and 42% (N=89) at WHTC.

**Figure 4.2***Virtual Platform Used*

Data from Figure 4.2 illustrates the various platforms utilised by students for online learning. Approximately 12% of students reported utilising Big Blue Button (BBB), while 4% used both BBB and Zoom. Furthermore, 17% of students employed the Learning Management System (LMS) in conjunction with Zoom, while 37% relied solely on Microsoft Teams. Additionally, 22% utilised Moodle, while 6% utilised both Microsoft Teams and Google Classroom. Lastly, only 2% of students reported using Zoom exclusively.



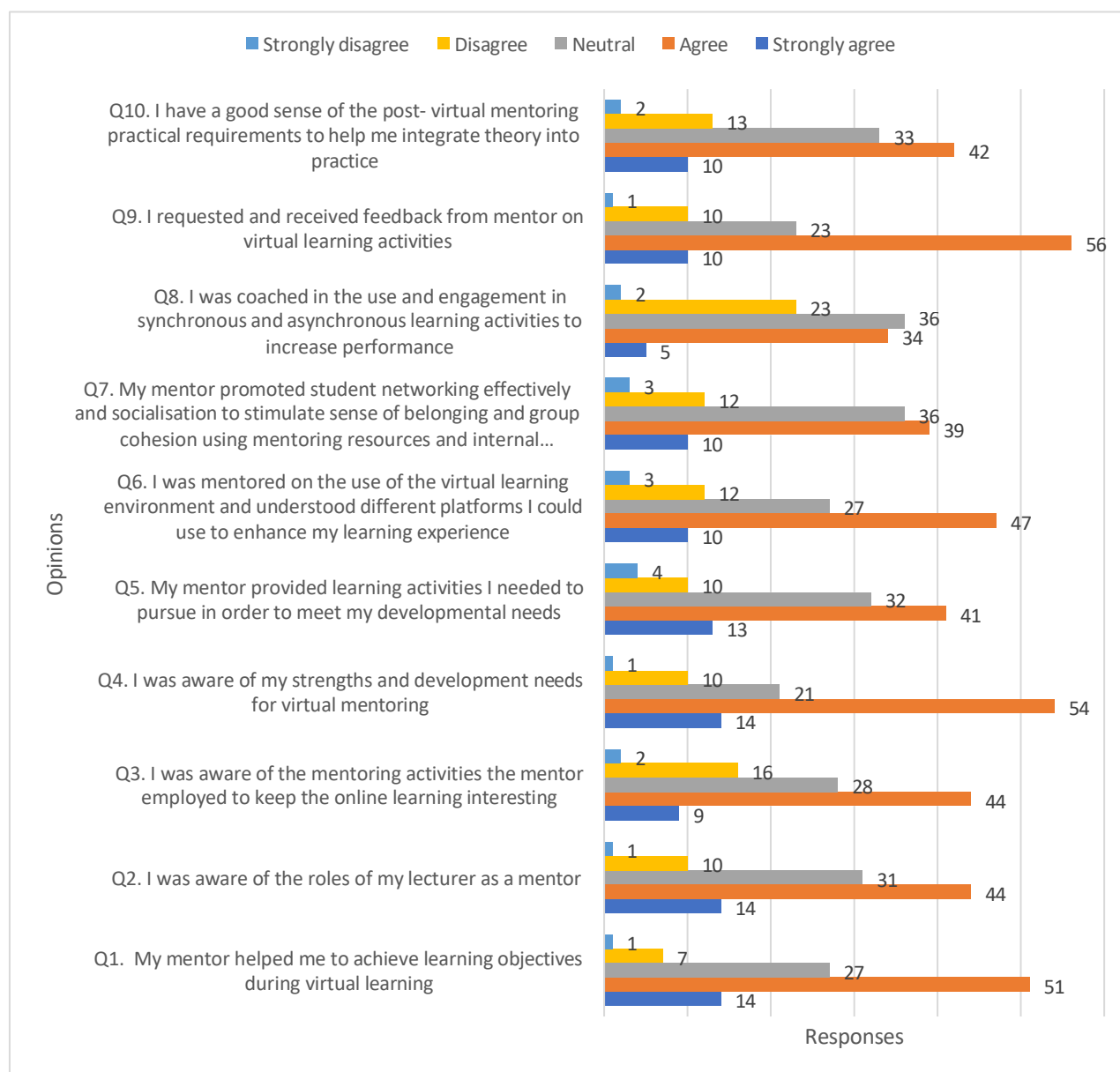
**Figure 4.3***Nursing Students' Opinion on Virtual Mentoring (%)*

Figure 4.3 illustrates nursing students' opinions on virtual mentoring. Approximately 65% of students acknowledged that their mentor assisted them in attaining

learning objectives during virtual education. Roughly 58% of students indicated awareness of the lecturer's role as a mentor. Around 53% of students confirmed their awareness of the mentor's mentoring strategies to maintain engaging online learning experiences. Approximately 68% of students who participated in virtual mentoring reported being aware of their strengths and areas for improvement.

About 54% of students agreed that the mentor provided the learning activities necessary to pursue their developmental needs. The mentor assisted approximately 57% of study participants in utilising the virtual learning environment and comprehending various platforms to improve their learning experience. About 49% of participants noted the mentor's effectiveness in fostering student networking and socialisation, as well as promoting a sense of belonging and group cohesion through mentoring resources and internal opportunities.

Thirty-nine per cent of students acknowledged receiving coaching to participate in synchronous and asynchronous learning activities to improve their performance. Roughly 66% of study participants stated that they sought and received feedback from their mentor on virtual learning endeavours. Approximately 52% of research participants stated that they had a clear understanding of the practical requirements of post-virtual mentoring to help integrate theory into practice.

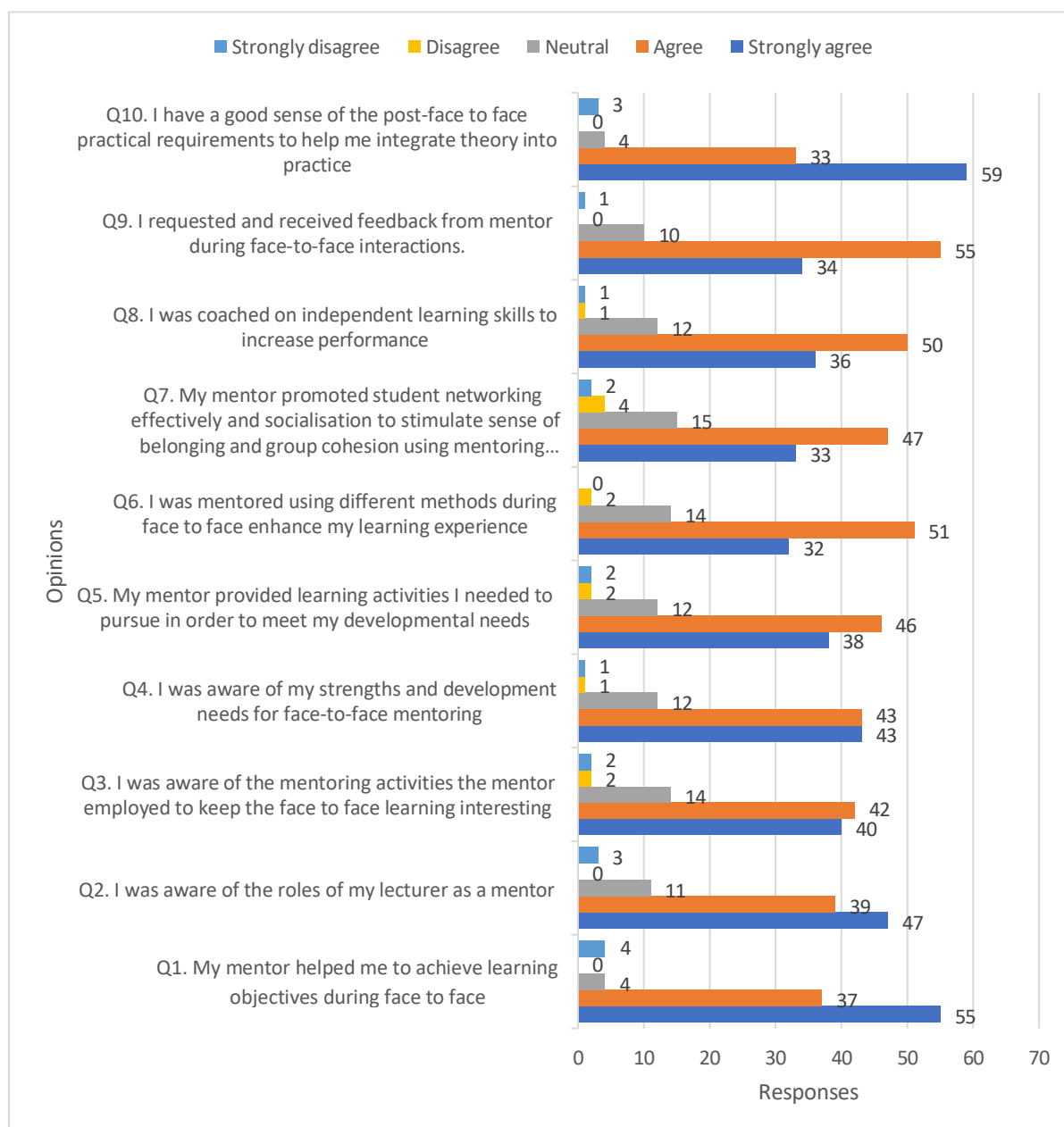
**Figure 4.4***Nursing Students' Opinion on Face-to-face Mentoring (%)*

Figure 4.4 shows that the mentor facilitated approximately 55% of the respondents' learning objectives during face-to-face interactions. An overwhelming 86% acknowledged

their awareness of their lecturer's role as a mentor. Similarly, around 82% recognised the mentoring strategies employed to maintain engagement in face-to-face learning sessions. A significant 86% indicated awareness of their strengths and areas for improvement within the face-to-face mentoring context. Additionally, 87% acknowledged that the mentor provided tailored learning activities to address their developmental needs. Approximately 83% of respondents noted the use of varied mentoring approaches during face-to-face sessions, which contributed to an enriched learning environment. Moreover, roughly 80% recognised the mentor's effective facilitation of student networking and socialisation, fostering a cohesive group dynamic through mentoring resources and internal opportunities. Furthermore, 86% acknowledged receiving coaching on independent learning skills aimed at enhancing performance. About 89% reported requesting and receiving feedback from their mentor during face-to-face interactions. Lastly, nearly 92% expressed confidence in understanding the practical requirements following face-to-face sessions, which is crucial for integrating theoretical knowledge into practical application.

**Table 4.4**

*RII Values for the Opinions of Students towards Virtual and Face-to-Face Mentoring*

Variable	RII (%)	Mean	Response	SD
Virtual mentoring			<b>70</b>	<b>12</b>
	≥65%		147 (70)	
	<65%		64 (30)	
Face-to-face Mentoring			<b>83</b>	<b>15</b>
	≥88%		196 (93)	
	<88%		15 (7)	

The mean virtual learning RII score was 70% indicating that most students had positive opinions about face-to-face mentoring as evidenced by a standard deviation of 12%. About 70% of the study participants had an RII score of 65% or above. Data from face-to-face opinions indicated a mean face-to-face mentoring RII score of 83% and a standard deviation of 15%. About 93% of the study participants had an RII score of the median 88% or above that also indicated positive experiences during face-to-face mentoring.

**Table 4.5**

*Factors Associated with Students' Virtual Mentoring RII Score*

Variable	Virtual mentoring RII score		p-value
	<65%	≥65%	
Gender			
Male	26(33)	53(67)	0.316
Female	38(29)	94(71)	0.392
Age, mean (SD)	23 (3)	24 (4)	0.044
Year of study			
3rd Year	39(32)	82(68)	0.294
4th Year	25(28)	65(72)	0.211
Institution			
IUM	14(33)	28(67)	0.432
UNAM	27(34)	53(66)	0.668
WHTC	22(25)	65(75)	0.001
Platform			
BBB	13(50)	13 (50)	0.683
BBB/Zoom	3 (38)	5 (62)	0.479
LMS/Zoom	13(37)	22(63)	0.875
Microsoft teams	18(23)	59(77)	0.174
Moodle	10(22)	36(78)	0.010
Microsoft teams and Google classroom	4 (33)	8 (67)	0.582
Zoom	1 (20)	4 (80)	0.048

Table 4.5 presents factors associated with the virtual mentoring scores comparing gender of participants, age, year of study, institution, and virtual platform used during

online learning. The p-value associated with gender (0.316) suggests that there is no statistically significant difference in RII scores between males and females. The mean age for virtual mentoring RII scores is 23 with a standard deviation of 3 for those scoring less than 65%, and 24 with a standard deviation of 4 for those scoring 65% or higher. The p-value (0.044) indicates a statistically significant difference in RII scores based on age, with older mentees tending to have higher RII scores. Regarding year of study, the table compares RII scores between third-year and fourth-year students. The p-value (0.294) suggests no statistically significant difference in RII scores based on the year of study. Regarding institutions, RII scores are compared across different institutions (IUM, UNAM, and WHTC). For IUM and UNAM, the p-values are greater than 0.05, suggesting that the results fail to reject the null hypothesis, indicating no significant association between the RII score and the institution. WHTC has a p-value of 0.001 which is less than 0.05, indicating a significant association between the RII score and the institution, suggesting that there may be a significant difference in the distribution of RII scores among students from WHTC compared to the other institutions.

The last comparison of virtual platform used, RII scores are compared across different virtual platforms. The p-value is approximately 0.683, which is greater than the typical significance level of 0.05. This suggests that there is no significant association between using the Big Blue Button (BBB) platform and the virtual mentoring RII score. The next p-value is 0.479, indicating no significant association between using the BBB/Zoom platform and the virtual mentoring RII score. Regarding LMS/Zoom, the p-value is approximately 0.875, suggesting no significant association between using the

LMS/Zoom platform and the virtual mentoring RII score. The p-value is approximately 0.174 for Microsoft teams which is greater than 0.05. Thus, there is no significant association between using Microsoft Teams and the virtual mentoring RII score. Moodle had a p-value of 0.01, which is less than 0.05. This suggests a significant association between using Moodle and the virtual mentoring RII score. The p-value is approximately 0.582, for using Microsoft Teams/Google Classroom indicating no significant association between the platform and the virtual mentoring RII score. The p-value for Zoom is 0.048, which is less than 0.05. Therefore, there is a significant association between using Zoom and the virtual mentoring RII score. Overall, the analysis suggests that age has a statistically significant impact on RII scores, with older mentees tending to have higher scores. However, there are no statistically significant differences in RII scores based on gender, year of study, institution, or virtual platform used for mentoring.

**Table 4.6**

*Factors Associated with Students' Face-to-Face Mentoring RII Score*

Variable	Face-to-face mentoring RII score		p-value
	<88%	≥88%	
Gender			
Male	4 (5)	75 (95)	0.338
Female	10 (8)	121 (92)	0.475
Age, mean (SD)	24 (2)	24 (3)	0.284
Year of study			
3rd Year	7 (6)	114 (94)	0.372
4th Year	7 (8)	82 (92)	0.613
Institution			
IUM	1 (2)	41 (98)	0.112
UNAM	6 (8)	73 (92)	0.296
WHTC	7 (8)	80 (92)	0.223

Table 4.6 presents the breakdown of RII scores of face-to-face mentoring experiences by gender, age, year of study, and institution. The p-value associated with gender (0.338) suggests that there is no statistically significant difference in RII scores between males and females in face-to-face mentoring. The table presents the RII score for face-to-face mentoring for males and females separately.

The p-values for both genders are relatively high (0.338 for males and 0.475 for females), suggesting that there's no significant difference in mentoring effectiveness between genders. With regards to age, the mean age for face-to-face mentoring RII scores is 24 with a standard deviation of 2 for those scoring less than 88%, and 24 with a standard deviation of 3 for those scoring 88% or higher. The p-value (0.284) indicates no statistically significant difference in RII scores based on age.

The table also compares RII scores between 3rd and 4th-year students. The p-value (0.372) suggests no statistically significant difference in RII scores based on the year of study in face-to-face mentoring. The table presents the RII score for face-to-face mentoring for students in the 3rd and 4th-years of study. The p-values for both groups (0.372 for 3rd-year and 0.613 for 4th-year) suggest no significant difference in mentoring effectiveness based on the year of study. Comparison of RII scores across different institutions IUM had a p-value of 0.112; UNAM 0,296; and WHTC 0.223. The p-value for all institutions is greater than the significance level of 0.05. The results fail to reject the null hypothesis. This indicates that there is not enough evidence to suggest a significant association between the institution and mentoring experiences.



**Results: Nursing Lecturers.** This analysis sought to explore the experiences of lecturers regarding virtual and face-to-face mentoring. By examining factors such as communication effectiveness, mentor-mentee relationships, skill development, and student engagement, the study aimed to identify the strengths and limitations of each mentoring modality in the context of nursing education.

Fifty-one lecturers completed the quantitative questionnaire. The response rate was 79.6%

**Table 4.7**

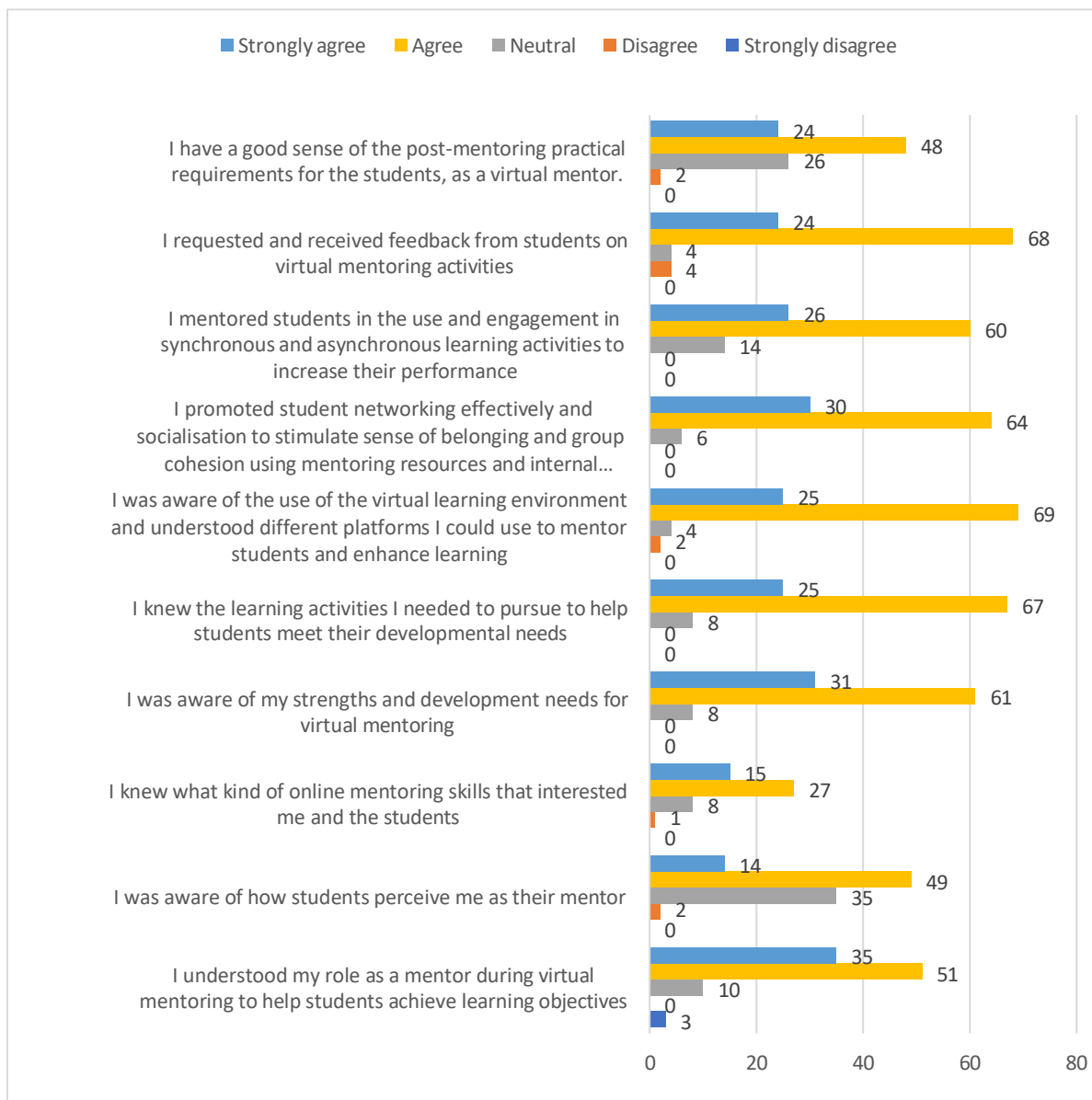
*Descriptive Statistics for General Variables of the Study (Lecturers)*

Variable	Response	Frequency	Percentage
Gender			
	Male	21	41%
	Female	30	59%
		<b>51</b>	<b>100%</b>
Institution			
	IUM	11	22%
	UNAM	16	31%
	WHTC	24	47%
		<b>51</b>	<b>100%</b>
		<b>mean</b>	<b>SD</b>
Years in the organisation		6	4
Age in years		43	9
Experience		9	6

Table 4.7 above shows participants' characteristics looking at gender, institution, and number of years in the organisation, participants' age and experience as a nursing lecturer. Regarding gender, there were 21 male respondents, accounting for 41% of the total, 30 female respondents, accounting for 59% of the total indicating a higher

representation of female respondents compared to male respondents in the sample. There were 11 respondents from IUM, accounting for 22% of the total, 16 respondents from UNM, accounting for 31% of the total and 24 respondents from WHTC, accounting for 47% of the total. Among the three institutions, WHTC had the highest representation with 47%, followed by UNAM with 31%, and IUM with 22%. This indicates a higher engagement or larger sample size from WHTC in the study. Regarding number of years in the organisation, the mean was 6 years with a standard deviation of 4 years. This suggests that, on average, respondents have been with their respective organisations for approximately 6 years, with some variability in the length of tenure. The mean age of nursing lecturers was 43 years with a standard deviation of 9 years. This indicates that the average age of respondents is 43 years, with some variability in ages among the sample. The mean years of experiences was 9 years with a standard deviation of 6 years. This suggests that, on average, respondents have approximately 9 years of experience in their respective roles or fields, with some variability in the level of experience among the sample.

Figure 4.5 displayed illustrates the comprehensive perspectives of participants regarding their roles as mentors in virtual mentoring settings. It highlights that a substantial 86% of participants affirmed their clear understanding of responsibilities in guiding students towards achieving learning objectives through virtual mentoring initiatives. Moreover, a sizeable portion, approximately 63%, acknowledged their awareness of how students perceived them in their mentorship roles, indicating a nuanced understanding of their impact on student learning experiences.

**Figure 4.5***Nursing Lecturers' Opinion on Virtual Mentoring (%)*

Furthermore, 42% of participants acknowledged their comprehension of the diverse array of online mentoring skills that resonate with both themselves and their

students, underscoring the importance of adaptability and empathy in virtual learning environments.

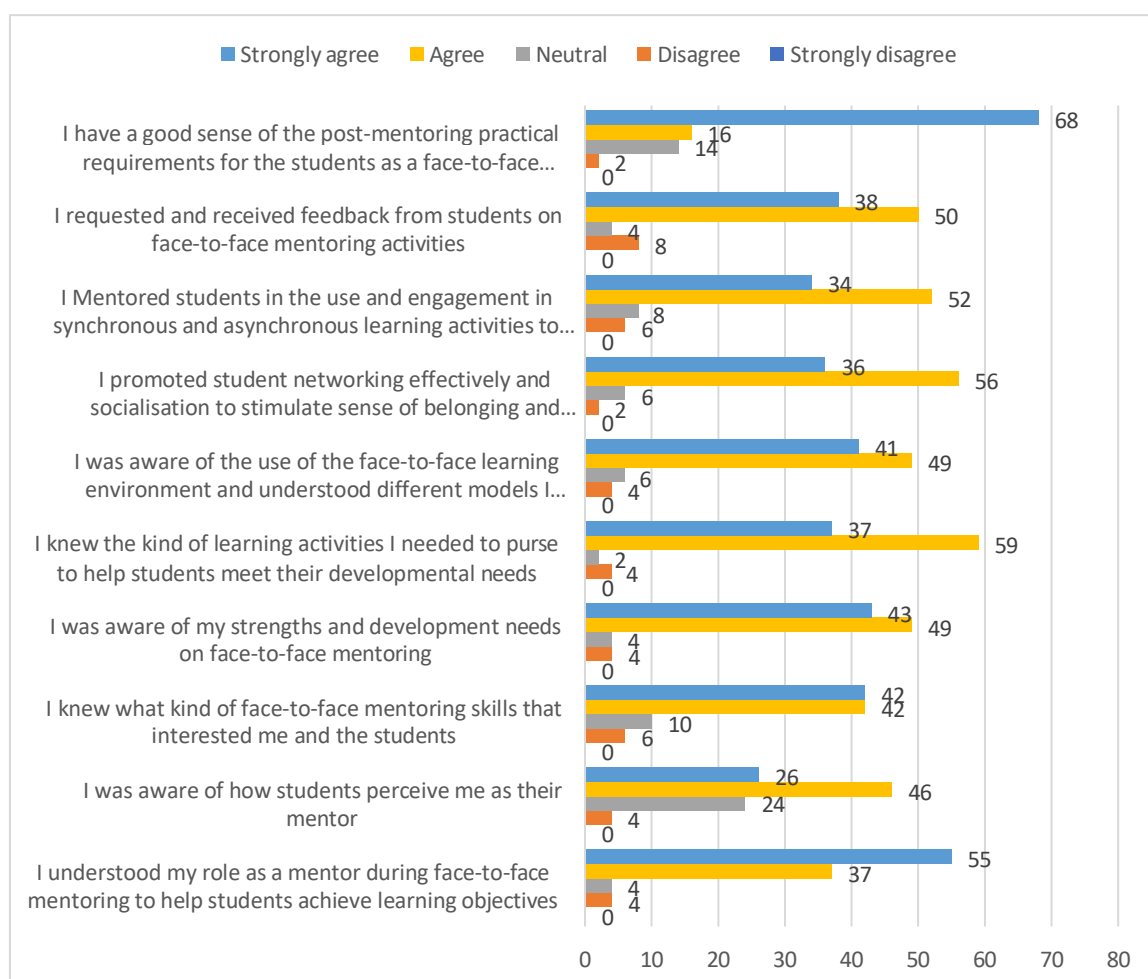
Additionally, an overwhelming majority, around 92%, recognised their individual strengths and identified areas for further development within the area of virtual mentoring, reflecting a commitment to ongoing self-improvement and effectiveness in supporting students' needs. Moreover, participants demonstrated a prominent level of understanding, with approximately 82%, regarding the specific learning activities essential for facilitating students' progress in meeting their developmental milestones within virtual learning contexts. This highlights their capacity to tailor their mentorship approaches to suit diverse student requirements and learning styles effectively. Additionally, a notable 94% of participants indicated their familiarity with the virtual learning environment and their adeptness in utilising various platforms to mentor students and enrich their learning experiences. This proficiency highlights their adaptability and technological savvy in navigating digital landscapes to optimise mentoring outcomes.

A substantial majority, approximately 94%, acknowledged their effectiveness in promoting student networking and socialisation, leveraging mentoring resources and internal opportunities to cultivate a supportive learning community conducive to student success and well-being. Around 86% of participants acknowledged their pivotal role in guiding students to engage with both synchronous and asynchronous learning activities, emphasising their commitment to enhancing student performance through varied instructional modalities. Additionally, participants demonstrated a proactive approach to feedback, with approximately 92% acknowledging their practice of soliciting and

incorporating feedback from students on virtual mentoring activities, thereby fostering a culture of continuous improvement and responsiveness to student needs. Lastly, approximately 82% of participants acknowledged their understanding of the practical requirements students would encounter post-mentoring, demonstrating foresight and preparedness in equipping students with the necessary skills and knowledge for future success beyond the virtual learning environment.

**Figure 4.6**

*Nursing Lecturers' Opinion on Face-to-face Mentoring (%)*



Approximately 87% affirmed their comprehension of their role as mentors during face-to-face mentoring sessions aimed at assisting students in achieving their learning objectives. Around 72% acknowledged their awareness of how students perceived them in their capacity as mentors. Roughly 84% acknowledged their understanding of the face-to-face mentoring skills that interested both them and their students. Approximately 92% acknowledged their awareness of their strengths and areas for development in face-to-face mentoring. About 96% acknowledged their understanding of the learning activities necessary to pursue to support students in meeting their developmental needs. Around 90% acknowledged their familiarity with the face-to-face learning environment and their grasp of various models available for mentoring students to enhance learning. Approximately 92% of participants acknowledged their remarkable effectiveness in actively promoting student networking and facilitating socialisation within the educational environment. By leveraging a range of mentoring resources and internal opportunities, they adeptly fostered a profound sense of belonging and cohesion among students. Their commitment to nurturing a supportive community underscores their dedication to student well-being and academic success. Moreover, a considerable proportion, roughly 86%, recognised the pivotal role they played in mentoring students to actively engage with both synchronous and asynchronous learning activities. Through their guidance and support, students were empowered to navigate and effectively utilise diverse learning modalities, thereby enhancing their overall performance and educational outcomes.

Furthermore, around 88% of participants acknowledged their consistent practice of soliciting and thoughtfully integrating feedback from students on face-to-face mentoring

activities. This commitment to feedback underscores their dedication to continuous improvement and responsiveness to the evolving needs and preferences of their mentees. About 84% of participants demonstrated a thorough understanding of the practical requirements awaiting students upon completion of their mentoring journey, particularly within the specialised context of nurse training. By equipping students with the necessary skills and knowledge, they prepared them for the challenges and responsibilities they would encounter in their future roles as healthcare professionals. This foresight and preparation are instrumental in ensuring the successful transition of students into their professional careers, thereby upholding the standards of excellence within the nursing profession

**Table 4.8**

*RII Values for the Opinions of Lecturers towards Virtual and Face-to-Face Mentoring*

Variable	RII (%)	Response mean (SD)
Virtual mentoring		81 (11)
	≥80%	30 (58)
	<80%	21 (41)
Face-to-face mentoring		83 (15)
	≥88%	29 (57)
	<88%	22 (43)

The RII (%) for virtual mentoring is 81, with a standard deviation of 11. Among respondents, 58% reported achieving an RII of ≥80%, while 41% reported an RII of <80%. Regarding face-to-face mentoring, the RII (%) is 83, with a standard deviation of 15. Among respondents, 57% reported achieving an RII of ≥88%, while 43% reported an RII of <88%. Both virtual and face-to-face mentoring approaches have relatively high RII

percentages, indicating positive perceptions of their effectiveness among respondents. The mean RII for face-to-face mentoring (83%) is slightly higher than that for virtual mentoring (81%). In both virtual and face-to-face mentoring, a majority of respondents reported achieving RII scores meeting or exceeding certain thresholds ( $\geq 80\%$  for virtual mentoring and  $\geq 88\%$  for face-to-face mentoring), suggesting overall positive experiences. However, there is a notable difference in the threshold levels for virtual and face-to-face mentoring (80% vs. 88%), which may indicate different standards or expectations for effectiveness between the two modalities. The standard deviations for both virtual and face-to-face mentoring indicate some variability in respondents' perceptions, suggesting that experiences and perceptions of effectiveness may vary among individuals.

**Table 4.9**

*Factors Associated with Lecturers' Virtual Mentoring RII Score*

Variable	Virtual mentoring RII score		
	<80%	$\geq 80\%$	
Gender			
Male	9 (43)	12(57)	
Female	12(40)	18(60)	
Age, mean (SD)	39 (8)	46 (8)	0.001
Years of experience, mean(SD)	6 (4)	10 (6)	0.007
Institution			
IUM	6 (56)	5 (45)	0.304
UNAM	4 (24)	12(75)	
WHTC	11(46)	13(54)	
Number of years in the organisation, mean (SD)	4 (2)	8 (5)	



The above table presents data on the factors associated with virtual mentoring, categorised by various variables, on different outcomes such as gender, age, years of experience, institution, and number of years in the organisation. There were 21 males and 30 females. The RII scores and p-values are given for males and females separately. For both genders, there is no significant difference in RII scores based on the p-value (0.533). The mean age for individuals with RII scores <80% is 39 years with a standard deviation (SD) of 8, and for those with RII scores ≥80%, it is 46 years with an SD of 8. The p-value (0.001) suggests a statistically significant difference in RII scores between different age groups. With regards to years of experience, lecturers with RII scores <80% have a mean experience of 6 years (SD=4), while those with RII scores ≥80% have a mean experience of 10 years (SD=6). The p-value (0.007) indicates a statistically significant difference in RII scores based on years of experience.

The table also compared virtual mentoring RII scores per institution. The institutions included are IUM, UNAM, and WHTC. The p-values per institution which were calculated using a Chi-square test, tested whether there is a significant association between the virtual mentoring RII categories (<80% and ≥80%) and each institution (IUM, UNAM, and WHTC). IUM had a p-value of 0.631; UNAM has a p-value of 0.305, and WHTC; 0.855. There is insufficient evidence to conclude that there is a significant association between the implementation index categories and all institutions. With all institutions having a p-value greater than 0.05, the results fail to reject the null hypothesis.

Regarding number of years in the organisation, individuals with RII scores <80% have been in the organisation for a mean of 4 years (SD=2), while those with RII scores

≥80% have been there for a mean of 8 years (SD=5). The p-value (0.002) suggests a statistically significant difference in RII scores based on the number of years in the organisation. Overall, the analysis suggests that age, years of experience, and the number of years in the organisation are significantly associated with virtual mentoring RII scores. However, gender and institution do not show significant associations with RII scores.

**Table 4.10**

*Factors Associated with Lecturers' Face-to-Face Mentoring RII Score*

Variable	Face-to-face RII score		p-value
	<88%	≥88%	
Gender			
Male	8 (42)	13(58)	0.386
Female	14(42)	16(58)	0.386
Age, mean (SD)	39 (8)	46 (8)	0.003
Year of experience, mean (SD)	6 (4)	10 (6)	0.002
Institution			
IUM	4 (36)	7 (64)	0.477
UNAM	4 (25)	12(75)	0.001
WHTC	14(58)	10(42)	0.731
Number of years in the organisation, mean (SD)	5 (3)	7 (5)	0.014

Table 12 compares the face-to-face RII scores of nursing lecturers. With regards to gender, among male respondents, 43% scored below 88%, while 57% scored 88% or higher. Among female respondents, 40% scored below 88%, while 60% scored 88% or higher. The p-value associated with females and males are both 0.386 indicates that there is no statistically significant difference in RII scores between males and females. This

suggests that gender does not significantly influence the effectiveness of face-to-face mentoring. The table also presents the mean age of respondents with RII scores below 88% and those with RII scores of 88% or higher. Respondents with RII scores below 88% have a mean age of 39 years, while those with RII scores of 88% or higher have a mean age of 46 years. The p-value (0.003) suggests a statistically significant difference in RII scores based on age, with older respondents tending to have higher RII scores.

Regarding years of experience, the table displays the mean years of experience of respondents with RII scores below 88% and those with RII scores of 88% or higher. Respondents with RII scores below 88% have a mean of 6 years of experience, while those with RII scores of 88% or higher have a mean of 10 years of experience. The p-value (0.002) indicates a statistically significant difference in RII scores based on years of experience, with respondents having more years of experience having higher RII scores.

The RII scores are compared across different institutions (IUM, UNAM, and WHTC). With a p-value of approximately 0.477 for IUM, the results fail to reject the null hypothesis, suggesting that there is not enough evidence to conclude that there is a significant association between the face-to-face RII score and gender within this institution. UNAM has a p-value of approximately 0.001, therefore the results reject the null hypothesis, indicating that there is significant evidence to suggest an association between the face-to-face RII score and gender within this institution. With a p-value of approximately 0.731 for WHTC, the results fail to reject the null hypothesis, suggesting

that there is not enough evidence to conclude that there is a significant association between the face-to-face RII score and gender within this institution.

With regards to number of years in the organisation, respondents with RII scores below 88% have a mean of 5 years in the organisation, while those with RII scores of 88% or higher have a mean of 7 years. The p-value (0.014) indicates a statistically significant difference in RII scores based on the number of years in the organisation, with respondents having more years in the organisation having higher RII scores. The analysis suggests that age, years of experience, and the number of years in the organisation are significantly associated with face-to-face mentoring RII scores. Gender does not appear to have a significant influence, and while there is a trend towards significance for the institution variable, it does not reach statistical significance in this analysis. These findings provide valuable insights into factors that may impact the effectiveness of face-to-face mentoring among respondents.

## **Evaluation of Findings**

### **Qualitative Findings**

In this section, the qualitative and quantitative results from exploring virtual mentoring experiences among nursing students and their lecturers are evaluated. As the integration of technology transforms education, it becomes important to understand how virtual mentoring compares to traditional face-to-face mentoring. This investigation explores multiple facets of the mentoring experience, including the instructional content,

the promotion of student independent learning, socialisation, student support, mentoring relationships, and thoughts on potential improvements.

The theoretical basis of this research study is the CA approach by Collins et al. (1989) which argue that the traditional apprenticeship approach to learning makes a student to be a passive recipient of knowledge. The student only acquires skill by observation and imitation. The CA views a student as an active partner during the teaching and learning process. It utilises the process of making thinking visible to the student. In this study, the assumptions of the cognitive apprenticeship model were harnessed to mentor a student through a technologically driven virtual environment for effective mentoring relationships. On the other hand, the conceptual model views virtual mentoring as multifaceted. It involves mentors setting objectives and mentoring outcomes, a description of mentoring roles for both the mentor and mentee, how technology is integrated into the mentoring relationship including communication strategies and mentoring activities. As alluded in the CA model, assessment of the mentoring relationship progress and feedback is paramount. Virtual mentoring also takes into cognisance ethical issues that may affect the mentoring relationship and how mentoring is evaluated.

The first objective of this study, based on the main research question, was to explore the nursing students' experiences with virtual mentoring. Analysis of focus group discussion data revealed five themes and eleven subthemes. Both focus group discussions and lecturer interview guides used priori codes derived from the dimensions of learning using Collins et al.'s (1987, as applied by Chen, 2018) model of cognitive

apprenticeship and the conceptual framework of virtual mentoring. The first question answered was: How do 3rd and 4th-year nursing students describe their experiences as mentees during virtual mentoring? Six focus group discussions were done with each participating institution having two groups. Both groups consisted of a mixture of 3rd and 4th-years. The results from all six focus group discussions showed similarities on student virtual mentoring experiences.

The first concept was student's experiences on the teaching content. The CA model emphasises on teaching facts, concepts and procedures in a way that makes thinking visible to students. The teaching content that is prepared for a cognitive apprenticeship student considers a student as an active participant in the learning process incorporating the cognitive and metacognitive dimensions. One theme and two subthemes were identified. Preparation of adequate teaching content was found to be paramount for students to understand what was taught. Students acknowledged that the teaching content was adequate as the same content that was delivered during face-to-face teaching. However, cognitive apprenticeship model approach looks at how the content made the lecturer's thinking visible to the student, therefore, the use of slides, videos and pictures was identified as the subtheme. Varied teaching aids were employed by lectures such as videos, pictures, and diagrams to make thinking visible to students. The findings of this study are similar to Morin (2020) who found out that students were satisfied with the content that they received online.

According to Collins et al. (1989), varying teaching aids enable the students to articulate the content taught by forming abstract images in their brain. The inclusion of

slides, diagrams, pictures, and videos in virtual mentoring is highly beneficial from the perspective of nursing students. These visual aids help make complex concepts more understandable and tangible. By providing visual representations, these tools bridge the gap between theoretical knowledge and practical application, making it easier for students to grasp and retain information. Visual aids can also facilitate better engagement and interaction during virtual sessions, as they provide focal points for discussion and analysis. Essentially, these tools improve communication clarity and present abstract ideas in a more accessible and comprehensible way. According to Chen (2018), when mentoring students using teaching content, the lecturer does not expect the student to acquire knowledge just by observing the lecturer execute a task. Instead, the lecturer believes that having clear objectives and engaging content that triggers curiosity would facilitate the student's acquisition of knowledge.

The conceptual model developed for this study identified objectives and outcomes as important components in virtual mentoring. For successful virtual mentoring, online teaching content should be well-structured and organised, with clear learning objectives and sequential presentation of concepts. The second theme centred on optimising virtual mentoring sessions so that they are interactive and dynamic. Strategies such as incorporating multimedia content, utilising interactive platforms, and promoting active participation through discussions and activities can significantly enhance the learning experience. By creating a stimulating and responsive virtual learning environment, mentors can ensure that students remain focused, motivated, and able to achieve their academic and professional goals. This helps students to navigate through the material

and understand the logical progression of ideas. Also, by defining specific mentoring outcomes, both mentors and mentees have a clear understanding of what they aim to achieve through the mentoring relationship. This clarity helps in aligning expectations and focusing efforts on relevant areas. Setting outcomes allows for the measurement of progress over time. Mentors and mentees can track their advancement toward achieving the defined goals, providing a sense of accomplishment and motivation to continue the mentoring process.

Despite their appreciation for the use of slides, videos, and pictures in virtual mentoring, nursing students expressed concerns about the presentation of these materials. The rushed nature of the presentations hindered many students' ability to fully comprehend the content. Others mentioned feeling overwhelmed by the amount of information, which hindered their comprehension. Dennen and Burner (2008) emphasise that effective modelling in education involves demonstrating thinking processes to students. This approach is described as situatedness, which considers whether the content taught helps students become practitioners or merely learn about practice. Incorporating multimedia resources, such as videos, animations, interactive simulations, and graphics, can enhance engagement and accessibility for students with different learning styles. To promote academic success, the conceptual model suggests that mentors should focus on effectively integrating technology during virtual mentoring.

Shaikh (2017) highlights that students receive mentorship on academic survival skills when they meet the lecture objectives and comprehend the taught content. The student experiences reflect that the teaching content provided fell short of mentoring



students for academic survival skills, as most students expressed a limited understanding of the content taught. However, the second theme on promoting independent learning found that students developed resilience. Nursing students highlighted several key themes in their virtual mentoring experiences. Despite limited IT support, they appreciated the promotion of self-directed learning, which encouraged them to take initiative and develop resourcefulness. Activities like problem-solving scenarios and reflective discussions fostered critical thinking, enabling students to analyse complex scenarios and make informed decisions. Students also valued clear and simple objectives because they provided a clear roadmap for each session, which helped them stay focused and understand the purpose of their learning activities. These elements collectively contributed to a more effective and engaging virtual mentoring experience.

Figueroa (2019), who argues that virtual mentoring can sometimes lack the immediacy and personal connection of face-to-face interactions, also supports these findings. Therefore, selecting engaging activities and resources helps to maintain the interest and attention of nursing students. Interactive resources such as online case studies, simulations, virtual patient scenarios, and quizzes can be particularly effective in promoting active learning and engagement. Providing a variety of activities and resources caters to different learning styles and preferences among nursing students. Some students may prefer visual learning through videos or infographics, while others may prefer text-based resources or interactive modules. By offering diverse resources, mentors can accommodate the needs of a broad range of learners. In addition, Hayward et al. (2002), which was mentioned in Dennen and Burner's (2008) claims, showed that

mentees benefit from creating real-life scenarios because they help them remember what they have learned and put theory into practice. For instance, when a student encounters a disease-stricken patient in a practical scenario, they envision nursing the patient and developing a nursing care plan, which not only strengthens their nursing care plan writing skills but also enhances their ability to manage a real patient.

The findings also confirm what De Swardt et al. (2017) notes that problem-based learning approach allowed students to adapt and participate in ever changing, unpredictable environments they find themselves in during practice. Practical problem-solving questions are evidence-based resources and activities that reinforce the importance of critical thinking and decision-making in nursing practice. Mentors can guide students in navigating scholarly databases, accessing peer-reviewed journals, and critically appraising research literature. By engaging with evidence-based resources, students learn to apply research findings to clinical decision-making and practice. Also, in relation to independent learning, the concept of guided participation in the cognitive apprenticeship model allowed the student to move from their zone of proximal development by (Vygotsky, 1978) when they work through assignments given at their own time. Students experienced what they called 'moving out of their comfort zones' to develop a culture of self-directed learning. They adapted to the online learning by making their own timetables which accommodated study groups and working on assignments. Students were able to come up with presentable material, discuss and get feedback from the lecturer which strengthened their reading, writing and presentation skills.

Furthermore, the findings alludes to Borup et al. (2018) argument that metacognitive skills are essential for independent learning as they enable learners to plan, monitor, regulate, reflect, and adapt their learning processes effectively. By cultivating metacognitive abilities, learners can become more self-directed, motivated, and successful in their pursuit of knowledge and skills.

The themes that emerged from fostering socialisation among students were that interpersonal relationships were built through group work and socialisation encouraged collaborative learning. Students noted the importance of mentors creating a supportive environment through regular check-ins and personalised feedback through WhatsApp groups, which helped them feel connected and valued. Collaborative learning activities, such as group projects and peer discussions, were beneficial for enhancing understanding and developing teamwork skills. These activities, facilitated by virtual platforms with features like group discussions and assignments, allowed students to share diverse perspectives and build a sense of camaraderie. These elements collectively contributed to a more interactive and engaging learning experience. WhatsApp groups promote cohesion and a sense of belonging.

Regarding socialisation, Collins et al. (1989) argue that the social context refers to the entire environment that influences the learning process. An expansion of the social context by Dennen and Burner (2008) refers to socialisation as the community of practice. When they shared a task, mentors who used group work promoted mutual engagement between students, resulting in a sense of belonging. Despite the geographical separation of students, the community of practice fostered through group work united them through

mutual agreement, joint enterprise, or a shared repertoire during their work and assignment presentations. Loong (1998), as cited in Dennen and Burner (1998), points out that group work is a way of promoting peer mentoring, where students can identify their knowledge gaps and ask for peer assistance and support. Students expressed that they took the initiative to start WhatsApp chat groups so that they could help each other with their studies.

A review of the literature by Raso et al. (2019) identified that during mentoring relationships, students often learn appropriate professional behaviour and ethics through a hidden curriculum. This hidden curriculum includes unspoken, implicit aspects of education taught through an educational institution's culture and environment, with communication being a key component. In nursing education, the hidden curriculum involves norms, values, attitudes, and behaviours that contribute to the formation of professional identity and socialisation within the nursing profession. The conceptual framework of Raso et al.'s (2019) study suggests that virtual mentoring facilitates open communication between mentors and nursing students, encouraging reflective discussions that promote the values, norms, and attitudes integral to nursing practice. Mentors are instrumental in modelling professional behaviours and attitudes, both explicitly and implicitly. Through virtual interactions, mentors can exemplify professionalism, ethical decision-making, and effective communication skills. By observing and emulating these behaviours, nursing students can learn the profession's unwritten expectations and internalise its professional values and ethics.

On lecturer support, two subthemes were identified. The students pointed out that feedback is important for psychological support. Students expressed that they sometimes felt 'on their own' and experienced psychological stress due to a lack of support. Students observed that the absence of lecturers left them without any emotional or psychological support. Other online learning problems that students encounter, such as a lack of data and compatible gadgets for online learning, shed light on this theme. According to Shaikh (2017), feedback and evaluation are the primary roles of a mentor in nursing education. Feedback gives the mentee insight into their developmental needs. Positive feedback helps students feel valued and competent, which can significantly boost their confidence. Also, constructive feedback, when delivered sensitively, can help students recognise their areas for improvement without feeling demoralised. These findings concur with Sacco and Kelly's (2021) findings, where lecturers reported a reduced ability to support students during online learning. The support focused more on consultation on how to use the online LMS than mentoring for academic success.

Feedback is an essential component of mentoring for nursing students; it provides opportunities for evaluation, growth, and improvement. The conceptual framework identified that assessment strategies and feedback are important in virtual mentoring. Mentors can provide individualised feedback tailored to the unique needs and abilities of each nursing student. Through written feedback, video conferencing, or audio recordings, mentors can offer constructive criticism, praise accomplishments, and offer suggestions for skill enhancement. Constructive feedback on clinical reasoning, communication skills,

and professional behaviour prepares students for success in clinical settings and promotes lifelong learning and development.

Without achieving the mentoring goals, support may have faded. Students had to rely on the clinical environment to consolidate theory. During discussions, students struggled to grasp the concept of reflective thinking in the classroom. During clinical attachment, students understood reflective learning as a way of putting theory into practice. However, in the CA model, reflection refers to the student's ability to think deeply about how to solve problems and compare their decisions with those of the mentor. In a classroom situation, reflection allows a student to review their understanding of the concepts taught, their power of imagination and memory, and the feelings that enable them to grasp the meaning and value of the subject matter so that they can critique their judgements and actions. Students affirmed the role of clinical attachment in consolidating theoretical knowledge. According to Shaikh (2017), mentors provide nursing students with guidance in making clinical decisions based on theoretical knowledge during classroom mentoring. They help students understand how theoretical concepts apply to real-life patient care scenarios, assisting them in prioritising patient needs and making appropriate clinical judgments. Mentors' role in the classroom underscores the importance of research. Lecturers use current research evidence to inform clinical decision-making, and they encourage students to critically evaluate research findings for their applicability to patient care situations. Through guided reflection, students gain insight into how theoretical concepts influence their clinical practice, leading to continuous learning and professional development.

The last theme delved into the use of videos during live lectures, allowing students to compare virtual and face-to-face mentoring. Students' opinions about virtual mentoring identified one theme: the use of videos during live lectures, where institutional support and balanced lecture content are necessary for effective virtual mentoring. The students highlighted the need for strengthened institutional support to ensure the success of mentoring relationships, citing challenges in accessing live lecturers due to inadequate ICT department support. Some mentioned that they had network issues and could not join live lecturers. Students cited the lack of ICT department support as a demotivating factor during online learning. However, lecturers were able to provide support using other social media outside the learning management system, such as WhatsApp and Google Meet, to keep students on board.

Students lamented the absence of facial expressions, which convey personal emotions and motivation, which are important aspects of virtual interactions to provide social coordination. According to the conceptual framework, communication strategies are critical in virtual mentoring. Non-verbal communication plays a significant role in mentoring nursing students, offering several benefits that complement and enhance verbal interactions. Non-verbal cues such as facial expressions, gestures, and body language can help mentors establish rapport and build trust with nursing students. A warm smile, attentive posture, and friendly demeanour convey openness and approachability, making students feel comfortable and valued in the mentoring relationship. In addition, non-verbal cues often reinforce verbal messages, helping to clarify and enhance students' understanding of complex concepts or instructions. For

example, using hand gestures or visual aids can supplement verbal explanations, making abstract ideas more tangible and easier to grasp for students. Facial expressions, nodding, or eye contact can convey encouragement, affirmation, or constructive criticism in a way that complements verbal feedback. This multi-modal approach to feedback can reinforce learning while also promoting self-awareness and improvement. Lecturers may also use a compassionate touch or a reassuring gesture to convey understanding and encouragement, fostering a supportive mentoring environment. Calming gestures, such as a soothing tone of voice or a gentle touch, can help defuse stressful situations and promote effective communication and collaboration among students and mentors. Students lacked such intimacy during online learning.

The second research question aimed to explore how lecturers describe their experiences as mentors during virtual mentoring sessions. Lecturers had varied experiences regarding their role as virtual mentors, especially in the classroom. The first theme identified was that proper planning of objectives and content of lectures is important to make students grasp the content taught. Lecturers expressed that the preparation of online teaching content did not differ from the preparation of face-to-face teaching content. Nearly all lecturers interpreted the art of making thinking visible to students as creating clear, easy-to-follow objectives, creating slides with pictures and diagrams, and posting videos for students to view. The findings contradict the findings of the Sacco and Kelly (2021) study, which revealed that lecturers had to adapt their teaching methods to the constraints of online teaching. Their teaching content did not accommodate the different learning styles they would use during face-to-face instruction.



Collins et al. (1989) borrowed the concept of modelling from Bandura (1976) as a CA strategy. Modelling was defined as an instructional method that allows a teacher to demonstrate a new concept or approach. Students learn by observing. To model students, lecturers used simple objectives, pictures, and videos, making their thinking visible. Various content selection and preparation models teach students how to think. Although a variety of strategies were used to make thinking visible to students, lecturers did not adjust the amount of content taught to suit online interaction timing. For example, an online lecturer needs preparation time for logging in and a waiting period for all students to log in. Also, in between the sessions, the network may delay progress, which leads to less content delivery time. Due to time constraints, lecturers were unable to address all objectives, implying that students did not receive comprehensive guidance on academic survival skills.

The second theme identified was that problem-solving questions and practical scenarios promote student expertise and critical thinking, and one subtheme—coaching, guidance, and support given during class presentations to promote understanding—emerged to promote student expertise. Almost all lecturers mentioned the use of problem-solving scenarios. The lecturers also pointed out that they gave feedback on assigned tasks during presentations, homework, and assignments. They comprehended that the goal was to foster student-independent learning. Modelling, coaching, and scaffolding are all instructional pedagogies used to mentor the student's cognitive processes, where they attempt to answer questions that lead to the discovery of a strategy to solve a problem, according to the CA approach. Mentoring students by making thinking visible involves

strategies to encourage students to articulate and share their thought processes, reasoning, and problem-solving strategies. This approach promotes metacognition, enhances critical thinking skills, and fosters deeper understanding. Lecturers use a variety of strategies, such as thinking aloud, where they verbalise their steps in problem-solving. Use stimulating visual aids, ask probing questions, and implement thinking routines such as, 'see-think-wonder,' 'circle of viewpoints,' or 'I notice, I wonder, it reminds me of.' These routines, created by Oxford, make thinking visible and provide a framework for structured inquiry and reflection.

Some students shared their experiences, stating that certain problem-solving scenarios were too obvious to stimulate critical thinking. This contradicts the views of the lecturers, who believed that problem-solving was an effective way for students to develop critical thinking skills. In light of this, Oriol et al. (2010) cautioned that excessive scaffolding could hinder students' learning, while insufficient scaffolding might not be sufficient for students to develop critical thinking skills.

Lecturers viewed socialisation in two contexts: first, the social environment where mentoring took place, and second, the role of the lecturer as a mentor who promotes group cohesion among students. Lecturers mentioned that they assigned group work to foster a sense of belonging among students, promote socialisation, and facilitate collaborative learning. De Swardt et al. (2017) argue that promoting student socialisation during online mentoring presents unique challenges compared to traditional face-to-face interactions. However, with careful planning and implementation of effective strategies,

nursing lecturers can create engaging and interactive virtual environments conducive to student collaboration and socialisation.

Lecturers primarily used WhatsApp to provide guidance and support. Mentoring experiences online are based on the lecturer's familiarity with and confidence with the online environment to provide student support. WhatsApp groups serve a variety of purposes, including general school information sharing, guiding, and offering support to students' academic problems. The online learning interface was a pristine environment for both the student and the lecturer; therefore, challenges of communication were inevitable. Dennen and Burner (2016) pointed out that although it is a challenge to scaffold students and address individual learning needs in an online environment, using varied instructional designs that are easier to navigate may be important as it reduces psychological stress. The authors argued that it is important to train lecturers in CA web-based learning first so that they can build learning activities that do not overload the students but keep them busy with application and creative activities.

According to Oriel et al. (2010), when a lecturer is flexible regarding student consultation, they enhance scaffolding, where they provide tips and evaluate the student's thinking. These findings relate to what Kuperminc (2021) said about group mentoring during the literature review. The author argued that group mentoring has no formal structure, but rather, the mentor takes up responsibility if they are motivated and decides to role model, support, and guide the group of mentees. Lecturers in WhatsApp groups had the opportunity to mentor their students virtually.

In the CA model, fading refers to the act of a mentor gradually removing overt support from a mentee while continuing to give limited hints and feedback (Collins et al., 1989). The primary theme that emerged was the importance of never terminating a mentoring relationship. Despite deducing a subtheme from mixed experiences, some highlighted the importance of meeting the goals of the mentoring relationship first. The lecturers did not clarify their interpretation of fading. However, fading was evident in the responses, as lecturers indicated that they give students tasks to perform and evaluate whether learning has taken place. Also, lecturers stated that they leave students to explore but continue to provide mentors with the support they need. Other lecturers advocated for the termination of a mentoring relationship upon the achievement of goals. From a strategic point of view, ending a mentoring relationship when goals have been met is a decision aimed at maximising growth and ensuring the effectiveness of the mentoring process. Lecturers who advocate ending the mentoring relationship may be looking at giving the student independence, preventing dependency, giving them time to focus on other students, and facilitating their growth. Long-term mentoring, on the other hand, fosters good rapport, increased self-confidence in the mentee, and increased efficacy, all of which contribute to the mentor's professional satisfaction.

Regarding areas for improvement, lecturers pointed out that they have limited knowledge of how to form and maintain virtual mentoring relationships. The affective part of mentoring in nursing heavily relies on role-modelling students' values, attitudes, and professional identities through face-to-face interactions. Nursing ethically accepts lecturers' displays of communication skills and non-verbal gestures. Many lecturers

expressed a lack of skills regarding the use of virtual platforms to mentor students; therefore, they pointed out that institutional support is paramount to promoting a virtual mentoring culture. The lecturers expressed the sentiment that institutions ought to provide backing for online learning and mentoring initiatives. For example, some lecturers made statements like 'other problems are beyond our control, such as a lack of data'. They suggested that institutions collaborate with telecommunications companies to provide students with e-learning data and subsidise gadgets to enable online learning. Lecturers also noted that students were not motivated to participate in online learning; hence, it was difficult to tell which students needed what kind of support. Also, the use of cameras during live lectures was cited as a way to monitor students' body language and facial expressions that may indicate understanding, so it was challenging to mentor someone whom you could not see.

## **Quantitative Results**

Olsen and George (2004) used a cross-sectional analysis approach to analyse the quantitative data. The efficiency of the method lies in its ability to compare data from diverse groups without requiring a longitudinal follow-up. The method also allows for comparing groups or conditions, such as virtual and face-to-face mentoring experiences. By collecting data from both groups at the same time, the researcher managed to directly compare the outcomes and characteristics of each group, facilitating a robust comparative analysis. Additionally, by developing the quantitative questions from the qualitative data, this approach offers a snapshot of the participants' current status or

characteristics at a specific moment in time. In the context of mentoring experiences, the researcher was able to capture the perceptions, attitudes, and outcomes of nursing students and lecturers regarding virtual and face-to-face mentoring at a particular point in their educational journey, reflecting on the qualitative data. The research utilised statistical t-tests and Chi-square analyses to determine significant differences between virtual and face-to-face mentoring experiences across various factors, including satisfaction, effectiveness, and perceived benefits.

The data was collected from a total of 51 instructors and 211 third- and fourth-year students from IUM, UNAM, and WHTC, all of whom were from the same participating universities. According to the student questionnaire findings, 132 female students and 79 male students responded. The demographic data reveal the prevalence of women in the nursing profession. There were 120 students in their third year and 91 students in their fourth year, making a total of 211 students. The most frequently used virtual learning environment was Microsoft Teams, accounting for 37% of usage. Moodle was the second most commonly used platform, with a usage rate of 22%, followed by Zoom at 17%. The higher number of female respondents (132) compared to male respondents (79) corresponds to the prevailing pattern of nursing being largely female-dominated. In the past, people often associate nursing with caregiving roles that they consider more suitable for women. This cultural attitude has resulted in an increased presence of women in nursing programmes and, consequently, in the field of nursing.

The student opinions on virtual mentoring indicated positive mentoring experiences, as more than half (65%) pointed out that lecturers helped them achieve their

objectives through virtual mentoring, compared to more than 88% on face-to-face mentoring. They were aware of the mentoring activities employed by lecturers to guide them during virtual learning. The fact that approximately 65% of students acknowledged their mentors' assistance in attaining learning objectives during virtual education indicates the importance of mentorship in facilitating academic success in online learning environments. This finding suggests that mentors play a crucial role in guiding students through the virtual learning process and helping them achieve their educational goals. They concur with Shaikh (2017), who argued that classroom mentoring should guide students towards academic success. The results showed that roughly 58% of students were aware of the lecturer's role as a mentor, which highlights the need for clear communication and the delineation of roles within the mentoring relationship. It also underscores the importance of educators actively engaging in mentorship activities to support students beyond traditional teaching roles. These discoveries reflect the observations made by Olurunfemi (2019) and Woolnough and Fielden (2017) regarding the lack of a defined framework for nursing mentoring. This ambiguity results in mentoring activities being haphazard, with the interpretation of the mentor-mentee dynamic dependent on their perceptions of mentoring.

Approximately 53% of students affirmed their awareness of the mentoring strategies employed to maintain engaging online learning experiences. This finding underscores the importance of mentors adopting innovative and effective strategies to enhance student engagement and participation in virtual learning environments. The CA model emphasises the selection of teaching methodologies that engage students and

make their thinking visible. Students had mixed feelings, with some expressing negative experiences related to mentoring, asynchronous activities, and student networking. Despite this, about 68% of students reported awareness of their strengths and areas for improvement in virtual mentoring. This suggests that virtual mentoring can facilitate self-reflection and self-awareness, enabling students to identify areas for growth and improvement, thereby highlighting the significance of the CA model in virtual mentoring. Lecturers should encourage students to engage in self-reflection and self-assessment as part of the mentoring process. Integrating opportunities for feedback and reflection into virtual mentoring activities can promote student self-awareness and personal development.

Approximately 54% of students agreed that the mentor provided the learning activities necessary to pursue their developmental needs. This finding highlights the importance of mentors tailoring learning activities to meet the individual needs and goals of their mentees in virtual settings. Shaikh (2017) pointed out that learning activities are paramount to classroom mentoring. Although virtual mentoring is in its infancy in nursing, Jacobson and Sherod (2021) noted that increasing reliance on technology makes it possible to develop sustainable mentoring relationships like in other higher education disciplines. Nursing lecturers face a challenge in designing and facilitating learning activities that align with the specific learning objectives and developmental needs of their mentees. Flexibility and adaptability in the delivery of learning activities are essential in virtual mentoring to accommodate diverse learning styles and preferences.



Approximately 57% of study participants reported receiving mentorship in utilising the virtual learning environment and comprehending various platforms to enhance their learning experience. This finding highlights the role of mentors in providing guidance and support to students in effectively navigating virtual learning tools and resources. Although online learning came abruptly, WHO (2018) challenged nurse educators to acquaint themselves with higher education standards to enable them to function in an ever-changing environment. The notion that 'we always did it this way' removed nursing lecturers from their comfort zone. Approximately 49% of participants noted the mentor's effectiveness in fostering student networking and socialisation, promoting a sense of belonging, and group cohesion through mentoring resources and internal opportunities. This finding highlights the significance of mentors in facilitating social connections and peer support networks in virtual learning environments. The findings recognise the role of social learning theories in virtual environments, as pointed out by Hayes (2019). Not only does socialisation foster group cohesion, but it also alleviates the stress and anxiety that come with isolation. According to De Swardt et al. (2019), mentors who proactively create opportunities for networking and socialisation among students promote collaborative learning and a sense of community and belonging among mentees.

Thirty-nine per cent of students acknowledged receiving coaching to participate in synchronous and asynchronous learning activities to improve their performance. This finding highlights the role of mentors in providing guidance and support for effective participation in both learning modalities. One may attribute the relatively low percentage to a lack of understanding of asynchronous learning. During focus group discussions,

students discussed downloading videos and slides provided by lecturers on the online learning platform and watching them at their own pace, indicating the use of asynchronous learning. Regarding seeking and receiving feedback, 66% of study participants stated they sought and received feedback from their mentor on virtual learning endeavours. This underscores the importance of feedback in the virtual mentoring process for promoting continuous improvement and growth among students, as noted by Dimitriadou et al. (2015) and Jafaru et al. (2018). Last, students shared their views on reflective practice. Approximately 52% of research participants indicated having a clear understanding of the practical requirements for post-virtual mentoring, which aids in integrating theory into practice. This suggests that virtual mentoring can help students better understand the practical applications of theoretical concepts in their professional endeavours. This aligns with the CA mentoring model, which encourages reflective thinking and exploration to develop expertise.

Regarding face-to-face mentoring experiences, the fact that 55% agreed that the mentor helped them achieve learning objectives during face-to-face mentoring suggests that there is room for improvement in ensuring that mentoring activities align closely with learning goals. Similarly, face-to-face mentoring should prioritise clearly defined learning objectives and tailor activities to effectively assist students in achieving these objectives. The low percentage translates to a lack of clearly defined mentoring activities during face-to-face interactions. Higher percentages (86% and 82%) of students were aware of the mentor's roles and employed activities, which indicates effective communication and clarity regarding mentoring expectations. The findings concur with Hudson (2013), who

argues that in a classroom setting, clear communication channels and guidelines for mentor roles and activities are crucial to maintaining this awareness.

Regarding awareness of their developmental needs, a majority of students (86% and 87%) felt aware of their strengths and areas for improvement, as well as receiving learning activities to address these needs, indicating that mentors provide personalised guidance effectively. Face-to-face mentoring emphasises understanding individual students' needs and providing tailored support and activities to address them. High agreement (83% and 80%) on the use of various mentoring methods and the effective promotion of student networking and socialisation suggests that mentors employed diverse strategies to enhance the learning experience. In a face-to-face setting, mentors can use methods such as simulations, discussions, and group projects to simulate interactions and foster a sense of community among students. Face-to-face learning generally results in high satisfaction, as it allows mentors to more easily identify struggling students and offer them support. It also accommodates students with varied learning styles, as noted by Riley and Fearing (2009). The high agreement (92%) regarding having a good understanding of post-face-to-face practical requirements suggests effective integration of theory into practice. Face-to-face mentoring provided clear guidelines and resources to help students to bridge the gap between theory and practice during their clinical placements.

In terms of the virtual mentoring platforms used, Moodle and Zoom appear to have statistically significant associations with the virtual mentoring RII score. There is a marginal association with Microsoft Teams, but it is not statistically significant at the

conventional level. The other virtual platforms (BBB, BBB/Zoom, LMS/Zoom, and Microsoft Teams/Google Classroom) do not show significant associations with the virtual mentoring RII score. These findings suggest that the choice of virtual platform may influence the virtual mentoring RII score to some extent, with Moodle and Zoom showing stronger associations compared to others.

Data from Table 4.3 show that students had positive mentoring experiences with both virtual and face-to-face interfaces. The mean RII score for virtual learning was 70%, with a standard deviation of 12%, and for face-to-face learning, it was 83%, with a standard deviation of 15%. Both mean scores are above 65, indicating positive mentoring experiences among student nurses on both learning platforms. This suggests that the majority of students perceive virtual and face-to-face mentoring as effective, although there may be variations in individual experiences. However, despite the generally positive perceptions of virtual learning, there may still be challenges, such as technological issues, a lack of direct interaction, or difficulty maintaining focus, which could lead to slightly lower overall satisfaction scores compared to face-to-face mentoring. However, a comparison of RII scores across different institutions IUM had a p-value of 0.112; UNAM 0,296; and WHTC 0.223. The p-value for all institutions is greater than the significance level of 0.05. The results fail to reject the null hypothesis. This indicates that there is not enough evidence to suggest a significant association between the institution and mentoring experiences. These results suggest that the mentoring practices across these institutions may be relatively similar. If institutions employ comparable methods, strategies, and resources for mentoring, it could lead to similar mentoring experiences, thus resulting in

non-significant differences in RII scores. Also, the three institutions may be adhering to standardised curriculums and training protocols that ensure consistency in mentoring experiences across different institutions. This standardisation could minimise variability in mentoring quality and effectiveness. The sample of students and lecturers might have similar characteristics and experiences, leading to homogeneous responses regarding mentoring experiences. If the demographics, professional backgrounds, and expectations of the participants are similar, it might result in comparable RII scores across institutions. Furthermore, the results may suggest that during the transition to virtual learning necessitated by the COVID-19 pandemic, all institutions might have adopted effective strategies to maintain mentoring quality. The similarity in the effectiveness of these strategies could contribute to the lack of significant differences in mentoring experiences.

Regarding gender, there appears to be no significant difference in virtual mentoring engagement between males and females, with p-values of 0.316 and 0.392 for males and females, respectively. There was an association between students' age and satisfaction with the virtual mentoring experience, with a correlation coefficient of 0.044, indicating significance below the standard threshold of 0.05. This suggests that age influences virtual mentoring experiences. This finding aligns with observations by Francis and Hoefel (2018) concerning the Internet age, characterised by university students born after 1996. These students, shaped by the digital age, are adept at exploring additional information through the internet, facilitating experimentation with new knowledge acquisition methods. However, millennials (students born before 1996) did not demonstrate significant satisfaction with online mentoring. Francis and Hoefel (2018) highlight that

while millennials are comfortable with technology and open to change, they value engagement, collaboration on new challenges, and negotiation. Consequently, this generation expressed dissatisfaction due to inadequate preparation for online learning, which impacted their virtual mentoring relationships.

There is no significant difference in virtual mentoring engagement between 3rd and 4th-year students, with p-values of 0.294 and 0.211, respectively. All of the values are above the cut-off point of the probability value  $p = 0.05$ . These results suggest that there is no association between gender and virtual mentoring experiences, indicating that the mentoring platform is equally effective for both male and female students, thereby eliminating gender bias. This suggests that the virtual mentoring activities were inclusive and accessible, regardless of gender. The lack of association between year of study ( $p = 0.294$ ) and virtual mentoring experiences suggests that the effectiveness of mentoring remains consistent regardless of the student's academic level. This implies that virtual mentoring programmes can cater to the needs of students at various stages of their academic journey. The results also show universality across institutions, as the non-significant association between institutions and virtual mentoring experiences indicates that the benefits of mentoring are not specific to any particular educational institution. This implies that different institutions, irrespective of their size, location, or academic focus, can successfully implement virtual mentoring activities.

Based on these findings, the researcher concludes that it is important to focus on the quality of mentoring interactions rather than demographic factors or technological preferences. As a result, institutions can prioritise mentor training, support resources, and

programme structure to ensure that all students receive effective mentoring experiences, regardless of their background or the platform used. However, there are significant differences in virtual mentoring engagement across different platforms. Moodle and Zoom, for example, show notably higher engagement compared to other platforms.

Regarding face-to-face mentoring experiences, there was no association between the student's gender ( $p = 0.338$ ), the student's age ( $p = 0.284$ ), the year of study ( $p = 0.372$ ), or the institution ( $p = 0.484$ ). According to these findings, the lack of association between gender, age, and year of study suggests that face-to-face mentoring experiences in nursing education offer equal opportunities for mentorship across diverse demographics. This indicates that regardless of gender, age, or academic level, students have access to mentoring support, which is crucial for their professional development. The results also show consistency across institutions, as the non-significant association with the institution implies that the effectiveness of face-to-face mentoring experiences remains consistent across different educational institutions. This implies that the institution where mentoring takes place does not significantly influence its quality, suggesting the potential for standardisation or uniformity in mentoring practices within the nursing education field at UNAM, IUM, and WHTC. Furthermore, one can argue that in face-to-face mentoring experiences, the quality of interactions and the dynamics between mentor and mentee may play a more significant role than demographic factors or institutional settings. This highlights the importance of interpersonal skills, communication, and rapport-building in effective mentorship within nursing education. The uniformity of face-to-face mentoring opinions suggests that technological factors do

not influence face-to-face mentoring experiences in nursing education. Unlike virtual mentoring experiences, where the choice of platform may impact the experience, face-to-face interactions seem to be consistent regardless of the specific tools or technologies employed.

Data from nursing lecturers' quantitative analysis showed that 30 females and 21 males participated. The most represented institution was WHTC, followed by UNAM because it offers the Bachelor of Nursing Science as the main program. Lecturer opinions for virtual mentoring revealed that the significant majority (86%) affirmed their clear understanding of their responsibilities as mentors. Their understanding highlights the importance of clarity and alignment in mentorship roles within virtual learning environments. Mentors who are aware of their responsibilities can effectively guide students towards achieving learning objectives and provide meaningful support throughout the mentoring process. Although there were no clear guidelines on how to mentor students virtually, lecturers used their experience to guide students during online learning. Furthermore, approximately 63% of lecturers acknowledged their awareness of how students perceive them in their mentorship roles, emphasising the importance of empathy and self-awareness in virtual mentoring. Understanding their perception by students allows mentors to tailor their approaches to better meet student needs and promote positive learning experiences. These findings affirm the role mentoring plays in nursing. Even in times of crisis, the knowledge that experienced nurses possess is invaluable.



About 42% of lecturers recognised that a diverse array of online mentoring skills are paramount in adapting to versatile virtual learning environments. Mentors who possess a wide range of online mentoring skills can effectively navigate digital platforms and tailor their approaches to meet the unique needs of students, which boosts self-esteem and promotes professional growth. Ninety-two per cent of participants were aware of their strengths and areas for further development, reflecting a commitment to ongoing self-improvement and effectiveness in virtual mentoring. According to Gessler (2019), mentors who are self-aware and proactive in addressing their areas of growth can better support students' needs and enhance their mentoring effectiveness. According to Kumar et al. (2021), lack of skill and fear of the online learning environment are two of the barriers that affect nursing's adoption of online learning.

Lecturers showed an elevated level of understanding (approximately 82%) regarding the specific learning activities essential for facilitating students' progress. This underscores their capacity to tailor their mentorship approaches to suit diverse student requirements and learning styles effectively, as suggested by Chen (2018). Mentors who are knowledgeable about effective learning activities can create engaging and impactful virtual learning experiences for students. It was also interesting to note that 94% of participants were confident in utilising various platforms to mentor students. The findings emphasise their adaptability and technological savvy in navigating digital landscapes to optimise mentoring outcomes. Mentors who are familiar with virtual learning environments can leverage technology to enhance communication, collaboration, and learning experiences for students.

Regarding the promotion of student socialisation and networking, approximately 94% of participants were confident in their effectiveness in promoting student networking and socialisation. This highlights the importance of mentorship in fostering a supportive learning community conducive to student success and well-being. According to De Swardt et al. (2017), mentors who facilitate networking and socialisation opportunities can help students build connections, collaborate with peers, and access support networks in virtual learning environments. Eighty-six per cent of the lecturers were aware of their pivotal role in guiding students to engage with both synchronous and asynchronous learning activities. This shows the lecturer's commitment to enhancing student performance through varied instructional modalities, although migration to online learning was a crisis in management. The findings confirm what Lasater et al. (2021) found out about mentoring during crises. The author found out that crises built resilience among lecturers as they navigated ways to keep their jobs during COVID-19. Mentors who guide students in engaging with different learning activities can help students develop the essential skills and competencies required for success in virtual learning environments.

Ninety-two per cent of participants acknowledged their practice of soliciting and incorporating student feedback on virtual mentoring activities, indicating a culture of continuous improvement and responsiveness to student needs. Mentors who actively seek feedback can identify areas for improvement and tailor their mentoring approaches to better meet students' expectations and preferences. They may also identify struggling students who need individual support and coaching. Cypress (2020) asserts that trust strengthens human relations, and providing constructive and supportive feedback to

students is one way to foster confidence. Eighty-two per cent of participants were confident that post-instructional practical attachment provided students with the necessary skills and knowledge for reflective practice beyond the virtual learning environment. Shaikh (2017) argues that mentors who prepare students for the transition from mentoring to real-world practice can help bridge the gap between theory and practice and facilitate students' professional development and career readiness.

The findings regarding face-to-face mentoring of nursing students reveal several key insights into the perspectives and practices of mentors in traditional face-to-face settings. Regarding their mentoring role, 87% of participants affirmed their understanding of their role as mentors during face-to-face mentoring sessions. The findings underscore the importance of clarity and alignment in mentorship roles. Mentors who understand their role can effectively guide students to achieving their learning objectives and provide meaningful support throughout the mentoring process. Seventy-two per cent of lecturers acknowledge that they were aware of how students perceived them in their capacity as mentors. This highlights the importance of empathy and self-awareness that lecturers enjoyed during face-to-face mentoring. Despite different socioeconomic and ethnic backgrounds, Lyons et al. (2017) argued that mentors who understand the perceptions of students can adapt their approaches to better meet student needs and foster positive mentor-student relationships.

About 84% of lecturers recognised the face-to-face mentoring skills that resonate with both them and their students. Based on their experience as mentees during their student years, lecturers recognised the importance of adaptability and versatility in

traditional educational settings to mentor their students effectively. Mentors who apply a diverse set of mentoring skills can effectively engage students and tailor their approaches to meet individual learning needs, which is easier with the traditional mentoring approach. As lecturers are well conversant with traditional face-to-face mentoring, 92% of participants were aware of their strengths and areas for development in face-to-face mentoring, reflecting a commitment to ongoing self-improvement and effectiveness in mentorship. Although they did not have formal mentoring frameworks, they used the experience gained in the nursing profession to be proactive when mentoring students face-to-face.

Ninety-six per cent of lecturers had a prominent level of understanding of the learning activities necessary to support students in meeting their developmental needs. This highlights the lecturer's capacity to tailor their mentorship approaches effectively. Shaikh (2017) argues that nurse educators who are knowledgeable about effective learning activities can create engaging and impactful mentoring experiences for students. It is not surprising to see that 90% of lecturers acknowledged that their familiarity with the face-to-face learning environment and various mentoring models aided their adaptability and expertise in traditional teaching settings. With their experience, they were able to create supportive and engaging learning environments for students. Due to the familiarity of the face-to-face learning environment, 92% of lecturers acknowledged that they promoted student networking and facilitated socialisation, thereby fostering a supportive learning community. About 86% of lecturers were aware of their pivotal role in mentoring students to actively engage with both synchronous and asynchronous learning activities,

emphasising their commitment to enhancing student performance through varied instructional modalities. Riley and Fearing (2009) argue that mentors who guide students in engaging with different learning activities according to their preferred learning styles can help students develop the essential skills and competencies needed for success in the classroom. Homework and assignments provide the students with an opportunity to do self-directed learning. According to Gessler (2019), self-directed learning encourages autonomy, models responsible behaviour as the students set their own goals to complete the task, and fosters accountability.

Concerning giving feedback, approximately 88% of lecturers were positive about their consistent practice of soliciting and thoughtfully integrating feedback from students into face-to-face mentoring activities, reflecting a commitment to continuous improvement and responsiveness to student needs. As noted by Shaikh (2017), actively giving and seeking feedback can identify areas for enhancement and tailor mentoring approaches to better meet student expectations and preferences. About 84% of lecturers had positive opinions about their impact on students after completing their mentoring journey. They felt that they managed to equip students with the necessary skills and knowledge to facilitate a smooth transition into clinical practice.

Data from the lecturers' responses on the comparison of virtual and face-to-face mentoring experiences showed a mean virtual mentoring RII of 81% and a standard deviation of 11%. The mean face-to-face mentorship RII score was 83%, with a standard deviation of 15%. The slight variation in mean scores between virtual and face-to-face mentoring experiences (81% versus 83%) suggests a relatively similar perception of both

methods' effectiveness overall. This suggests that virtual mentoring can be a viable alternative to face-to-face mentoring in certain contexts. However, the standard deviation for face-to-face mentoring experiences (15%) is higher than that of virtual mentoring (11%). This suggests that there is greater variability in responses to face-to-face mentoring, indicating that some lecturers may have had incredibly positive experiences while others had less positive experiences. In contrast, virtual mentoring experiences seem to be more consistent across respondents.

Regarding factors associated with virtual mentoring, there was no significant difference in virtual mentoring satisfaction between male and female participants, as indicated by the p-value of 0.386. Both genders have similar RII (Relative Importance Index) scores for virtual mentoring. The lack of association between virtual mentoring experiences and gender or institution implies that perceptions of virtual mentoring effectiveness are consistent regardless of these factors. This suggests that virtual mentoring can be equally effective for both male and female lecturers, as well as across the three participating institutions. The results suggest that virtual mentoring can be a cost-effective alternative to face-to-face mentoring, especially considering the consistency in perceived effectiveness and potentially lower standard deviation. The results concur with the Neely et al. (2017) study, which dismissed gender effects on virtual mentoring relationships.

The results showed an association between the lecturer's age ( $p = 0.001$ ), years of experience ( $p = 0.007$ ), and years in the organisation ( $p = 0.002$ ), as well as virtual mentoring experiences among lecturers. Based on these results, several interpretations

arise. First, virtual mentoring impacts ones' experience and expertise. Lecturers who have been in the profession for longer a duration are likely to possess more experience and expertise. This could mean that they are more comfortable with technology and more adept at effectively using virtual mentoring platforms. Second, older lecturers may have had less exposure to technology earlier in their careers compared to younger lecturers. According to Francis and Hoefel's (2018) assumptions, the association between age and virtual mentoring experiences may reflect a learning curve or generational differences in technology adoption. Third, lecturers who have worked with the organisation for a longer period of time may have established networks and deep institutional knowledge. This can facilitate smoother virtual mentoring experiences, as they may be more familiar with the organisational culture, policies, and key personnel to consult in case they meet challenges. This affirms Woolnough and Fielden's (2017) assertion that experience and expertise play a significant role in mentoring novice nurses. The results did not appear to show any significant difference in virtual mentoring satisfaction based on the institution where the participants belong (IUM, UNAM, WHTC), as indicated by the p-values being greater than 0.05. All three institutions have similar RII scores for virtual mentorship. The lack of differences suggests that possibly all three institutions provide similar resources and support for virtual mentoring, resulting in similar levels of satisfaction among participants regardless of the institution they belong to. Similar demographics can influence how individuals engage with virtual mentoring platforms and the effectiveness of mentoring relationships. Cultural or institutional factors within the participating institutions may also have played a significant role in the results. For example, shared

organisational culture, values, or norms among the three institutions may influence participants' perceptions and experiences of virtual mentoring.

The results from face-to-face mentoring experiences showed that there is no significant difference in face-to-face RII scores based on gender. The p-value of 0.386 suggests that the difference observed could likely be due to random chance rather than a genuine difference between male and female respondents. There is a significant difference in face-to-face RII scores based on age. For those with RII scores less than 88%, the mean age is 39, while for those with scores of 88% or higher, it is 46. The p-value of 0.003 indicates that this difference is statistically significant, suggesting that older participants tend to have higher RII scores in face-to-face interactions. The results suggest the impact of experience and wisdom. Older nursing lecturers may have more experience in face-to-face interactions, both personally and professionally, which could contribute to their higher RII scores. They may have developed better communication skills, emotional intelligence, and rapport-building techniques over time. Also, with age often comes increased confidence and assertiveness, which can positively influence rapport-building in face-to-face interactions. Experienced lecturers may feel more comfortable expressing themselves, establishing connections, and engaging in meaningful dialogues with others. Similar to age, there is a significant difference in face-to-face RII scores based on years of experience. Participants with more years of experience (mean of 10 years) had higher RII scores compared to those with fewer years of experience (mean of 6 years). The p-value of 0.002 reinforces this finding's statistical significance.



There are differences in face-to-face RII scores based on the institution the respondents belong to. For instance, those from UNAM have a significantly higher percentage of RII scores  $\geq 88\%$  compared to other institutions, with a p-value of 0.001 indicating strong statistical significance. On the other hand, the differences in RII scores among respondents from IUM and WHTC are not statistically significant. The findings suggest that UNAM may provide resources and support for developing interpersonal skills, such as communication workshops, mentorship programmes, or extracurricular activities focused on social interaction. Access to such resources could enhance the ability of UNAM members to build rapport effectively in face-to-face interactions. UNAM, as the oldest parastatal training institution for nurses and a leading academic institution, may attract individuals who are already proficient in interpersonal communication and social interaction. As a result, members of UNAM may inherently possess higher RII scores compared to respondents from other institutions.

In terms of gender, IUM and WHTC demonstrated that gender does not significantly influence face-to-face mentoring experiences, as indicated by their respective p-values. This suggests a level of consistency and equality in mentoring approaches and experiences between male and female students in these institutions. However, with UNAM, there is a significant gender-based difference in mentoring experiences. This finding highlights the necessity for UNAM to delve deeper into the reasons behind these disparities and explore ways to customise or enhance mentoring programmes to guarantee fair experiences for all students, irrespective of their gender.

However, in the absence of clearly documented mentoring frameworks, the results might suggest that institutions have implemented mentoring programmes that are fair and unbiased, accessible to all employees regardless of gender and age. Similarly, the findings clarify that there is no significant correlation between the duration of work in the company and participation in in-person mentoring. It appears that the duration of employment within the organisation may not strongly influence an individual's likelihood of participating in face-to-face mentoring; rather, it is the mentoring culture that plays a pivotal role. Although the p-value for years in the organisation ( $p = 0.098$ ) did not reach traditional levels of statistical significance (e.g.,  $p < 0.05$ ), it is close to the threshold. This suggests a weak association between years in the organisation and face-to-face mentoring, albeit not significant in this study. This finding may warrant further investigation or a larger sample size to confirm or refute this potential relationship.

Zachary (2011) highlights the importance of promoting cross-generational collaborations, allowing younger lecturers to benefit from the experience and wisdom of their older colleagues, while older lecturers may gain fresh perspectives and insights from younger colleagues. Such cross-generational collaboration fosters a culture of learning and innovation within the organisation, ultimately leading to improved outcomes and performance. Thus, the results uphold the null hypothesis.

## Summary

This chapter presented the discussion of the qualitative findings and quantitative results of the study. The discussion was based on the purpose of the research: To make a comparative analysis of virtual and face-to-face mentoring experiences among third- and fourth-year nursing students and their lecturers from Namibia. The research strategy and design informed the format of discussion of the research results for sequential answering of the research questions. An explorative sequential methodology was used. Qualitative data was collected first using focus group discussions (students) and individual interviews (lecturers). Issues of trustworthiness were discussed as it is important for qualitative researchers to exhibit what criteria was used to ensure that the study results are trustworthy.

Trustworthiness of qualitative data was established through credibility, transferability, dependability and confirmability based on Lincoln and Guba (1985) recommendations. Credibility was ensured through persistent observation, prolonged engagement with the data, triangulation and peer debriefing. Credibility ensured reader confidence and proof of truthfulness of the results. Transferability was achieved through engaging an adequate representative sample from each participating institution and allocating adequate data collection time to allow in-depth descriptions of experiences. As an experienced nurse educator, the researcher lens was used to produce clear steps about the data collection and interpretation process to assure dependability. Dependability was ensured by using audit trails. Confirmability was also discussed as a measure to ensure trustworthiness. Based on Lincoln and Guba (1985) and Miles et al.

(2013) recommendations, all focus group discussions and lecturer interviews were recorded for confirmability. The researcher was present during the zoom discussions to capture important points and initiate probing. Responses were manually transcribed first and entered in NVivo. Replaying the audios repeatedly ensured that what was on the transcripts was the correct representation of what was said by the respondents.

The chapter also covered the measures used to ensure reliability and validity in the quantitative phase. Tong et al. (2012) presented a table that differentiated validity in qualitative and quantitative data. Based on Cohen et al.'s (2018) description of validity, the researcher adopted a questionnaire that had previously passed a validity test. Tiew et al. (2017) developed the instrument to evaluate the mentoring experiences of graduate nurses at the National University Hospital, Australia. Five subject experts validated the adopted instrument's content validity, ensuring that it accurately sought comparisons between the virtual and face-to-face mentoring experiences of both students and lecturers. To establish the validity of the quantitative results, the researcher divided the questionnaire into two sections using concurrent validity. Section A focused on virtual mentoring opinions, while Section B focused on face-to-face mentoring opinions, using related questions on a 5-point Likert scale. The researcher pre-tested the quantitative tools for students and lecturers to ensure their reliability.

The researcher used the thematic analysis stages outlined by Nowell et al. (2017) to analyse the results from the qualitative phase. The researcher guided the thematic development by adapting predefined codes from the focus group and interview guide based on the CA model, the proposed conceptual framework for virtual mentoring, and

Shaikh's (2017) roles as a mentor in the classroom. For both interview guides, we used five codes: teaching content, methods of promoting student expertise, socialisation, fading, and opinions on virtual mentoring.

The main theme under teaching content for student nurses was the preparation of the teaching material, which was crucial for students to understand what was taught. A subtheme emerged, emphasising that some students perceived rapid coverage of the content, resulting in inadequate comprehension. Students believed that lecturers preferred completing the syllabus over student comprehension. Students expressed satisfaction with the use of videos, slides, pictures, and diagrams as visual aids. They appreciated the ability to replay videos at their own pace, which facilitated asynchronous learning. Furthermore, pictures stimulate student interest, enhancing understanding.

Almost all lecturers identified problem-solving scenarios as the main theme for promoting student expertise. Students, however, felt that some problem-solving questions were too obvious, leaving no room for critical thinking. Lecturers used clear and short objectives to make sure that students followed the flow of the lecture. The use of problem-solving affirmed the importance of sequencing learning activities to coach students on critical thinking and problem-solving skills. There was general satisfaction among the student population as they managed to achieve lecture objectives. Lecturers pointed out that they made simple objectives that were easy to follow. This shows that lecturers managed to apply the stages of modelling, coaching, and scaffolding in the context of the CA approach, enabling students to better comprehend the taught content.

Homework and assignments primarily promoted independent learning. Homework kept students occupied, allowing them to allocate time for school work and home chores, thereby exercising self-discipline. In terms of socialisation, many students appreciated the use of WhatsApp groups to promote group cohesion. Students also used the social network to solicit feedback from their lecturers and keep each other informed about school-related matters. Most students appreciated the lecturers' support in WhatsApp groups. Students did not clearly describe fading, but most expressed confidence in the post-mentoring clinical practice. Students were satisfied with the guidance they received from lecturers and, as a result, were confident about their upcoming clinical attachment. The quantitative results, which showed no difference between virtual and face-to-face mentoring experiences, supported the results.

There were varied opinions about the comparisons between face-to-face and virtual mentoring experiences. Students expressed varying views and opinions about virtual mentoring. The main theme identified was the need for training on the use of virtual learning platforms and their features that support mentoring activities. Students also advocated for the use of videos during online learning. The students highly value non-verbal communication from the lecturers during live presentations. They expressed a lack of appreciation for the lecturer's use of facial expressions to emphasise points and convey general mannerisms. Students suggested that lecturers should balance the amount of content they prepare for online learning by considering how quickly they cover the teaching content. This measure would counteract the marathon nature of presentations, which often fail to accommodate the question-and-answer sessions that enhance student

understanding. The students proposed including material regarding the use of specific learning management systems and their features within the ICT module. Regarding asynchronous learning activities, students pointed out that when lecturers upload reading materials and videos online, they will be able to download the material later and read it. Also, uploading slides will benefit those with low data, as they can download at night when data charges are low or free.

A qualitative analysis of lecturers' experiences revealed five themes and ten subthemes under each main theme. The findings were that the preparation of teaching content played a crucial role in assisting students in understanding the taught content. Most lecturers prepared their teaching content the same way they used to prepare for face-to-face lectures. During a live lecture, slides would be displayed so that the students could read while also listening to the explanations given. A few lecturers elaborated on the use of videos, especially when teaching practical components. Lecturers primarily used videos and pictures to make thinking visible. Lecturers stressed that they explained and used examples to help students understand the concepts taught. Methods for promoting student expertise identified two themes. Lecturers used problem-solving scenarios to bring the real clinical situation into class for students to critique and find solutions. To improve their communication and presentation skills, the lecturers assigned group work and homework to the students. Students' experiences, which primarily relied on group work and WhatsApp groups to foster group cohesion, aligned with the findings on socialisation promotion. Lecturers expressed commitment, saying they would attend

to student concerns even outside of working hours to offer continued support. The students had previously alluded to this theme.

The role of fading in mentoring was also not well understood by the lecturers. The majority of them believed that the mentoring relationship should never end, whereas others believed that achieving goals must precede termination. Despite their lack of a complete understanding of fading, the lecturers outlined activities that parallel this process, offering limited guidance to students throughout their time at the institution. The main theme of the opinions was the need for competence in forming and maintaining effective virtual mentoring relationships. Experiences from lecturers revealed that while they participated in most classroom mentoring activities, their understanding of their relationship with students was limited. Also, due to the informal nature of mentoring in nursing and the lack of defined mentoring frameworks, lecturers understood their roles as mentors but had difficulties describing the roles under the guidance of the CA model.

The quantitative results aimed to compare the virtual and face-to-face mentoring experiences of nursing students and their lecturers. The researcher analysed quantitative data from the 3rd and 4th-year nursing students first, followed by data from nursing lecturers. A total of 211 students filled out the questionnaire. The student response rate was 55%. Out of 64 lecturers from the three institutions, fifty-one responded, giving a respondent rate of 79.6%. The data were analysed according to the plan described in Chapter 3. The analysis included variables such as gender, age, training level, institution, and the virtual platform used. Additionally, a Likert scale was employed to determine indicators for virtual mentoring and face-to-face mentoring.



Data from 3rd and 4th-year students showed no association between age of the student, their gender, year of study, institution and platform being used for learning with both virtual and face-to-face mentoring. The results revealed that there were no differences between face-to-face and virtual mentoring experiences among student nurses. The results suggest that there is uniformity of mentoring practices among the three institutions, homogenous student demographics and similar experiences in adapting to online learning and mentorship. The RII at 5% significance level confirmed satisfaction of the Generation Z student with virtual mentoring confirming Francis and Hoefel (2018) assertion about use of the internet across generations.

The quantitative results from nurse lecturers measured the same variables as those of students. The number of years of experience as a nurse educator and the length of time in the organisation replaced the level of training. Quantitative results for lecturers also showed similarities in virtual and face-to-face mentoring experiences across all institutions. For both virtual and face-to-face mentoring, there was no association between gender, institution, or years in the organisation. The findings concur with those of Neely et al. (2017), who dismissed the effect of gender in virtual mentoring relationships. However, there was an association between ages, years of experience, and years in the institution with both face-to-face and virtual mentoring experiences. The results ensured generalisability for both students and lecturers. Therefore, the findings showed that there was no difference between mentoring virtually and face-to-face based on the cognitive apprenticeship model by Collins et al. (1989) and Shaikh (2017).

The CA model, conceptual framework, and reflection on the study's findings and results revealed that a variety of teaching methods and aids help students form abstract ideas and comprehend the taught content. As pointed out by Collins et al. (1989) and Chen (2018), students use their cognitive and metacognitive processes to understand complex subject matter. Therefore, the mere display of slides is not enough to make thinking visible; neither is performing a task for a student nor making them watch the demonstration. Online learning requires enhanced methods to challenge students' mental processes, enabling them to tackle complex tasks they may encounter during clinical practice. Students identified a gap in the presentation style of lecturers, suggesting a need for enhancement. Dennen and Burner (2016) argued that the content taught online should teach a student to be a practitioner, not to learn about practice. A hurried approach to teaching will only impart memorisation, not comprehension. Mentoring students in academic survival skills is essential. Meeting lesson objectives and providing adequate time for question-and-answer sessions increases the likelihood that students will retain the content and use reflective skills during their clinical attachment.

The traditional apprenticeship model relied on observation and imitation to promote student expertise, as noted by Gessler (2018). Online learning calls for ways to promote student expertise. Across all institutions, problem-solving scenarios emerged as the most common method for promoting student expertise. Both students and lecturers appreciated the use of problem-solving questions; they were similar to the real patient presentation. The students demonstrate their patient management skills by cognitively constructing abstract images of the patient using the scenarios provided. Although

students and lecturers lamented the lack of guidance on using the virtual space, many managed to navigate and had the experience of interacting virtually to meet their objectives.

According to Collins et al. (1989), the social environment largely influences the learning process. Mentoring relationships thrive well in a non-threatening environment. The researcher found that lecturers played a crucial role in fostering group cohesion among student nurses, echoing Dennen and Burner's (2016) assertion that group cohesion encourages peer mentoring among students. As students interact with lecturers through WhatsApp and other social media platforms, role modelling simultaneously occurs. Despite varying descriptions of fading, the primary emphasis was on the importance of first achieving goals before ending the relationship. Lecturers who constantly provided feedback and support to the students boosted their confidence. Verbal and non-verbal communication skills are equally important in nursing student mentoring. Both students and lecturers expressed dissatisfaction with the lack of video support during live lectures. The IT department failed to provide both students and lecturers with the necessary ICT infrastructure to facilitate satisfactory communication. The next chapter discussed in detail the implications and some recommendations.

## **CHAPTER 5: IMPLICATIONS, RECOMMENDATIONS, AND CONCLUSIONS**

### **Introduction**

This chapter examines the implications drawn from the comparative analysis of virtual and face-to-face mentoring experiences among 3rd and 4th-year nursing students and their lecturers. The findings of this study provide valuable insights into the effectiveness, challenges, and opportunities presented by both modes of mentoring. Additionally, the chapter provides recommendations for practitioners, policymakers, and researchers based on the conclusions drawn from the analysis.

Before penning down the implications of the research, an overview of the study highlights is given to articulate this chapter with the previous chapters. A review of literature from Clement (2018) and Welch (2017) revealed that virtual mentoring is a new practice in nursing education particularly with undergraduate nursing students. Clement (2018) argues that mentoring lack penned down frameworks in most institutions that train nurses. Although mentoring is argued to be the backbone in nursing, it is largely informal. The meaning of mentoring therefore depends on the contexts to which it is applied. Evaluation of virtual mentoring relationships by Barret (2010) revealed that virtual learning environments largely cover the cognitive domain. There is limited learning of the nursing culture that is usually strengthened by mentoring. Findings from Olurunfemi (2019) and Searle (2004) affirmed mentoring as an integral phenomenon in nursing where overt skills, such as resilience, self-confidence, reflection, curiosity, and tolerance are passed on to student nurses by experienced lecturers during teaching. An argument presented

by Tinoco et al. (2020) pointed out that mentoring relationships may be formed and maintained through web-based technologies without face-to-face meeting.

Although virtual mentoring has been practiced mostly with post graduate nursing students, the traditional face-to-face model has remained the preferred method with the undergraduates. The background of this study revealed that most nurse training institutions were forced to migrate to online learning mode of instruction due to the COVID-19 restrictions. There were mixed feelings among students and nurse lecturers as to how they will relate to meet their objectives using the virtual space. Namibia was not spared by the COVID-19 pandemic as all institutions of higher learning were forced to migrate to online teaching including nurse training institutions. Sudden migration to online learning challenged nurse educators to mentor students using a technologically driven environment to produce competent and knowledgeable cadre.

As the study sought to understand the student experiences, the inclusion criteria for students were based on the experiences both 3rd and 4th-year students have on both face-to-face and virtual learning. The mixed methods approach with an exploratory sequential design was utilised in order to allow collection and analysis of qualitative data on experiences followed by collection of quantitative data. The quantitative phase also compared both students and lecturers' experiences on virtual and face-to-face mentoring.

As the research involved human subjects, ethical considerations were followed accordingly. Application to carry out the research study was done to the research boards of all participating institution. Permission was granted to carry out the research by all three

participating institutions. The application letter included a disclosure phrase on the purpose of the research study. The name of the researcher, the institution where the research is studying and supervisor details were all included. Participants were informed on the voluntary nature of participation to avoid coercion. All participants consented verbally for telephone interviews and focus group discussions. The consent form was printed and signed by the participants who responded to the questionnaire. Before focus group discussions and interviews, the researcher explained the expectations from respondents, expected duration of the discussion and interviews and recording of interviews. Explaining reduced boredom and discomfort on participants. All focus group discussions and interviews were done at the convenient time of participants. Data was collected over a period of six weeks following the proposed methodology; qualitative first then quantitative to test hypothesis. Qualitative data were analysed using NVivo 12 and quantitative data entered in the STATA statistical package for easy analysis.

Based on the evaluation of the research findings from the previous chapter, this chapter presented implications of the research study and recommendations for further inquiry and practice. The meanings were drawn from the evaluation of findings looking at diverse literature reviewed and the research study results. The researcher also highlighted the implications of the research study findings in nursing education based on technological advancement. Technological impact on education in the 21st century cannot be ignored coupled with the Generation Z of student nurses trained in most nursing colleges. The two are driving forces that propel higher education institutions to go online

harnessing the power of technology to reach to diverse populations in different geographical locations.

Expounding of implications led to the recommendations both for practice of virtual mentoring and future research. The researcher elaborated on the implications of the study to point out recommendations to improve virtual mentoring based on the participants' opinions. Further recommendations were mainly centred on grey areas that can be explored in order to strengthen and support virtual mentoring relationships in a virtual classroom. As noted in the previous chapter, the identified themes from student nurse's data were mostly identical to the themes that lecturer data highlighted. The recommendations for practice sought to affirm the CA model as a method that enables virtual mentoring. Drawing on the experiences of the traditional face-to-face mentoring experiences, making thinking visible may challenge virtual platforms to expand their interfaces to allow effective engagements.

The purpose of research is to improve human lives. Research develops scientific theories to advance human knowledge, as noted by Brink et al. (2018). The last section of this chapter discussed the recommendations for future research. The research used the lessons drawn from the implications of the findings and recommendations for practice to open gaps that future research may fill. As noted by Clement (2017), Figueroa (2017), and Morin (2020), virtual mentoring is an understudied field, especially in nursing education. The limitations of this study and gaps serve as points for future research.

A conclusion sums up the research study highlighting the main points throughout the research study. The summary highlights the identified problem statement and purpose of the research study and how the objectives of the research study were revisited in order to ensure that they were met. The summary also covers the research methodology used to meet both the qualitative and quantitative objectives of the study and answer research questions. The methodology included the sampling procedures, data collection, and analysis methods. The conclusion also gave a summary of how trustworthiness and credibility of the research study was ensured in both the qualitative and the quantitative phase of the research. The research results are also summarised. A summary of themes identified from the student's focus group discussions and the telephone interviews from lecturers is given. The themes led to the evaluation of the results where meaning was given to the themes. Also, highlights of the quantitative results were given to pave way for conclusions of the tested hypothesis. The chapter commences by discussing the implications of the research study based on the research findings.

### **Implications of the Findings**

The implications of the study were presented according to the findings based on student mentoring experiences followed by lecturer mentoring experiences. The discussion was based on implications on virtual mentoring practice and virtual mentoring based on the CA model, the conceptual framework and the research findings. Also, the implications considered the role of the mentor in nursing education as developed by Shaikh (2017).



## **Student's Mentoring Experiences**

**Teaching Content and Delivery.** Based on the findings from the teaching content, students had a positive experience. Most students confirmed that the teaching content was enough and was prepared as face-to-face was done. Hypothesis testing also affirmed that there were no significant differences between face-to-face and virtual mentoring experiences. The first implication is that during classroom mentoring, use of multimedia tools such as slides, diagrams, and videos can enhance learning by making complex concepts more accessible and engaging for students. Visual aids can facilitate comprehension and retention, catering for different learning styles. To optimise student engagement particularly in virtual mentoring, lecturers need to effectively plan and execute lessons delivered online. Educators must ensure that the content is relevant, engaging, and aligns with learning objectives. Moreover, they need to consider factors such as bandwidth limitations, accessibility, and technical support to optimise the learning experience for all students.

Also, methods of promoting expertise and socialisation were similar for both learning environments. However, there were some negative experiences concerning the presentation of the content taught online. Students pointed out that online presentations were done in a hurry which led to little or no understanding. This had both negative and positive implications. Hastily delivered lectures reduce comprehension; mentees may struggle to fully comprehend the material due to the fast pace. This can lead to understanding gaps and hinder their overall learning experience. Also, there was decreased student engagement due to rapid delivery causing students to lose interest or

become disengaged with the content. Without sufficient time to process information or ask questions, students may disengage from the mentoring session altogether. From the students' responses, there was substantial stress due to the feeling of trying to keep up with a fast-paced lecture. This can create a negative learning environment and hinder their ability to absorb and retain information effectively. Positive implications are that lecturers who are able to deliver lectures quickly can save time, allowing for more content to be covered within a limited timeframe. This can be beneficial when there is a lot of material to cover or when time is limited. It also counteracts the problems of data and to some extent network connectivity problems. Also, due to the diverse disposition of learning styles for students, other mentees may prefer a faster pace of instruction, especially if they have prior knowledge or experience with the topic. Quick lectures can cater to their needs and preferences, allowing them to move through the material more efficiently. The fast pace is also a way of challenging students to think quickly and critically about the material being presented. This can promote active engagement and stimulate higher-level thinking skills. In healthcare settings, the ability to think and make decisions fast is an advantage, therefore, delivering lectures in a hurry can help mentees develop this skill and prepare them for fast-paced environments.

Encouraging self-directed learning empowers students to take responsibility for their education, fostering skills such as problem-solving, time management, and self-regulation. However, limited ICT support can hinder students' ability to access resources, troubleshoot technical issues, and fully engage in independent learning activities. Lack of ICT support may result in barriers to accessing virtual learning platforms or participating

in online mentoring activities. Students who lack access to necessary technology or face technical difficulties may feel marginalised or excluded from the mentoring process, impacting their engagement and learning outcomes. In addition, technical issues such as poor audio or video quality or unreliable internet connections can disrupt communication between mentors and mentees, hindering the quality of interaction and diminishing the effectiveness of mentoring relationships. This can impede the exchange of knowledge, feedback, and support, limiting the educational value of the mentoring experience. There may be missed or incomplete learning opportunities for nursing students. For example, students may be unable to access educational resources, participate in virtual simulations or clinical discussions, or engage in collaborative projects due to technical constraints. This can hinder their ability to develop essential clinical skills, critical thinking abilities, and professional competencies. The ultimate result is that trust and communication are undermined, hindering the development of a supportive learning environment conducive to student growth.

Varied socioeconomic backgrounds of students have an implication in virtual mentoring. Socioeconomic disparities in access to technology and internet connectivity may exacerbate existing inequalities among nursing students. Those with limited resources or living in rural or underserved areas may face greater challenges in accessing virtual mentoring support, further widening the gap in educational opportunities and outcomes. As Shaikh (2017) points out that in a classroom set up, a mentor is responsible for mentoring students on academic survival skills, facilitating, lecturing, and guiding on

efficient information retrieval and helping with writing skills, lack of ICT buries all such endeavours.

Regarding promoting critical thinking skills, it is essential to prepare students to analyse information critically, evaluate evidence, and make informed decisions. Educators can facilitate critical thinking through activities such as discussions, case studies, and problem-solving tasks, fostering deeper understanding and intellectual growth. Also clear and concise learning objectives provide direction and purpose, helping students understand what is expected of them and how they can achieve their learning goals. Simple objectives can enhance student motivation and focus, leading to more meaningful learning experiences.

The findings of the study affirmed that problem-solving scenarios are the most used methods of promoting critical thinking skills for student nurses. However, students expressed some concerns on the way problem solving scenarios were presented. Some students noted that other problem scenarios used were too obvious to stimulate critical thinking. The implication of this problem is that there is need for diverse problem solving scenarios. Mentors must recognise the importance of providing a variety of problem scenarios that challenge nursing students at distinct levels of complexity. While some scenarios may be straightforward to assess foundational knowledge, others should require deeper critical thinking and decision-making skills. Therefore, mentors should diversify the range of scenarios used in mentoring sessions to ensure they adequately stimulate critical thinking and problem-solving skills among nursing students.

**Use of Videos for Virtual Classroom Mentoring.** There was limited data on the description of videos in terms of their content, length and activities that were done after playing a video. According to Burner and Dennen (2016) CA model targets instructional designs that use multimedia technologies to design computer-based coaching and mentoring. Use of videos was argued to be part of passive learning with a story telling approach especially when there is no combination of visuals and spoken text, no highlights of essential information, and distractions (Buchner, 2018). Incorporating videos into virtual mentoring of nursing students can have several implications, both positive, and negative.

First, videos enhance visual learning. Visual representations of clinical procedures, patient interactions, and healthcare scenarios can facilitate comprehension and retention of complex concepts. Therefore, virtual mentoring can leverage videos to supplement didactic instruction, reinforce key learning objectives, and enhance students' understanding of theoretical concepts in practical contexts. Second, videos provide simulation of real world practice. Therefore, virtual mentoring can use videos to expose students to diverse clinical scenarios, improve their clinical reasoning skills, and promote confidence in decision-making and patient care. Third, they provide flexibility in accessibility as students can download and watch videos at their convenient time. Therefore, virtual mentoring with videos enables asynchronous learning, accommodating students' individual needs and preferences while promoting self-directed learning and autonomy.

Students may be affected by technical challenges when downloading and playing videos. Therefore, virtual mentoring platforms must address technical issues and ensure seamless video playback, compatibility across devices and browsers, and user-friendly interfaces to optimise the learning experience for nursing students. Also, the use of videos in virtual mentoring raises ethical considerations related to patient privacy and confidentiality. Mentoring videos featuring patient interactions or clinical procedures must adhere to strict privacy regulations and obtain appropriate consent from patients and healthcare providers. Therefore, virtual mentoring should prioritise patient confidentiality and compliance with ethical guidelines, ensuring that mentoring videos protect patients' privacy rights and uphold professional standards of practice.

The source of the videos that were used was not clarified by both groups of respondents. For example, scholarly sites such as Elsevier may provide excellent videos on many nursing topics supported by texts and speeches, which may require the student to answer some questions at the end, as suggested by Buchner (2018). However, such sites may need the institutions to subscribe in order to access the educational content. In addition, video conferencing was found to be a powerful tool in promoting a sense of belonging and nearness to the lecturer. The study by Ramos-Macillo et al. (2020) found out that students appreciated the use of video conferencing by the younger lecturers than the older lecturers who were using power point which had large volume of information. However, long video conferencing reduced the concentration span of students and house chores. Lessons that can be drawn are that lecturers need to shorten live lectures and use varied teaching methods to keep students interested in the lecture.

**Socialisation.** The study findings from both groups of participants noted that most students and lecturers were positive on the methods of promoting socialisation. Socialisation was described in terms of group cohesion and having a sense of belonging to the group. There was limited description on the socialisation aspect noted in the review of related literature by De Swardt et al. (2017). The first implication that can be drawn from the findings is that social interaction plays a crucial role in the learning process, enabling students to collaborate, share ideas, and support each other. WhatsApp groups can facilitate communication and community-building among students, fostering a sense of belonging and enhancing learning outcomes. The use of the use of WhatsApp groups in mentoring nursing students has several implications, including enhanced communication and collaboration, promotion of peer learning, accessibility of support networks, facilitation of informal learning, maintenance of academic engagement, and the importance of respecting boundaries and privacy. By leveraging WhatsApp groups effectively, mentors can create a supportive and interactive learning community that enhances students' academic success, professional development, and overall well-being.

On the other hand, limited definition and understanding of socialisation on both participant groups highlighted the limitation of the data collection tool in context of mentoring for ethics and behaviour. The findings on methods of promoting socialisation were limited leaving the need for lecturers to broaden their knowledge on using socialisation for academic excellence and transmitting values and beliefs in nursing. De Swardt et al. (2017) expanded mentoring on socialisation to include not only transmission of ethical values but also cultural and gender awareness among students, values of

professional nursing, student behaviour and work ethics. In order to illuminate the study problem, Morin's (2020) findings in Nepal showed that there was limited learning of culture and self-reflection during online learning. Barret (2010) argued that the online learning environment largely covers the cognitive domain that leaves grey areas in the affective and psychomotor domain usually strengthened by mentorship. This study's findings contrasted the argument by Morin (2020) which may suggest that there is a thin line separating virtual mentoring and face-to-face mentoring or the mentors and mentees lack an in-depth knowledge of classroom mentoring components. The latter illuminates Clement's (2017) observation that most nurse training institutions lack formal mentoring frameworks and largely rely on informal mentoring. The researcher concurs with Jooste (2018) who pointed out that a lack of clear mentoring framework gives various contextual dimensions of mentoring in nursing such as how it occurs, teaching practices, and learning practices it adopts. The acceptance of the null hypothesis in the quantitative phase is attributed to lack of consistency in mentoring approaches by nursing faculty, limited guidance and structure, missed opportunities for tailored support, lack of accountability and feedback mechanisms, and underdeveloped mentor skills.

### **Implementation of Mentoring Activities**

While some studies may show no significant difference between face-to-face and virtual mentoring particularly where online learning has been practiced for a long time, this outcome was not expected in mentoring nursing students due to several reasons inherent to nursing education and the abrupt migration to online learning. For example,



age and experience of lecturers suggest that older individuals and those with more years of experience tend to have higher face-to-face RII scores. This could imply that experience and maturity play a role in interpersonal communication effectiveness. The significant differences based on the institution suggest that there may be organisational factors at play influencing virtual and face-to-face RII scores. Further investigation into the differences between these institutions could provide insights into best practices for communication effectiveness. While there is no significant difference based on gender effects across the platforms, it is worth noting that the sample sizes may influence this finding. Further research with larger sample sizes could provide more conclusive results for lecturers. The results pointed out that the nurse training institutions may consider providing training or support for younger employees and or those with less experience to improve their interpersonal communication skills and use of LMS which could positively impact their RII scores. Additionally, understanding institutional differences can inform organisational strategies for communication training and development especially on the use of the virtual interface.

These results were not expected by the researcher as migration to online learning was abrupt without much preparation by the institutions, students and lecturers. Nursing education heavily emphasises hands-on learning and practical skills development. While virtual mentoring can offer theoretical knowledge and some simulation experiences, it may not fully replicate the tactile learning experience and real-time feedback provided in face-to-face interactions. Nursing students often require direct observation, demonstration, and hands-on practice under the guidance of experienced mentors to

develop clinical competency. Therefore, the absence of face-to-face mentoring was expected to limit the effectiveness of skill acquisition and application.

In addition, nursing is inherently a relational profession that requires effective communication, empathy, and trust-building with students, patients, families, and interdisciplinary teams. Face-to-face mentoring facilitates the development of interpersonal skills and the observation of professional role modelling by experienced nurses. The researcher believed that virtual mentoring may struggle to replicate the depth of interpersonal connection and the subtle nuances of communication observed in face-to-face interactions. Without the ability to observe mentors' non-verbal cues and interpersonal rapport, nursing students may miss out on valuable learning opportunities related to professional socialisation and identity formation. Although these were pointed out during focus group discussions and interviews, the quantitative comparison rejected the alternate hypothesis in both groups.

The findings may be associated with the benefits of e-mentoring by Iqbal (2020) comparison of face-to-face and online mentoring which found out that virtual mentoring dominated on the Likert scale on variables such as asynchronous benefits, reduced discrimination by gender and race, improved communication between the mentor and the mentee, thus, respondents did not experience differences on the platform used. Also, these findings confirm Abdelaziz et al. (2011) and Keefe (2012) where they noted that students were satisfied with online learning of clinical skills mainly by using videos. Keefe (2012) found out that students who received online instruction on pain assessment had a higher reflection and retention score than students that received face-to-face instruction.

Ramos-Macillo et al. (2020) noted that students who were towards completion of their course were grateful and resilient during online learning as they could not afford to put their studies on hold.

Due to the prohibition of movement and public gatherings, students' socialisation and extracurricular activities were not possible. As noted on literature review, face-to-face mentoring often extends beyond individual interactions to include networking opportunities, extracurricular activities that students engage in, the hidden curriculum, and community engagement activities. These extracurricular experiences foster a sense of belonging to the nursing students and provide valuable networking connections for future career advancement. The researcher believed that virtual mentoring may lack the social richness and community engagement opportunities inherent in face-to-face interactions, potentially isolating nursing students from their peers, mentors, and broader professional networks. However, the disparities in the comparisons yielded unexpected outcomes, consequently highlighting the prominence of virtual mentoring as a significant factor in the practice of online learning. Although Seshabela et al. (2020) acknowledged that virtual mentoring is still at its infancy in nursing, Jacobson and Sherod (2020) argued that further exploration on how it can be used may shape the future of nursing education based on its success in fields such as higher education.

The argument made by Jacobson and Sherod (2020) accentuates the transformative potential of virtual mentoring in shaping the future of nursing education. By embracing virtual mentoring, nursing educators can foster innovation, expand access,

enhance professional development, and contribute to evidence-based practice within the nursing profession.

### **Strengths and Weaknesses**

Drawing from the implications unearthed, this section illuminates both the merits and shortcomings of this study, which could inform the recommendations for practice, future research, and influence the conclusions. The study employed both qualitative and quantitative methods to get a comprehensive understanding of the dimensions and complexities of virtual and face-to-face mentoring experiences as described by the participants. Qualitative data provided rich insights into participants' perceptions, attitudes, and experiences, while quantitative data offered statistical comparisons that helped identify patterns or trends across the two mentoring modalities. Another strength of the study is that it applied triangulation by integrating multiple data sources through mixed methods and data collection techniques, enhancing the credibility and validity of the study results. The researcher checked quantitative data from virtual and face-to-face mentoring comparisons against the qualitatively confirmed results to account for potential biases or limitations arising from the different methods of data collection. The contextualisation of quantitative findings within the rich narratives obtained from qualitative data allowed the researcher to clarify the socio-cultural, institutional, and technological influences shaping mentoring dynamics in nursing education.

The flexibility of the exploratory sequential design allowed deeper exploration of themes or unexpected phenomena identified in qualitative data, guiding the development of more targeted quantitative measures in the subsequent phase. The researcher believed that including both nursing students and their lecturers as participants, helps to capture diverse perspectives and insights from key stakeholders involved in the mentoring process. This participant diversity enriched the data and enhanced the relevance and applicability of the study findings to different stakeholders within the nursing education context.

The study has several limitations that affect its findings. One limitation was achieving the desired sample size and representativeness, particularly within the student population. Because data collection coincided with study breaks at all three institutions, recruitment challenges arose. The online quantitative questionnaire had a poor response rate, necessitating the distribution of printed, self-administered questionnaires. The response rate from students was relatively low, at 55%. According to Weaver et al. (2019), a low response rate can result in a smaller sample size, which may compromise the statistical power of the analysis. With fewer participants, the study might be less able to detect significant differences or associations between variables related to virtual and face-to-face mentoring experiences. This limitation could affect the reliability of the study findings and increase the risk of failing to detect true effects.

There is also a risk of non-response bias, which occurs when the characteristics of non-respondents systematically differ from those of respondents in ways that affect the study outcomes. For example, nursing students who had particularly negative experiences with virtual mentoring might be less inclined to participate in the study, leading to an underrepresentation of critical viewpoints. Conversely, students who had positive experiences might be more motivated to respond, resulting in an overrepresentation of favourable perspectives. This could skew the study results and undermine their validity. To mitigate non-response bias, the researcher used follow-up reminders and printed hard-copy questionnaires. The inclusion criteria and use of random sampling also helped minimise bias. Data collection during institutional breaks required extensive outreach efforts, as many students were in remote rural areas, posing logistical challenges for the researcher.

The study's findings may also be limited by the participants' lack of prolonged exposure to virtual mentoring. During this study, both students and lecturers were inadequately prepared for online learning, experiencing it for the first time. With more experience and improvements in online Learning Management Systems, similar studies in the future could yield different results as lecturers and students become more familiar with the virtual environment. The low response rate from online questionnaires suggests that both students and lecturers may not prefer using the online interface unless necessary.

## **Recommendations for Application in Practice**

This section draws from the discussion of findings in the previous chapter and implications of the study to make recommendations application in practice. The study supports the argument by Iqbal (2020); Terpstra and King (2021); Morin (2020) that online learning is the future of nurse training. Nurses need to remove the mentality of 'we always did it this way and move to innovative ways of the higher education approach to teaching and learning. Based on the findings, this research study recommended the application of the cognitive apprenticeship model of mentoring on the following areas:

### **Institutional Support**

Success of mentoring relationships in an organisation depends on the organisation's willingness to provide resources for mentors and mentees. One of the themes that arose from opinions from both participant groups highlighted the need for support from the ICT department on the use of the Learning Management System. Morin (2020); Keengwe (2019) noted that sudden migration to online learning during the Covid-19 pandemic may have had an impact on the preparation of online teaching. Keengwe (2019) added the challenge of students who may not afford smart phones and laptops to engage in virtual learning. Nurse training institutions have the mandate to support best-practices of virtual mentoring by:

1. Investing in technological infrastructure

Investing in robust technology infrastructure is essential for ensuring smooth and seamless virtual mentoring experiences. This includes providing access to reliable internet connections, user-friendly platforms, and technical support services.

## 2. Adopting hybrid approaches and training

Institutions should consider adopting hybrid approaches that combine elements of both virtual and face-to-face mentoring. This allows for flexibility while also preserving the benefits of in-person interactions, particularly for activities requiring hands-on guidance and emotional support. There is need to train lecturers on the use of online learning platforms to enable them to take advantage of the features that allow mentoring.

## 3. Use evaluation feedback mechanisms

Institutions should consider putting in place clear mentoring frameworks and evaluation mechanisms for evaluating the effectiveness of virtual mentoring activities and gathering feedback from students. This iterative process can inform programme improvements and ensure alignment with the evolving needs of mentors and mentees.

Zachary (2011) argues that institutions that support a mentoring culture within their structures can benefit from increased accountability and responsibility among employees, optimal use of resources, and the maintenance of trust and integrity. This study suggests that nursing training institutions should implement written policies on student mentoring to ensure all lecturers are aware of their roles and responsibilities in the mentoring process.



Iqbal (2020) suggests that in the technology-driven era of higher education, e-mentoring ought to be mandatory, and future research could explore methods to enhance its effectiveness. It is important to customise backgrounds that are fun and engaging, as well as maintain interest in the virtual setting. They counteract the distractions and boredom that students experience during online and virtual learning. Lecturers may post short quizzes, role plays, and diagrams for students to complete, analyse, and interpret. Lillyman et al. (2010) noted that students can engage in storyboarding in a virtual environment.

Reallocating human resources to support virtual learning is essential. Given the students' lack of technological support, this study recommends that institutions transitioning to online learning develop measures to assist students struggling with logging in and navigating the LMS. Despite Generation Z's familiarity with technology, the findings of this study indicate that students often lack devices compatible with the applications used for online learning. They require assistance in setting up their devices and maintaining connectivity, particularly in areas with low bandwidth.

Adequate orientation for students and lecturers on navigating the virtual learning environment is necessary. Students reported that the sudden shift to online learning resulted in insufficient preparation for both students and lecturers. With technology driving virtual learning, many institutions are leveraging online platforms to address issues of cost, distance, and time. This study suggests including an orientation to online features and functions during the ICT module in the first year. Additionally, curriculum reviews

should consider incorporating a unit and practical component on using the LMS for students upon admission to the Bachelor of Nursing programme.

### **Adoption of Virtual Mentoring**

Given the variability in face-to-face mentoring experiences, institutions may need to provide additional training and support for mentors to ensure consistency and effectiveness on virtual mentoring platforms. Face-to-face mentoring generally requires less training due to its more straightforward nature. The formal curriculum of nursing education programmes should incorporate mentoring to guarantee that all students have access to structured and meaningful mentoring experiences. This can be achieved by incorporating mentoring activities into clinical placements, coursework, and professional development activities, providing students with mentorship opportunities throughout their educational journey.

The study recommends promoting inclusive virtual mentoring environments to address gaps identified between institutions, age groups, and levels of experience. Nurse training institutions should foster inclusive environments that value diversity, equity, and inclusion in mentorship practices. Mentors should aim to positively impact students regardless of age or experience. They should recognise and address the unique needs and challenges faced by students from underrepresented groups, ensuring that mentoring is responsive to the diverse backgrounds and experiences of nursing students. Lecturers should establish clear communication channels with their mentees, such as email, messaging apps, or virtual meeting platforms, to facilitate regular interaction and support.

The key aspects to consider include:

- Examining accessibility and equity to ensure equitable participation for all nursing students, including those with disabilities or from underrepresented backgrounds, considering both Generation Z students and older generations.
- Addressing the diverse needs of nursing students from various cultural, ethnic, and linguistic backgrounds by pairing them with compatible mentors.
- Exploring inclusive practices that accommodate the unique learning styles, preferences, and experiences of diverse nursing students. This may involve offering multiple communication modalities, flexible scheduling options, and personalised mentoring approaches.

### **Application of the CA Model**

O'Brian and Thompson (1992) noted that advances in psychology have enabled educators to better understand human learning and draw from cognitive psychology to develop theories that support knowledge and skill acquisition. The strength of cognitive learning theories lies in their view of learners as active participants in the learning process, rather than passive recipients of information. This approach leads to greater scientific productivity. According to Braungart and Braungart (2019), cognitive learning focuses on how students perceive, process, and structure information to make sense of it. Therefore, virtual learning content should be restructured in terms of volume and time.

Riley and Fearing (2009) recommend more frequent, shorter mentoring sessions to maintain student interest. Lecturers need training on identifying tacit knowledge based on their subject matter expertise and experience. Polanyi (1966), as cited in Dennen and

Burner (2016), argued that people often know more than they can express, which supports the CA model that emphasises the transfer of tacit knowledge over explicit knowledge. Explicit knowledge is conveyed through lectures, slides, handouts, and videos. However, Riley and Fearing (2009) argue that most higher education institutions still prioritise explicit knowledge over tacit knowledge, which is crucial for developing problem-solving skills. Online teaching content should be student-centered, divided into "bite-sized" pieces to create an intuitive learning experience with continuous testing and iteration. The CA model encourages students to be inquisitive, use mental processes to construct abstract ideas, and engage in reflective thinking.

The Terpstra and King (2021) model of cognitive apprenticeship in simulation facilitator mentorship highlights the importance of mentors using their experience and skills to guide students in learning key knowledge by selecting specific facts and concepts. This approach helps avoid overwhelming students with irrelevant information, which can leave them feeling unsupported and overly dependent on lecturer guidance. Many students in this study expressed frustration over poorly explained slides and a lack of understanding. The CA model calls for curriculum realignment to specify learning objectives, content delivery methods, and assessment strategies. It emphasises continuous engagement between mentors and mentees to create an engaging and non-threatening virtual mentoring environment. Proper selection of tacit and explicit knowledge for mentoring can achieve academic excellence by:

- Enabling mentors to design and deliver learning activities that build student confidence and foster innovation in lesson planning, delivery, student engagement, and evaluation.
- Encouraging peer mentoring among lecturers, allowing subject experts to share virtual mentoring skills with novice lecturers and students. Organisations that promote peer mentoring in transmitting tacit and explicit knowledge are likely to have successful virtual mentoring relationships. This approach can address the gap identified in data analysis, where there was an association between years of experience and virtual mentoring experiences.

Terpstra and King (2021) argue that cognitive apprenticeship is a missing link in mentoring. Lecturers should anchor the content taught with selected concepts and facts and develop strategies to make thinking visible and help students grasp concepts and facts. Finally, lecturers should ensure students master the techniques for completing tasks. The absence of written mentoring frameworks in many nursing colleges results in a haphazard practice, leaving many aspects of the mentoring relationship undefined.

### **Virtual Mentoring Models**

Virtual mentoring can be a valuable tool in nursing education, offering opportunities for personalised guidance, support, and professional development. Figueroa (2017) explored the applicability of virtual mentoring in STEM (science, technology, engineering, and mathematics) fields. Although Figueroa's study concentrated on STEM, nursing education can benefit from many of its findings and insights due to the shared need for

mentorship, skill development, and career guidance. Drawing from STEM mentoring, the study recommends the following:

- Given nursing students' demanding schedules due to clinical rotations and coursework, lecturers should provide flexible learning opportunities through mentoring. Virtual mentoring offers flexibility in scheduling sessions, allowing students to engage in mentorship activities at convenient times without disrupting other commitments.
- Pair individual nursing students with experienced nurse mentors for regular one-on-one virtual meetings. These sessions can include discussions about career goals, academic challenges, clinical experiences, and professional development opportunities.
- Create virtual mentoring groups, in which a mentor leads discussions and activities with a small group of nursing students. This model fosters peer support, collaboration, and the exchange of ideas among students with similar interests or career aspirations.
- Use asynchronous communication tools such as email, discussion boards, or messaging apps to facilitate mentorship interactions at convenient times for both mentors and mentees. This model allows for flexibility in scheduling and accommodates students with varying schedules or time zones.
- Implement formal mentorship programmes in nursing schools that provide guidelines, resources, and training for both mentors and mentees. These

programmes should include defined goals, timelines, and evaluation criteria to ensure meaningful mentorship experiences.

- To stimulate interest, incorporate virtual simulation scenarios where nursing students can observe and learn from virtual mentors demonstrating clinical skills, critical thinking, communication techniques, and professional behaviour in various healthcare settings.

### **Recommendations for Future Research**

This research has revealed several areas that require further exploration and evaluation. The vast grey areas confirmed the argument by Clement (2018), Figueroa (2017), and Morin (2020) that virtual mentoring is an under-researched field. The hypothesis testing in the quantitative phase concluded that there were no differences in virtual and face-to-face mentoring experiences. However, the question arises: how effective is virtual mentoring? Are the similarities due to practice or a lack of understanding of virtual mentoring? If there are formal mentoring frameworks in nursing schools, will the results be the same? How can mentoring effectiveness be measured? These questions highlight research gaps that require further investigation to improve mentoring experiences during online learning.

The research recommendation discussion revolved around the definition of mentoring in nursing education. Shaikh (2017) asserts that the context in which one uses or implements mentoring determines its definition. Research is necessary to identify strategies for mainstreaming mentoring in nursing education. Additionally, there should

be a clear description of the activities involved in virtual mentoring, research on virtual mentoring frameworks, studies on evaluating virtual mentoring, and the application of cognitive apprenticeship mentoring. Figueroa (2017) evaluated mentoring models for Science, Technology, Engineering, and Mathematics (STEM) students. Given that nursing is both a science and an art, further research could potentially apply these proposed models to the nursing field.

### **Virtual Mentoring**

This study recommends further investigation into virtual mentoring to define specific tasks for mentors and mentees in the following areas:

- Explore the training and support needs of mentors and mentees involved in virtual mentoring.
- Investigate the efficacy of training programmes from other disciplines that equip participants with virtual communication skills and adapt them to a nursing context.
- To understand the activities required for online learning, such as knowledge transfer, skill development, and satisfaction for both mentors and mentees, research the mainstreaming of virtual mentoring.
- Conduct studies to compare the effectiveness of virtual mentoring and traditional face-to-face mentoring in nursing education, measuring outcomes such as student satisfaction, knowledge retention, clinical skill development, and academic performance.



- To assess the effects of demographics and culture on mentoring, more research is required on the mentoring culture among the three institutions in Namibia.

With ongoing technological advancements, online learning is becoming increasingly prevalent in higher education institutions. The COVID-19 pandemic highlighted new possibilities for educational reform. To avoid becoming outdated, nursing education must adapt to these changes. Therefore, we need to conduct further research to identify activities that enhance virtual mentoring experiences and to define the parameters of virtual mentoring activities and relationships. It is essential to explore the features of different learning management systems and harness them to enhance virtual mentoring.

Researchers should investigate the effectiveness of Neely et al. (2017)'s virtual mentoring model in nursing education by applying the CA model. This model emphasises one-on-one mentoring based on factors like gender, age, perceived similarities, extraversion, and proactive personality. Future research could expand this model to group mentoring, as attributes such as gender and age did not significantly impact virtual mentoring experiences in this study. Nursing schools have traditionally employed a group mentoring approach, assigning a group of students to a single tutor throughout their training. Nursing faculty could benefit from investigating how to implement group mentoring considering gender, experience, and age.

Previous theories (Kram, 1985; Ragins, 1989) suggested that time constraints often affect women, limiting their participation as mentors in many professions. This study revealed that some lecturers responded slowly and provided feedback, were more accessible on WhatsApp, or were preoccupied with their children during online learning. It is important to determine which gender is more effective in online mentoring and how generational gaps may influence mentoring relationships.

### **Cognitive Apprenticeship Mentoring**

Collins et al. (1987) introduced the CA model, which suggests that a teacher can guide and coach a student to develop critical thinking and problem-solving skills by making their thinking visible to the student. However, in a virtual learning environment, the traditional teacher-centred approach may be less effective. According to Serin (2018), the teacher-centred approach encourages students to focus primarily on the lecturer, whereas the student-centred approach allows students to use their cognitive and metacognitive processes to construct their understanding of the content. Further investigation is required to examine methods of combining the student-centred approach with the CA model to guide students who are physically far from their instructors.

Core modules in nursing education often rely on teaching and demonstrating the practical components of the subject matter. However, as Terpstra and King (2021) noted, patients in clinical settings may present with different scenarios than those described in textbooks. Therefore, students need training in reflective thinking and application skills.

For instance, instructors could collaborate with students to establish objectives for exploration before presenting new content, enabling them to effectively investigate the subject matter. Assigning prior reading tasks can prepare students for upcoming lectures. Collins et al. (1991) argue that this method encourages students to develop inquisitive and critical minds, using reflective skills to solve problems independently.

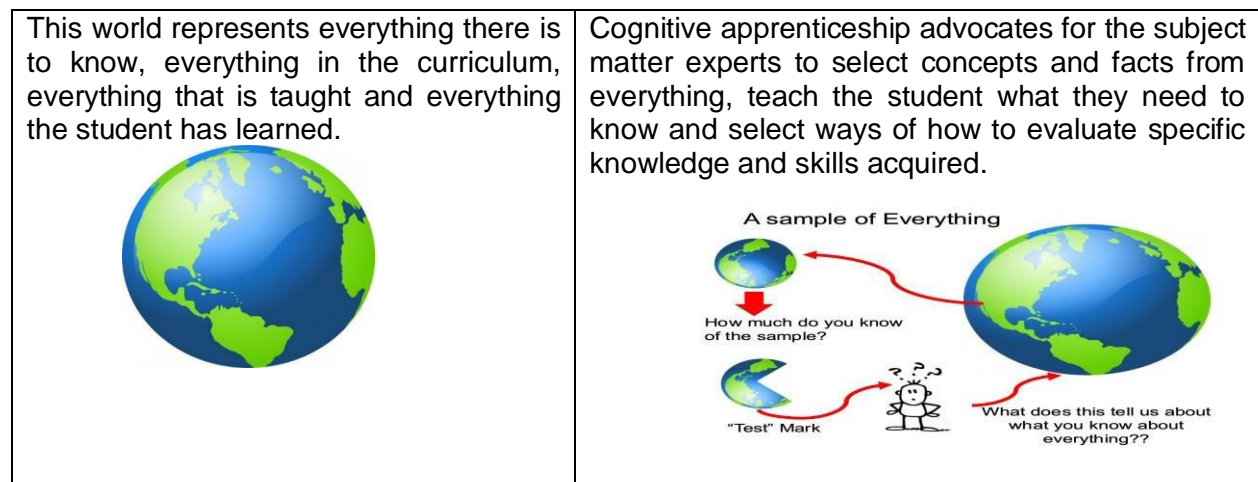
When studying the CA model of mentoring, it is important to recognise that students do not require instruction in every detail. Instead, educators should focus on identifying the essential facts and concepts that students need to grasp and guide them towards achieving the desired learning outcomes. Teaching facts equips students with exploratory skills, enabling them to form abstract ideas for deeper understanding. Key questions include whether lecturers know what is important in the curriculum, whether they use their experience to help students identify tacit knowledge, how much time they allow for self-directed learning, and how much information students retain during passive learning.

Irby et al. (2010) argue that what students know and can produce at the end of the instructional period is contingent upon a well-defined instructional framework. They underscore that the educational 'world' encompasses all knowledge, the entire curriculum, the teaching process, and the student's acquired knowledge. In this context, CA advocates for subject-matter experts to carefully select and focus on key concepts and facts from this extensive body of knowledge.

According to Irby et al. (2010), CA supports the idea that subject matter experts should not attempt to teach everything within a curriculum. Instead, they should identify the most critical concepts and facts that students need to master. This selective approach ensures that instruction is both manageable and meaningful, allowing students to build a strong foundation of essential knowledge. Once educators identify these key concepts and facts, the next step is to teach them effectively. This involves not just delivering information but also guiding students through the process of understanding and applying this knowledge. The teaching methods should make the thinking processes of the experts visible, demonstrating how to approach problems and construct solutions.

**Figure 5.1**

*Teaching and Learning of Facts and Concepts*



*Adopted from; Calls for Reform of Medical Education. Irby, Cooke, and O'Brien (2010)*

This approach helps students develop critical thinking and problem-solving skills that are essential in their field. Furthermore, CA emphasises the importance of evaluating the specific knowledge and skills acquired by students. Lecturers should tailor evaluations to the specific concepts and skills we are teaching, not a one-size-fits-all process. It

involves assessing how well students can apply what they have learnt in real-world scenarios, rather than just testing their recall of information. This type of evaluation helps ensure that students truly comprehend and can use their knowledge effectively.

Researchers can use the CA model to research various methods of promoting expertise, focusing on components such as modelling, coaching, scaffolding, articulation, reflection, and exploration. The CA model of mentoring rejects the notion that a mentor simply transfers knowledge to a mentee, emphasising student participation through collaborative learning in contextualised activities. For example, modelling is an instructional strategy where a teacher shows a student how to complete a task using verbal and physical demonstration. According to Collins et al. (1991), modelling creates a picture in the student's mind that serves as a guide for the teacher's expectations. Modelling eliminates the frustrations associated with a lack of guidance and instead boosts students' confidence. The nursing curriculum must incorporate teaching strategies that show how the lecturer will model students, thereby eliminating the frustrations associated with online learning. Such activities may be of immense importance to prepare the student for clinical practice.

### **Situated Learning**

One area worth investigating is the use of situated learning to mentor students, helping them bridge the gap between theoretical knowledge and practical application, particularly in online learning contexts. Collins et al. (1991) proposed that situated learning environments facilitate the transfer of knowledge from one domain to another

through abstraction. For instance, educators teaching practical modules might share brief video clips for students to critique techniques, or students might record themselves performing procedures for assessment and feedback within a virtual learning environment. Many nursing procedures, such as handwashing and medication administration, lend themselves well to situated learning. Further research could delve into how situated learning can effectively translate nursing skills into online settings, reducing the reliance on face-to-face interactions between educators and students.

Additionally, Lillyman et al. (2010) suggested that storyboarding serves as a beneficial mentoring tool to engage students in online learning environments. Storyboarding provides a structured approach for nursing students to visualise and plan their learning journey. Mentors can collaborate with students to create visual narratives outlining patient care scenarios, clinical procedures, or complex healthcare situations. Further exploration could focus on developing problem-solving scenarios that enhance students' critical thinking and decision-making skills within simulated environments, preparing them for real-world clinical practice. This research also suggests investigating how storyboarding can enhance problem-solving assessments for nursing students in online learning environments, potentially requiring educators to develop graphic design skills to create engaging narratives aligning with various learning domains.

Longitudinal studies could track students' progression from novice to expert practitioners and evaluate the sustained impact of these learning experiences on their career trajectories, solidifying computer-assisted mentoring as a valuable practice in nursing education.

## **Nurturing Virtual Mentoring Relationships**

The effectiveness of a mentoring relationship depends on a variety of factors, including the characteristics of both the mentee and mentor, the mentoring environment, and the established goals. Khan and Gogos (2013), as cited in Pollard and Kumar (2021), emphasise the pivotal role of mentoring in determining the quality and success of graduate education and student retention. Essential mentor attributes include humour, friendliness, and expertise. Commitment and motivation emerge as common traits shared between mentors and mentees. As highlighted by Iqbal (2020), online mentoring offers numerous benefits, such as mitigating social and geographical barriers and fostering mentors' freedom of expression through online platforms. To develop effective virtual mentoring relationships, insights from traditional face-to-face mentoring dynamics must be integrated into virtual contexts. Furthermore, this research underscores a lack of clarity among educators regarding the termination of mentoring relationships, emphasising the importance of establishing clear guidelines for timing and evaluation to prevent undue psychological stress and premature termination.

Given the nascent stage of virtual mentoring in nursing, it is critical to recognise that mentors typically engage voluntarily, driven by professional development and expertise enhancement rather than monetary incentives. Therefore, mentors may benefit from guidance on building and sustaining relationships with mentees, including cultivating trust, respect, and ongoing communication until the relationship concludes. Unlike face-to-face instruction, virtual mentoring often involves students separated by geographical boundaries, prompting exploration into diverse mentoring approaches such as one-on-

one, peer mentoring (between junior and senior student nurses), and leveraging multiple communication channels like WeChat or Skype. Furthermore, future research should investigate organisational factors influencing the implementation of virtual mentoring programmes. This includes examining institutional support mechanisms, funding strategies, technological infrastructure requirements, and policy frameworks essential for sustaining effective virtual mentoring initiatives within educational contexts.

## **Conclusions**

Virtual mentoring in nursing education, particularly for undergraduate students, is still in its preliminary stages of development. Clement (2018; Clement & Welch, 2017) has conducted some research on virtual mentoring, notably focusing on graduate doctoral students, but various authors (Woolnough & Fielden, 2017; Olurunfemi, 2019; Morin, 2020) have lamented the lack of clearly documented frameworks. The landscape of nursing education witnessed significant changes due to the COVID-19 pandemic, with sudden restrictions on face-to-face learning prompting most nursing institutions to swiftly transition to online platforms. In light of these developments, this study aimed to explore the virtual mentoring experiences of student nurses (3rd and 4th-years) and their lecturers during online learning at the three institutions offering Bachelor of Nursing Science in Namibia.

The research commenced by providing a historical overview of nurse training development, tracing its roots from the Florence Nightingale training system to its adoption by missionaries in Southern Africa. The demand for enhanced nursing services



has driven a shift in nursing education towards bachelor's degree programmes, replacing the traditional certificate and diploma hospital-based models. Despite this shift, the instructional models largely remained unchanged until the COVID-19 pandemic necessitated the transition to online learning, disrupting traditional face-to-face education.

Studies from Spain and Nepal highlighted the challenges faced by students during the sudden shift to online learning, including concerns about completing studies, uncertainty regarding the return to face-to-face learning, and the translation of theoretical knowledge into clinical practice. Amidst these challenges, mentoring emerged as a crucial component of nursing education, prompting this research to focus on virtual mentoring experiences during online learning.

Drawing from the difficulties encountered by student nurses during online learning, the study aimed to explore virtual mentoring experiences among both students and nursing lecturers. Leveraging the experiences of 3rd and 4th-year students, who had exposure to both face-to-face and virtual mentoring, allowed for meaningful comparisons and hypothesis testing

The research delved into the development of nursing education in Namibia, highlighting the apprenticeship model of nurse training and the continued involvement of the government in clinical attachments for nursing nurses. While mentoring in clinical settings is common, this research focused on virtual mentoring experiences within classroom instruction, guided by the cognitive apprenticeship model.

Reviewing related literature highlighted the importance of mentoring in nursing education, particularly in fostering professional growth and socialisation among students. However, the shift towards university-based nursing education necessitated reforms in curriculum and instructional approaches. The CA model emerged as a valuable framework, emphasising the importance of making thinking visible, teaching concepts and facts, and promoting student expertise through various mentoring processes. It also provides a robust theoretical foundation for mentoring in various contexts, including virtual environments, as a prominent framework in educational psychology. Effectively leveraging this model in virtual mentoring can optimise learning outcomes and facilitate the development of expertise among mentees.

Literature shows that virtual mentoring modelling helps mentors demonstrate desired skills, behaviours, and problem-solving strategies through online platforms. They can utilise video demonstrations, simulations, or interactive presentations to model expert performance and guide mentees in understanding complex tasks and concepts. Coaching is a skill that mentors apply to provide guidance and support to mentees as they engage in learning activities. Through synchronous or asynchronous communication channels, mentors offer personalised feedback, clarify misconceptions, and scaffold learning experiences to meet individual mentees' needs. Coaching sessions involved discussions, goal-setting exercises, and constructive critiques to enhance mentees' skills and confidence. Scaffolding involved gradually withdrawing support as mentees gained proficiency and independence. Mentors scaffolded learning experiences by providing structured frameworks, resources, and prompts to assist mentees in navigating

challenges and advancing their understanding. Step-by-step instructions, concept maps, or guided problem-solving tasks tailored to mentees' skill levels may comprise scaffolding techniques. As mentees demonstrate increasing competence, mentors gradually reduce their involvement and encourage self-directed learning. Virtual mentoring allows mentors to gradually fade their presence while still providing access to resources, expertise, and occasional guidance as needed. Mentors encourage mentees to take charge of their learning journey and apply the acquired knowledge independently. Reflection plays a crucial role in virtual mentoring, allowing mentees to consolidate learning experiences, identify strengths and weaknesses, and set goals for future development. Mentors facilitate reflective practices by prompting mentees to analyse their learning processes, evaluate their progress, and articulate insights gained from their experiences.

Online platforms can support reflection through discussion forums, journals, or multimedia presentations. Articulation encourages mentees to articulate their thoughts, ideas, and solutions effectively through written or verbal communication. Mentors foster articulation by engaging mentees in meaningful discussions, collaborative projects, or presentations where they can articulate their understanding, reasoning, and problem-solving strategies. Encouraging articulation enhances mentees' communication skills and promotes a deeper understanding of the subject matter. Virtual mentoring encourages mentees to explore diverse perspectives, resources, and learning opportunities. Mentors facilitate exploration by recommending relevant literature, online resources, or professional networks that expand mentees' knowledge bases and broaden their

understanding of the field. Virtual mentoring platforms provide access to a wealth of information and interactive tools that support mentees' exploration and inquiry.

The study utilised a mixed-methods approach. Qualitative data collection involved focus group discussions with nursing students and telephone interviews with lecturers, followed by quantitative data collection using validated questionnaires. Thematic analysis revealed insights into teaching content, problem-solving approaches, and self-directed learning, socialisation, and feedback mechanisms during virtual mentoring. Lecturers prepared the teaching content the same as in face-to-face teaching but delivered it hurriedly. The students perceived a lack of adequate mentoring to understand the online content. Students expressed satisfaction with problem-solving scenarios but highlighted distractions and the need for institutional support in navigating online learning. They also lamented the lack of support from the ICT departments during online learning. Lecturers emphasised the importance of proper planning, visual aids, and open communication channels for effective virtual mentoring.

The quantitative phase corroborated the qualitative findings, indicating that there were no significant differences in virtual mentoring experiences compared to face-to-face mentoring for both. Students and lecturers. However, there were concerns regarding timely feedback and institutional support. This study provides insights into the virtual mentoring experiences of nursing students, highlighting crucial areas for enhancing pedagogical practices and institutional support. The findings underscore the necessity for nursing education programmes to continually evolve and adapt their mentoring strategies to meet the diverse needs of students in both virtual and face-to-face environments. By

identifying the strengths and limitations of current mentoring approaches, this research paves the way for developing more effective, inclusive, and supportive mentoring frameworks. Enhanced pedagogical practices and robust institutional support are essential for fostering a conducive learning environment, ultimately contributing to the professional growth and competence of future nurses. Recommendations include developing clear mentoring frameworks, training lecturers and students in using learning management systems, and fostering open communication channels to enhance virtual mentoring relationships. The study recommends further research to enhance virtual mentoring practices, assess their efficacy in nursing education and the integration of the CA model of mentoring.

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## APPENDICES

### Appendix A: UREC Provisional Approval



REAF\_DSPA - Version 1.0

<b>UNICAF UNIVERSITY</b> <b>RESEARCH ETHICS APPLICATION FORM</b> <b>DOCTORAL STUDIES PROVISIONAL APPROVAL</b>
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The Provisional Approval - Research Ethics Application Form (REAF) should be completed by Doctoral level candidates enrolled on Dissertation stage 1.

This form is a **provisional approval** which means that the UREC committee has accepted the initial description of the project but this is conditional as changes may have to be implemented following Dissertation Stage 2 and piloting in Dissertation Stage 3.

**This is a conditional offer and acceptance of the project needs to be verified and confirmed upon completion of the Research Ethics Application Form in Dissertation Stage 3.**

**Important Notes:**

- An electronic version of the completed form should be uploaded by the student to the relevant submission link in the VLE. Student's supervisor will then review the form and provide feedback commentary. Once supervisor's initial approval is given then the supervisor will forward this to [doctoral.studies-aa@unicaf.org](mailto:doctoral.studies-aa@unicaf.org), for provisional approval by the Unicaf University Research Ethics Committee (UREC).
- Please type your answers and **do not** submit paper copy scans. Only *PDF* format documents should be submitted to the committee. It is recommended to use free version of Adobe Acrobat Reader available online: <https://get.adobe.com/reader/>
- If you need to supply any supplementary material, not specifically requested by the application form, please do so in a separate file. Any additional document(s) should be clearly labelled and uploaded in the relevant VLE link.
- If you have any queries about the form, please address them to your dissertation or project supervisor.



REAF\_DSPA - Version 1.0



**UNICAF UNIVERSITY**  
**RESEARCH ETHICS APPLICATION FORM**  
**DOCTORAL STUDIES PROVISIONAL APPROVAL**

UREC USE ONLY:

Application No:

Date Received:

**Student's Name:** Sithulisiwe Ndlovu**Student's E-mail Address:** sithulisiwendlovu115@yahoo.com**Student's ID #:** R1807D5722964**Supervisor's Name:** Vikram Niranjana**University Campus:** Unicaf University Zambia (UUZ)**Program of Study:** UUM: PhD Doctorate of Philosophy - Education**Research Project Title:** An exploration of the virtual mentoring experiences among students and lecturers in nurse training institutions in Namibia**1. Please state the timelines involved in the proposed research project:**

Estimated Start Date: 01-Apr-2021

Estimated End Date: 30-Sep-2021

**2. The research project****2a. Project Summary:**

In this section please fully describe the purpose and underlying rationale for the proposed research project. Ensure that you pose the research questions to be examined, state the hypotheses, and discuss the expected results of your research and their potential.

It is important in your description to use plain language so it can be understood by all members of the UREC, especially those who are not necessarily experts in the particular discipline. To that effect please ensure that you fully explain / define any technical terms or discipline-specific terminology (maximum 300 words +/- 10%).

The purpose of the research is to explore virtual mentoring experiences among students and lecturers in nurse training institutions in Namibia. The motivation behind this study is that e-mentoring is becoming eminent in nurse training because of the developments in information technology and advent of diseases such as COVID-19 -19 where there are restrictions on the traditional face to face teaching experiences. Mentoring is defined by Huggins (2016) as a training system under which a more experienced individual who guides a student and develop their potential in the development of skills, improvement of performance in order to achieve their career goals. E-mentoring harnesses the power of technology in web-based environment to foster the mentor and mentee relationship among students and their lecturers without face to face meeting. Mentoring forms an integral part in nursing as skills, attitudes and knowledge such as resilience, self-confidence, reflection, curiosity and tolerance are passed on to novice students during the teaching and learning interactions. Institutions of higher learning in Namibia migrated to online learning during the COVID-19 19 pandemic. The questions that will be addressed are:

What are the virtual mentoring experiences of students and lecturers?

How do the experiences differ from face to face experiences?

How can virtual mentoring be improved in order to increase its efficiency?





## 2b. Significance of the Proposed Research Study and Potential Benefits:

Outline the potential significance and/or benefits of the research (maximum 200 words).

Virtual mentoring is a new concept in nurse training in Namibia. Nurse training has been done using the traditional face to face instruction. Upon successful completion of this research, e-mentoring strategies may be developed in order to strengthen, support and increase confidence of on the mentorship relationship between the lecturer and the student. The nursing profession needs to keep abreast with current trends and the fast-paced technological advances. This removes the belief that 'we have been always doing it like this'. In order to stay relevant in health care reforms, nursing education should create a robust virtual mentoring environment which has the same efficacy as the traditional face to face mentoring relationships. The study aims to inform action as the era of online learning seems to be inevitable. Proactive institutions will benefit especially when both staff and students are prepared psychologically despite other limitations faced by Namibia as a middle-income country.

## 3. Project execution:

### 3a. Type of project. The following study is an:

- ☒ experimental study (primary research)
- ☐ desktop study (secondary research)
- ☐ desktop study using existing databases involving information of human/animal subjects
- ☐ Other

If you have chosen 'Other' please Explain:



REAF\_DSPA - Version 1.0

**3b. Methods. The following study will involve the use of:**

Method	Materials / Tools
<input checked="" type="checkbox"/> Qualitative	<input checked="" type="checkbox"/> Face to Face Interviews <input checked="" type="checkbox"/> Phone Interviews <input type="checkbox"/> Face to Face Focus Groups <input checked="" type="checkbox"/> Online Focus Groups <input type="checkbox"/> Other*
<input checked="" type="checkbox"/> Quantitative	<input checked="" type="checkbox"/> Self-administered Questionnaires <input checked="" type="checkbox"/> Online Questionnaires <input type="checkbox"/> Experiments <input type="checkbox"/> Tests <input type="checkbox"/> Other *

\*If you have chosen 'Other' please Explain:

**4. Participants****4a. Does the Project involve the recruitment of participants?**

☒ YES    **If YES, please complete all following sections.**

☐ NO    **If NO, please directly proceed to [Question 5](#).**

**Note:** The definition of “participation” includes active participation, such as when participants knowingly take part in an interview or complete a questionnaire.



REAF\_DSPA - Version 1.0

#### 4b. Relevant Participant Details of the Proposed Research

Please state the number of participants you plan to recruit, and describe important characteristics such as: demographics (e.g. age, gender, location, affiliation, level of fitness, intellectual ability etc). It is also important that you specify any inclusion and exclusion criteria that will be applied (e.g. eligibility criteria for participants).

Number of participants

Age range From  To

Gender ☒ Female  
☒ Male

Eligibility Criteria:

- Inclusion criteria
- Exclusion criteria

Disabilities

Other relevant information (maximum 100 words):



#### 4c. Recruitment Process for Human Research Participants:

Please clearly describe how the potential participants will be identified, approached and recruited (maximum 200 words).

The potential participants are students that are undergoing Bachelor of Nursing Science degree in three (3) institutions in Namibia. Due to a large number of potential participants, Cochran's formula will be used to determine a representative sample size. After permission is granted to carry out the research, the researcher will find the number of students who are doing online learning from each of the participation institution. A sample size will be determined then participants chosen randomly. The same formula will be used among potential participants from the lecturers. The researcher will recruit research assistants in order to gain entry onto the student population as her status as a lecturer may interfere with the selection process. Participating lecturers will be reached via email.

#### 4d. Relationship between the principal investigator and participants:

Is there any relationship between the principal investigator (student), co-investigators(s), (supervisor) and participant(s)? For example, if you are conducting research in a school environment on students in your classroom (e.g. instructor-student).

☐

YES

☒

NO

If YES, please specify (maximum 100 words).

#### 5. Further Approvals

Are there any other approvals required (in addition to ethics clearance from UREC) in order to carry out the proposed research study?

☒

YES

☐

NO

If YES, please specify (maximum 100 words).

The researcher will seek permission to carry out the research with the management of the institutions that train Bachelor of Nursing Science students in order to get written consent to gain access to students and lecturers. The institutions that will participate are University of Namibia, International University of Management and Welwitchia Health Training Center.



## 6. Potential Risks of the Proposed Research Study

**Are there any potential risks, psychological harm and/or ethical issues associated with the proposed research study, other than risks pertaining to everyday life events (such as the risk of an accident when travelling to a remote location for data collection)?**

☐ YES ☒ NO

If YES, please specify (maximum 150 words):

## 7. Application Checklist

Please mark ☒ if the study involves any of the following:

- ☐ Children and young people under 18 years of age, vulnerable population such as children with special educational needs (SEN), racial or ethnic minorities, socioeconomically disadvantaged, pregnant women, elderly, malnourished people, and ill people.
- ☐ Research that foresees risks and disadvantages that would affect any participant of the study such as anxiety, stress, pain or physical discomfort, harm risk (which is more than is expected from everyday life) or any other act that participants might believe is detrimental to their wellbeing and / or has the potential to / will infringe on their human rights / fundamental rights.
- ☐ Risk to the well-being and personal safety of the researcher.
- ☐ Administration of any substance (food / drink / chemicals / pharmaceuticals / supplements / chemical agent or vaccines or other substances (including vitamins or food substances) to human participants.
- ☐ Results that may have an adverse impact on the natural or built environment.



### 8. Final Declaration by Applicants:

- (a) I declare that this application is submitted on the basis that the information it contains is confidential and will only be used by Unicaf University and Unicaf University Research Ethics Committee (UREC) for the explicit purpose of ethical review and monitoring of the conduct of the research proposed project as described in the preceding pages.
- (b) I understand that this information will not be used for any other purpose without my prior consent, excluding use intended to satisfy reporting requirements to relevant regulatory bodies.
- (c) The information in this form, together with any accompanying information, is complete and correct to the best of my knowledge and belief and I take full responsibility for it.
- (d) I undertake to abide by the highest possible international ethical standards governing the Code of Practice for Research Involving Human Participants, as published by the UN WHO Research Ethics Review Committee (ERC) on <http://www.who.int/ethics/research/en/> and to which Unicaf University aspires to.
- (e) In addition to respect any and all relevant professional bodies' codes of conduct and/or ethical guidelines, where applicable, while in pursuit of this research project.
- (f) I understand it is my responsibility to submit a full REAF application during Dissertation Stage 3 to UREC. If a REAF application is not submitted my project is not approved by UREC.
- (g) I fully acknowledge that this form does not constitute approval of the proposed project but it is only a provisional approval.



I agree with all points listed under Question 8

Student's Name: Sithulisiwe Ndlovu

Supervisor's Name: Vikram Niranjana

Date of Application: 03-Dec-2020

### Important Note:

Please now save your completed form (we suggest you also print a copy for your records) and then submit it to your UU Dissertation/project supervisor (tutor). **In the case of student projects, the responsibility lies with the Faculty Dissertation/Project Supervisor.** If this is a student application, then it should be submitted via the relevant link in the VLE. Please submit only electronically filled in copies; **do not** hand fill and submit scanned paper copies of this application.



**Before submitting your application, please tick this box to confirm that all relevant sections have been filled in and the information contained is accurate to the best of your knowledge.**

## Appendix B: UREC Approval



UREC Decision, Version 2.0



### Unicaf University Research Ethics Committee Decision

**Student's Name:** Sithulisiwe Ndlovu

**Student's ID #:** R1807D5722964

**Supervisor's Name:** Dr Vikram Niranjana

**Program of Study:** UU-DOC-900-3-ZM

**Offer ID /Group ID:** O31447G32607

**Dissertation Stage:** DS 3

**Research Project Title:** Exploration of the virtual mentoring experiences among third and fourth year students and nursing lecturers in nurse training institutions in Namibia

**Comments:**

QUESTIONNAIRE

Ask for the actual age (not the age range) as this will allow for more detailed statistical analysis at a later point.

**Decision\*:** B. Approved with comments for minor revision

**Date:** 20-Jan-2022

\*Provisional approval provided at the Dissertation Stage 1, whereas the final approval is provided at the Dissertation stage 3. The student is allowed to proceed to data collection following the final approval.



## Appendix C: Permission Letter 1



Dear Mr/ Ms Sithulisiwe Ndlovu

Date 22.2.2022

**RE: Research Permission**

This letter confirms the approval of your proposal by the IUM Research Ethics Committee. The proposal demonstrates an awareness of ethical responsibilities and a commitment to ethical research processes. The approval of the proposal by the committee thus constitutes ethical clearance and permission to conduct the study.

In order to acquire the information from different sources that you have requested the following Offices of the International University of Management needed to be contacted;

Prof O. Arowolo ( Acting Vice Chancellor) for any policies or documents of the university.

Email address; [o.arowolo@ium.edu.na](mailto:o.arowolo@ium.edu.na)

Mr. S Naruseb (Human Resource Director) data or interviews/questionnaires from staff members.

Email address: [s.naruseb@ium.edu.na](mailto:s.naruseb@ium.edu.na)

Mr. A Nashilundo (Registrar) for entering the data base and information from students interviews/questionnaires.

Email address: [a.nashilundo@ium.edu.na](mailto:a.nashilundo@ium.edu.na)

All information released is subjected to policies of the International University of Management.

However, because of our own interest in research we expect you to share your findings with us on completion of your research study.

Yours faithfully


Oladele O Arowolo (Prof)  
Vice-Chancellor



PP



## Appendix D: Permission Letter 2



**CENTRE FOR RESEARCH SERVICES**  
*Office of the Pro-Vice Chancellor: Research Innovation and Development*  
 UNIVERSITY OF NAMIBIA, Private Bag, 13301 Windhoek, Namibia  
 340 Mandume Ndemufayo Avenue, Pioneers Park, Office D090 ☎ +264-61-2064624 ✉ [kmbulu@unam.na](mailto:kmbulu@unam.na) Fax +264-61-206 4624

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16 February 2022

Dear Sithulisiwe Ndlovu,

**PERMISSION TO CONDUCT RESEARCH ACTIVITIES AT THE UNIVERSITY OF NAMIBIA (UNAM)**

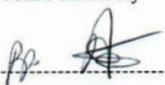
Your application to conduct research at UNAM entitled: **"An exploration of the virtual mentoring experiences among students and nursing lecturers in nurse training institutions in Namibia"** was considered based on ethical approval from your institution. Hence, permission is hereby granted with the following conditions:

1. During the course of your research activities at UNAM, you will observe the required procedures, norms and ethical conduct in accordance with the relevant Research Policies and Guidelines. If unsure, please consult *the Centre for Research Services* at UNAM for guidance. The assessment take note of your adjusted methodology of collecting data and anonymity of participants as indicated in the email. Any deviations and amendments to the original documents submitted (i.e. methodology, interview guide, consent forms, etc.) must be submitted again for approval, before the research activities can commence.
2. The results of the findings will be shared with the PVC: Research, Innovation and Development, and the Centre for Research Services, before they are disseminated or published in the public domain.
3. Upon completion, a copy of the Research Report must be lodged with the UNAM Library for our records.
4. Proper, full acknowledgements of the University of Namibia and all participants /respondents shall be done in the Research Report and any subsequent publications arising from this research.
5. Although permission is granted, provision of information is to the consent of respondents.

If you are agreeable to the above conditions, please sign and date a copy of this letter and return it the Centre for Research Services (Email: [nkanime@unam.na](mailto:nkanime@unam.na)). If you have any queries, do not hesitate to contact the Centre for Research Services.

Wishing you all the best with your research.

Yours sincerely




Prof Nelago Indongo  
Director: Centre for Research Services

**I accept and agree to all the conditions**

\_\_\_\_\_

Sithulisiwe Ndlovu

\_\_\_\_\_



\_\_\_\_\_

18-02-2022

Full Name and Surname
Signature
Date

## Appendix E: Permission letter 3



**WELWITCHIA HEALTH TRAINING CENTRE  
RESEARCH AND DEVELOPMENT DIVISION**

<b>Enquiries: Mr Panduleni P. Shimanda</b> P. O. Box 98604, Pelican Square 183 Industria Street, Lafrenz Ext. 1, Windhoek, Namibia	Mobile: +264 81 3296489 Email: <a href="mailto:shimandap@welwitchia.com.na">shimandap@welwitchia.com.na</a>
--	--

*All correspondence must be addressed to the office of the Research Coordinator*

Date: 12 January 2022

Mrs Sithulisiwe Ndlovu  
Student ID: R1807D5722964

Dear Mrs Ndlovu

**RE: APPROVAL LETTER: AN EXPLORATION OF THE VIRTUAL MENTORING EXPERIENCES AMONG STUDENTS AND LECTURERS IN NURSE TRAINING INSTITUTIONS IN NAMIBIA.**

Reference is made to the above-mentioned subject:

The office hereby grants you permission to collect data from first-year certificate nursing students regarding your study which seeks to assess “**AN EXPLORATION OF THE VIRTUAL MENTORING EXPERIENCES AMONG STUDENTS AND LECTURERS IN NURSE TRAINING INSTITUTIONS IN NAMIBIA**”. Data collection is granted to be collected from students and lecturers at Welwitchia Health Training Centre.

Kindly be informed that permission has been granted under the following conditions:

- Permission should be obtained from each individual participant
- The data collected must only be used for research purposes
- A copy of the final report to be provided to Welwitchia Health Training Centre
- A different application for approval for publication of this project should be submitted

I hope you find all this in order

Regards,

Panduleni P Shimanda

Head of Department: Research and Development

Cc: Rector  
Dean of Academics

## Appendix F: Informed Consent Form



UU\_IC - Version 2.1



### Informed Consent Form

#### Part 1: Debriefing of Participants

**Student's Name:** Sithulisiwe Ndlovu

**Student's E-mail Address:** sithulisiwendlovu115@yahoo.com

**Student ID #:** R1807D5722964

**Supervisor's Name:** Dr Vikram Niranjana

**University Campus:** Unicaf University Zambia (UUZ)

**Program of Study:** Doctor of Philosophy

**Research Project Title:** An exploration of the virtual mentoring experiences among third and fourth year nursing students and lecturers in nurse training institutions in Namibia

**Date:** 18-Jan-2022

**Provide a short description (purpose, aim and significance) of the research project, and explain why and how you have chosen this person to participate in this research (maximum 150 words).**

The purpose of the research study is to explore virtual mentoring experiences among students and nursing lecturers in nurse training institutions in Namibia. Nursing lecturers have extensive expertise in face-to-face mentoring but have little or no Online teaching experience especially before the Covid-19 pandemic. The aim of virtual mentoring is to provide motivation and emotional support to students using technology. The aim of the study is to answer the question 'What are the experiences of students and lecturers during virtual mentoring in nursing education? the findings of the study may move nursing away from rigid old ways of the traditional dyad to flexible two-way virtual mentoring that prepare both mentors and mentees to achieve mentoring goals using a technology driven environment. You have been chosen to participate on this study as a student/ nurse lecturer because of your experience in both face to face and Online learning. Please note that during focus group discussions and interviews, all conversations will be recorded.

The above named Student is committed in ensuring participant's voluntarily participation in the research project and guaranteeing there are no potential risks and/or harms to the participants.

Participants have the right to withdraw at any stage (prior or post the completion) of the research without any consequences and without providing any explanation. In these cases, data collected will be deleted.

All data and information collected will be coded and will not be accessible to anyone outside this research. Data described and included in dissemination activities will only refer to coded information ensuring beyond the bounds of possibility participant identification.

I, Sithulisiwe Ndlovu, ensure that all information stated above is true and that all conditions have been met.

**Student's Signature:**



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### Informed Consent Form

#### Part 2: Certificate of Consent

**This section is mandatory and should to be signed by the participant(s)**

**Student's Name:** Sithulisiwe Ndlovu

**Student's E-mail Address:** sithulisiwendlovu115@yahoo.com

**Student ID #:** R1807D5722964

**Supervisor's Name:** Dr Vikram Niranjana

**University Campus:** Unicaf University Zambia (UUZ)

**Program of Study:** Doctor of Philosophy

**Research Project Title:** An exploration of the virtual mentoring experiences among third and fourth year nursing students and lecturers in nurse training institutions in Namibia

I have read the foregoing information about this study, or it has been read to me. I have had the opportunity to ask questions and discuss about it. I have received satisfactory answers to all my questions and I have received enough information about this study. I understand that I am free to withdraw from this study at any time without giving a reason for withdrawing and without negative consequences. I consent to the use of multimedia (e.g. audio recordings, video recordings) for the purposes of my participation to this study. I understand that my data will remain anonymous and confidential, unless stated otherwise. I consent voluntarily to be a participant in this study.

Participant's Print name:

Participant's Signature:

\_\_\_\_\_

Date:

**If the Participant is illiterate:**

I have witnessed the accurate reading of the consent form to the potential participant, and the individual has had an opportunity to ask questions. I confirm that the aforementioned individual has given consent freely.

Witness's Print name:

Witness's Signature:

\_\_\_\_\_

Date:

## Appendix G: Student Questionnaire

### QUESTIONNAIRE (Students)

#### SECTION A

Circle the choice in questions 1 and 4 and fill in in questions 2,3, and 5

Q1. What gender do you identify as? Choose one option.

- A. Male
- B. Female
- C. Prefer not to answer

Q2. What is your age? .....

Q3. What is your level of training? .....

Q4. Which institution are you from?

- A. IUM
- B. UNAM
- C. WHTC

Q5. Which platform were you using for virtual learning? .....

#### SECTION B

Choose one option for each question presented in the table below. Indicate with a tick under the number representing your opinion on virtual mentoring.

Question	Strongly agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly disagree (1)
Q1. My mentor helped me to achieve learning objectives during virtual learning					
Q2. I was aware of the roles of my lecturer as a mentor					
Q3. I was aware of the mentoring activities the mentor employed to keep the online learning interesting					
Q4. I was aware of my strengths and development needs for virtual mentoring					

Q5. My mentor provided learning activities I needed to pursue in order to meet my developmental needs					
Q6. I was mentored on the use of the virtual learning environment and understood different platforms I could use to enhance my learning experience					
Q7. My mentor promoted student networking effectively and socialisation to stimulate sense of belonging and group cohesion using mentoring resources and internal opportunities					
Q8. I was coached in the use and engagement in synchronous and asynchronous learning activities to increase performance					
Q9. I requested and received feedback from mentor on virtual learning activities					
Q10. I have a good sense of the post- virtual mentoring practical requirements to help me integrate theory into practice					

Choose one option for each question presented in the table below. Indicate with a tick under the number representing your opinion on face-to-face mentoring.

Question	Strongly agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly disagree (1)
Q1. My mentor helped me to achieve learning objectives during face to face					
Q2. I was aware of the roles of my lecturer as a mentor					
Q3. I was aware of the mentoring activities the mentor employed to keep the face to face learning interesting					
Q4. I was aware of my strengths and development needs for face-to-face mentoring					
Q5. My mentor provided learning activities I needed to pursue in order to meet my developmental needs					
Q6. I was mentored using different methods during face to face enhance my learning experience					
Q7. My mentor promoted student networking effectively and socialisation to stimulate sense of belonging and group cohesion using mentoring resources and internal opportunities					
Q8. I was coached on independent learning skills to increase performance					
Q9. I requested and received feedback from mentor during face-to-face interactions.					
Q10. I have a good sense of the post-face to face practical requirements to help me integrate theory into practice					

## Appendix H: Lecturer Questionnaire

### QUESTIONNAIRE (Lecturers)

Circle the choice in questions 1 and 4 and fill in in questions 2,3, 5 and 6

1. What gender do you identify as? Choose one option.

A. Male

B. Female

C. Prefer not to answer

2. What is your age? .....

3. What are your years of experience? .....

4. Which institution are you from?

A. IUM

B. UNAM

C. WHTC

5. Number of years in the organisation .....

**Question 7: Choose one option for each question presented in the table below. Indicate with a tick under the number representing your opinion on virtual mentoring.**

Question	Strongly agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly disagree (1)
I understood my role as a mentor during virtual mentoring to help students achieve learning objectives					
I was aware of how students perceive me as their mentor					
I knew what kind of online mentoring skills that interested me and the students					



I was aware of my strengths and development needs for virtual mentoring					
I knew the learning activities I needed to pursue to help students meet their developmental needs					
I was aware of the use of the virtual learning environment and understood different platforms I could use to mentor students and enhance learning					
I promoted student networking effectively and socialisation to stimulate sense of belonging and group cohesion using mentoring resources and internal opportunities					
I mentored students in the use and engagement in synchronous and asynchronous learning activities to increase their performance					
I requested and received feedback from students on virtual mentoring activities					
I have a good sense of the post-mentoring practical requirements for the students, as a virtual mentor.					

**Question 8: Choose one option for each question presented in the table below. Indicate with a tick under the number representing your opinion on face-to-face mentoring.**

<b>Question</b>	<b>Strongly agree (5)</b>	<b>Agree (4)</b>	<b>Neutral (3)</b>	<b>Disagree (2)</b>	<b>Strongly disagree (1)</b>
I understood my role as a mentor during face-to-face mentoring to help students achieve learning objectives					
I was aware of how students perceive me as their mentor					
I knew what kind of face-to-face mentoring skills that interested me and the students					
I was aware of my strengths and development needs on face-to-face mentoring					
I knew the kind of learning activities I needed to pursue to help students meet their developmental needs					
I was aware of the use of the face-to-face learning environment and understood different models I could use to mentor students to enhance learning					
I promoted student networking effectively and socialisation to stimulate sense of belonging and group cohesion using mentoring resources and internal opportunities					

I Mentored students in the use and engagement in synchronous and asynchronous learning activities to increase their performance					
I requested and received feedback from students on face-to-face mentoring activities					
I have a good sense of the post-mentoring practical requirements for the students as a face-to-face mentor in nurse training					

Thank you for your time

## Appendix I: Language Editor Confirmation Letter

A K Kaliki Copy-Editing Consultancy

Box 6030

Nkurenkuru

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31 May 2024

To whom it may concern

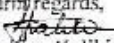
### RE: LANGUAGE EDITING: SITHULISIWE NDLOVU

This letter serves to confirm that I, Adolfine Kaliki from A K Copy-Editing Consultancy edited a research thesis report by Sithulisiwe Ndlovu titled, **"WHAT WORKS BETTER? A COMPARATIVE ANALYSIS OF VIRTUAL AND FACE-TO-FACE MENTORING EXPERIENCES AMONG NURSING STUDENTS AND LECTURERS IN NAMIBIA."**

During the editing process, I reviewed the document for grammatical accuracy, punctuation consistency, stylistic coherence, clarity of expression, and adherence to formatting guidelines, including the utilisation of APA referencing style 7th edition. Additionally, I configured my computer to utilise UK English to ensure linguistic alignment with established standards. To facilitate transparency and collaboration, I employed the track changes function, providing comments and suggestions throughout the document to enable the student to consider each alteration, thereby empowering her to accept or reject changes as deemed appropriate.

Should there be any further inquiries or clarifications regarding the editing process, please do not hesitate to contact me directly. It has been a privilege to contribute to the refinement of Sithulisiwe Ndlovu's research report, and I trust that the final version reflects our commitment to academic excellence.

Warm regards,

  
Adolfine Kaliki

Copy-Editor and Proof-Reader (UCT)

Masters in Educational Management (MSU)

BED English (St. Louis University)

Bachelor of Journalism (CUEA)

Dip. Religious Education (St. Peters College)

