



CHALLENGES FACING BACCALAUREATE NURSING EDUCATION IN THE 21ST
CENTURY: THE CONTEXT OF NAMIBIA

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By Sikhangezile Gwaticunda

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Approval of the Thesis

CHALLENGES FACING BACCALAUREATE NURSING EDUCATION IN THE 21ST CENTURY: THE CONTEXT OF NAMIBIA

This thesis by Sikhangezile Gwatikunda has been approved by the committee members below, who recommend it to be accepted by the faculty of Unicaf University in Malawi in partial fulfilment of the requirements for the degree of

Doctor of Philosophy (PhD) in Education

Thesis Committee:

Prof. Leonorah Tendayi Nyaruwata, supervisor

Dr Olga Novokhatskaya, chair

Dr Anna Panduleni Kauko Shilunga, external examiner

Dr Chrispen Chiome, internal examiner

Abstract

CHALLENGES FACING BACCALAUREATE NURSING EDUCATION IN THE 21ST CENTURY: THE CONTEXT OF NAMIBIA

Sikhangezile Gwaticunda

Unicaf University in Malawi

Nursing education in the 21st century is faced with various challenges as evidenced by nursing graduates' reduced ability to respond to changing population needs and to cope in complex healthcare environments. Examining the challenges facing baccalaureate nursing education in Namibia contributed to the proposal of strategies of maximising both theoretical and clinical learning experiences for baccalaureate student nurses in Namibia.

This study investigated the challenges facing baccalaureate nursing education in the 21st century in Namibia using a mixed methods explanatory study design. Data was collected from Bachelor of Science in Nursing degree students and clinical courses educators from the International University of Management and Welwitchia University. 159 nursing students and 28 nurse educators selected through stratified random sampling completed the structured questionnaire. Out of these, 18 were purposively selected to participate in online individual interviews. Whereas descriptive statistics were used to analyse demographic characteristics, exploratory factor analysis was performed on the rest of the quantitative data using Statistical Package for the Social Sciences version 23. Qualitative data was thematically analysed using MAXQDA and findings from both phases were integrated.

The key challenge areas in in-class learning/teaching were around ensuring a technology enabled learning environment, curriculum administration issues, financial constraints, and relaxed enrolment requirements. Challenge areas in clinical learning/teaching included lack of adequate supervision, unsupportive learning environments, lack of resources,

communication and technology related issues, negative staff attitudes, overcrowded clinical environments, increased workload, theory-practice gap, negative role modelling and lack of case diversity.

Maximised theoretical and clinical learning experiences are a product of addressing lower priority needs and external factors and acknowledging preferred learning styles. The researcher urges nurse training institutions to employ the buddy system as part of new nurse educator onboarding and has proposed, for policymakers, the development of a practice educator role and a model of a revised curriculum within which specialisation can be introduced in the third year of training. Future research could focus on nurse educator retention strategies, digitalisation in nursing education and on the patient as a valuable resource for clinical learning.

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.

Dedication

To my youngest child Kiki, whose primary school years became synonymous with mommy's research. You even composed a song out of some of my ranting utterances – 'The five sisters of charity'. Your enthusiasm in my work wiped away the guilt of my missing out on the game nights, some of the school festivities and the scaling down of sleepovers. I promise you a year of making up for the lost time my girl, God willing.

AI Acknowledgement

I acknowledge that I have not used any AI tools to create, proofread or produce any text or ideas related to any draft or final versions of the thesis.

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Acknowledgements

Were it not that the Lord loved me so, I would have given up. I am grateful that His Almighty held my hand through this tumultuous process. Periods of confusion seemed to span over weeks but the excitement each time I saw the little glimmer of light in the horizon is unparalleled; all because You made me see hope. In addition, I would like to extend my gratitude to the following individuals, institutions and organisations:

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Table of Contents

Approval of the Thesis	ii
Abstract.....	iii
Declaration.....	v
Dedication.....	vi
AI Acknowledgement.....	vii
Copyright Page.....	viii
Acknowledgements	ix
List of Abbreviations.....	xvi
List of Tables	xvii
List of Figures	xix
<i>CHAPTER ONE: INTRODUCTION.....</i>	<i>1</i>
Problem Statement	6
Purpose of the Study, Research Aims and Objectives	7
<i>Purpose of the Study</i>	<i>7</i>
<i>Aim</i>	<i>8</i>
<i>Objectives.....</i>	<i>8</i>
<i>Innovation</i>	<i>9</i>
Nature and Significance of the Study.....	9
<i>Nature of the Study.....</i>	<i>10</i>
<i>Significance of the Study.....</i>	<i>12</i>
Research Questions and Research Hypotheses.....	13

<i>CHAPTER TWO: LITERATURE REVIEW</i>	14
Theoretical Framework	19
<i>The Concept Nursing Education</i>	19
<i>Nursing Education in the Context of Changing Healthcare Environments</i>	20
<i>Defining a Challenge</i>	22
<i>Nursing Education, a Theoretical Perspective</i>	22
<i>Conceptual Framework</i>	27
Field/Industry	29
Nursing Education, Challenges Faced and Way Forward.....	29
<i>The Evolution of Nursing Education: A Global Perspective</i>	30
<i>The Evolution of Nursing Education: Namibia</i>	36
<i>Nursing Education Now</i>	38
<i>Into the Future: Tackling the Challenges</i>	51
Chapter Summary.....	78
<i>CHAPTER THREE: RESEARCH METHODS</i>	83
Research Approach and Design	83
<i>Mixed Methods Research</i>	83
<i>Population and Sample of the Research Study</i>	95
Instrumentation of Research Tools	103
<i>The Quantitative Data Collection Tool</i>	103
<i>The Qualitative Data Collection Tool</i>	108
<i>Instrument Testing</i>	110
Operational Definition of Variables.....	111
<i>Construct/Variable 1. Demographic Data Variables</i>	111

<i>Construct/Variable 2. In Class Learning/Teaching Challenges</i>	113
<i>Construct/Variable 3. Clinical Learning Challenges</i>	114
<i>Construct/Variable 4. Clinical Teaching Challenges</i>	115
Study Procedures and Ethical Assurances.....	116
<i>Ethical Assurances</i>	117
Data Collection and Analysis	121
<i>Data Collection</i>	121
<i>Data Analysis Techniques</i>	122
Chapter Summary.....	127
CHAPTER FOUR: FINDINGS	133
Introduction.....	133
<i>Overview of Study Purpose</i>	133
<i>Chapter Organisation</i>	133
<i>Section One: Quantitative Data Analysis</i>	136
<i>Section Two: Relationship Between Clinical and In-class Learning/Teaching</i> <i>Challenges</i>	163
<i>Section Three: Qualitative Data Analysis</i>	165
<i>Section Four: Results Integration</i>	191
<i>Evaluation of Findings</i>	200
Chapter Summary.....	219
CHAPTER FIVE: IMPLICATIONS, RECOMMENDATIONS, AND	222
CONCLUSIONS	222
Introduction.....	222

Implications	229
<i>Demographic Characteristics</i>	229
<i>Challenges Faced by Nurse Educators and Nursing Students</i>	231
Conceptual Framework	251
Recommendations for Application	252
<i>Student Placement</i>	252
<i>Inclusivity, Diversity and Mental Health Support</i>	253
<i>Embrace Technology</i>	254
<i>Enhance Nursing Education Resources</i>	256
<i>Quality Assurance</i>	260
<i>A Revision of the Curriculum</i>	263
Recommendations For Future Research	264
<i>Research Into Nurse Educator Retention Strategies</i>	265
<i>Curriculum Revision</i>	266
<i>Entry Requirements</i>	266
<i>A Different Approach to Training the Nurse Educator</i>	267
<i>Digitalisation in Nursing Education</i>	268
<i>A Different Approach to Clinical Learning</i>	268
<i>Addressing Discrimination</i>	269
<i>The Role of the Patient</i>	270
Conclusion	270
REFERENCES	285
APPENDICES	319
Appendix 1: Quantitative data collection tool	319

Appendix 2: Interview Guide	337
Appendix 3: Permission to use items for ‘technology enabled learning environments’ ...	343
Appendix 4: Permission to use items from ‘opinions of educators on difficulties in the clinical environment.....	344
Appendix 5: UREC decision	345
Appendix 6: Approval from MoHSS	346
Appendix 7: Permission to collect data from WU	347
Appendix 8: Permission to collect data from IUM	348
Appendix 9: Informed consent form	349
Appendix 10: Amended informed consent form for qualitative interviews.....	351
Appendix 11: Research information to participants.....	353

List of Abbreviations

AACN:	American Association of College of Nursing
CA:	Cronbach's Alpha
CEU:	Clinical Education Unit
CPD:	Continuous Professional Development
EBP:	Evidence-based Practice
EFA:	Exploratory Factor Analysis
HPCNA:	Health Professions Council of Namibia
ICN:	International Council of Nursing
IOM:	Institute of Medicine
IUM:	International University of Management
MHETI:	Ministry of Higher Education, Technology and Innovation
MoHSS:	Ministry of Health and Social Services
NMC:	Nursing and Midwifery Council
RCM:	Royal College of Midwives
RCN:	Royal College of Nursing
SCT:	Social Cognitive Theory
SLT:	Social Learning Theory
UNAM:	University of Namibia
WHO:	World Health Organization
WU:	Welwitchia University

List of Tables

Table 1: Literature Review Themes	16
Table 2: History of Nursing Education	34
Table 3: Nurses and Midwives Leaving the Register	42
Table 4: Post-positivism versus Constructivism Assumptions	89
Table 5: Study Population	98
Table 6: Nursing Student Purposive Sampling Frame	102
Table 7: Nurse Educator Purposive Sampling Frame	102
Table 8: Demographic Characteristics	138
Table 9: Academic Characteristics	139
Table 10: Social Characteristics	140
Table 11: EFA Suitability for In-class Learning Challenges	142
Table 12: Determination of the Optimum Number of In-class Learning Challenges ...	143
Table 13: Description of the Extracted In-class Learning Challenges	146
Table 14: EFA Suitability for Clinical Learning Challenges	147
Table 15: Determination of the Optimum Number of Clinical Learning Challenges ...	149
Table 16: Distribution of Factor Loadings for Clinical Learning Challenges	150
Table 17: EFA Suitability tests for In-class Teaching Challenges	154
Table 18: Determination of the Optimum Number of In-class Teaching Challenges ...	155
Table 19: Description of the Determined In-class Teaching Challenges	158
Table 20: EFA Suitability Tests for Clinical Teaching Challenges	159
Table 21: Determination of the Optimum Number of Clinical Teaching Challenges ...	160
Table 22: Distribution of Factor Loadings for Clinical Teaching Challenges	162
Table 23: Relationship Between Student Clinical and In-class Learning Challenges ...	164

Table 24: Relationship Between Nurse Educator Clinical and In-class Teaching Challenges	165
Table 25: Challenges Faced by Nursing Students: Themes and Sub-themes	168
Table 26: Recommendations from Nursing Students	180
Table 27: Challenges Faced by Nurse Educators: Themes and Sub-themes	180
Table 28: Recommendations from Nurse Educators	190
Table 29: Nursing Student In-class and Clinical Learning Challenges	192
Table 30: Nurse Educator In-class and Teaching Challenges	196
Table 31: Key Findings	273

List of Figures

Figure 1: The Effects of Challenges	8
Figure 2: Learning Theories and Nursing Education.....	23
Figure 3: The Social Cognitive Theory	26
Figure 4: Conceptual Framework	28
Figure 5: Traditional Theory Practice Gap Model versus Bidirectional Gap Model	50
Figure 6: Quantitative and Qualitative Weighting.....	85
Figure 7: Explanatory Sequential Design Steps	93
Figure 8: The Practice Educator Role.....	260
Figure 9: A Revised Curriculum.....	264

CHAPTER ONE: INTRODUCTION

Healthcare systems are constantly changing due to both population and disease dynamics. Thus, it is imperative for nursing education to keep abreast of the changes to enable an effective response to the needs of the patients. One way of doing this is by maximising student nurses' learning opportunities. However, such opportunities are negatively impacted by a myriad of challenges.

“Nursing education stands as a cornerstone of the healthcare system, shaping the competencies, knowledge, and skills of future nurses who will deliver care to diverse populations across various settings.” (Kumar, 2024, para. 1). Changing patient needs, in addition to advances in healthcare delivery and technological innovation, have contributed to major changes in nursing education (Kumar, 2024). Agreeably, the population of the 21st century is not only ageing but it is also growing, and this comes with an array of chronic diseases and other health complexities alongside an avalanche of public health emergencies that accompany rapidly growing populations. This is happening in a world where technological advances are accelerating at a pace that could be perplexing and frustrating for the resource-stricken communities whose capabilities to keep pace are meagre. The need for nursing education to be relevant to the needs of today's population is unquestionable. In addition, the need to bridge the gap between theory and practice in nursing has never been more dire.

Singh et al. (2024) conducted a systematic review on ‘barriers and solutions to the gap between theory and practice in nursing services’ and summarised the challenges faced by nursing students across the qualitative studies they reviewed as follows:

- There are issues related to supervision by competent educators, and nursing students believe that they should have mentors by their side through the entirety of their placement.

- There is lack of in-service training during clinical placement, which is normally facilitated by qualified nurses who, however, are inundated with increased workload, lack of time and access to training facilities.
- Limited clinical practice time is a hindrance.
- Negative attitudes arising from interactions with nurses and instructors are another challenge.
- There is inadequacy in preparing for clinical practice wherein the curricula focus primarily on [foundational] subjects such as anatomy and physiology without much attention being given to translating theory into practice.
- Courses in communication, English language and various nursing specialities are not included in the curricula.

Mbirimtengerenji et al. (2015) also iterate that since nursing is a dual profession that involves teaching both in class and in the clinical area nurse tutors are challenged in ensuring that the integration of theory and clinical practice occurs. And Frenk et al. (2010, as cited in Bvumbwe & Mtshali, 2018), argue that the mismatch of competencies to patient and population needs; poor teamwork; persistent gender stratification of the professional status; and a narrow technical focus, are some of the challenges facing healthcare professional education in sub-Saharan Africa.

Experienced nurses, nurse educators and other medical professionals play an important role in the impartation of knowledge through both classroom and clinical teaching with the aim of producing a clinically competent nurse. Challenges in this role have been reported. Dejene et al. (2022) assessed the core teaching competency of health professional educators in Ethiopia and found that both in-class and clinical educators had suboptimal teaching competency. For example, gaps in skills were noted in the use of active learning methods, assessment of students and feedback, and digital learning. In addition, many of the educators were found to be young

and lacking in experience and training (Dejene et al., 2022). Another challenge faced by nursing education is the shortage of nurse educators which is a result of multiple factors. Some of these factors include poor remuneration, increased workloads and a lack of continuous professional development (CPD) opportunities (Johnson, 2024).

The benefits of CPD cannot be over-emphasised. Indeed Ndayisenga et al. (2020) found that nursing and midwifery educators' classroom organisation and clinical teaching preparation improve post participating in relevant CPD workshops thereby contributing to an increase in student learning outcomes attainment. The educators benefited from an increase in knowledge on learning styles and moved from the traditional teacher centred teaching methods to participatory methods which include brainstorming, role plays, group discussions, and debate (Ndayisenga et al., 2020).

Whereas theoretical learning, received from the academic staff, prepares the student nurse for practice, the role of a nurse is largely practical and requires good hands-on experience. However, student nurses face significant hindrances to accessing hands-on clinical learning experiences in healthcare environments because of clinical placement shortages and challenges (Kumar, 2024). Johnson (2024) argues that nursing students' clinical practice skills are affected by challenges such as reduced availability of clinical practice areas, competition from other professional fields and the growing complexity of the practice environments.

Competition among students from different institutions in the clinical area, their treatment as workers, and their subjection to scapegoating for errors done in practice are some of the challenges within the clinical practice aspect of nursing education as voiced by Mathebula (2016) in a study conducted in South Africa. In addition, Foolchand and Maritz (2020)'s study on 'experiences of nurses regarding the clinical mentoring of student nurses in resource-limited settings' reveals that mentoring is not fully practised and that when it is, it lacks formality with no clarity of role expectations. The situation is made worse by poor

resources (physical, personal and human), the lack of management oversight and monitoring by the nurse training institutions as well as the lack of appreciation of mentors and the incongruency between what is taught in class and what is practised in the clinical settings (Foolchand & Maritz, 2020).

Nursing education today has been forced to catch up with digitalisation with e-learning becoming an indispensable part of it. This has both advantages and disadvantages. According to Makhene (2023), nursing education in South Africa has not been spared from the social injustice brought by digital divide. Makhene (2023) agrees that today's learning environment is technological and requires students to have access to high-speed internet connection, yet some are without this access. Moses and Nyoni (2023) argue that the opportunities provided by e-learning outweigh the challenges. It cuts through geographic barriers, is flexible and accommodates creativity and critical thinking (Moses & Nyoni, 2023).

In a study by Abou Hashish and Alnajjar (2024) nursing students had positive attitudes toward digital transformation services and were generally prepared to use digital technologies and found them easy to use. Oducado (2021) argue that, regardless of the nursing students' readiness for online learning, issues related to internet availability and connectivity continue to be a challenge. Those with good connectivity and high household income are more ready to use virtual platforms (Oducado, 2021). In a systematic review on 'the implications for teaching, learning and assessment at South African universities after the Covid-19 pandemic' Mahlaba and Sekano (2023) extracted the following:

- Students face a reduction in interaction and personal contact and are challenged with adjusting to the new mode of learning.
- The educators lack training in online teaching, face barriers to keeping students involved and interested.

- There are challenges related to the need to transform modes of instruction to a virtual set-up.
- Students are not satisfied with online assessments feedback.
- Students find it difficult to focus, manage time and understand content online.

In Namibia, some of the challenges facing nursing education have been identified as knowledge practice gap, shortage of equipment and negative attitudes of clinical staff (Hatupopi & Nuuyoma, 2019; Munangatire & Nambuli, 2022). Ashipala and Shapopi (2022) argue that the shortage of nurses is doing a disservice to nursing education. While Nhokwara et al. (2022) lament of the problems surrounding large classes. Shindjabuluka et al. (2022) in Namibia and, elsewhere Kaveh et al. (2022) observe that it took the COVID-19 pandemic for the virtual platform to gain recognition/popularity in nursing education. Kaveh et al. (2022) further agree that students and educators experienced transformations [positive] in personal and professional lifestyles; other methods of teaching gained popularity, and that the virtual environment could be integrated with the traditional face-to-face internships. Of note is that these studies have been from the eye of a qualitative researcher. Without disregarding the richness of the findings obtained from qualitative inquiry there is a need to also quantify the challenges faced in nursing education. This helps tailor strategies to address identified challenges.

Quantitative studies have employed such tools as the 'Clinical Learning Environment and Supervision Evaluation Scale (CLES)' (Ozbicakci et al., 2022) and the 'Opinions of instructors on difficulties in the clinical environment' (Dağ et al., 2019). These have the clinical environment as the focus area and have been applied in areas other than Namibia. This study, therefore, investigated the challenges facing baccalaureate nursing education in the 21st century in Namibia from a mixed methods approach with the focus on challenges faced both

in-class and in the clinical environment. The researcher hypothesised that these challenges co-exist and have an impact in the making of the graduate nurse.

Problem Statement

In a survey conducted in 2020, only 20% of the nurse graduates were confident in their general knowledge of nursing and 66% of the qualified nurses believed that nurse graduates of today are less prepared to practise than those produced 5 to 10 years ago (“How Prepared”, 2020). Yet the nurse of today needs to be even more prepared to care for patients with complex and diverse needs within healthcare settings that have been greatly changed by disease profile and the rapid growth of the ageing population (Fukada, 2018).

The nurse graduate is assumed to have been theoretically and practically prepared to render care. And it has been suggested that the baccalaureate nursing degree be the minimum professional qualification of a nurse to aid in addressing complex issues in nursing practice (Blaauw et al., 2014, as cited in Wakibi et al., 2020). Carvalho et al. (2017, as cited in Wakibi et al., 2020) concede that the baccalaureate nursing degree enhances critical thinking and the evidenced based abilities of a nurse. The education of the baccalaureate nursing degree holder is, however, not without challenges. Challenges in the training of the nurse have been noted both in class and in the clinical environment (Farzi et al., 2018; Gemuhay et al., 2019; Jamshidi et al., 2016), some of which relate to embracing technology. Whilst challenges associated with embracing technology in nursing education in Namibia have not been fully explored, their existence can be inferred from research that has been done in other developing countries (Makhene, 2023; Zarei & Mohammed, 2022).

Now, scholars who have researched on challenges facing nursing education in Namibia have done so mostly through qualitative exploratory studies (Ashipala & Shapopi, 2022; Hatupopi & Nuuyoma, 2019; Hoebes & Ashipala, 2023). The few qualitative studies conducted suggest an existence of challenges in clinical education, but their magnitude has not been fully

examined. In addition, the focus has been mostly on clinical education. Awarding in-class education equal attention in research would ensure that this is not neglected as it is an equally important part of nursing education. This mixed method study, conducted in Namibia on challenges facing baccalaureate nursing education in the 21st century, helped formulate a wholesome understanding of the phenomenon. When these challenges are addressed, the production of baccalaureate nurse graduates who are better prepared to serve the contemporary society can be enabled.

Purpose of the Study, Research Aims and Objectives

A presentation of the purpose of the study, research aims and objectives follows.

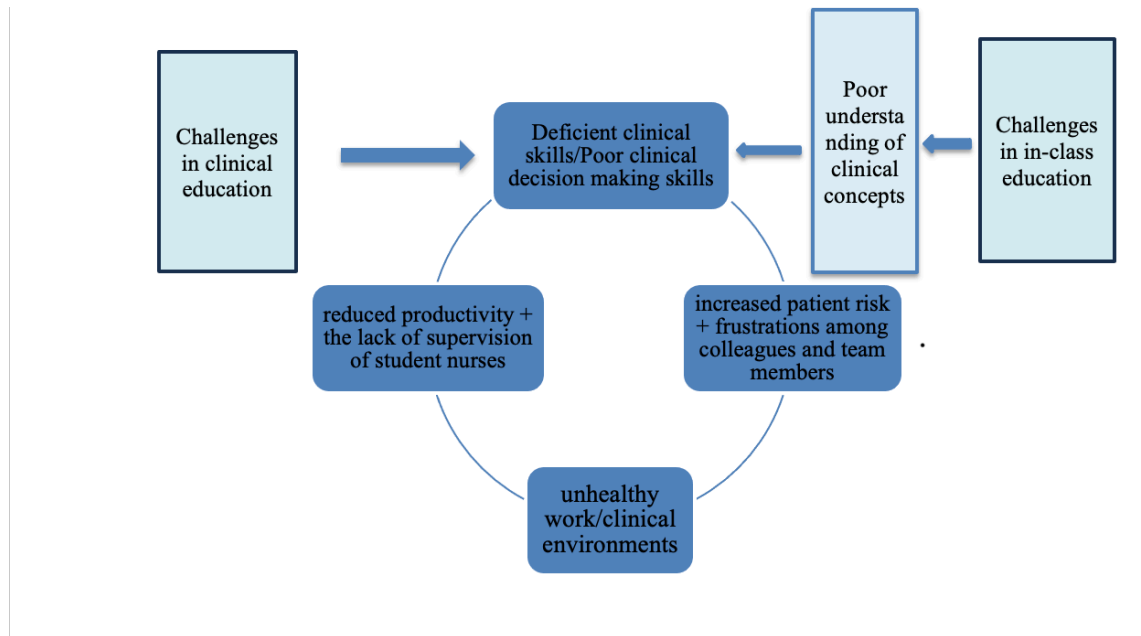
Purpose of the Study

Nursing education comprises two areas: clinical education and theoretical (in-class) education. Challenges in one area can negatively affect the other. The purpose of this study was to examine challenges facing baccalaureate nursing education in the 21st century in Namibia and determine if any relationship exists between challenges faced in clinical education and those encountered in theoretical education.

Challenges in in-class and clinical education are detrimental to the acquisition of clinical skills. A healthcare provider with deficient clinical skills does not only place the patient at risk but can cause frustrations among colleagues and team members thereby leading to unhealthy work environments. Unhealthy work environments can reduce productivity and can also perpetuate the lack of supervision of interns (in this context student nurses). If these problems are not addressed, then the vicious circle (Figure 1) will not be interrupted. In the current study the challenges were identified and strategies to address them have been suggested.

Figure 1

The Effects of Challenges



Source: Author

Aim

The aim of this study was to investigate the challenges facing baccalaureate nursing education in the 21st century in Namibia.

Objectives

The objectives of the study were to:

- examine challenges in the baccalaureate nursing education both in theory and in clinical practice in Namibia,
- determine any relationships between challenges faced in theoretical education and those faced in clinical education within the baccalaureate nursing education in Namibia,
- analyse how baccalaureate nurse educators and nursing students describe the challenges encountered in theoretical education and in clinical education,

- recommend strategies for maximising both theoretical and clinical learning experiences for baccalaureate nursing students in Namibia.

Innovation

- Past research in this area, in Namibia, has been mainly qualitative; this study employed a mixed methods approach.
- The focus on challenges in nursing education in Namibia has been on learning in the clinical environment; this study not only included in-class learning but examined challenges faced in both learning and teaching in class and clinical practice.
- Current research appreciates how integrating the Social Learning Theory (SLT), including its later version, the Social Cognitive Theory (SCT), humanist and constructivist learning theories in addressing challenges facing nursing education can improve nursing students' theoretical and clinical learning experiences.
- The researcher recommends the buddy system to facilitate nurse educator onboarding (driven by the plight of educators who felt they are thrown at the deep end when they assume the role). This has been mostly used in workplaces where safety is crucial.
- The researcher recommends the revision of the curriculum and has proposed a model that could be followed. Within this model specialisation can commence in the third year of training.

Nature and Significance of the Study

This sub-section outlines the nature and significance of the study.

Nature of the Study

Study Design. Quantitative approach: A quantitative cross sectional analytical design was employed to gather and analyse data on challenges faced by both educators and students in baccalaureate nursing education. Structured self-administered questionnaires were used.

Qualitative approach: As a follow-up to the identified challenges, a qualitative descriptive design was utilised to explore the views of both educators and students on these challenges and on suggestions of how they can be circumvented. Online individual interviews were used as the method of data collection.

Setting. Respondents were recruited from two of the three universities that offer the baccalaureate nursing degree namely Welwitchia University (formerly Welwitchia Health Training Centre) and International University of Management (IUM).

Population and Sampling. The population consisted of the baccalaureate programme students and their educators. Educators comprised lecturers and clinical instructors who were part of the school of nursing faculty staff at the two institutions. Stratified random sampling was employed to select participants for the quantitative aspect of the study and purposive sampling was used to select the qualitative sample.

Data Collection Instruments. The items on in class teaching / learning and those on clinical learning were developed with reference to literature (Frenk et al., 2010, as cited in Bvumbwe & Mtshali, 2018; Hatupopi & Nuuyoma, 2019; Mathebula, 2016; Mbirimtengerenji et al., 2015; Munangatire & Nambuli, 2022, Nhokwara et al., 2022; Sabone et al., 2018). The items on the use of technology were adapted and modified from a questionnaire by Kirkwood and Price (2016), titled 'Perceptions of use of technology-enabled learning' – permissions received. Items on clinical learning were also largely based on the 'Clinical Learning Environment and Supervision Evaluation Scale (CLES)' (Saarikoski & Leino-Kilpi, 2002, as cited in Ozbicakci et al., 2022) – permissions received. Dağ et al. (2019)'s tool on 'Opinions

of instructors on difficulties experienced in the clinical environment' was used for the items on clinical teaching difficulties faced by nurse educators of which permissions were also received.

Face and content validity was tested through a pilot study using a pilot sample size of 7 students and 3 nurse educators which did not form part of the final sample. Some parts of the questionnaire were based on standardized questionnaires and some on the reviewed literature, thereby contributing to reliability. The Cronbach's Alpha (CA) was used to measure internal consistency of the questionnaire responses.

Quantitative data gathered and analysed helped inform the development of the interview guide for qualitative data collection. The interview guide consisted of open-ended questions which were accompanied by appropriate probing questions.

Data Collection and Analysis. Data collection commenced after relevant approvals, permissions and informed consent had been received (see Chapter Three). Participants went over the research information to participants sheet before giving their consent. The respective sampling frames comprised students undertaking the BSc Nursing science degree, in Years 2 to 4, and a list of nurse educators who taught clinical subjects. Selected participants received the survey link electronically and were able to indicate their consent before proceeding with the survey questions. Six nursing students opted for the paper version of the questionnaire, and they completed a paper version of the consent form. The quantitative sample comprised 159 nursing students and 28 nurse educators. Quantitative data collection commenced on 27/11/2023 and was completed on 06/01/2024.

Prospective individual interviewees were listed as described under purposive sampling. Interview sessions were commenced after a signed consent form had been scanned back to the researcher by each respective participant. Data saturation was reached with 11 for nursing students and 7 for nurse educators. Qualitative data collection took place between 10/04/2024 and 05/05/2024, inclusive.

Quantitative data was analysed with the help of SPSS version 23 while qualitative data was thematically analysed with the aid of MAXQDA.

Significance of the Study

There was a need to analyse why the nurse graduate is found unprepared to practise as expected. The underlying assumption was that this could be due to challenges faced in nursing education. An examination of the challenges in baccalaureate nursing education in Namibia provided insights into what strategies could be considered to map ways of maximising clinical learning experiences for student nurses.

Policy makers within the professional regulatory body, Ministry of Health and Social Services (MoHSS) and Ministry of Higher Education, Technology and Innovation (MHETI) could consider increasing the number of teaching hospitals, include use of virtual space in the training of educators, the funding of simulation hubs, and virtual reality (VR) simulators. In addition, MoHSS, and the nurse training institutions could work on reviewing the current curriculum areas and supporting the development of practice educators.

Providers of nursing education can utilise recommendations from this study to review student enrolment numbers, emphasize and support blended learning, review curricula to ensure relevancy, initiate support systems for educators such as IT and clinical skills refreshers, and exchange programmes to widen exposure. In addition, nurse educators may be motivated to pursue CPD. Nursing students can benefit from maximized learning experiences when identified challenges are addressed.

By using a mixed methods approach and examining challenges faced both in class and in the clinical environment, this study has contributed to research and knowledge in nursing education. Furthermore, the proposed model on curriculum revision connects the findings to practical implications and, even if not actioned in the exact form, has the potential to get stakeholders and policymakers thinking. This has been quite an experience for the researcher

who has not only expanded her experience in research but also contributed to the knowledge base and identified further areas of research.

Research Questions and Research Hypotheses

The study sought to answer the following questions:

1. What challenges are faced in the baccalaureate nursing in-class and clinical education in Namibia?
2. What is the relationship between challenges faced in in-class and those in clinical education within the baccalaureate nursing education in Namibia?
3. How do baccalaureate nurse educators and nursing students describe the challenges encountered in in-class education and in clinical education?
4. What strategies can help maximise in-class and clinical learning experiences for baccalaureate student nurses in Namibia?

Researchers work to reject or nullify the null hypothesis. The following were the hypotheses for this study:

Hypothesis 1

H₀ Baccalaureate nursing education in the 21st century, in Namibia, is not faced with challenges.

H₁ Baccalaureate nursing education in the 21st century, in Namibia, is faced with various challenges.

Hypothesis 2

H₀ Clinical education has no association with in-class education.

H₁ Clinical education has an association with in-class education.

CHAPTER TWO: LITERATURE REVIEW

Nursing education comprises two areas: clinical education and theoretical education. Challenges in one area can negatively affect the other. The purpose of this study was to examine challenges facing baccalaureate nursing education in the 21st century and determine if a relationship exists between challenges faced in clinical education and those encountered in theoretical education in Namibia.

Several studies have been conducted on theory-practice gap in nursing education (Hatupopi & Nuuyoma, 2019; Saifan et al., 2021; Shoghi et al., 2019), however, gaps exist. Not much research has focused on challenges faced within each of the components of nursing education (theory and practice) in Namibia. Whereas the studies on theory-practice gap highlight curriculum related issues such as misalignment between theoretical and clinical education (Saifan et al., 2021) the unique comprehensive curriculum used in Namibia has not garnered much attention in research.

Another problematic area deserving of more attention in research is that which relates to embracing technology. Following the COVID-19 pandemic, nurse educators are called to be always prepared to deal with such unexpected events (Nashwan et al., 2020). While Shindjabuluka et al. (2022) acknowledges that both nurse educators and nursing students were unprepared for online learning during the pandemic there is need to unpack lessons learnt from the pandemic. Despite the undebatable role of digitalisation in nursing and nursing education, Namibia is still lagging behind. For instance, scholars elsewhere report on the benefits of social media (Giroux & Moreau, 2022; Hernandez & Munyan, 2020), Virtual Reality (VR) simulation (Moran et al., 2018; Pottle, 2019), and online learning (Esterhuizen, 2020) in nursing education yet similar research is limited in Namibia.

Challenges facing clinical education among nursing students is well-researched in Namibia, with majority of the studies using monomethod, and qualitative approaches (Ashipala

& Shapopi, 2022; Hatupopi & Nuuyoma, 2019; Munangatire & Nambuli, 2022; Nhokwara et al., 2022; Shindjabuluka et al., 2022). By employing mixed methods, exploring challenges in both theoretical and clinical education and including nurse educators, the current study has made a significant contribution to nursing education research in Namibia.

It is imperative for a healthcare provider to be skilled and competent so as not to place the patient at risk and not cause frustrations among colleagues and team members. This would contribute to unhealthy healthcare work environments and when these environments are unhealthy patient care and student learning are both negatively impacted. Clinical competence begins with a strong theoretical foundation. Determining what challenges are faced in both in-class (theoretical) and clinical nursing education results in an overarching understanding of the issues that need to be addressed. By addressing these challenges nursing students' learning experiences can be maximised.

This chapter, Chapter Two, sets off with an exploration of the theories relevant to nursing education. The section intends to illuminate what theories have shaped and continue to shape nursing education. The concepts 'nursing education' and 'challenge' are defined. The discussion concludes with a presentation of the conceptual framework. Subsequent sections and subsections present different themes. An outline of the themes is presented in Table 1.

Table 1*Literature Review Themes*

Topic	Theme topic	Content covered
Theoretical framework	The concept nursing education	Nursing education defined and its aim explained.
	Nursing education in the context of changing healthcare environments	How the rise in the ageing population, increased health care demands, the increased use of technology in care delivery, pandemic preparedness have affected nursing education.
	Defining a challenge	The concept 'challenge' is defined.
	Nursing education, a theoretical perspective	An overview of the novice to expert, the constructivist, humanistic, behaviourist, and cognitivist learning and the Social Learning theories and their application in nursing education.
	Proposed conceptual framework	A discussion on how several learning theories can be used to explain learning in nursing and a presentation of the proposed conceptual framework.
Feld/Industry	Field/Industry	The position of nursing education within the field of nursing.
Nursing education, challenges faced and way forward	The evolution of nursing education: a global perspective.	Nursing education in the 19th and 20th centuries; The sisterhoods' and Florence Nightingale's influence.
	The evolution of nursing education: Namibia	The history of nursing education in Namibia.
	Nursing education now	What is new in the 21st century regarding nursing education; challenges facing nursing education globally and regionally.
	Into the future: tackling the challenges.	Lessons learnt from the COVID-19 pandemic; culturally competent care, nursing education's contribution to reducing health care costs.

Majority of the searches were limited to full text peer reviewed scholarly articles and the following are some of the databases that were used:

- Coronavirus Research Database
- E-book Central
- ProQuest One Academic
- ProQuest One Business
- PubMed Central
- Google scholar

Key terms included but were not limited to the following:

(use of technology in nursing education) AND (stype.exact("Scholarly Journals") AND subt.exact(("students" OR "nurses" OR "education") AND ("learning" OR "teaching" OR "nursing education" OR "nursing" OR "curricula") NOT ("patients" OR "covid-19" OR "questionnaires" OR "health care" OR "coronaviruses" OR "hospitals"))) AND pd(20171003-20221003) AND PEER(yes))

And

(use of technology in nursing education) AND (stype.exact("Scholarly Journals") AND subt.exact(("students" OR "education") AND ("teaching" OR "nursing education" OR "nursing") NOT ("patients" OR "covid-19" OR "questionnaires" OR "health care" OR "coronaviruses" OR "hospitals"))) AND pd(20171003-20221003) AND PEER(yes)) AND (subt.exact(("nursing education" OR "education" OR "nursing") NOT "students") AND pd(20171004-20221004) AND PEER(yes))

And

(use of technology in nursing education) AND (stype.exact("Scholarly Journals") AND subt.exact(("students" OR "education") AND ("teaching" OR "nursing education" OR "nursing") NOT ("patients" OR "covid-19" OR "questionnaires" OR "health care" OR "coronaviruses" OR "hospitals"))) AND pd(20171003-20221003) AND PEER(yes))

And

("nursing education challenges" AND "developing countries") AND (pd(20191112-20241112) AND PEER(yes))

And

("nursing education challenges" AND "sub Saharan Africa") AND (pd(20191112-20241112) AND PEER(yes))

And

"nursing education challenges" AND "Namibia") AND (pd(20191112-20241112) AND PEER(yes))

And

"nursing education challenges" AND (pd(20191112-20241112) AND PEER(yes))

And

"nursing education challenges" AND PEER(yes)

And

"nursing education challenges" AND "high income countries") AND PEER(yes)

And

"nursing education challenges" AND "first world countries") AND PEER(yes)

And

"nursing education challenges in the STATES" AND PEER(yes)

And

"nursing education challenges in the UK" AND PEER(yes)

And

"nursing education challenges in the UK"

And

"nursing education challenges" AND "America"

And

"nursing education challenges" AND "high income countries"

And

"nursing education challenges" AND "developed countries"

Where a historical perspective was not needed the cut-off year was 5 years. Further articles were handpicked using the following key terms:

“What is a theory”; “theoretical framework”; “defining theoretical framework”; “theories of teaching and learning”; “theories used in nursing education”; “nursing education in Namibia”; “the evolution of nursing education in Namibia”; “the influence of South Africa on nursing education in Namibia”; “Nursing education in the 19th century”; “nursing education in the 20th century”; “Florence Nightingale and nursing education”; “the evolution of nursing education, nursing education in the 21st century”; “evidence-based practice”; “what is evidence based practice”; “challenges facing nursing education”; “challenges facing nursing education in Africa”; “challenges facing nursing education in sub-Saharan Africa”; “use of social media in nursing”; “culturally competent nursing care”; “nursing and the LGBTQ community”

Care was taken to include peer reviewed articles and where possible to exclude articles more than 5 years old – due to scarcity of published literature for the context of Namibia older sources were used, and some grey literature for concepts not well covered in peer reviewed articles had to be used.

Theoretical Framework

Polit and Beck (2021) loosely define theory as an abstract generalisation that explains relationships between phenomena. Typically, theories are known to have a purpose of explaining or predicting. In this section the concepts nursing education and challenges are defined. The researcher discusses the theoretical frameworks underpinning nursing education before proceeding to explain the conceptual framework upon which this study rests. According to Salawu et al. (2023) the theoretical framework can be conceived from one or more theories and consists of connected concepts and foundations intended to support a study.

The Concept Nursing Education

“Nursing education refers to formal learning and training in the science of nursing” (Gale Encyclopedia of Nursing and Allied Health, 2018, para. 1). It aims to advance the nursing profession. Nursing students are guided and assisted to learn the art and science of nursing

through nursing education which takes place in a tertiary institute such as a college or a university (Bruce et al., 2011, as cited in Tsimane & Downing, 2020). The nurse educator thus assumes the role of the facilitator and guides the students towards attaining competence. The primary goal of nursing education might have remained the same through the centuries, from the time of Florence Nightingale to date, but the recipients of care's expectations from the end-products (qualified nurses) of this activity/process have evolved with the changing healthcare environments.

Nursing Education in the Context of Changing Healthcare Environments

Historically the nursing curricula has been influenced by tradition, trends, accreditation, and regulation ("Institute of Medicine", 1995). The Institute of Medicine is now called the National Academy of Medicine.

Tradition: Most baccalaureate nursing degree programmes would include health population-based practice and public health issues such as disease prevention and health promotion.

Trends: The traditional approach zeroed in on individual situations at the expense of macro-level interventions. Even then, the National League for Nursing (1992, as cited in "Institute of Medicine", 1995) had started to appreciate that the focus on the individual would not be adequate in meeting the needs of the 21st century population.

Accreditation and regulation: Regulatory and accreditation bodies [then and now] standardise programme exit outcomes to ensure that nurses have the competencies that will ensure safe nursing care.

The primary goals of nursing education might have remained constant over the centuries, but nursing education must evolve to meet the healthcare needs of changing populations. According to "How an Aging Population" (2018) the ageing population requires nursing education to be aimed at preparing nurses to serve older adults who have "significant

deterioration” of their physical and mental health. Over 90% of these older adults have at least one chronic illness, and almost 80% have at least two (“How an Aging Population”, 2018).

Booth et al. (2021) examined digitalisation within the nursing profession and indicate that although digital technologies have advanced significantly the nurse is challenged in their use. This then restricts the profession from fully benefiting from these in terms of nursing practice and patient care. These challenges range from lack of appropriate infrastructure, expertise, to struggling with internet access. The Scottish Government (2017) acknowledges the need to prepare nurses to be comfortable with the incorporation of technology into patient care with a suggestion of including technological competence in the nursing curricula. Booth et al. (2021) also assert that nursing must transform and embrace digitalisation to be better equipped to respond to the complex healthcare environments.

According to Spader (2020) nursing education has had to rapidly evolve to address healthcare challenges which include COVID-19 pandemic related challenges and those associated with inequalities in healthcare and the use of technology. The American Association of College of Nursing (AACN) states, “We are moving from baccalaureate, master’s, and doctor of nursing practice curricula essentials toward competency-based education and assessment” (Trautman in Spader, 2020, para. 5). This is in a quest to provide today’s population with professionals who are well prepared and competent. Supporting the need to shift towards competency-based education Lewis et al. (2022) encourage the nursing academic to embrace it in preparing nurse graduates for their professional roles.

In summary the drivers of changing healthcare environments are the ageing population, increased health care demands, the increased use of technology in care delivery, and being prepared to deal with pandemics. The COVID-19 pandemic reminded us of how ill-prepared we were to function in a pandemic.

Defining a Challenge

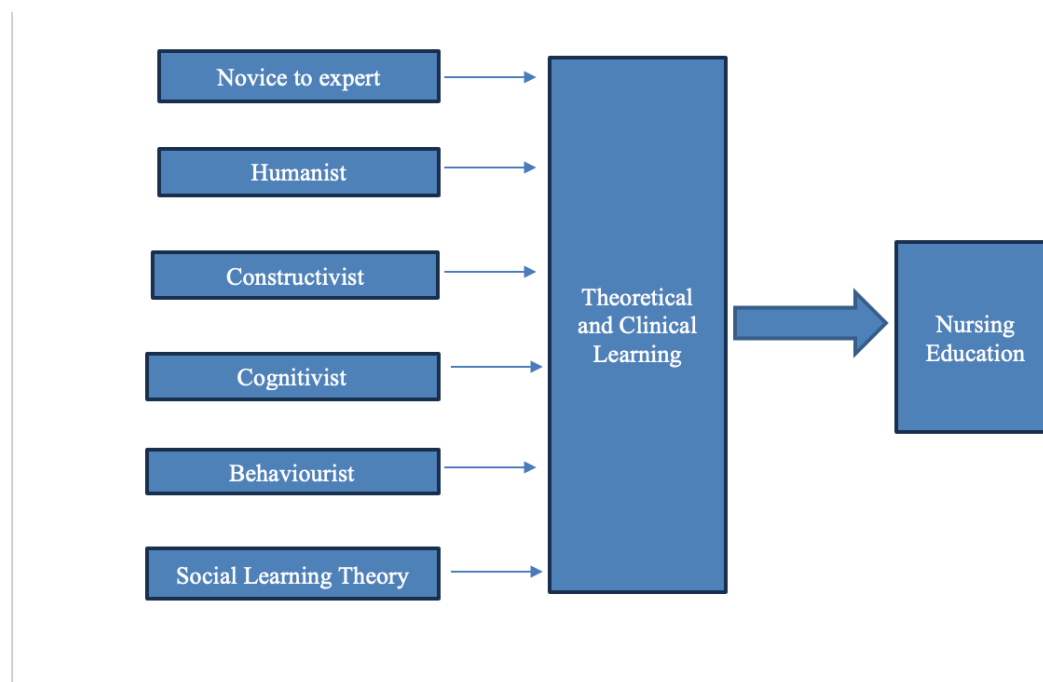
A challenge can be defined as “the situation of being faced with something that needs great mental or physical effort in order to be done successfully and therefore tests a person’s ability” (Cambridge Dictionary, n.d.). In this study a challenge is seen as an obstacle in nursing education that has a contributory factor in the ‘making’ of a graduate nurse who is not adequately prepared to take care of today’s patient.

Nursing Education, a Theoretical Perspective

Nursing education is a product of classroom learning, conventionally known as theoretical learning, and clinical learning. Traditionally, classroom learning would take place in a physical space with the learners seated on chairs or benches and the teacher standing in front or at a point where he/she could physically see most if not all the learners. And clinical learning would be in a physical simulation space and at the patient’s bedside.

Nurse educators are the facilitators of learning. In most cases the nurse educator has an advanced degree, such as a master’s or doctoral degree, is often an employee of a university although nurse educators can be that part of clinical teams that keep nurses abreast of the latest needs in health and patient care (Global Health, 2020). When the registered nurse assumes the nurse educator’s role as a guide and facilitator of the student nurse’s learning in the clinical environment, she/he is called a preceptor (Rashwan et al., 2023).

How the overall learning activity is understood is explained from different theoretical perspectives. An overview of the novice to expert, the constructivist, humanistic, behaviourist, and cognitivist learning theories (Figure 2) is provided and this is followed by a discussion of the Social Learning Theory (SLT) including its later version, the Social Cognitive Theory (SCT), and its application in nursing education.

Figure 2*Learning Theories and Nursing Education*

Source: Author

The Novice to Expert Theory. Novice ➡ advanced beginner ➡ competent ➡ proficient ➡ expert. Patricia Benner’s novice to expert theory is based on the premise that nurses develop nursing skills over time. Benner believed that education and experience are some of the contributory factors to the development of such skills (“Patricia Benner Novice to Expert”, 2017). The nurse requires enough time to progress from a novice to an expert. And this progression would even take place without the nurse being aware that it was happening (“Patricia Benner Novice to Expert”, 2017). It is important to note, however, that expertise in nursing hardly occurs in a linear pattern and to acknowledge that external factors affect individuals differently.

The Humanist Theory. According to the humanist theory the student takes ownership of learning and requires his/her needs to be met to enable learning (“What Is Humanistic Learning”, 2020.). Simply put, an individual is motivated by goal attainment and lower priority needs must be met before they can consider the higher priority needs (“Maslow’s Hierarchy of Needs”, 2020). The teacher [nurse tutor/lecturer/instructor] gives the student [student nurse] the responsibility to learn as they wish with the student being driven by their will to do so (Aliakbari et al., 2015).

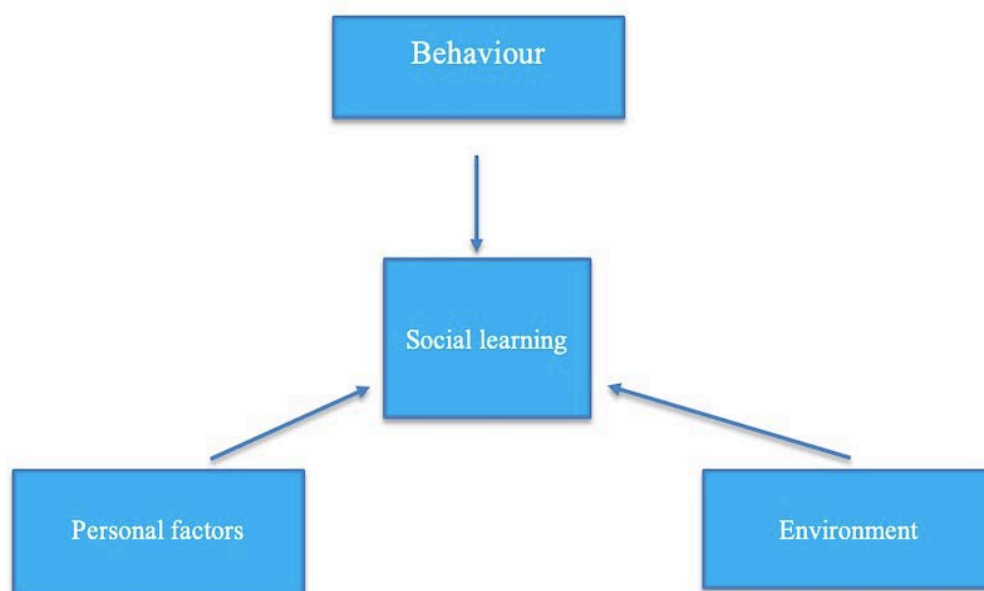
The Constructivist Theory. The constructivist theory has its basis on the premise that a learner's pre-existing knowledge helps them in the acquisition of new knowledge (Dennick, 2016). Constructivists would argue that creating a group discussion and the selection of one person as a coordinator in theory sessions and at the patient’s bedside can help to shape and strengthen cooperation and learning (Aliakbari et al., 2015).

The Cognitivist Theory. Cognitive theory focuses on what happens in the mind of the learner. To learn, the individual organises information based on what is already known and reorganises it to get new understanding (Braungart et al., 2003). Unlike the behaviourists, the cognitive theorists do not believe in rewarding or positive reinforcement. Learners are motivated to learn by tensions that result from goals and expectations (Braungart et al., 2003). The learner is an active participant as opposed to being a passive one in the process of learning and recognises the role of prior knowledge and past experiences to improve learning outcomes (“Learning paradigms”, n.d.). A good example is Piaget’s theory which focusses on exploratory learning and emphasizes activity and experience and discourages rote learning (Quinn, 2007, as cited in Aliakbari et al., 2015).

The Behaviourist Theory. Behaviourists believe that learning is exhibited by observable changes in behaviour (Thompson, 2019). Most relevant to nursing education is Thorndyke's theory, a subset of the behaviourist theories which proposes that learning takes place through trial and error (Aliakbari et al., 2015). The behaviourist learning theory asserts that learning results from a connection made between a stimulus and a response. To learn, according to the behaviourists, people need a conducive environment which can be manipulated or changed, and they need the behaviour to be reinforced (Braungart et al., 2003).

The Social Learning Theory. A theory that is commonly applied by nurse educators is Bandura's Social Learning Theory (SLT). It borrows from both the behaviourists and the cognitivists perspectives. Bandura (1971) asserts that "in the social learning system, new patterns of behaviour can be acquired through direct experience or by observing the behaviour of others" (p. 3). According to the SLT, during clinical practice, students supposedly learn from the interactions they have with patients, qualified nurses, and other healthcare workers – they learn through observation. The instructor is also a role model as she/he teaches professional ethics, and how to communicate with patients, and the healthcare team.

Bandura's SLT was later refined to **Social Cognitive Theory (SCT)**, emphasizing how personal, behavioural and environmental factors influence human behaviour (Bandura, 1986, as cited in Schunk & DiBenedetto, 2023). This is illustrated in Figure 3. There is, thus, recognition that not only the environment influences learning but that the influence is also from personal factors and behaviour, which in nursing, would include competences.

Figure 3*The Social Cognitive Theory*

Adapted from: Bandura (1986, as cited in Schunk & DiBenedetto, 2023).

When the author developed an interest of conducting this research it was before the COVID-19 pandemic. This area of research has become even more relevant in this period when the pandemic effects have affected nursing education in ways that were never imagined. The obvious effect being of course the need to rely more on virtual learning now than ever before. The prevalent mode of teaching/learning during and post the COVID-19 pandemic has been virtual. The aspect of virtual learning brings a twist to the issue of role modelling and social learning. For instance, vicarious reinforcement may not be applicable to virtual environments, or it might not be as effective (own opinion). In vicarious reinforcement [which is an important element of the SLT] the response to the acceptable or unacceptable behaviour of others influences those who observe the response into behaving in a particular way (Bandura, 1971). Behaviour observation may be difficult within the impersonal nature of the virtual space.

Indeed, the student nurse benefits from role modelling and social connectedness, however, there are some areas of controversy within the SLT such as:

- Bandura probably underestimated the importance of biological factors on social learning (Burdick, 2014).
- The SLT ignores the mental or emotional state of learners; and learning abilities (Mukhalalati & Taylor, 2019).
- The SLT ignores the cultural, linguistic, and historical factors that shape a students' experience (Mukhalalati & Taylor, 2019).

According to Bandura it is the imitation of behaviour that trains the child; however, studies have found that the influence of genetics in the training of the youth cannot be ignored. For example, DiLalla and Gottesman (1991, as cited in Burdick, 2014) found that genetic conditions such as psychiatric disorders can lead to antisocial behaviour in children and adolescents.

Comprehending how learning takes place from the perspective of these renowned education theorists informed the development of the conceptual framework in this study. It birthed an understanding that learning can be explained using a framework that interrelates some of these known theories.

Conceptual Framework

A conceptual framework is an expression either narratively or graphically of the study being embarked upon (Salawu et al., 2023). The researcher conceptualised that an interplay of several learning theories can be used to explain learning in nursing (Figure 4). The success of such learning being dependent on how the constituencies of the different learning theories support learning. Such constituencies are as follows:

Lower priority needs (from the humanist theory): these could include cultural and linguistic needs, the mental and emotional state, learning ability, digital literacy, internet access. The

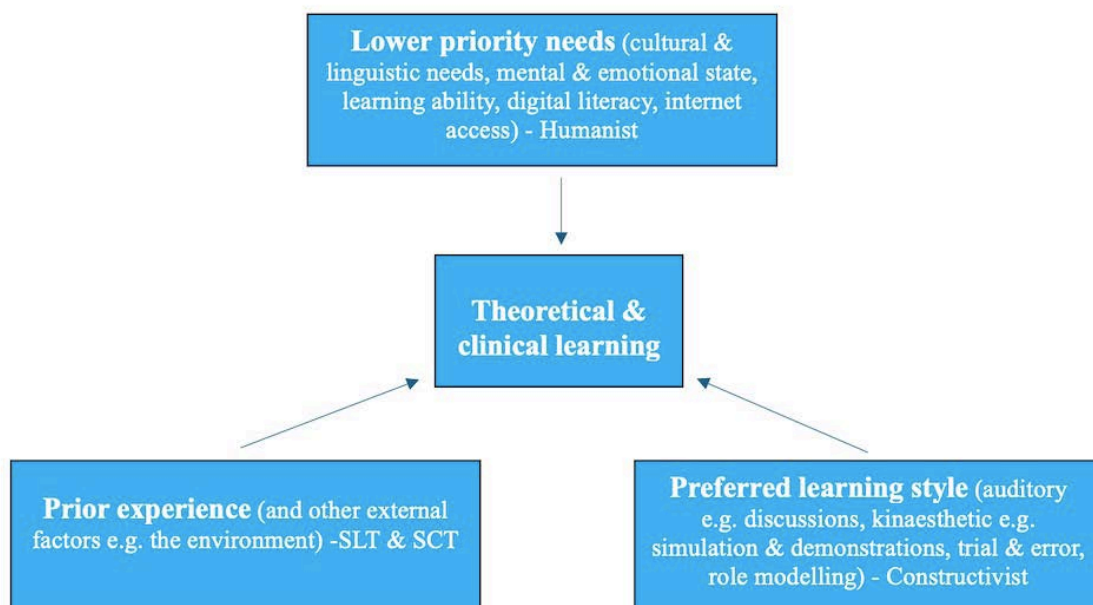
pace at which a novice transcends to expert (**novice to expert theory**) could be dependent on these.

Prior experience (from the cognitivist theory): including other external factors such as the environment (**SLT & SCT**).

Preferred learning style (constructivists): with auditory, which is used in group discussions and kinesthetics, used in simulations and demonstration of clinical procedures being the most relevant. Visual and reading/writing would of course still apply in some situations such as in presentations and history taking/reviewing of patient notes, respectively and role modelling (**SLT**) wherein nursing students look up to and wish to emulate their educators and mentors. The trial-and-error approach (**behaviourist**) forms the basis of learning in the simulation environment.

Figure 4

Conceptual Framework



Source: Author

Current research findings indicate that learning is a product of meeting lower priority needs, the effects of prior experience and other external factors, and the preferred learning style.

Field/Industry

The International Council of Nurses (ICN)'s definition of nursing is widely used and refers to the act of extending collaborative care to individuals, and the different units of society which include families, groups, and communities, regardless of their health status (ICN, 2002, as cited in "Nursing Definitions", n.d.). Nursing is part of the healthcare system and besides the prevention of illness, it is concerned with the promotion of health. According to "Occupational Safety" (n.d.) healthcare is all about providing health services to people. Thus, nursing exists within the broader concept of healthcare.

This research is within the field of nursing education which involves the preparation of persons, who enrol into a nursing programme, to take up the role of a nurse who gives the nursing care. Nursing education, a concept that was defined in detail earlier, is the 'education' of nurses. One of the purposes of education is that of qualification (Thomas, 2001). At the end of a prescribed period and after meeting the learning outcomes the graduate nurse obtains a qualification. Challenges on the road to both obtaining this qualification and ensuring that the holder of the qualification is competent to give the expected care exist. This research illuminates such challenges within the specific context of Namibia and suggests strategies to address the identified challenges.

Nursing Education, Challenges Faced and Way Forward

This section presents an integration of the literature reviewed around nursing education, associated challenges and some of the ways of tackling these challenges.

The Evolution of Nursing Education: A Global Perspective

As early as 1813, a group of women, under the Ladies' Benevolent Society of Charleston, started a programme of looking after the sick at home in Australia ('Nursing in the 1800s', 2016). Australia also received 'the first trained' nurses known as the Five Sisters of Charity, close to the beginning of the 19th century, in 1838 to be precise ('Nursing in the 1800s', 2016). Not much is said about the training of these sisters. Their interest was in the education of the poor. In its earlier years, nursing was never viewed as a profession but as an extension of domestic work to be expected from women. Women are known to be caring and thus they naturally assume the position of a nurse when a family member is unwell, in most cultures at least. It is reasonable to think that as the world population grew the proportion of the sick increased and there arose a need to have some sort of structure of how care could be provided. This occurred as a need to help those who were ailing, at no cost and out of the goodness of the heart. Unknowingly this heralded the birth of nursing education.

Different parts of the world experienced the development in nursing education at different times and at varying paces. According to Bahçecik and Alpar (2009), in Turkey nursing education began as early as 1912. This was in the form of a six-month course which trained voluntary medical attendants. By 1955 Turkey was able to train nurses at a bachelor's degree level and master's level by 1968 whilst PhD programmes commenced in 1972 (Bahçecik & Alpar, 2009).

The 19th century nurse was female. The nurse, according to Hawkins (2010, as cited in Lane, 2020) had little medical education, was more like a housemaid and her duties included making poultices (herbal pastes with healing properties), keeping the patient environment clean and attending to the patient's needs. In 1840, nursing sisterhoods [such as Anglican sisterhoods] took lower-class women to work in the wards and higher-class women to work as nurse managers (Baly, 1987 & Dingwall et al., 1988, as cited in Hawkins, 2010). According to

Bradshaw (2000, as cited in Hawkins, 2010), Nightingale very much liked the sisterhoods' focus of character shaping and discipline. When the sisterhoods started their mission, the aim was to create employment for single, middle, and upper-class women (Hawkins, 2010). Maggs (1983, as cited in Hawkins, 2010) contends that the nurse reformers had similar aims but in addition included the provision of a more formal training of nurses. Formal training opened doors to certification and opportunities for promotion.

Nightingale had to do a lot of convincing in her early years of nursing. Her ability to convince those in control that nursing was more than just a domestic chore and that it was an activity that commanded respect, contributed to the professionalisation of nursing. She faced medical and military opposition but was able to demonstrate the mortality rate among soldiers using statistics (Weller-Newton & McCormack, 2020). It was, however, not until 1860 that the Nightingale Training School and Home for Nurses opened in London ("The First Trained Nurses", n.d.). This school used an approach different from earlier schools: it was an independent school and was not based in a hospital. The duration of training was one year and the trainees, during training were called probationers and 'Nightingales' on graduation ("The First Trained Nurses", n.d.). Nightingale's school, started in 1860 and certified close to 2000 nurses by the end of the 19th century.

According to Lane (2020), the probationers were divided into two groups, the nurse-probationers, and the lady-probationers: the nurse-probationers received free training which was of a lower standard than that of the lady-probationers who paid for the high standard education and had no salary during training. The nurse-probationers were paid, minimally, during training (Lane, 2020). Lane (2020) further argues that these divisions were needed for student success considering that the two groups had different prior education. Prior education has become even more relevant to nurse training today, as it is for many other courses. Nurse training institutions in the 21st century also consider prior education with the entrance

examinations being conducted during institutional selection processes. Such assumptions work for the most part, however, differences will always result from the different factors that influence how one perceives reality. In African colleges today, one needs a reasonable understanding of science subjects to be admitted into nursing, with subjects such as Mathematics and Science being the most desirable; subjects that are in their entirety objective in nature. Excelling in the same would not necessarily equate to a better understanding of how to provide culturally sensitive care, for example, or being a good communicator. Thus, despite starting from a similar academic take-off point, the design of the curricula might still need tailoring to specific sub-groups.

A few years after the establishment of the Nightingale's school in London, pro- and anti-registration factions dominated the nursing arena. These factions still strived to balance theoretical and moral training. The pro-registrationists, such as Ethel Fenwick, combined theoretical teaching with prolonged practical experience and the anti-registrationists, the likes of Eva Luckes and Florence Nightingale, argued that an overemphasis on theoretical knowledge would undermine character training which was crucial in producing a good nurse (Hawkins, 2010).

Not long after the evolution of independent colleges did hospital-based training take over. Doctors took control of this kind of training. Hospitals transformed from "warehouses" for the sick into "large laboratories" for learning about diseases and patient care (Hawkins, 2010). The extent of such control can be seen in the way some of the doctors perceived the nurse. Doctor Charles West had this to say:

First, however, I must remind you that the nurse is not the doctor; that she never can be; that if she forgets her proper place, and tries to interfere with his duties, or to set herself above his directions, instead of being a blessing she will be a curse, instead of promoting the sick child's recovery she will very often hasten its death (Charles West, 1860, p. 16).

The above view of the nurse was shared by many. Carson-Newman (2018) refers to nurses being educated on how to maintain patient comfort; and doing housekeeping duties. In addition, one Dr Hooker shared the same sentiments with Doctor Charles West; believing that nurses were inferior to physicians and that they had no opinions. Today this might not be the case in most, if not all, of the developed nations but traces of such perceptions and behaviours are still noticeable in the less developed countries. And this cannot be wholly attributed to some superiority demeanour of doctors as there is a possibility that such mistrust could be due to graduate nurse unpreparedness. There are instances of course, when the undesirable treatment of student nurses by medical students have been reported: within the clinical environment student nurses at times deal with a degrading and negative atmosphere such as when they are treated as inferior to medical students (Farzi et al., 2018; Jamshidi et al., 2016).

Susan Pembrey [a nurse leader who was pro university education for nurses] introduced the concept individualized nursing in the late 1970s, a concept which changed the traditional approach. The change was from an approach whereby junior nurses and students would provide personal care while senior nurses administered medication to one where nursing was more individualised with nurses being assigned to take care of a group of patients. The 1970 – 1980s also saw the push towards having nursing at a degree level (Weller-Newton & McCormack, 2020).

It might be assumed that with the effort put into advancing nursing education the nurse educators are adequately prepared for the task. Yet this has not been so, at least not uniformly worldwide. In the late 20th century, some clinical instructors still did not undergo preparation to take up the clinical instruction roles, yet clinical teaching is an activity that requires high skill (Weller-Newton & McCormack, 2020). In some cases, nurse clinicians are requested to facilitate clinical learning, but one can be a skilled clinician without necessarily being a skilled

teacher (Weller-Newton & McCormack, 2020). The preparation of nurse educators is an important aspect of the evolution of nursing education.

By 1921, in the USA, nursing licensure was implemented in all existing states (Carson-Newman, 2018). This was driven by a cry for care that met set standards. Around this time training took more than a year, certification was after three years of training. The first nursing licensure exam was in 1903, in North Carolina (Carson-Newman, 2018). By then patient care had increased in complexity. Nursing became a full-fledged profession by the 1950s, and around this time the years of training moved up to 4 years (less for those who sought only technical skills). The 21st century has seen a further shift: not only should nurses graduate from a diploma or college nursing programme but they should also have completed a clinical experience component with the bachelor's degree being the recommendation in many countries (Carson-Newman, 2018). Table 2 presents a snapshot of the history of nursing education in USA, UK, and Namibia.

Table 2

History of Nursing Education

United States of America

United Kingdom

Namibia

Timepoint	Event
1813	A programme for nursing the sick poor at home initiated by the Ladies benevolent society of Charleston, South Carolina.
1860	Nightingale Training School opens at St Thomas Hospital in London.
1863	A six-month course in nursing offered by the Hospital of Philadelphia. First diploma awarded from this course in 1869.
1872	One year nursing curriculum offered by the New England Hospital School of nursing.
1873	Three schools of nursing open: New York Training School, Connecticut training school at the State Hospital and Boston training school open.
1885	<i>A textbook of nursing</i> by Clara S. Weeks Shaw published. This was the first textbook by a nurse.

1886	Spelman seminary (later Spelman College) in Atlanta Georgia begins a nursing programme for African American women.
1888	Bellevue Hospital in New York City opens The Mills Training School for Men.
1893	Howard university opens a nursing education programme (first in the country at a university setting).
1899	Teacher's College at Columbia University in New York offers nurses a course in hospital economics. This would help nurses teach and administer in hospital-based nurse training schools.
1900	American Journal of Nursing begins publication.
1900	More hospitals establishing their own training schools for nurses. Instruction in exchange for free nursing care
1903	North Carolina passes the first nurse registration act, licensing professional nurses.
1909	University of Minnesota opens the first nursing school which was not part of a hospital but that of a school, with a baccalaureate as the qualification.
1914-1918	World War One. Just over 10 000 nurses enrolled at the Queen Alexandra Imperial Military Nursing Service to provide nursing services to British Army soldiers.
1919	The regulation of Nurses Act passed for England, Scotland, Wales, and Ireland
1925	A study of the present status of the negro woman in nursing is completed.
1938	Rhenish missionaries attempt to start nursing school – denied
1940	State enrolled nurse formally recognized (2 years of training)
1952	A two-year associate nursing degree programme opens. The associate degree nurses performed more technical tasks.
1960	American Nurses association recommends the baccalaureate degree as the basic educational foundation for professional nursing practice.
1970s	First nursing degree
1970s	Enrolled and diploma nurse training
1983	New professional register – four branches (mental health, children, adult, learning disability)
1986	Project 2000 – drive behind moving diploma level nurse training based in colleges/universities as opposed to hospitals
2004	Royal College Nursing votes for degree only nurses
2008	UNAM – first degree in nursing
2009	Nurses' courses in the UK now degree level

Sources: (*Penn Nursing, n.d.*); (*Thomas, 2016*); (*Van Dyk (1997)*).

The Evolution of Nursing Education: Namibia

Just like many other countries in the developing world, Namibia was facing challenges in healthcare even before the beginning of the 21st century. Supporting Environmental Education in Namibia (2002, as cited in Klopper & Uys, 2012), states that the shortage of healthcare workers, heavy workloads, the HIV/AIDS scourge, and brain drain long contributed to such challenges. These challenges not only affect the delivery end of service but also the education of the nurses who will later work in challenging work environments. Bearing in mind that the training of a nurse comprises two indispensable components: theory and practice, the student nurse who looks forward to translating theory into practice in the clinical setting will, invariably, be met with a disappointingly ill-prepared environment battling issues related to staff shortage and a burnt-out healthcare delivery team.

Before Namibia gained its independence in 1990, nurse training was regulated by the South African nursing council (Klopper & Uys, 2012), and Van Dyk (1997, as cited in Klopper and Uys, 2012), explains that this is why the Namibian nursing curriculum resembles, to a large extent, that of South Africa. In 2008 the Bachelor of Science Nursing degree was only offered at the University of Namibia (UNAM), with an estimated output of 160 graduates from its two campuses in 2012 (Klopper & Uys, 2012). To date, two other institutions have joined UNAM in offering nursing education at a degree (baccalaureate) level namely Welwitchia University (WU), formerly Welwitchia Health Training Centre, and the IUM.

The introduction of nursing education in Namibia followed a rocky road. In fact, it was 99 years after the first baccalaureate nursing students, in the world (Offered at University of Minnesota in 1909), had been enrolled into a university, that Namibia started offering the same qualification. To give a brief overview as obtained from Van Dyk (1997)'s History of nursing in Namibia: The Rhenish missionaries tried to start a nursing school, at the request of tribal chiefs, as early as 1938 but the hospital administration, at Grootfontein Hospital, rejected this

request. Years later, as more natives acquired secondary school education, Catholic sisters gradually developed training schools for auxiliary nurses. Enrolled nursing assistants could be trained at different locations in the country by 1974. The latter part of the 20th century saw the development of more comprehensive nursing programmes which included the basic three-year general nurse training (diploma) with an additional year in midwifery for those who wanted to be midwives. Searle (1987, as cited in Van Dyk, 1997) rightfully worried if the nursing profession would be able to cope with the challenges of the 20th century. Searle had the foresight that social change would shake the profession to some extent. Indeed, it has and continues to do so.

As stated earlier, the bachelor's degree in nursing was offered at UNAM from 2008. WU had its first enrolment for the same qualification in 2013 and IUM in 2014. Of note is that this same qualification was first offered by the University of Minnesota in 1909, almost a century before Namibia joined in. It took Namibia a long time to offer the qualification yet the need to advance nursing knowledge has been there since the evolution of nursing. Grypma (2003); Street (1973); and Young (2005, as cited in Duncan et al., 2020) speak of Johns' commitment towards advancing nursing knowledge which Johns believed was crucial in increasing leadership capacity and in keeping the profession committed to the social mandate of just and equitable care. [Ethel Johns was a nurse leader who pioneered the first university degree programme in Canada].

Namibia might have started advancing in nursing education much later than other nations, but it certainly has not been spared from the drivers of healthcare transformation. How far the nation has gone or how prepared it is to respond to the healthcare needs of the present-day society is further unravelled in this study. Factors that drive healthcare transformation such as an increasing ageing population, increased longevity, chronic illness in addition to

healthcare disparities which Salmond and Echevarria (2017) speak of, very well align with the Namibian context.

It is not certain that the nursing profession is braced to deal with current and future challenges, but it is indeed certain that the challenges faced now will not be gone tomorrow. “Nursing Education Challenges in the 21st Century” (n.d.) extrapolates that by 2030 the global shortage of health workers will reach 18 million, this being due to retirement, burnout, and lack of educational resources. Moreover, the clientele that the nurses serve has become smarter, and the responsibilities of the graduate nurse have increased yet only 23% newly qualified nurses demonstrate practice readiness when it comes to the ability to manage clinical change of status (“Nursing Education Challenges in the 21st Century”, n.d.). The global shortage of healthcare workers affects nations differently; for Namibia this means losing even more nurses to the nations who can offer more in terms of remuneration and better quality of life standards. The lack of educational resources could mean lack of up-to-date equipment or digital technologies for some countries but for Namibia this could be even the inability to access or afford internet, which, in contrast, is a readily available resource for first world country students.

The population of Namibia to date stands at 2 635 652 and is growing at a steady rate of 2% (“Namibia Population 2022”, n.d.). To meet the needs of a growing population, not only should more nurses be trained, but the end-product of the nurse training needs to be also prepared to serve the population whose healthcare needs are anything but escalating in a nation where resources are dwindling. It is thus imperative to analyse the challenges facing nursing education in this century considering population growth and changing healthcare environments.

Nursing Education Now

This section reviews nursing education and the associated challenges. It focuses on what has changed, and the challenges facing nursing education from both a global and regional

perspective. Changes in nursing directly impact nursing education, therefore, understanding these changes helps contextualise the challenges facing nursing education.

What has changed? Evidence-based practice (EBP). That is what has mostly driven the change. EBP is attributed to earlier works of Florence Nightingale, and the 21st century has seen it being propelled further. According to Reinking (2020) Nightingale and her nurses observed the conditions that contributed to the wounded British soldiers' survival and tried to ensure similar conditions throughout the hospital in Scutari. Such conditions, which led to better health outcomes, included clean dressings, good hydration and clean air (Reinking, 2020). These were evidence-based practices, and they brought the mortality rate of the wounded soldiers down.

According to Nightingale (1999, as cited in Fee and Garofalo, 2010), hygiene was neglected in the camp, and this was in addition to other challenges such as the shortage of medicines and essential supplies. This fuelled infections. She attributed the high mortality among the wounded soldiers to diet, dirt, and drains. And she was right. Food brought from England, the cleaning of kitchens and hospital wards in addition to the flushing out of sewers which she organized, helped reduce the number of soldiers who died. Stark (1979, as cited in Fee & Garofalo, 2010) contends that it was not only Nightingale's ability to lead but also her concern with sanitation that remarkably brought down the mortality rate.

The National Institute of Corrections (2017) describes EBP as:

... an ongoing, critical review of research literature to determine what information is credible, and what policies and practices would be most effective given the best available evidence. It also involves rigorous quality assurance and evaluation to ensure that evidence-based practices are replicated with fidelity, and that new practices are evaluated to determine their effectiveness (para. 2).

In applying EBP, the patient is treated the same way that a healthcare provider would want to be treated ("The Evolution of Evidence-Based Practice", n.d.). Referencing hospital statistics provided by the American Hospital Association in 1999, the IOM (2000) pointed out

that between 44 000 and 98 000 deaths of those admitted to United States hospitals in 1997 were due to preventable adverse events. Clearly there was need for safer care. Evidence-based care would enable this.

EBP is here to stay. Today's patients are not only more knowledgeable about their condition, but they are also aware that they deserve the best care. Moreover, the population is very diverse and requires diversified care. Today's nurse should be prepared to serve such a population. It is of paramount importance that the product of nursing education is equipped with the knowledge and competencies that would enable it to meet the needs of the 21st century patient. The general understanding is that nurses with a baccalaureate qualification are well-prepared to meet these needs. Indeed, the IOM (2011, as cited in Fawaz et al., 2018) asserts that holders of the Bachelor of Science in Nursing degree are better positioned to respond to various patient needs; function as leaders; and provide safe evidence-based care. Whether this is the case in all settings is worth of research. Speaking on the use of healthcare information technology, Jamshidi et al. (2012, as cited in Fawaz et al., 2018) recognized that although the technology will assist in the provision of safer care the management of the larger volumes of data might be a challenging task. Nurses are challenged to have a wide knowledge base and the competencies commensurate with providing care of the highly complex patient (Reinhard & Hassmiller, 2012, as cited in Fawaz et al., 2018).

Nursing education today has become more outcome oriented rather than process based and needs to pursue skill-based and evidence-based techniques in education contrary to former models of formal lecturing (Fawaz et al., 2018). This will enable the graduate nurse to meet the needs of the contemporary society. Fukada (2018) contends that nurses should be able to care for patients with complex and diverse needs within healthcare settings that have been greatly changed by disease profile and the rapid growth of the ageing population. Thus, nurses should be well-prepared to competently meet the patient needs.

IOM (2001, as cited in “Institute of Medicine”, 2003) stipulates that all healthcare professionals should possess the following core competencies if they are to respond to the needs of the 21st century population: provide patient-centred care; work in interdisciplinary teams; employ EBP; apply quality improvement; and utilize informatics. Similarly, the Nursing and Midwifery Council (NMC) (n.d._a) states that all nurses in all four fields of nursing (adult nursing, children’s nursing, learning and disabilities nursing, and mental health nursing) must demonstrate professional values, communication and interpersonal skills, nursing practice and decision making, and leadership, management and team working as core competencies.

In trying to be in sync with the disease trends and the changing population demographics nursing education has not been without challenges. Now that the expectations of a 21st century nurse have been outlined, the next sub-sections take a closer look at the challenges nursing education has faced both globally and regionally. Two of the objectives: to examine challenges facing nursing education both in theory and clinical practice and, to analyse how baccalaureate nurse educators and nursing students describe challenges encountered both in theoretical and clinical education are addressed in the following two sub-sections.

Challenges Facing Nursing Education: A Global Perspective. The global shortage of nurses, which has been projected to be around 18 million in 2030 by WHO, has been attributed to retirement, increased workload, and lack of educational resources (“Nursing Education Challenges in the 21st Century”, n.d.). The shortage can lead to even more burnout among the few nurses in service which can lead to resignations and early retirement or even ill-health. Some of those who have been long serving in the field are in the nursing education faculties meaning the faculties will suffer too. Nurses with substantial experience in the field form the backbone of the practical education of student nurses, some as nominated preceptors and mentors and others simply as role models. With such a calibre of nurses leaving the field, nursing education cannot remain unaffected.

The United States of America grapples with nurse faculty shortage. AACN (2024) cites that an ageing faculty, retirements, lucrative remuneration in clinical practice and a reduction in enrolment into nurse educator programmes as some of the contributing factors. Nursing faculty has continued to lose staff to retirement, and to decisions by others to just leave the profession. In 2017 the NMC indicated that more nurses and midwives were leaving the register than joining it and this was for the first time in history. For the UK, the proportion of those who left the register within the 12-month period increased by about 9% (Nursing and Midwifery Council, n.d.b). Table 3 below presents the figures of nurses and midwives opting out of the professional register by country of initial registration.

Table 3

Nurses and Midwives Leaving the Register

Country of initial registration	October 2015 to September 2016	October 2016 to September 2017
UK	26 635	29 019
Europe	2 435	4 067
Rest of the world	2 090	2 277
Total	31 178	35 363

Source: NMC (n.d.b)

Realizing that the client served today is very knowledgeable about their health situation is good; in fact, it makes it so much easier to develop health promotion and education tools and to influence health seeking behaviours. However, if the graduate nurse is ill-prepared to serve the client who knows what is wrong with them and how it can be fixed the situation ceases to be a pleasant one. The nurse will find himself/herself in a precarious position. Such a position could exacerbate any previous confidence issues and may result in the nurse becoming clumsy and prone to errors or in the patient thinking they are better off treating themselves at home. Measures that could be both harmful and unsafe. To be better placed to give quality and

appropriate care to the patient who has a good knowledge of their condition requires the nurse to possess the core competencies that were discussed earlier in the section. Because without the core competencies, making informed decisions, managing and solving complex problems can be almost impossible (“Nursing Education Challenges in the 21st Century”, n.d.).

Dewart et al. (2020) have voiced the fears that the COVID-19 pandemic brought to nursing education. Their context is Canada. And their fears are presented in the form of questions:

How will we recover from the pandemic? Will we be able to sustain and maintain a program if the crisis extends long term? Is it responsible and ethical to advocate for accelerated programs to licensure, and reduced clinical practicum hours? If educators, who are also nurses, are pulled into providing clinical care and frontline service, how does that affect our responsibility and capability to educate when, in a year, an exhausted and diminished workforce needs more nurses (p. 2)?

When COVID-19 hit we were not prepared. Neither as healthcare providers nor as educators of healthcare professionals. The pandemic has challenged educators to explore ways of facilitating learning when face-to-face interaction is not possible. Online/distance education is not a 21st century innovation but it certainly has gained a new perspective in the teaching of clinical courses during and post the pandemic. Whereas blended learning has been in use in some if not most health-related courses, pure online learning in nursing may not share the same popularity.

In a study conducted in Iran, Jamshidi et al. (2016) found that the challenges faced by student nurses in the clinical environment included ineffective communication skills, lack of theoretical knowledge and practical skills, stress, and feelings of being treated as inferior to medical students. Whereas in a study conducted in Turkey by Sucu et al. (2019) on ‘Difficulties in Clinical Nursing Education’ some of the significant challenges faced by clinical instructors included heavy workload, lack of clinical practice area space, a mismatch between educational experiences and educational goals of the course. The instructors also experienced difficulties

in achieving the course objectives, creating an environment conducive for learning, and working in harmony with other members of the healthcare team.

In another study in Iran nursing students dubbed the situation ‘mislearning’ when they observed the gap between theory and practice as nurses failed to adhere to the aseptic technique when required and described the practice environments as crowded, unorganised and stressful (Haririan et al., 2024). Such less ideal clinical learning environments were thought to be a result of shortage of nurses, facilities, equipment, high workload and poor remuneration (Haririan et al., 2024). Taking the extra role of supporting nursing students where remuneration is poor is probably not what clinical staff would find palatable. Indeed, Jafarian-Amiri et al. (2020) contend that nursing students can face challenges in the clinical learning environment due to lack of support from their educators and members of staff who include nurses and doctors.

Committee on the Robert Wood Johnson Foundation Initiative (2011, as cited in Gimenes & Faleiros, 2014) agrees that the training that the nurses received in the 20th century is not sufficient in meeting the needs of the clientele of the 21st century as the complexity of healthcare environments has increased thereby requiring heightened levels of skills, competencies, and attitudes. Gimenes and Faleiros (2014) argue that nurses face challenges in transferring knowledge into clinical practice, and Okuyama et al. (2011); Kearney (2010); and Kiersma (2011) in the same article suggest that patient safety should be included in the nursing curricula. One might argue that the use of simulation addresses the issue of patient safety. And it does. However, simulators need to be as close as possible to the real if they are to invoke a spontaneous response of assuming a duty of care among trainees. However, such simulators are not in place in some nurse training institutions due to costs as will be elucidated in the next section that looks at challenges facing nursing education within the African region.

Challenges Facing Nursing Education: A Regional Perspective. Professional education, generally, has failed to brace up for healthcare challenges [in Africa] (Global Health

Workforce Alliance, 2013; Frenk et al., 2010; Crisp, 2012, as cited in Bvumbwe and Mtshali, 2018). Frenk et al. (2010, as cited in Bvumbwe and Mtshali, 2018) contend that this has been due to the mismatch between competencies and patient/population needs, lack of teamwork, and a narrow technical focus among other causes.

In a study by Mathebula (2016) student nurses felt that they were treated as workers during clinical placements. In agreement Amukugo et al. (2017) who conducted a study at an intermediate hospital in Namibia found that 54% of the nursing students cited staff shortage and 19% negative attitudes by registered nurses/midwives as some of the factors that hinder learning during night shift.

Munangatire and Nambuli (2022) conducted a study on ‘Nursing students’ perceptions and experiences of utilising the nursing process at a university teaching hospital in Namibia’ and found that students had positive perceptions, in general, of the nursing process but its continued use was threatened by the existence of some barriers to its implementation. One such identified barrier is that qualified nurses do not implement it in a way that is supportive to learning. The nurses were said to use a “shortcut” (Munangatire & Nambuli, 2022). Some of the reasons why nurses use shortcuts can be reasonably assumed. As discussed earlier, some clinical settings are resource starved. This can range from lack of adequate staff, lack of space to lack of consumables. Speaking from experience, an educator can teach or demonstrate a skill and evaluate its acquisition to satisfaction in class or in a simulation room only to realise that implementing it in the clinical area is near impossible because of just not having the resources to do so. This does not mean to say that nursing professionals who simply cannot be bothered much about correct practices do not exist. That would be naïve. It is human nature to go with what one finds easier, when faced with task completion. It must be pointed out that continued use of these so-called shortcuts has the potential of totally eroding the knowledge of what is right. As an example, some nurse-midwives were found to open a partograph after a woman

had delivered (Hatupopi & Nuuyoma, 2019), yet it is a record intended to be used in monitoring the progress of labour. [A partograph is a tool used to monitor a woman in labour].

Qualified nurses not only take the role of preceptors but are also mentors for student nurses in clinical practice. Thus, their well-being, or lack of it, will likely influence how available or prepared they are to play these roles. Staff with a low morale and negative attitudes may not be able to teach, if anything, they may influence the students to feel the same way too. The lack of equipment and consumables often leads to improvisation in the clinical area. Although this might save a purpose or a life, the student may never get to learn how to do things right. And this can pose a dilemma when, after graduating the nurse gets to work in a better resourced environment.

In some instances, even when the staff is available, they may feel unqualified to take up the extended role of facilitating the learning of student nurses. This is supported by Mhango et al. (2021) who assert that in addition to the preceptors hardly having time for the preceptorship role, the shortage of trained preceptors poses a challenge in the following up of students in the clinical practice environments.

Another issue that can make clinical learning environments uncondusive for learning relates to clinical staff attitudes. In a study by Amoo et al. (2022) on “Nursing students’ perception of clinical teaching and learning in Ghana” some of the participants complained about negative staff attitudes which, they felt, affected their ability to learn.

Mbirimtengerenji et al. (2015) on ‘Challenges of nurse tutors’ classroom and clinical performance when teaching in Malawi’ found that both nurse tutors and students were disappointed with nurse tutors’ cognitive, affective, and psychomotor performance during both theoretical and clinical teaching. Students complained that lecturers talked throughout the entire lesson, which could be up to 2 hours, resulting in them losing concentration and not gaining much from the lesson. It is important to combine teaching styles as students will most

likely have different learning style preferences. Only 54.3% of the 129 students who took part in the study agreed that nurse tutors demonstrated clinical procedures effectively both in class and in the clinical area (Mbirimtengerenji et al., 2015).

Another challenge that might affect learning in the classroom or compound the ineffectiveness of a learning style is the size of a class. Large classes are generally difficult to handle while class control is easier with smaller classes. Except for the benefit of learning from other students' opinions large classes were frowned upon by nursing students in a study conducted by Nhokwara et al. (2022) in Namibia. This is because students do not fully participate in group assignments when they see that they can rely on others' mindsets; poor concentration results from an inability to hear/see content; there are increased chances of copying, poor lecture control and delayed feedback.

Large classes require large physical space which tends to be costly. Where the physical space cannot be stretched students may be cramped up in whatever space is available which in turn impacts the physiological needs of both the educators and the students negatively. An environment that promotes concentration addresses the issues of ventilation, comfort, and security. Ahmed et al. (2022) conducted a study on 'Combined effects of ventilation rates and indoor temperatures on cognitive performance of female higher education students in a hot climate' and found a strong association between indoor temperature and ventilation rates with cognitive performance. Cognitive performance reduces when there is a disturbance of the physiological stability which occurs when the body "gets outside the psychological zone of maximal adaptability" (Hancock & Vasmartzidis, 1998, as cited in Ahmed et al., 2022, p.11). As illustrated in the conceptual framework, lower priority needs, in this case comfort and security, have to be fulfilled before learning can take place.

Among the recommendations from the students who took part in the study by Nhokwara et al. (2022) were the following: putting up more infrastructure, increasing the

number of lecturers, reducing the intake of students, installing speakers in teaching venues to counteract the disadvantages of large classes. Although none of the students suggested use of the virtual environment, its ability of not requiring a physical space means that it can easily accommodate large classes.

A competent nurse is a product of an effective education of the nurse, with this education taking place both in a classroom setting and a clinical environment. Mathebula (2016) found that nurse educators do not spend enough time with the student nurses during clinical accompaniment and the students were not given a clinical accompaniment schedule by nurse educators. In addition, the tutors who took part in the study by Mbirimtengerenji et al. (2015) indicated that they struggled to balance clinical teaching duties and other duties. Furthermore, nurse educators sometimes work with limited resources especially in rural or under-served areas amidst increasing student numbers (Mbirimtengerenji, 2015).

Hatupopi and Nuuyoma (2019) looked at the 'Challenges Experienced by Nursing Students at the Satellite Campus of a Higher Education Institution in Namibia'. The students who participated in the study were concerned about the theory-practice gap, lack of exposure to cases that would help them learn, limited time for clinical practice, lack of equipment and infrastructure, discrimination by nurses such as when they are compared to other students from other institutions, and language barrier. The students also voiced a concern on the importance placed on being task oriented in providing care as opposed to being geared to offer comprehensive care – an example was given of nurses who would open a partograph after a woman has delivered (Hatupopi & Nuuyoma, 2019).

Not far from home, in Botswana, nursing education has also suffered from the shortage of staff in classroom and clinical learning. Preceptors are unavailable in the clinical setting. Students also suffer because of limited diversity and space of clinical settings (Sabone et al., 2018). Overcrowding in clinical settings leads to the 'recycling of patients' for practising skills

(Sabone et al., 2018). This practice sounds downright unethical. It is. But these are the measures students must resort to in some settings to get a clinical experience.

South Africa has not been spared: nurses among other skilled healthcare workers have left the country in search of greener pastures leading to shortages that are crippling to the healthcare system (Allied Health Association of South Africa [AHASA], 2023). And according to Sabone et al. (2018) it is not easy to convince the 21st century generation that nursing is a promising career when students in training lack resources such as diversified faculty and supervisors for their clinical practice. Thus, at a time when the nursing workforce is shrinking due to emigration, enrolment numbers are dropping as the profession loses attraction perpetuating the shortages.

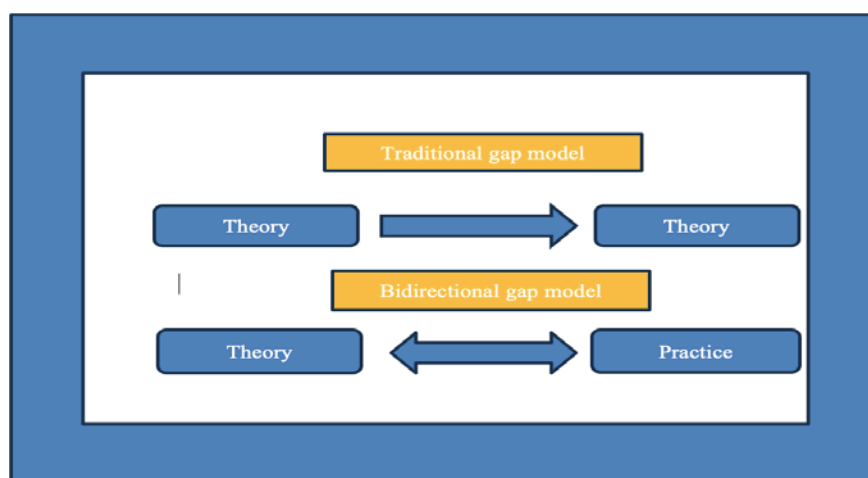
Continuing professional development programmes, as Mlambo et al. (2021) put it, are critical to enhancing the nurses' knowledge and skills and key to their lifelong learning. And CPD has a significant role in the basic training of nurses in that qualified nurses who are adequately exposed to it become more competent role models and preceptors. Mbirimtengerenji et al. (2015) argue that there is inadequate CPD which influences the quality of teaching, and that the clinical accompaniment and supervision of students is negatively affected by the lack of professional development; lack of orientation or induction programmes; and challenges with the use of new technologies among other factors.

Theory versus Practice. Whether the challenges faced in in-class nursing education and clinical nursing education have an association is not well-researched. However, much research has been conducted on the theory-practice gap. This sub-section focusses on the second objective: to determine any relationships between challenges faced in theoretical education and those faced in clinical education within baccalaureate nursing education in Namibia.

Theory and practice are critical components of nursing education (Saifan et al., 2021). Arteaga et al. (2024) in a systematic review on ‘A Systematic Literature Review to Address the Gap Between Theory and Practice’ redefine the theory-practice gap as being bidirectional and not unidirectional as depicted in the traditional definition (Figure 5).

Figure 5

Traditional Theory Practice Gap Model versus the Bidirectional Gap Model



Source: Arteaga et al. (2024)

One of the causes of the theory-practice incongruency relates to a curriculum which is not in sync with what is practised. Whereas Saifan et al. (2021) report on some misalignment between theory and practice, participants in a study by Shoghi et al. (2019) suggested a revision of the curriculum to ensure that it is context-based. How instruction is done in-class could negatively influence not only theoretical learning but also clinical learning. The lack of experience among nursing academe and the promotion of rote learning decrease the interest in learning among students (Salifu et al., 2018). Hatupopi and Nuuyoma (2019) also report on theory-practice gap in their study conducted in Namibia. Because of the relationship that exists between learning in class and in the clinical environment it is reasonable to assume that the challenges faced in one component could compound the challenges faced in the other component.

Into the Future: Tackling the Challenges

This section explores lessons learnt from the COVID-19 pandemic, strategies of cutting healthcare costs and the provision of culturally sensitive care. The discussion herein is in line with the fourth objective which is on strategies for maximising both theoretical and clinical learning experiences for baccalaureate nursing students in Namibia.

COVID-19: Lessons Learnt. It is unsurprising that nursing services were visibly shaken by the emergence of COVID-19 and the effects of the resultant pandemic. The strain on healthcare services was immediately felt and countries worked tirelessly and fearfully in trying to control the spread of the virus and mitigate its impact. The initial response from a public health perspective was obviously geared towards controlling the pandemic. It was about saving lives. And, as was expected, as the initial shock began to wear off and the world began to face the new normal, other areas that had been immensely affected became more evident. Such as nursing education.

Oducado and Estoque (2021) conducted a study that investigated ‘The undergraduate nursing students’ stress, satisfaction, and academic performance towards the implementation of online learning during the COVID-19 pandemic’ which concluded that undergraduate nursing students were either stressed or very stressed by online learning. Shorey et al. (2022)’s multinational study on ‘Salutogenesis and COVID-19 pandemic impacting nursing education across SEANERN [Southeast and East Asian Nursing Education and Research Network] affiliated universities’ found that students from Cambodia, Hong Kong, Laos, Malaysia, and Philippines experienced high levels of stress (Shorey et al., 2022). This, according to Aslan and Pekince (2020, as cited in Shorey et al., 2022), could be attributed to challenges of adapting to new learning/teaching modes, changes in regulations, and the shortage of nurses. In addition, Oducado and Estoque (2021), argue that some components of nursing education, such as the practical modules, are just not easily digitally taught. Abbasi et al. (2020, as cited in Oducado

& Estoque, 2021) contend that most of the students studying health science courses argue that clinical and technical skills are best learnt in laboratories and the clinical environment, and not online. In addition, from two COVID-19 surveys conducted by Health Education England, increased pressure regarding student placement and course completion, burnout and mental health issues were identified (Devereux, 2022).

According to Cardiel et al. (2022), there were some noticeable disparities between training students face-to-face and online in a study conducted in Spain. Students living in rural areas were found to have limited access to electronic devices and faced challenges in trying to balance the online learning with work and family responsibilities. The use of the virtual learning environment for learning clinical skills online in place of face-to-face simulation could have only posed a further challenge. Indeed, the nursing curriculum might not be designed for online learning (Oducado & Estoque, 2021). Aristovnik et al. (2020, as cited in Oducado & Estoque, 2021) agree that globally, students find online learning burdensome and that it increases their workload. Furthermore, students struggle with internet connection and cost. In the United Kingdom the challenges were more to do with students needing IT support and the lack of appropriate equipment (Ford, 2020) than with internet connectivity.

Some institutions such as the Nightingale College were not deterred by the pandemic. They were quick to transition to online simulation and to use at-home practice kits to enable students to continue with their education as near usual as possible (“Nightingale College Nursing Students”, n.d.). The college made plans to improve remote learning in nursing education. An on-ground hub overseen by faculty was among the plans and it was envisaged that this would be a centre for practical skills learning where students can meet once a month to practise nursing procedures (“Nightingale College Nursing Students”, n.d.). During the peak of the COVID-19 pandemic placement unavailability was high due to the risks associated with placing students in certain areas or changes to the way care was being provided, so this helped

circumvent this problem (Devereux, 2022). It might also be worth considering these simulation hubs as we look into the future of nursing education. There has been a suggestion that online consultations be considered as placement too (Ford, 2020).

For some, the pandemic provided an impetus to innovation. The Texas Board of Nursing (2020, as cited in Blevins, 2021) contends that the pandemic unearthed innovative opportunities for bridging gaps encountered by graduate nurses. Such approaches would include academic-clinical partnerships, residency, and improved preceptorship programmes which Blevins (2021) describes as follows:

Academic-clinical partnerships: Within this approach students could be rewarded for working in the clinical area.

Nursing residency programmes: The purpose of nurse residency programmes is to integrate graduate nurses into providing care which is safe, and which promotes confidence and organizational commitment. Under a programme designed by Phoebe Putney Memorial Hospital, graduate nurses were mandated to participate in various simulation exercises, hands-on practice, and skills assessments. Nurse graduates appreciated this programme as it made them more confident and ready to respond to patient needs.

Effective preceptorship: Preceptors use their knowledge and experience of managing patients to support the newly qualified in their new roles while ensuring that the reasons behind patient situations are understood. [During the pandemic] empathetic preceptors were needed even more than ever before as the novice nurses faced many challenges in transitioning to their new roles during such difficult times (Flumer, 2020 as cited in Blevins, 2021).

The academic-clinical partnership, although not practised in Namibia, is an approach that some African countries use too. The remuneration that is given to students might not be much, but it can help them afford some necessities during their training. Because there is some form of payment, student nurses are motivated to assist in covering staff shortages and they in

turn accumulate the required clinical hours. Whereas in most African countries, student nurses training for levels lower than a degree do not pay tuition, in some countries such as Zimbabwe and Botswana they even receive allowances while in Namibia they do not get any remuneration. Nurse training at degree level comes with tuition costs for majority of the countries in Africa. Most students struggle to make ends meet during training and as such are even more demotivated when working in clinical settings that are challenged by staff shortages.

As soon as graduate nurses register with the Nursing Council of Namibia and secure employment, they are considered ready to assume work. The nursing residency programme might be a good approach to adopt but its viability cannot be ascertained. It is an approach that clearly requires good funding.

Elsewhere, the State of California Board of Registered Nursing set out guidelines for telenursing experiences which enabled the recognition of students' direct patient care hours (Hargreaves et al., 2021). According to Hargreaves et al. (2021) this worked as follows: 50% direct patient hours were combined with 50% simulation and / or virtual clinical hours; students were assigned to groups and each group would prepare for a telenursing call in what was called a pre-conference. Each group would then call the patient and assess them and come up with an education plan for the patient. They would base their actions on the course and clinical objectives. Each group would then participate in a post-conference call. This exercise would earn each student who fully participated 6 clinical hours per patient.

Nurse educators at the University of South Carolina managed to quickly embrace the situation and forge ways of continuing to meet the learning objectives. Several strategies were used such as virtual simulations and online small group discussions. During the small group discussions students and educators would review case studies/clinical simulations with the intention of learning any new interventions that could be used with future encounters ("Overcoming Disruptions", n.d.).

Indeed, the pandemic may have influenced innovation, but for some the situation was just dismal. According to Agu et al. (2021) most of the nursing schools in the Caribbean did not have sufficient resources to enable full online teaching and virtual simulation. In some situations, students did not have the devices needed to access content and yet in other situations they did not have internet connectivity, or the faculty simply did not have virtual modules. This posed challenges to students and to the health profession. Agu et al. (2021) further outline how student nurses and the profession were impacted:

Impact on the student nurses: Online learning can contribute to inequality to learning. Some students live in remote areas with no internet access and some even with the access would struggle because the devices they own might not have enough memory space to support online learning platforms. Most of the affected students would have depended on campus libraries for resources as they did not have personal copies of textbooks and / or computers. Students found themselves having to adapt to online platforms such as Google Classroom, Blackboard Collaborate, Zoom and Moodle for example.

Impact on the profession and health care systems: The profession had to be ready to accept nurses who had trained under different circumstances. Premature completion of the training has the potential of negatively impacting confidence in the nurse. Yet extending training would have far more detrimental effects especially in the developing countries.

Palomino et al. (2023) on 'Impact of the COVID-19 pandemic on the nursing students' education in a public university in Colombia' found that the pandemic brought up challenges related to adapting to the virtual platform including access to and ability to use technology. The virtual space was said to have led to reduced social interactions with faculty and peers, and to have added to barriers to communicating with patients (Palomino et al., 2023). In addition, there was disillusionment among students regarding managing the study environment and balancing work with school when they were forced to work to help with family upkeep amidst

the loss of jobs suffered by some parents (Palomino et al., 2023). Using the virtual space requires the student to be disciplined and not see it as a way of taking up other responsibilities during times that should be dedicated to learning.

Esterhuizen (2020) reflected on the influence of the COVID-19 pandemic on nursing and nursing education in Gauteng, South Africa and had this to say:

COVID-19 slammed nurse educators out of their inertia and threw us unprepared into the deep end of the online teaching pool. We did not have time to plan, discuss and budget for the correct infrastructure, electronic access, or the cost of online teaching. Almost overnight educators had to come up with innovative methods to communicate complex nursing concepts in the most cost-effective way. Few of our nursing students have the electronic infrastructure or the financial means to use Microsoft teams, Zoom or Telegram optimally (p. 1).

Not all was negative though. Esterhuizen (2020) acknowledges the ease of reaching larger groups of students that is brought by online teaching, and how possible it was to give all students the same content that they could retrieve whenever they wanted to. Esterhuizen (2020) also indicates that the online private chat box enables all students, including the shy and not so confident, to participate. Ford (2020) speaks of one of the nurse educators who said that the benefits of online teaching were being embraced and that the digital chatroom allowed all students to freely speak up. Ford (2020) acknowledges the convenience brought by having pre-recorded video lessons within students' reach.

In a study on 'COVID-19 as an enabler for enhancing online learning and teaching skills for nurse educators at the University of Namibia' participants appreciated the lessons learnt from the pandemic (Shindjabuluka et al., 2022). Because of the COVID-19 pandemic institutions had an opportunity to acquire IT equipment and revitalize the IT department and nurse educators had an opportunity of acquiring skills for teaching and assessing students online. Online content was seen to have the advantage of being available to students at their own time. Nurse educators appreciated not having to deal with traffic and parking issues and the stress of being in a physical space (Shindjabuluka et al., 2022). In addition, Kaveh et al.

(2022) agree that there were some lessons learnt from the pandemic: students and educators experienced transformations [positive] in personal and professional lifestyles; other methods of teaching gained popularity, and the virtual environment could be integrated with the traditional face-to-face internships.

The challenges brought by the COVID-19 were palpable. According to Kaveh et al. (2022) clinical nursing education suffered much from the effects of the pandemic. Some of the hindrances to clinical learning included shortened duration of clinical practice, and overcrowded wards. Elective patients were also not generally hospitalized during the peak of the pandemic which meant that this type of population was selected out thus leading to students missing out on learning opportunities brought by this group of patients. In agreement, Shindjabuluka et al. (2022) state that the shift to online teaching was unexpected and fast-tracked and both educators and students were unprepared. Educators struggled with using platforms such as Moodle, Panopto and conducting online practical lessons. The difficulties faced in trying to transition to the virtual learning environment could have been there before the pandemic, but the pandemic did exacerbate them. There was urgency. One would have thought that considering how countries ensure outbreak preparedness we would have planned how the training of health professionals would continue amid a pandemic. More so, when considering that this student population could not be removed from the very places that fuel the spread of contagious pathogens.

Nashwan et al. (2020) suggest that nurse educators be always prepared to deal with unexpected events such as the COVID-19 pandemic. They are expected to be in possession of skills such as online teaching in addition to the usual clinical skills. It is easy to say this now because we have lived through the COVID-19 pandemic. In the study by Shindjabuluka et al. (2022), suggestions for improvement included training nurse educators on online teaching,

increasing support in online course design and instruction, facilitating communication between nurse educators and students such as using group work.

Undoubtedly if a similar pathogen was to shake the world in a more or less similar way, we would be better prepared. This does not mean that we would be ready for anything else that might drastically affect nursing education. There is a need for nurse educators to not be consumed by this event that we have lived through but to think of all possible events that might impact the perpetuation of the profession.

Towards Reducing Health Care Costs. Reducing healthcare costs is a team effort and nursing education has a role in this. Some of the ways of reducing costs in healthcare, according to “Cost-Effective Care” (n.d.), are outlined below:

- The use of electronic health records which enable the sharing of data between healthcare providers. Best practices can be determined much more efficiently, and at-risk populations can be identified. Coordinated services in the management of chronic diseases help reduce hospital admissions and emergency room services.
- Involving patients in their care through online portals. They can make appointments and communicate with healthcare providers.
- The use of new treatment methods such as medical device options.
- The use of telehealth and the virtual platform which add efficiency to patient assessment and treatment.

Graduate nurses need to be conversant with these ways and even more so considering nurses hold influential positions in the management of health services. This, of course would be more relevant to nations that have electronic and telehealth services in place. Namibia may not be at this stage yet, but this is the future of care delivery; besides some of the nurses training in Namibia secure employment in the developed territories thus sensitizing the student nurses to such modalities can only be beneficial.

Suggestions on how to increase the number of qualified health professionals have been discussed and these include increasing the number of training institutions and increasing the enrolment numbers. Both ways could be very costly unless the larger part of training moves to the virtual environment and use of modern technologies (Thomas, 2022). In Namibia there is an outcry of lack of clinical practice space hence some groundwork would need to be done prior to increasing enrolment numbers – for example, constructing more teaching hospitals. Time constraint has been raised as an issue in online teaching. Thomas (2022) argues that online education is very time consuming in terms of lecture preparation and assessment grading. This, however, is mostly at initiation; and costs only get lower with time as electronic content is easily editable.

Dos Santos and Jayesakara (2020) support the idea of clinical education units (CEU) in reducing costs of nursing education. The CEU was found to be more cost effective in Australia. Although this may be expensive to set up it is not so costly to run once up. The CEU was more effective than the other two models that Dos Santos and Jayesakara (2020) studied (the clinical facilitator and clinical preceptor models).

Pedregosa et al. (2021) outline the following elements of a CEU:

- there is a commitment between academic and healthcare organisations towards student learning,
- a clinical mentor guides, instructs and supervises undergraduate students in the clinical environment,
- a link teacher who is an academic nurse hired by the training institution and without patient care responsibilities, liaises between academic and the healthcare organisation, coordinates the clinical mentor-student partnership and evaluates the learning-teaching process,

- the ward manager influences staff motivation and creates the conditions for a ward learning culture,
- a mentoring programme provides the clinical mentor with the skills and support needed to sustain students' learning, and
- meetings between the link teacher, the clinical mentor and the ward manager and the students are held to promote feedback.

Dyar et al. (2019) suggest the use of student-led clinical learning environments to develop competencies in clinical practice. This can have the advantage of reducing the number of staff required to supervise students hence reduce training costs as Dyar et al. (2019) state, in these kind of environments students make clinical decisions and get to support other students. The clinical educator involvement in this case is more supportive than active teaching.

Another way of cutting health care costs is through advocating for and enabling dual roles for healthcare professionals. One such role of interest is the nurse-paramedic. Edge Hill University recently introduced a master's level nurse paramedic course. It is set to bridge the gap between transporting people to the hospital and ensuring that those who need primary and urgent care get it quick enough (Royal College of Nursing [RCN], 2022). Simply put, many a people are conveyed to the hospital unnecessarily and many more are not reached in time. Yet a professional who can decide on care and give that care on spot can be created, releasing staff and other resources to reach those in need of urgent conveyance to hospital.

Educating Them to Give Culturally Competent Care. O'Brien et al. (2021) examined the cultural competence educational interventions in an integrative review and found that what better prepares students to serve a culturally diverse community includes simulation and scenarios that solicit culturally considerate responses from the students. In addition, web-based learning and clinical practice situations that afford intercultural relations were found to be effective educational interventions. As Mkandawire-Valhmu (2022) puts it, nursing is a

relational profession and at times as nurses we find ourselves struggling to relate with patients who perceive reality differently from us. This can be further compounded by lack of trust among patients because of some social injustices such as genocide and homophobia.

One of the population groups that continues to face healthcare environments that fall short of providing culturally competent care is the transgender population. Gokilapriya and Annalakshmi (2022) illuminate the extent to which the transgender community is stigmatized in society. This population continues to suffer many forms of abuse and unemployment, and this is psychologically harmful (Gokilapriya & Annalakshmi, 2022). Nurses should not be found among the perpetrators of abuse as they are mandated to not discriminate. Indeed, the American Nurses Association Code of Ethics for Nurses states that the nurse must be compassionate and respectful of the dignity, worth and unique attributes of every individual and that the nurse “promotes, advocates for, and protects the rights, health, and safety of the patient” (Haddad & Geiger, 2022, para. 3). Yet there exists a dilemma in trying to be inclusive when caring for LGBTQI+ patients in some settings. Sherman et al. (2021a) point out that about 72 nations criminalise LGBTQI+ identities and behaviours and, in such settings, the integration of the LGBTQI+ content into nursing education may be disallowed. Nurses and nurse educators need to understand the policies that may threaten the safety of this population and be better prepared to serve it without jeopardizing its safety (Sherman et al., 2021a). Sherman et al. (2021b) argue that if legislature that protects transgender and gender diverse populations does not exist, nursing students and their educators may not have the knowledge on and appropriate attitudes towards this population group and their healthcare needs. The area on inclusive legislature is said to be insufficiently studied by Sherman et al. (2021b).

Henriquez and Ahmad (2021)’s study revealed that healthcare providers generally lack an understanding of the LGBTQ culture which affects the ability to provide competent, sensitive care. According to Henriquez and Ahmad (2021) most healthcare settings are found

to have heteronormative assumptions and tend to ignore the existence of LGBTQ identities. Such attitudes marginalise this population and could negatively impact their health seeking behaviours. Kumar (2024) contends that diversity, equity and inclusion are imperative in nursing education. Henriquez and Ahmad (2021) iterate that LGBTQ cultural competency education adds knowledge to healthcare givers on how to provide care to this population comfortably leading to patient satisfaction and feelings of safety among patients. Nurses who are culturally competent would know how to elicit responses from the patients on the ways they prefer to be addressed, what gender they identify with and their medical and surgical history for example (Cicero & Black, 2016, as cited in Koch et al., 2021).

Eickhoff (2021) in a study on 'Identifying gaps in LGBTQ health education in baccalaureate undergraduate nursing programs' found that majority of nurse training institutions taught less than 5 hours' worth of content on LGBTQ with 13.3% of the schools not covering the said content at all. Only 22% of the schools indicated that they incorporated LGBTQ in their teaching on elderly and end of life care at a time when the world's population is largely ageing. Institutions that did not focus on the LGBTQ population cited lack of time as a hindrance. Eickhoff (2021), however, felt that this community was neglected, although acknowledging the difficulties faced by nurse educators in the quest to balance curriculum demands. In fact, liberal arts schools were found to cover more LGBTQ content and Eickhoff (2021) suggests that liberal arts be integrated into nursing programmes. Quite interestingly, about 67% of the schools indicated that they do not sufficiently educate student nurses on LGBTQ issues despite 62% of the students voicing that they needed the content. 62% of schools reported that faculty members lacked knowledge on LGBTQ matters hence were unable to teach it (Eickhoff, 2021). Faculty members can be empowered to be more receptive of this population through CPD programmes. It is when faculty is comfortable and knowledgeable enough on the healthcare issues affecting the LGBTQ that it can be better

positioned to formally teach modules/content on LGBTQ and influence the students in training to be more acceptive of the transgender and gender diverse individuals.

An awareness of one's own attitudes and stereotypical behaviours is a necessity if one is to provide genuine culturally competent care (Berie et al., 2021). The higher the level of education the higher the cultural competency nursing care score was in the study by Berie et al. (2021) on 'Cultural competence nursing care and its associated factors among nurses in Northern Ethiopia'. The score was higher among nurses who had a master's level of education (Berie et al., 2021). The authors explained that this could be due to the nurses having had opportunities to learn about culturally competent care during training. It could be argued that cultural competence is embodied within the core competencies 'patient-centred care' and 'communication and interpersonal skills'; however, treating it as a standalone competence could ensure it gets the sufficient attention it deserves.

Embracing Technology in Nursing Education. From as early as the 1990s nursing education began to incorporate technology into the teaching process. This was in the form of power-point presentations which started to be used in place of overhead projectors. In addition, emails became a common means of communicating (Axley, 2008). Since then, digital technologies have continued to evolve. Today countless virtual platforms are used both in informal and formal environments to communicate, teach, play, or entertain. And an equal amount is used in the education of nurses and other healthcare professionals.

Digitalisation. The initiation of technology in nursing education dates decades back. Gause et al. (2022) argue that technology has long been a part of nursing education justifying why they included studies from 2016 in their literature review. Undoubtedly there have been advances in technology and as the healthcare environment is transformed by digital technologies the need for schools to keep abreast of the advances in electronic medical records becomes even more relevant.

The need for nurses to keep pace with digital technologies cannot be overemphasised. Booth et al. (2021) argue that nurses have not kept pace despite the substantial advances in technology. The advantage of these advancements can be seen in the way telehealth and electronic devices have eased the assessment and care of patients. In settings where electronic records, telehealth, and video consultations are used, delays in seeking and receiving care can be averted. Patients need not travel to access health care; they can do it in the comfort of their homes. This is the 'now' in selected contexts and would benefit majority of populations if implemented in all care settings. For the nurse, exposure to these systems should start during training. Such a transformation cannot happen overnight; however, the work should be started. Nes et al. (2021) in an exploratory study on the use of digital technologies among nursing students and teachers state that "students need to be able to locate, evaluate, and use technology as a resource to be successful in both student and professional roles" (p. 329).

In this study by Nes et al. (2021), digital educational technologies were found to have the advantages of allowing for the integration of multiple learning tools (66%), asynchronous access (71%) and being affordable (68%). However, the disadvantages were quite significant, and these included that they hamper interaction between students and teachers (72%), reduce physical contact (77%) and that some users may be technically challenged (67%). The interaction between students and teachers can be promoted using blended learning as described later, whereas technical support is required to help students manoeuvre their way through virtual environments. In another study on the acceptability of google classroom, Huang et al. (2021) found that students appreciated google classroom and found the ability to review work after class quite helpful, others liked that they could use it on their mobile phones. The negative views were few and were related to the complexity of the platform (Huang et al., 2021). However, these can be circumvented by increased support and exposure.

Students, like most people, tend to be resistive of monotony and lone working. Virtual platforms should thrive to be as interactive as possible. One way of stimulating active learning in the classroom is the use of audience response systems (ARS). These encourage group problem solving and remove the probability of embarrassment when a student gives a wrong response as they cannot be spotted by either the facilitator or the peers (Atlantis & Cheema, 2015 & Grzeskowiak et al., 2015, as cited in Moran et al., 2018). The downside of ARS systems is that they have not been found to be beneficial in long-term knowledge retention (Atlantis & Cheema, 2015, as cited in Moran et al., 2018) even though they are largely accepted by learners who feel they make lectures more enjoyable. Cook and Steinert (2013, as cited in Moran et al., 2018) assert that e-learning helps remove geographic and scheduling barriers to continuing medical education. The benefit is even more pronounced when e-learning is accompanied by real-time feedback, self-assessments, user-friendliness, more time for completion and topicality (Maertens et al., 2016, as cited in Moran et al., 2018).

As nursing education evolves, educators are expected to help students become more technologically experienced. This expectation might just remain an expectation if certain obstacles to its implementation are not addressed. Some of the obstacles identified include task overload which may lead to the unavailability of academics to support students (Fawaz et al., 2018). This is even more so when the educators double up as clinical practitioners. Suggested solutions include creating strong partnerships between academic and clinical facilities and implementing internship programmes (Fawaz et al., 2018). The authors also echo that nursing residency programmes should receive more financial support citing that this would promote easy transition [of the graduates] into practice. Although the authors Fawaz et al. (2018) focused on postgraduate nursing education their findings and subsequent recommendations can be applied to undergraduates.

The clinical component of nursing education is critical in developing clinical competencies in nurse trainees. Physical simulations where physical manikins are used have been the dominating approach to the practical education of nurses and other healthcare professionals. It is unsurprising if both faculty and students appear to be sceptical about the notion of using a virtual environment for the simulation. However, virtual reality (VR) simulators have been found to be effective in medical education and especially so because they allow for repeated practice (Moran et al., 2018), and immediate feedback. Mosa et al. (2012, as cited in Moran et al., 2018) contend that smartphones enable trainees to easily access information on the diagnoses and management of the patient while at the patient's bedside.

Virtual reality has its pros and cons. The following are some of the advantages of virtual reality according to Pottle (2019):

- It is not resource intense. It saves money and faculty time. There is no need for extra training of staff as the software used is intuitive.
- VR setup is quick (takes less than 5 minutes) and requires small space. This means faculty can run other simulation activities while VR is ongoing.

Pottle (2019) states that, however, VR is not suited for all educational opportunities hence other procedures continue needing the conventional simulation method. The author gives an example of abdominal palpation and cannulation although of course the list goes beyond this. The examination of the abdomen is best simulated physically and talking to a patient about the prognosis of a disease might not be best learnt in a VR simulation. The characters in VR are controlled by artificial intelligence and hence may not be appropriate in meeting some of the learning objectives such as breaking bad news (Pottle, 2019). A student will learn much more about appropriate body language by observing a mentor giving news that is not so good to a patient than they ever might in a VR simulation.

Hitt and Tambe (2016, as cited in Da Silva et al., 2022) argue that digitalisation and the automation of processes can help reduce costs, medication waste and drug errors. The electronic medication record (eMAR) assists in the smooth administration of medication. And computerised tools, according to Da Silva et al. (2022) aid in reducing excessive documentation. Excessive use of technology has, however, its disadvantages. Users must continuously strive to ensure they remain ethical, and that nursing maintains its human touch. Da Silva et al. (2022) contend that technology should be properly evaluated and managed. When users are less familiar with the eMAR, or any other electronic records for that matter, they may be shy to use it. Oumer et al. (2021) in a study on the 'Utilization, determinants, and prospects of electronic medical records in Ethiopia' found that healthcare professionals who had been trained in eMAR were more likely to use it than those who were not. It would thus be beneficial if the eMAR concept can also be used during nurse training so that when the graduate nurse later assumes employment and is required to use the same, the transition becomes easier and the frustrations less. This will reduce errors in this 'teething' period as the nurse tries to familiarize her/himself with various systems linked to patient management.

According to Tavares et al. (2018), nurses have developed distance learning courses, educational software and virtual learning environments which can be used by health institutions in education programmes with the potential benefit of improving nursing care. Indeed, Haimour et al. (2022) state that, largely, nurses are ready to use e-learning. Prado et al. (2013, as cited in Tavares et al., 2018) believe that telenursing promotes and supports healthcare education remotely and that it should be part and parcel of nurse training curricula with the aim of preparing the nurses to serve the patients.

According to Doswell et al. (2013, as cited in Mackay et al., 2017) the incorporation of mobile devices into the clinical environment has escalated, and this, according to Mather and Cummings (2015b, as cited in Mackay et al., 2017) allows the student to construct knowledge

from an enormous pool of internet resources. And this can happen without the student leaving the patient's bedside. Later, it is discussed how resistors fear that students might make errors by putting into practice what they learnt in isolation from the internet. With or without this fear and with or without approving these practices students who have the access will 'look up' what they are unsure of or what they judge as controversial, on the internet. This is a habit that has become part of humans in the contemporary world. When you 'do not get it' the reflex is to 'look it up'. Hoping or wishing that it does not happen will not make patients safer; rather, acknowledging that it has become the norm is a good step towards ensuring that technology is used in a way that ensures safe patient care. What we can do as educators is contribute to the development of evidence-based resources that can be easily accessed via the internet by students and graduate nurses. Hoebes and Ashipala (2023) found that registered nurses reported use of cell phones as one of unacceptable behaviours observed in students. To address this, educators can inculcate responsible use of mobile phones as opposed to prohibiting their use.

As many communities continue to lament about the shortage of healthcare professionals it has become imperative that healthcare professional education considers ways of ensuring that faculty are not badly impacted by such shortages. According to "Virtual Simulations" (n.d.) podcasts, blogs and telehealth can be used by rural communities to educate nurses. "Virtual Simulations" (n.d.) further contends that the biggest step in nursing education today is the incorporation of virtual simulation with 65% of nursing programmes already using these. With virtual simulations students get to learn from experts who may be physically distant.

Yangoz et al. (2017) conducted a systematic review on 'The use of e-learning programme in nursing education' and had the following conclusions:

- Students who indicated that they were happy with the e-learning programme as a teaching method in one study would not take another e-learning programme unless they had the relevant devices and access to the internet.

- In another study there were no significant differences between e-learning and face-to-face learning in general, but students reported better "capability" and "independency" in e-learning while finding the lecture more effective and motivational.
- In a study on the introduction of e-learning in enhancing pain education in nursing the students generally appreciated e-learning, however, they preferred this to be blended with face-to-face learning.
- And yet another study on the use of an e-learning programme on paediatric medication management found the method to be more effective than a lecture.
- While one study found lectures to be more favourable than role playing and e-learning.

It can thus be concluded that while e-learning has several merits, it is not uniformly accepted and there are instances where face-to-face is a step above it. This suggests that blended learning may have a superior position in nursing education.

Foronda et al. (2020) carried out a systematic review on 'Virtual Simulation in Nursing Education' and found that 86% of the evidence indicated that students were positively impacted by virtual simulation. Virtual simulation was found to be effective in improving knowledge, skills, critical thinking as well as self-confidence and learner satisfaction.

According to "Trends in Nursing Education" (2022), there are several factors that predict the future success of online teaching and learning in nursing as presented in a 2021 report which was published by Wolters Kluwer and the National League for Nursing (NLN). Firstly, the accelerated move towards technology driven teaching is not going to come to a halt even when the pandemic becomes history. Secondly, students need to be encouraged to undertake projects that foster experiential learning as they make connections between coursework and the real world. Thirdly, higher education institutions need to focus on new ways to measure learning outcomes to determine if concepts have been mastered. Fourthly, there is need to improve technology infrastructures such as developing methods of enabling

distant interactions with simulation objects. Fifthly, there is need to commit to blended learning approaches which enable students to have access to their educators regardless of their geographical location. Lastly, learning opportunities need scaling up and wider platforms should be created for more students.

Dusquesne University, as reported by “Trends in Nursing Education”, (2022) has engaged in the following ways to promote skill mastery by students:

- The use of virtual patients which allows students to do physical assessments to come up with diagnoses and appropriate medical management.
- Virtual communities which allow students to interact with simulated characters with a variety of social and health backgrounds. The created scenarios help students learn about population-based health and primary care.
- Testing and assessment integrity. The software, Examsoft, allows the educators to create secure online exams. Student performance assessment and coursework evaluation can be done using this software.
- Course management. Students can stay in contact with faculty through web-based discussion boards, blogs and so on. Content, homework, and assignments are delivered via online platforms.
- Synchronous coursework. This is achieved through live classes which students value as they enable interaction with faculty and classmates.

Other institutions can adopt some of these ways to help skill mastery among students.

In their scoping review on ‘Technological literacy in nursing education’ Nes et al. (2021) found that only one study focused on nursing technological knowledge, skills, and competence and concluded that studies that bring technological competencies onto the spotlight are needed. And not only students’ competence in technology should be enhanced but also that of the educators as well. Nurse training institutions have a duty of preparing future

nurses for a technology-enriched healthcare environment. While some settings may be resource limited and incapacitated in terms of utilising advanced technologies in education and healthcare service, some may be technologically shy due to lack of exposure or lack of confidence. For most of the developing countries the most obvious hindrance is financial limitation.

As stated above some of the educators may be technologically naïve. The way that technological advances are accepted by different faculty members would tend to vary. Nsouli and Vlachopoulos (2021) put faculty members into three categories regarding their acceptability of technology as follows:

Pioneers: The pioneers value e-learning and see it as providing flexibility for nurses. They believe in new learning approaches and that technology is crucial in the future of healthcare.

Followers: Followers have neutral or passive attitudes. They acknowledge the importance of technology but do nothing to promote its use. They think they need extra training to enable them to use technology and agree that traditional teaching approaches are outdated for today's student. They feel that students are more competent than them in the use of technology. They lag in their pace behind the demands of this generation.

Resisters: These oppose the idea of the use of technology. They have negative attitudes towards the use of technology and feel overwhelmed by the curriculum and believe they do not have sufficient time to attend training workshops. Resisters focus on the challenges of using technology such as lack of consistency. They have a blame-shifting attitude and would blame institutions for the challenges. Without policies in place resisters will not use technology. Resisters hate that students study using their personal computers and submit assignments electronically. They feel that sourcing information from the internet is getting it the easy way. They feel that nursing has no room for error hence students' learning must not be left to them

but that they should be supervised. They also fear for their jobs. They fear that with increased use of technology their roles will be eliminated.

The way faculty members are categorised according to how they accept technology above does not fall far from the classification of nurse educators by Rogers. Rogers (1995, as cited in Nyoni & Botma, 2020) classifies the nurse educators as innovators, early adopters, early majority, late majority, and laggards. The innovators, like pioneers, take a leading role. They introduce the planned changes in the curriculum while the early adopters who are more like followers can be used to champion the implementation of the curriculum. Not everyone can be an innovator or a pioneer, the followers are needed because they are trusted by the majority hence are central to the effectiveness of change. The resisters should not be viewed negatively either. They may help keep in check the planned change and may at times be key to averting a disastrous move.

Joel et al. (2020) in a study on ‘Interactive Video Technology as A Mode of Teaching ...’, conducted at an institution of higher education in Namibia found that participants, who were student nurses, had both positive and negative experiences of the Interactive Video Technology (IVT) as a mode of teaching. The positive experiences included the advantages of being in the same virtual space at the same time with students from other campuses; that the technology was an effective way of teaching and learning and that this was resourceful in terms of both time and money. There were, however, challenges identified such as poor internet connectivity, poor sound system and lack of appropriate equipment. Only one venue was adequately equipped for these classes, and one IT person available Joel et al. (2020). If an institution of higher learning could face problems with internet connectivity it can be assumed that the students face even bigger challenges with the same when they are off campus.

Blended Learning. Looking at how the world of technology has evolved; resisters may feel that they have no place in nursing education. From where we stand right now, efforts are more likely to be placed towards followers than resisters, and the agenda should be to get the followers to the same level as the pioneers. It might be more worthwhile to expend energy on followers than on making resisters appreciate the need for change although of course a place may be found for them in approaches such as blended learning.

The effects of COVID-19 are a constant reminder that we have been too slow in embracing technology. Resisters would complain about lack of time to attend training workshops. This is not an unfounded complaint, and it need not be seen as such. It is critical that faculty management strategize on how best to assist faculty members acquire the skills that will make them more confident in using advanced digital technologies in curricula administration. Some fear that as technology takes over nursing might lose the human touch, yet this also need not be the case. In addition, some genuinely fear that students may be misled by some internet resources and end up jeopardising patient safety. Blended learning is one way of addressing such fears. Tertiary education institutions and governments should help students maximise the benefits of blended learning by offering technical support, guidance, and scholarships. ('Expanding Provision of Professional Education for Nurses, Africa', 2023).

Du et al. (2022) compared blended learning to the traditional approach and put forth the following advantages of blended learning:

- It is student centred which allows students to use existing knowledge while being guided and supported by teachers.
- Online learning resources are diverse making them relevant to different student needs (McLaughlin, 2013).
- Diversified teaching helps in the comprehension and mastery of skills.

- Since students still benefit from the traditional approach this means the need for interaction is met and communication between teachers and students is enhanced.
- Blended learning is cost-effective (Liu et al., 2020; Maloney et al., 2015).

Thus, by employing blended learning some of the fears echoed by resisters can be addressed. Nothing beats a real-life experience. Virtual simulators and simulation hubs do make it easier to reach more students at lower costs of travelling but a student who is taught at the patient's bedside is bound to be more confident than the one taught from a distance, using simulated scenarios. The patient does not have programmed responses to assessment questions, and this is something that will never change no matter how advanced in technology we become.

Narjes and Mousavizadeh (2022) argue that students, would rather have face-to-face learning than e-learning, generally, although students with family and professional responsibilities would prefer e-learning and the access to recorded lectures. Familiarity is one of the advantages of face-to-face learning; other advantages are that it gives room to better communication and control and that it allows for proper evaluation. Thus, blended learning helps meet the preferences of both population groups.

Acknowledging the Role of Social Media. Hernandez and Munyan (2020) conducted a review and found only two studies relating to the use of social media in graduate nursing education. They, however, found that social media has been used much more in other disciplines. Examples include Twitter, blogs, and YouTube. Sterling et al. (2018, as cited in Hernandez & Munyan, 2020) found that Twitter and blogs were used to develop clinical concepts and disseminate information.

In a case study by Giroux and Moreau (2022) on 'Nursing students' use of social media in their learning, some of the students indicated that they formally used social media to create patient-oriented health advocacy campaigns. And some stated they used it informally at the patient's bedside to assist them with health education citing YouTube videos as one of such

media. The authors assert that faculty could take advantage of social media use by students to develop specific competencies and meet some of the learning outcomes.

Hernandez and Munyan (2020) also found that one project on the use of social media designed by Shaw et al. (2016) helped students in the development of skills in critical inquiry and in health and social media literacy. Sterling et al. (2018, as cited in Hernandez & Munyan, 2020) found, from their systematic review, that Twitter and blogs were used to develop clinical concepts and to share information and that blogs were often used to start journal clubs intended to supplement learning.

At the beginning of the 21st century several studies looked at the use of social media in nursing education. Tuominen et al. (2014) did a study on the views of students on social media in nursing education and found that students used more applications in their free time than during study time. The exception was e-learning which was used the most for studying. Regardless, only 13% of the students used the e-learning environment daily in their studies. Schmitt et al. (2012) and Rodriguez (2011, as cited in Tuominen et al., 2014) pointed out that the delay in the use of social media was tied to lack of confidence among teachers regarding both technological and pedagogical skills.

Through using social media, nursing students become more knowledgeable about matters relating to privacy, ethics, professionalism, communication, and health policy. However, the risks associated with social media use in health care are of concern and can hinder its use. These include breaches in the protection of patient information, and unprofessional conduct. If correctly used the benefits of social media use outweigh the disadvantages. Nurse educators are called to lead the integration of social media into curricula. For, according to Sarginson and Cecilia (2024), it has the “potential to enhance student growth and learning across complex skill sets, facilitating success and supporting student development” (p. 8). And

according to a systematic review by Almutairi et al. (2022) using social media to support students' learning was found to promote rapid interaction and communication.

The sudden shift to increased use of the online environment driven by COVID-19 had negative financial implications in most settings. In a study by Moradi et al. (2022) both faculty and students complained of the high cost of equipment and internet. Members of the faculty could not even afford to buy personal laptops. Faculty members also felt unprepared to use the virtual platforms.

The Cost. We cannot, of course, overlook the fact that the initiation of online curricula is costly, however, once up and running the approach is indeed more cost effective than the traditional face-to-face tuition. The issue of unaffordability is not something that can be trivialized especially for resource limited communities. Most students in developing countries struggle to access the internet. For some this is due to not being able to afford the cost of the internet and for some it may be lack of internet connectivity in the remote areas they live in and yet for others to possess a reliable smart device is nothing but a dream. Challenges faced by students in different contexts are most likely as varied as the contexts are. Having students partake in research of this nature helped unravel the specific issues they face in the context of Namibia and thereby aiding in paving strategies for enabling the use of advanced technologies in the training of nurses.

No Turning Back. As we move towards completely embracing technology in healthcare education it is of paramount importance that its application in academia is in sync with the application in practice for the two cannot be addressed separately. In a systematic review by Fernández-Luque (2021) on 'Training in digital competencies for health professionals' the documents on digital competence appeared to be mostly developed in the academic context even though they were said to have been designed for healthcare

professionals to use in the workplace. It is thus recommended that such developments be a part of lifelong learning.

Pepito and Locsin (2019) voice that technological breakthroughs are occurring at an alarming rate with advanced technologies such as robotics and artificial intelligence transforming the nursing industry. The future will see more routine procedural nursing tasks being done by machines. It might seem as if nurses may become less relevant in the care of patients, and this can induce fear of losing control and endangering patients. Indeed Pepito et al. (2019) assert that home health care for older persons can be more sustainable with the use of advanced technologies than it can ever be with waiting for a healthcare professional to carry out all the care work. However, the same authors do point out that although technology can assist by taking up roles in the care of the elderly, nurses will not be replaced as they will remain needed for human interaction, empathy, and autonomy (Pepito et al., 2019).

Pepito and Locsin (2019) posit that the involvement of nurses in deciding what can be delegated to technology and what cannot, should not be undermined. This will ensure that care is rendered safely. The role of nursing education in harnessing technology in nursing is also critical. Technology and machine learning should be part of the nursing curriculum. This will enable graduate nurses to transition easily into their roles.

Most of Generation Z either just finished tertiary education, is in or will be in tertiary learning institutions within the coming few years. This generation, born between 1995 and 2010 (Seemiller & Grace, 2016), was born when the World Wide Web and handheld technologies became the major parts of technological advancement (Chicca & Shellenbarger, 2018). This knowledge coupled with the fact that the use of technology has taken a grip on the health care sector is the more reason why the health professional educators of today must be prepared and be comfortable with the use of technology in the training of health care professionals.

As Moran et al. (2018) would put it, “Healthcare and medical training have no immunity to universal, rapidly changing technology. In medical education, advances like simulations, virtual patients, and e-learning have evolved as pedagogical strategies to facilitate an active, learner-centred teaching approach” (para. 1). Now is the time to embrace advanced technologies not only in the provision of healthcare services but also in the preparation of healthcare service providers of the now and the future.

Chapter Summary

The purpose of this study was to examine challenges facing baccalaureate nursing education in the 21st century and determine if any relationship exists between challenges faced in clinical education and those encountered in theoretical education in nursing in Namibia. The literature review has identified that the focus on challenges faced in nursing education in Namibia has been on the clinical learning environment with in-class education not receiving as much attention. Digitalisation and its challenges in nursing education has also not been fully explored. Nursing education would benefit from more quantitative and mixed methods studies considering current approaches have been mainly qualitative and monomethod.

Nursing education comprises learning in the classroom and learning in the clinical setting with the aim of advancing the nursing profession. As discussed in this chapter, the primary goal of nursing education has not changed over the years but the expectations and the demographics of the recipients of care have changed necessitating changes in nursing education to align with the needs of the populations served by the qualified nurses.

The nursing curriculum has been historically influenced by tradition, trends, accreditation, and regulation (“Institute of Medicine”, 1995) while the drivers of changing healthcare environments include the ageing population, increased health care demands and use of technology. And according to Booth et al. (2021), responding to the complex healthcare environments requires nursing to embrace digitalisation.

The first part of the chapter defined the concept “nursing education” and explored the theories related to nursing education. The discussion set off with an overview of the novice to expert, the constructivist, humanistic, behaviourist, and cognitivist learning theories and the SLT and SCT. How these theories are applied in nursing was detailed before the researcher proposed the conceptual framework. The researcher conceptualised that the lower priority needs (humanist theory) which include cultural and linguistic needs, the mental and emotional state, learning ability, digital literacy, and internet access are a necessity while the pace at which a novice transcends to expert (novice to expert theory) would depend on the acquisition of these necessities. Prior experience (cognitivist theory) other external factors such as the environment (SLT & SCT) are also essential for learning whereas the importance of preferred learning styles (constructivists) cannot be overemphasised. Such learning styles would vary from auditory, kinesthetics, visual and reading/writing, role modelling (SLT), trial-and-error (behaviourist).

The researcher then provided an overview of the evolution of nursing education. As early as the 19th century, a group of women, under the Ladies Benevolent Society of Charleston, pioneered a programme of looking after the sick at home in Australia (‘Nursing in the 1800s’, 2016). The 19th century nurse, according to Hawkins (2010, as cited in Lane, 2020) was more like a housemaid, possessing little medical education. In 1860 the Nightingale Training School and Home for Nurses, an independent school not based in a hospital, opened in London (“The First Trained Nurses”, n.d.). This school certified close to 2 000 nurses by the end of the 19th century. Prior education was considered on enrolment into nurse training in this century as it is today, although, undoubtedly, the requirements are different. Today, one needs a reasonable understanding of science subjects to be admitted into nursing, with subjects such as Mathematics and Science being the most desirable in most African countries. Excelling in these subjects alone may not be a sufficient measure of one’s ability to nurse, however.

The 21st century has seen a high appreciation of evidence-based practice. EBP in nursing dates to the time of Florence Nightingale. According to Nightingale (1999) in Fee and Garofalo (2010) hygiene was neglected in the camp of the soldiers nursed by her during the Crimean War, and this together with the shortage of medicines and essential supplies fuelled infections.

Patients, today, are more knowledgeable about their conditions and come from a diverse population requiring diversified care. It is therefore pertinent that the nurse graduates are equipped with the knowledge and competencies that would enable them to meet the needs of the 21st century patient. The general understanding is that nurses with a baccalaureate qualification are well-prepared to meet these needs. Some scholars argue that this should be the minimum professional qualification of a nurse, and that the degree improves critical thinking and the ability to apply EBP (Blaauw et al., 2014 & Carvalho et al., 2017, as cited in Wakibi et al., 2020).

The Bachelor of Science Nursing degree which was first offered at the University of Namibia (UNAM) in 2008 (Klopper & Uys, 2012) is now offered at WU and IUM as well. Interestingly this qualification was first offered by the University of Minnesota for almost a century before it was in Namibia. Namibia might have started advancing in nursing education much later than other nations, but it certainly has not been spared from the drivers of healthcare transformation which include healthcare disparities in addition to an ageing population and associated co-morbidities (Salmond & Echevarria., 2017).

The literature review also presented an exploration of the challenges facing nursing education. Globally, one of the major challenges facing nursing education today relates to nurse educator shortage. The long-standing nurse shortage has affected the nursing faculty and will continue to do so as enrolment numbers into nurse educator programmes continue to decrease

(AACN, 2024). Nursing faculty has continued to lose staff to retirement, and to decisions by others to just leave the profession.

Various challenges were identified within the regional context. Frenk et al. (2010, as cited in Bvumbwe & Mtshali, 2018) contend that the failure of professional education to rise to the challenges affecting healthcare has been due to a mismatch between competencies and patient/population needs, lack of teamwork, and narrow technical focus among other causes. Examples of these challenges include students being counted in the staff numbers in the clinical practice areas (Mathebula, 2016); staff shortage and negative attitudes by registered nurses/midwives during night shift in Namibia (Amukugo et al., 2017). Other scholars found that students were not supported in implementing the nursing process (Munangatire & Nambuli, 2022) and they were concerned about the theory-practice gap, lack of exposure to cases that would help them learn, limited time for clinical practice, lack of equipment and infrastructure, discrimination and language barrier (Hatupopi & Nuuyoma, 2019).

In reviewing the challenges facing nursing education it was worth analysing the impact of the COVID-19 pandemic. It challenged educators to move away from the traditional face-to-face instruction to the virtual space. Although the initial response from a public health perspective was saving lives, the other effects of the pandemic such as its impact on nursing education were soon felt. Whereas undergraduate nursing students were either stressed or very stressed by online learning (Oducado & Estoque., 2021) online teaching meant educators could reach larger groups of students and allow asynchronous access to the same content in addition to enabling the shy student to participate (Esterhuizen, 2020).

The chapter concluded with a discussion around some of the strategies of addressing the challenges facing nursing education. The 21st century nurse must be culturally competent. As an example, cultural sensitivity and awareness of the LGBTQ community is a good attribute. Most healthcare settings tend to be heteronormative and ignore the existence of

LGBTQ identities (Ahmad, 2021), tendencies that could marginalise this population and negatively affect its health seeking behaviour. Kumar (2024) agrees that diversity, equity and inclusion are very important in nursing education. Cultural competence should be included in every nursing education curriculum.

Nursing education began to incorporate technology into the teaching process from as early as the 1990s with power-point presentations gaining popularity over time. Nurses need to keep pace with digital technologies; however, Booth et al. (2021) posit that nurses have not kept pace. Some of the advantages of these technological advancements include the use of telehealth and electronic devices which have eased the assessment and care of patients and have contributed to reducing healthcare costs. In addition, social media has gained a place in nursing education. Nursing students have been found to use the social media to create patient-oriented health advocacy campaigns and at the bedside to assist them with health education (Giroux & Moreau, 2022). Social media, thus, should be included in nursing education.

Although the initiation of online curricula is costly, once up and running the approach is indeed more cost effective than the traditional face-to-face tuition. However, it must still be noted that students and educators from resource-stricken communities struggle to access the internet let alone afford devices that support virtual learning. It is important to embed technology and machine learning into the nursing curriculum as this will enable graduate nurses to transition easily into their roles. Now is the time to embrace advanced technologies not only in the provision of healthcare services but also in the preparation of tomorrow's healthcare service providers.

CHAPTER THREE: RESEARCH METHODS

Research Approach and Design

In this section the research approach and design are presented. The researcher sets off by describing mixed methods research and why this approach was considered appropriate for the current study. This is followed by an exploration of the explanatory sequential design and its underlying philosophical assumptions. An outline of steps used in this design concludes the section.

Mixed Methods Research

The design of choice was the explanatory sequential design, a type of mixed methods design. Mixed methods research (MMR) involves the collection of both qualitative and quantitative data followed by integration of the data at some point in the research process, enabling meta-inferences (Polit & Beck, 2021). Creswell (2014, as cited in Creswell & Plano Clark, 2018) state that in MMR, the researcher:

- exercises rigour when collecting and analysing qualitative and quantitative data to answer research questions,
- combines the forms of data stated above and their results (findings),
- logically provides procedures for conducting the study using specific designs, and
- ensures the formulated procedures can be theoretically and philosophically explained.

By using both the quantitative and qualitative approach, mixed methods research (MMR) gains the ability of cancelling out the limitations of each approach thereby providing stronger evidence and more credible findings (“Mixed Methods Study”, n.d.). Speaking of research in the business arena, Molina-Azorin (2016), contend that obtaining results from different methods enhances the understanding of issues in business. The same would apply to education research. Timans et al. (2019) also agree that in MMR different ways of knowing are brought together to produce better knowledge of a phenomenon. The purpose of MMR

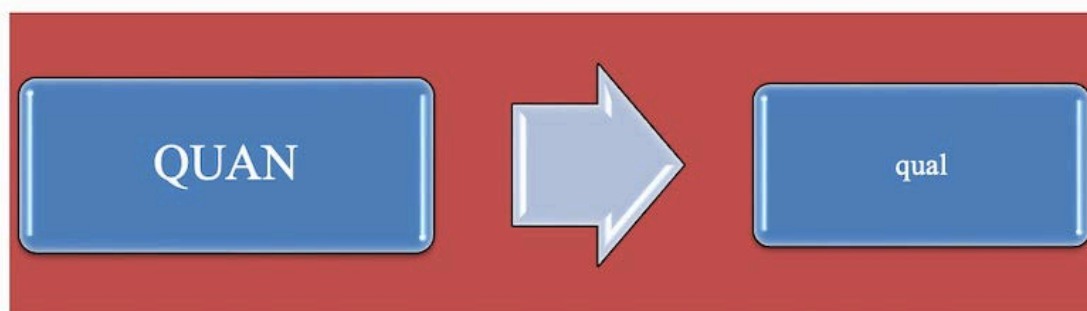
is to yield an extensive understanding of research problems and phenomena which would be impossible if a monomethod was used (Newcastle University, n.d.).

On the downside, MMR is not without complexity, hence it requires a high degree of expertise in addition to being quite resource intense (“Mixed Methods Study”, n.d.). The researcher also needs to have some knowledge of both qualitative and quantitative approaches (Creswell & Plano Clark, 2018). However, Molina-Azorin (2016) argues that the lack of skill in both approaches should not be seen as a hindrance but rather as an opportunity. An opportunity to learn. The researcher has used both approaches in the past in dissertations submitted for academic purposes. This experience was very valuable, and the researcher embarked on this study with a full awareness that MMR is more than just collecting data quantitatively and qualitatively; it is how the different data sets are integrated to deepen the understanding of the phenomenon under investigation. As Creswell and Plano Clark (2018) put it “researchers gain new knowledge that is more than just the sum of the two parts” (p. 13).

Creswell and Plano Clark (2018) propose three core mixed methods designs: the convergent design; the explanatory sequential design and the exploratory sequential design. Within the convergent design the results are merged and compared then interpreted whereas the exploratory sequential design involves utilizing the qualitative phase results to build quantitative instruments. The instruments designed from the qualitative phase can then be tested or applied in quantitative data collection and analysis (Creswell & Plano Clark, 2018). The third type, the explanatory sequential design entails collecting quantitative data first and then qualitative data in the second phase with priority given to either approach (Polit & Beck, 2021). In this study the researcher prioritised the quantitative phase. The weighting can be visualised as presented in Figure 6 below.

Figure 6

Quantitative and Qualitative Weighting



Why mixed methods? Quantitative and qualitative designs have been used in similar studies. Elbilgahy et al. (2020) used the standardized Clinical Learning Environment Inventory (CLEI) tool together with another quantitative tool that they designed to investigate the challenges facing clinical nurse educators and nursing students in the clinical environment in Saud Arabia and Egypt. The authors were able to statistically draw conclusions and compare mean scores, which is quite objective and is one of strengths of quantitative designs. One of the conclusions was that an ineffective learning environment makes teaching difficult and leads to an under-implementation of some nursing procedures (Elbilgahy et al., 2020). Of note is that the respondents had to choose from pre-listed consequences of an ineffective learning environment as opposed to them fully expressing themselves on this which could only be possible with a qualitative approach.

By including both the opinions of instructors on difficulties experienced in the clinical environment and their opinions about the effects of the difficulties experienced in clinical practice on teaching, Dağ et al. (2019) probably got data richer than what is ordinarily obtained from quantitative studies. However, it is possible that the instructors might have wanted to freely share their opinions instead of being restricted to ticking the list.

Moradi et al. (2022) found that the most important challenges of asynchronous e-learning were inappropriate groundwork and low inclination to virtual education. These were conclusions drawn from a qualitative study which involved 12 members of a nursing faculty and 8 undergraduate nurses of the Urmia School of Nursing and Midwifery in Iran. In another qualitative study, Kaveh et al. (2022) used in-depth semi-structured interviews to collect data in a study on 'Perspectives of students and clinical educators on clinical nursing education during the COVID-19 pandemic'. The prevalent themes were an injured clinical nursing education (CNE) system, CNE under fear and lessons learnt from the pandemic. These were retrieved from the subjective information provided by the participants.

Munangaire and Nambuli (2022) also justify the use of a descriptive exploratory qualitative approach in a study on 'Nursing students' perceptions and experiences of utilising the nursing process at a university teaching hospital in Namibia'. They contend that the approach allowed the participants to express their experiences and perceptions. Conclusions included that the students experienced that the nursing process was not well supported and that their perceptions on the use of the nursing process were generally positive. These are conclusions drawn from a small sample as is the norm with qualitative research since participants are purposively selected with no intention to generalize the findings.

Elsewhere, Jamshidi et al. (2016) published a paper on 'Challenges of nursing students in the clinical learning environment', which is a part of a larger grounded theory study. And through content analysis concluded that Iranian students faced challenges of ineffective communication, inadequate preparation, and emotional reactions within the clinical environment. In all these instances a monomethod was followed.

The qualitative designs in the above studies afforded the authors a deep exploration of phenomena but would not objectively measure the important challenges uncovered. Qualitative designs are valuable in the exploration of phenomena that may not be well-known. For

example, after un-earthing the challenges of asynchronous e-learning by Moradi et al. (2022), one could follow this up with a quantitative study that would then reveal the significance of each uncovered challenge. This could have been done within the same study using an exploratory sequential mixed method design or a separate follow-up quantitative study.

The reviewed literature revealed that most research in nursing education has been largely monomethod. Even though MMR is resource intense as stated earlier, there is need for nurse researchers to capitalise on its advantages. One study conducted by Younas et al. (2019), looked at the prevalence of mixed methods research in nursing journals and found it to be 1.89%. A further analysis in this review revealed several issues which indicated that researchers faced challenges with using mixed methods research: 29% of the 175 studies did not explicitly state the study design, 31% failed to justify using mixed methods as a design. Whereas 95% did not state the research paradigm, 78% did not indicate the weight carried by each phase (Younas et al., 2019).

Bressan et al. (2017) critically evaluated mixed methods research papers and found that research methodology was less rigorous for most of the papers and inconsistencies existed in application and reporting. The authors observed that this has negative implications in providing direction to novice researchers. Earlier, in 2011, Lopez-Fernandez and Molina-Azorin (2011) evaluated the use of MMR in interdisciplinary education and concluded that from the three journals evaluated over a 6-year period majority (25.6%) of the articles used the quantitative approach, whereas 21.4% employed the qualitative approach and only 9.2% used the mixed methods approach. The justification of the small proportion of mixed methods studies could be that MMR was quite new then, however, this remains low in some disciplines to date. Of note is that one of the journals evaluated by Lopez-Fernandez and Molina-Azorin (2011), the Academy of Management Learning & Education (AMLE) journal, was ranked highest in the field of education in management in 2010, the other two being the Educational Psychological

review (EPR) and Journal of Learning Sciences (JLS) (Lopez-Fernandez & Molina-Azorin, 2011).

Mixed methods research, referred by others as the third paradigm, is gaining popularity now and its early definition, according to Creswell and Plano Clark (2018) was in 1989 by Greene, Caracelli and Graham. Although some research problems may require mixed methods, some are best answered using a monomethod and as Creswell and Plano Clark (2018) contend, the importance of either the quantitative or qualitative approach should not be minimised because there are some research questions that would be best answered by either approach. The same authors suggest matching methods to different types of research questions rather than to specific content topics. Setting off with the problem on challenges faced in baccalaureate nursing education within the context of Namibia, the researcher used extensive literature searches and reflection before deciding that a mixed methods approach would better suit the problem and its context. Quantitative data was collected and analysed to provide evidence of the existence of the challenges and the qualitative data enabled an in-depth exploration of identified challenges and perceived strategies of addressing them. The integration of the findings provided a greater understanding of this phenomenon.

The Explanatory Sequential Design and Underlying Philosophical Assumptions.

“The explanatory sequential design is a mixed methods design in which the researcher begins with a quantitative phase and follows up on specific results with a subsequent qualitative phase to help explain the quantitative results” (Creswell & Plano Clark, 2018 p. 77). According to Creswell (2009), the explanatory sequential design is popular in MMR and within this design, weight is given to the quantitative data whose results are used to inform the qualitative data collection which happens in the second phase. The researcher explained the quantitative results using individual interviews. To guide the use of this design post-positivism and constructionism perspectives were employed.

A paradigm can be described as a general perspective of the intricate processes of the world (Polit & Beck, 2021). Paradigms related to human inquiry would seek to describe the nature of reality and the relationship between the inquirer and those being studied (Polit & Beck, 2021). The former being referred to as ontology and the latter as epistemology. The researcher chose to use more than one worldview in this mixed method study. According to Creswell and Plano Clark (2018), researchers using the mixed methods design can use multiple paradigms.

The survey is within the postpositivist paradigm whereas the second phase, which utilised individual interviews, is within the constructivist paradigm. Positivists emphasise the importance of objectivity and try to keep at bay personal beliefs and biases in what is called a scientific approach (Polit & Beck, 2021). Post-positivists, however, recognise the impossibility of total objectivity. On the other hand, the worldview of constructivists dwells on the meaning of phenomena which is formed through participants and their subjective views (Creswell & Clark, 2018). Creswell (2013, as cited in Creswell & Clark, 2018) identifies some assumptions of post-positivists and constructivists as summarised in Table 4.

Table 4

Post-positivism versus Constructivism Assumptions

Philosophical question	Post-positivism	Constructivism
Ontology (what can be known and how can this be known?)	Singular reality – the researcher rejects or fails to reject the stated hypotheses.	Multiple realities – quotes resulting from the individual interviews were used to explain/substantiate different perspectives.
Epistemology (how will knowledge be gathered what	Distance and impartiality - the quantitative instruments were completely structured, self-	Closeness and subjectivity - the researcher conducted the

are the sources of the knowledge)	administered and submitted via an online link.	individual interviews via Microsoft Teams.
Axiology (what is the classification of values)	Unbiased – stratified random sampling was used, developed instrument was piloted and adjustments made as needed, the quantitative instrument used a Likert scale type of items with respondent selecting responses with no influence from the researcher.	Biased – might be difficult to eliminate as researcher uses personal interpretations, although measures were put in place to reduce these.
Methodology (what are the procedures and techniques used to answer the research question?)	Deductive – involves the testing of a theory.	This can be inductive or deductive. When it is inductive patterns are identified and reported as they emerge. The researcher used a deductive approach and started with what the participants stated as challenges and explored these further.
Rhetoric (the art of writing)	Formal style – the variables are explicit, and writing is formal.	Informal style – the writing is more informal than it is formal. The intention is to not ‘refine’ the participant’s meaning.

In the quantitative phase the researcher rejected the following hypotheses:

- H_0 Baccalaureate nursing education in the 21st century, in Namibia, is not faced with challenges.
- H_0 Clinical education has no association with theoretical education.

To ensure objectivity the quantitative research instrument was completely structured, and the method of administration was uniform. Each respondent individually completed the questionnaire. Only parts of the questionnaire were extracted from validated instruments developed by other researchers; other sections were developed with reference to literature. Thus, the whole questionnaire was subjected to measures of ensuring validity and reliability. Five nurse educators with expertise in the field were engaged to check for face and content validity. The tool was also piloted, and adjustments made as needed. Question item formulation was varied to increase engagement and reduce socially desirable responses thereby enhancing objectivity. The Cronbach's alpha (CA) was used to measure the reliability of the questionnaire responses. Data collected was subjected to statistical analysis, in the form of Exploratory Factor Analysis (EFA) and conclusions were reached through deductive reasoning. Study variables were explicitly defined as presented later in the chapter.

Individual interviews yielded multiple realities. Since the researcher was the interviewer there was closeness to the participants. The data collected was subjective with direct quotes being used to substantiate findings. It may be difficult to eliminate bias as the researcher used personal interpretations, although measures to ensure trustworthiness were put in place to reduce these. Reasoning herein is inductive with the researcher relying on information provided by the participants to build themes, theories, and interpretations. Efforts were made not to lose the participants' meaning. Data collection and analysis as well as data collection instruments are detailed later in this chapter.

Why an explanatory sequential design? It is a straightforward design that can be done by a single researcher. Another advantage is that results can be presented in two separate papers (Polit & Beck, 2021). The intention of using the explanatory sequential design may be, according to Molina-Azorin (2016), to test variables with a large sample and follow this up with an in-depth exploration of [some] of the quantitative results during the qualitative phase.

A weakness of this design is that the second phase cannot begin until data analysis from the first phase has been completed (Polit & Beck, 2021).

The researcher believed that findings from the quantitative approach could be greatly enhanced by a second source of data. The exploratory sequential design was decided against because the researcher felt that there is sufficient information available to design a quantitative tool. In addition, the researcher was interested in knowing what the significant challenges were within the context of Namibia and explore these further by interviewing the nurse educators and the nursing students. The results helped inform decisions on what could be done to maximise student nurses' learning experiences.

Using this design taps into the advantages of MMR, which, according to Polit and Beck (2021) include the following:

Complementarity — Words and numbers complement each other in the use of quantitative and qualitative data.

Practicality — The researcher is not tied down to a single approach but gets 'to use whatever method is possible' to answer a pertinent question.

Enhanced validity — Through the triangulation of methods validity is enhanced.

The explanatory sequential design has, according to Creswell and Plano Clark (2018), two variants: the follow-up explanations and the case-selection variants. The researcher chose the former which involves placing more emphasis on the quantitative phase and using the qualitative phase to explain the results from the initial quantitative phase. The researcher was interested in exploring the phenomenon qualitatively but needed the initial quantitative results to be able to select participants purposively (Creswell & Plano Clark, 2018).

Steps in explanatory sequential design. The steps in the explanatory sequential design are summarised in Figure 7 below.

Figure 7

Explanatory Sequential Design Steps



Adapted from Polit and Beck (2021).

Step 1: Design and implement the quantitative strand

The quantitative phase sought to answer the following research questions:

1. What challenges are faced in the baccalaureate nursing in-class and clinical education in Namibia?
2. What is the relationship between challenges faced in in-class education and those in clinical education within the baccalaureate nursing education in Namibia?

The researcher conducted a survey among nurse educators and nursing students meeting the eligibility criteria. A link to the survey was shared via Google forms to the sampled participants. Completed questionnaires were automatically submitted when the submit button was clicked at the end of the questionnaire. The collected data was analysed using descriptive statistics and exploratory factor analysis. Participants for the qualitative phase were selected based on the results obtained from the quantitative data analysis.

Step 2: Connect quantitative results to the qualitative phase

It is within this step that the mixing of methods becomes apparent. The qualitative phase is completely informed by the quantitative phase. As Creswell and Clarke (2018) posit, "... the researcher develops or refines the qualitative research questions, purposeful sampling procedures, and data collection protocols so they follow from the quantitative results" (p. 80). The researcher decided which quantitative results needed explaining. The intention was to explain significant results. The research questions were refined at this point and the researcher determined which participants would best answer the qualitative questions. By purposively sampling those participants who could help explain the specific results the qualitative phase was further connected to the quantitative. In addition, the interview questions were guided by the quantitative results.

Step 3: Design and implement the qualitative strand

The interview guide comprised semi-structured interview questions and the data was collected through online individual interviews. Data saturation determined the number of interviewees. The interviews were recorded with the permission of the participants. Thematic analysis of the collected data was conducted.

Step 4: Interpret the results

The researcher interpreted the data from both phases separately. This was followed by an integration of the study findings which used the qualitative results to explain the quantitative results.

Below is an excerpt portraying this process as applied in the current study:

Quantitative result: Quality of e-learning resources (Factor 2) – supported by item access to online or virtual technologies (factor loading 0.739).
Interpretation – these technologies are not accessible.



Qualitative question: What can you say about availability of open-source software for learning and teaching? (e.g. moodle, canvas)



Who can best answer this question? – purposively sample (See Table 6)



Qualitative result: Sub-theme 2.1: Perhaps virtual is not the best.



Results integration: When the interviewees explained how virtual learning is not always the best and the difficulties surrounding failing to connect and stay connected, they provided a deeper insight on the quality of e-learning resources ...

Population and Sample of the Research Study

The study setting, population, sampling and sample size are presented in this section.

Study Setting. Data was collected from nursing students and nurse educators who met the inclusion criteria as described in the eligibility criteria section. The study setting was made up of two of the three nurse training institutions in Namibia that offer the baccalaureate nursing degree qualification: International University of Management (IUM) and Welwitchia University (WU). The third nurse training institution was excluded for logistic reasons – efforts to get faculty and student lists proved to be quite challenging, despite having been ethically cleared to conduct the research. All other nurse training institutions train nurses at levels lower than baccalaureate hence were not relevant in this study.

IUM was a non-degree awarding body when it was first founded and it obtained its university status in 2002, a decade after the foundation of UNAM. It started with one student and by the time it celebrated its 20th anniversary in 2022 it had a student population of over 13

000 students (Introducing IUM, n.d.). IUM boasts of the main campus situated in Dorado Park, the city branch, the Ongwediva Centre of excellence, Nkurenkuru Campus and the Coastal Campus. The faculties include business administration, education, health and social sciences, information, and communication technology (ICT), strategic management, tourism, hospitality and events management, school of postgraduate studies and a centre of environmental studies (International University of Management, n.d.). The faculty of health and social sciences has three departments: the department of nursing and midwifery from whence the Bachelor of Nursing programme runs, department of health and wellness, and the department of pharmacist assistant (School of Health Sciences, n.d.).

About a decade later, in 2013, Welwitchia Health Training Centre (WHTC) now known as WU opened its doors. It had six campuses when the study was conducted and is still growing; the Walvis Bay, Kombat, Nkurenkuru, Katima Mulilo, Outapi campuses, and Windhoek campus, which is the main campus (Welwitchia Health Training Centre, n.d.). The Clara Barton School of Nursing runs a certificate in nursing, and some postgraduate courses in nursing in addition to the Bachelor of Nursing Science degree.

Population. A population is defined as all the cases the researcher is interested in wherein the accessible population conforms to the set criteria and is accessible for a study and the target population are the cases about which the study findings could be generalized (Polit & Beck, 2021). In this study the target population consisted of all nurse educators who taught clinical subjects to and supervised baccalaureate nursing students in the clinical area, and all baccalaureate nursing students in Namibia.

Baccalaureate Nursing Students. Students enrolled into the baccalaureate nursing programme follow a 4-year pathway of nursing education that culminates in a Bachelor of Nursing Science. The candidates come either straight from high school or they may have a prior qualification. Entry requirements are similar for each institution. A candidate is required

to have a minimum of 25 points and should have passed English language at Grade 12 ('Welwitchia University School of Nursing', n.d.).

Class sizes average 80 students per class. As an example, Nhokwara et al. (2022) argues that a class of 85-100 students at one of UNAM's campuses is too large and is a matter of concern with class sizes being at an average of 80-120 at the specific campus. The accessible population as provided by the two institutions were 257 and 1024 for IUM and WU respectively.

Nurse educators. The lists provided by the institutions had 9 and 31 nurse educators for IUM and WU respectively.

Inclusion criteria:

- Bsc Nursing students: All in their second, third or fourth years, from the two institutions, IUM and WU and their respective clinical courses educators.

Exclusion criteria:

- Nursing students below the age of 18 as the consenting process would then require the involvement of parents/legal guardians.
- Nurse educators not teaching clinical modules.
- Campuses which did not have all 4 academic years in operation, for example, some WU's campuses which had recently opened at the time of data collection.

Sampling and Sample Size. The quantitative phase employed stratified random sampling whereas participants were purposefully selected for the qualitative phase. With stratified random sampling, the population is divided into homogenous subsets from which participants are selected randomly (Polit & Beck, 2021). Because probability sampling is used to select the elements in the sample, stratified random sampling permits statistical inferences from the sample to the target population thus enhancing external validity. However, stratified sampling is not possible when the population cannot be subdivided into distinct subgroups (Sharma, 2017). In the current study the population could be divided into distinct subgroups.

Individual online interviews were conducted through Microsoft (MS) Teams and data saturation was reached with 7 nurse educators and 11 nursing students who were purposively selected. Data saturation is a concept used to determine whether the data collected is adequate to address research questions or support the researcher's study findings (Naeem et al., 2024). Thus, the qualitative sample comprised 7 nurse educators and 11 nursing students.

The Stratified Random Sampling Process. The study population (Table 5) consisted of nursing students in years 2 to 4 and nurse educators who taught clinical subjects and met the eligibility criteria as described earlier.

WU campuses that were included were the Windhoek, Nkurenkuru, and Kombat campuses while for IUM the participants were from the Windhoek Dorado campus which was the only campus offering the programme when this study was conducted.

Table 5

Study Population

Institution	Campus	Students	Nurse Educators
WU	Windhoek	408	10
	Kombat	325	11
	Nkurenkuru	291	10
IUM	Windhoek Dorado Campus	257	9
Total		1281	40

Whereas 1024 nursing students from WU made up the study population, 257 who comprised this population were from IUM. And the nurse educator study population was made up of 31 educators from WU and 9 from IUM.

Student Nurse Ratios

257 (IUM):1024(WHTC)

Which reduces to 1:4

Nurse Educator Ratios

9(IUM):31 (WHTC)

Which reduces to 1:3

Sample Size Calculation

Using YAMANE's formula:

$$n = N/1+N(e)^2$$

Student nurses:

$$n = 1281/1+1281(0.05)^2$$

$$n = 1281/1+1281(0.0025)$$

$$n = 1281/4.2025$$

$$n = 304.8 = \mathbf{305}.$$

Nurse educators:

$$n = 40/1+40(0.05)^2$$

$$n = 40/1+40(0.0025)$$

$$n = 40/1.1$$

$$n = \mathbf{36}$$

Nursing Student Proportionate Sample Size

WU

$$4/5 \times 305 = 244 \text{ (every 4}^{\text{th}} \text{ student was selected)}$$

IUM

$$1/5 \times 305 = 61 \text{ (every 4}^{\text{th}} \text{ student was selected)}$$

Nurse Educator Proportionate Sample Size

WU

$$4/5 \times 36 = 29$$

IUM

$$1/5 \times 36 = 7$$

Once the number of potential nursing student participants from each institution was established systematic random sampling was applied to determine who got to participate. The sampling frame consisted of all eligible nursing students per institution. To reduce systematic bias all eligible student names were arranged from second year to fourth year, and every K^{th} student was selected. This was calculated by dividing the population (sub-population) by the sample size (sub sample size). For example, from IUM nursing student population this was calculated as $257/61 = 4.2 = \text{every } 4^{\text{th}} \text{ student was selected}$. The nursing student sample size was initially calculated as 305, but only 220 students were reachable (accessible). Of the 220 nursing students who could be reached 159 completed the questionnaire of which 130 were from WU and 29 were from IUM resulting in a proportion not far from the calculated one.

Due to the small sample size all nurse educators, as they met the eligibility criteria, were approached except for 2 who completely refused to participate; thus 38 were approached. A total of 28 nurse educators responded with 5 being from IUM and the rest (23) from WU falling slightly off the calculated proportion of 1(IUM):4(WU). Justification of the final sample sizes is discussed under the implications.

“Purposive sampling, also known as judgmental, selective or subjective sampling, reflects a group of sampling techniques that rely on the judgement of the researcher when it comes to selecting the units ... that are to be studied” (Sharma, 2017 p. 751). Purposive sampling is ideal in qualitative research as it enables the selection of individuals who can best answer the research question. The most significant disadvantage of this method is its impact on the generalization of study findings, when used in quantitative research. Interview participants were selected using criterion purposive sampling. As Polit and Beck (2021) posit, with criterion sampling the researcher predetermines the criterion of importance and uses that to select the participants.

Since the intention was to understand further the challenges faced by nursing students and nurse educators in teaching/learning the researcher listed participants who had higher scores and those who had borderline scores. The latter were included with the intention of gaining insights from those whose scores leaned towards ambivalence. The higher Likert scores indicated the existence of a challenge thus when added the higher the sum the more the challenges reported by the participants. For example, one nursing student listed in the sampling frame had a score of 259 while another had a score of 148 for clinical learning challenges where the highest attainable score was 310. The sampling frame comprised 20 nursing students of which 5 had borderline scores and 14 nurse educators of which 3 had borderline scores. (See Tables 6 & 7). Interestingly, when given an opportunity to explain the challenges faced, participants with borderline scores spoke strongly about having faced/experienced challenges (see direct quotations in Chapter Four).

Table 6*Nursing Student Purposive Sampling Frame*

Participant number	In-class – score*	Clinical – score**	Pseudonym
W207	151	259	Jojo
W171	147	251	
W016	137	240	Lucia
M224	141	239	Luna
W031	155	237	
W209	147	228	
W042	90	220	
W232	141	220	
M241	122	220	Rosy
W035	111	203	Jade
W020	127	200	Amazing
M239	106	193	Nancy
W037	93	183	Emilia
W038	86	160	Tuli
	Mid-score 87.5	Mid-score 155	
W087	88	155	
M203	74	155	
W230	82	153	
W175	87	152	Ndapandula
W052	74	148	Rose
Highest attainable to support challenges	175	310	

*46-151 score range

**86-259 score range

Table 7*Nurse Educator Purposive Sampling Frame*

Participant Number	Score – In Class*	Score -Clinical**	Pseudonym
ML210	88	144	
WL006	98	138	Chuchu
WL002	92	135	Nande
WL009	101	132	
WL001	94	132	XY
WL018	84	127	
WL015	82	120	
WL022	85	118	Peter
WL029	87	116	Bird
WL024	76	114	
WL016	66	110	
	Mid-score 59.5	Mid-score 91	
WL007	61	93	Judy
WL012	62	93	Selma
WL014	53	92	
Highest attainable to support challenges	119	182	

*36-101 score range

**58-144 score range

Instrumentation of Research Tools

The researcher describes how the quantitative and the qualitative data collection tools were developed.

The Quantitative Data Collection Tool

Using a pre-existing questionnaire in quantitative studies has the advantage of avoiding the need to test it for reliability or validity. The option of adapting or creating a new questionnaire is available when the researcher concludes that existing questionnaires are not suitable for some of the variables. The researcher did not find a suitable existing questionnaire hence created one by bringing together sections of and/or items from existing instruments that closely measured the challenges faced in nursing education in the context of Namibia. Few of the items were created solely from literature. The survey questionnaire (Appendix 1) consisted of 3 main sections: A, B & C representing demographic characteristics (11 items), in class learning challenges (36 items) and clinical learning experiences (34 items) for the student questionnaire and representing demographic characteristics (12 items), in class teaching and learning challenges (37 items) and clinical learning experiences (31 items) for the nurse educator questionnaire. When the data was subjected to Exploratory Factor Analysis (EFA) the clinical learning experiences reflected challenges in clinical learning. The questionnaire was administered in English.

Development of the Survey Questionnaire. Quantitative data was collected using a self-administered structured questionnaire, which is a type of structured self-report instrument. “Structured self-report instruments consist of a set of questions (often called items) in which the wording of both the questions and, in most cases, response options is predetermined” (Polit & Beck, 2021, p. 281-282). Likert-type summated rating scales are a type of structured self-reports which consist of response options that allow respondents to indicate their viewpoint on the issue (Polit & Beck, 2021). Whereas the demographic questions were multiple choice the

rest of the survey used the Likert scale type of questioning. The contents of the survey questionnaire are outlined in the sections that follow.

Demographic Characteristics. Age, gender, ethnicity, education level/highest qualification, religion, monthly income, marital status, place of residence and years of experience are standard demographic characteristics that would be described in most research papers. These give the reader some background detail on the nature of the population under study. Much more relevant to this study were:

Academic institution: In addition to being a stratification item, it was important to know the academic institution each participant identified as this helped put the findings into context.

Academic year/academic years taught: This was included on the basis that each academic year is different in terms of competencies taught and learned and in the general aims and objectives of the courses taken. A second-year student has support needs that differ from that of a fourth year.

Primary language: The qualification is taught in English which is the official language of communication in Namibia, and this, as shown by the results, was not the primary language of majority of the respondents.

Other demographic characteristics included were useful in describing the socio-economic status of participants such as income/household income and place of residence.

Challenges in In-class Learning/Teaching. The inclusion of the first 12 questions, having been mostly developed from literature, is justified as follows:

Age at enrolment into nurse training: Does it really matter what age one enrolls into nurse training? Alyse (2022) shares the advantages of mature age entry into nursing but opines that age does not really matter. The older student can draw from life experiences and their motivation for nursing could be grounded on a genuine need to care or need to build a career. In both instances the drive could indeed make the mature student more focused and self-driven. In

Namibia a nurse trainee could be as young as 16 years depending on when they obtained their secondary school leaving certificate (equivalent to GCSE) and middle-aged trainees are not uncommon, while some can enrol after the age of 60 years. Whether the age at enrolment into nurse training contributes to challenges in nursing education could be a debatable issue, and it was examined in this study.

Entry requirements for studying nursing: When the Nightingale Training School and Home for nurses opened in London in 1860 the trainees were called probationers (“The First Trained Nurses”, n.d.). And these probationers according to Lane (2020) were divided into two groups, the nurse-probationers, and the lady-probationers. These divisions, Lane (2020) argues were needed for student success because the two groups had different prior education. Prior education remains relevant to nurse training today, as it is for all undergraduate degrees. In addition to the requirement to pass specific subjects in high/secondary school some institutions may further ask that one passes an aptitude test/entrance test.

Inexperienced educators: According to Weller-Newton and McCormack (2020) skilled nurse clinicians are at times requested to facilitate clinical learning, without having a qualification as an educator; but one can be a skilled clinician without necessarily being a skilled teacher. It was hence necessary to find out if nursing education today is impacted by inexperienced educators.

Shortage of educators: Nursing faculty has continued to lose staff to retirement, and to decisions by others to just leave the profession. The AACN (2024) reports of a long-standing nursing faculty shortage in America. Namibia has suffered from shortage of nurses which Ashipala and Shapopi (2022) argue, is doing a disservice to nursing education.

Lack of classroom space: Where the physical space cannot be stretched students may be cramped up in whatever space is available which could contribute to an environment less

conducive for learning/teaching. Educators and students alike need an environment that promotes concentration, ensuring adequate ventilation, comfort, and security.

Large classes: Large classes are generally difficult to handle while class control is easier with smaller classes. The advantage of large classes is that students can learn from other students' opinions, although nursing students have been found to complain about such classes (Nhokwara et al., 2022).

Lack of consideration of student learning styles: Mbirimtengerenji et al. (2015) on 'Challenges of nurse tutors' classroom and clinical performance when teaching in Malawi' found that both nurse tutors and students were disappointed with nurse tutors' cognitive, affective, and psychomotor performance during both theoretical and clinical teaching. Students are more likely to differ in their learning styles preferences.

Irrelevant curriculum: Nurses require a wide knowledge base and competencies that are in line with providing care for the highly complex patient (Reinhard & Hassmiller, 2012, as cited in Fawaza et al., 2018). As the population profile changes so do the needs of the patient. Also, nursing care needs to be commensurate with advances in technology.

Preparation to attend to the LGBTIQ community: Eickhoff (2021) feels that this community is neglected, with institutions feeling lack of time is a hindrance regarding incorporating this population group into the curricula. The qualified nurse is, however, expected to competently give care when support on how to do so was perhaps never availed in training.

The cost of tuition; other costs e.g., transport, accommodation, printing, lack of simulators are other aspects that may influence learning and teaching in nurse training. These were included in the demographic section.

The rest of the questions in this section were from the Technology-enabled learning environment tool by Kirkwood and Price (2016). The importance of moving towards a

technology-based learning environment was fully explored in Chapter Two, and Kirkwood and Price (2016) argue that digital learning environments, initially prevalent in Western countries, are now found in all parts of the world. Permissions to use items from this tool were received (Appendix 3).

Challenges in the Clinical Learning/Teaching. For both the student and the nurse educators this section of the questionnaire utilized content from instruments previously used by other researchers. Items on challenges in clinical learning were largely based on the ‘Clinical Learning Environment and Supervision Evaluation Scale (CLES+T)’ (Ozbicakci et al., 2022). Some of the questions had to be adapted to suit the current context and the original source was acknowledged.

Dağ et al. (2019)’s tool on ‘Opinions of instructors on difficulties experienced in the clinical environment’ was used for the items on clinical teaching challenges faced by nurse educators. Permissions were received (Appendix 4).

Validity and Reliability. Validity refers to how sound the research data is while reliability is about how accurate or consistent it is (Polit & Beck, 2021). Measures of ensuring validity included ensuring instrument homogeneity and convergence, engaging subject experts in validity assessment, conducting probability sampling and piloting the instrument. Designing the instrument from components of standardised tools as well as from literature increased its reliability. In addition, the Cronbach’s alpha (CA) was used to measure the internal consistency of the questionnaire responses. Referring to the CA, Polit and Beck (2021) state that “... the normal range of values is between .00 and +1.00, and higher values reflect better internal consistency” (p. 320). Whereas Polit and Beck (2021) state that the value 0.8 or higher is the most preferred, Bujang et al. (2018) argue that values greater than 0.7 are recommended.

The reliability of the two questionnaires was assessed using the CA. For each questionnaire the CA was calculated separately for each component, that is in-class and clinical

learning/teaching challenges. For the nursing students' questionnaire, Section B which comprised 36 items, measured in-class learning challenges, and had a CA value of 0.875 while Section C, which consisted of 34 items had a CA value of 0.917 and measured clinical learning experiences. Section B of the nurse educator questionnaire had 37 items, a CA of 0.922 and measured in-class teaching challenges while Section C with 31 items had a CA of 0.946 and measured clinical teaching challenges. The CA values of above 0.8 indicated a high level of internal consistency among the items, thus, the instruments reliably measured the underlying constructs.

The Qualitative Data Collection Tool

In-depth online individual interviews were used to collect data. Commonly used in qualitative research, interviews use verbal communication to collect data. They are less costly and offer an effective method of understanding the participants in their social context (Nathan et al., 2019). When researchers want to ensure that a specific set of topics is covered, they prepare a written topic guide to use in semi-structured or focused interviews (Polit & Beck, 2021).

The researcher was guided by the results of the quantitative study in preparing the interview guide. Busetto et al. (2020) contend that the interview topics can be directed by a preliminary data collection method as well as from existing literature and previous research. In-depth individual interviews allow for flexibility as they are not strictly structured. The researcher started off with some semi-structured questions and had the flexibility of using probes. Not only do the individual interviews contribute to rich content but they are an interactive process allowing the participant and the researcher to jointly contribute to knowledge generation (Xu et al., 2025). The closeness of the interviewer to the participant can however introduce bias. How this bias was mitigated as discussed later under ethical assurances.

Interview questions (Appendix 2) were constructed around specific topics that needed further exploration. These topics included the following:

Challenges in theoretical learning/teaching

- eLearning, e-resources, and internet connectivity.
- financial issues.
- curriculum administration.
- pre-enrolment age and requirements.
- curriculum administration
- accessibility and quality of databases and e-resources.
- software and data storage.

Challenges in clinical learning/teaching

- supervision and preceptorship challenges.
- leadership and management.
- unsupportive learning environments.
- lack of consumables and resources for learning.
- communication and technology.
- theory-practice gap.
- maximizing student experiences.
- preparedness of educators for clinical practice.
- increased workload.

The interview also allowed participants the freedom to share any other challenges they had faced and to also suggest suggestions for improvement.

Trustworthiness. This refers to how confident the researcher is of their data (Polit & Beck, 2021). To ensure credibility the researcher did not deviate from the research design and

methodology. Automatic transcription during the online individual interviews was enabled and this allowed for full verbatim capturing including fillers, sighs and so on. The researcher also ensured prolonged engagement with the data. The research process was detailed and followed to enhance dependability. Directly quoting participants' words prior to interpreting them contributed to confirmability. The interpretations of participants responses were not based on the researcher's beliefs or own understanding but on exactly what they said and meant. The research procedures have been adequately described to aid transferability. Trustworthiness is further discussed in Chapter Four.

Instrument Testing

After the development of the quantitative questionnaire pilot testing was conducted to determine face validity and the appropriateness of the content. Seven nursing students and three nurse educators formed the pilot sample. Respondents provided feedback about the questionnaire relating to its length and comprehensibility. The researcher used this feedback to improve the questionnaire by deleting repetitive statements. The length of the questionnaire was considered reasonable. One of the additional benefits of the pilot testing which had not been anticipated prior to the exercise included realising that the fear of being scammed was a potentially potent barrier to data collection; the researcher was therefore able to plan to prevent this. The other unanticipated benefit was that it became apparent that the data analysis method needed to be appropriate and practical to handle the various variables. The researcher thus decided EFA was suitable as it would condense the variables into fewer factors.

The qualitative tool was pretested on one nurse educator and two nursing students. This was to check for any ambiguous questions and to gauge the estimated length of each interview session. Issues with internet connectivity became obvious as the pre-test interview with one of the nursing students ended midway due to loss of connectivity. The researcher then made the decision to have the video camera turned off for the interviewees when there was a risk of loss

of connection. Interview questions were understandable to the participants. All participants who took part in the testing of the instruments were excluded from the actual data collection.

Operational Definition of Variables

The constructs demographic variables, in-class learning/teaching challenges, clinical learning experiences and clinical teaching challenges are defined in this section.

Construct/Variable 1. Demographic Data Variables

Demographic data enables one to understand the characteristics of a group of people. Demographic data is essential as it enables one to determine if the sample selected represents the target population sufficiently to allow for study finding generalisation (Lee & Schuele, 2010). Lee and Schuele (2010) further state that the demographic variables cannot be manipulated, that is, they are independent. The distribution of the demographic characteristics helps judge how close the sample is to the target population. Hammer (2011) opines that if demographic information is not included researchers assume absolutism which implies that the phenomenon being studied is the same regardless of culture, race, ethnicity, and socio-economic status.

Depending on whether the participant is a nursing student or a nurse educator the demographics sought in this study included institution, academic year, age group, gender, marital status, accommodation type, ethnicity, primary language, previous education level, religion, household monthly income/monthly income, years of experience, usual place of residence, or highest qualification. All the variables are categorical. Income and years of work experience are on an ordinal scale with 8 and 3 ranks provided for each respectively. Household monthly income, which related to the student questionnaire, referred to the disposable income within a family while monthly income, which related to the nurse educator questionnaire, referred to the disposable income for the individual completing the survey.

The rest of the demographic data was nominal. Institution referred to where the student was registered as a nursing student or where the nurse educator was employed. Data was also collected on the academic year the student belonged to or the academic years the nurse educators taught. The nurse educators could teach more than one group of students hence there was an allowance of choosing more than one option. Six categories for the age group were provided for the nurse educators and 5 for the nursing students. Gender, marital status, ethnicity, and religion are self-explanatory and were used to further ensure target population representativeness. Accommodation type during semester time may have an implication on the challenges that a student needs to navigate to attend lectures and clinical practice. The nursing students indicated whether they stayed on campus, in an owned or rented family house and so on. The usual place of residence for the nurse educators could be an indicator of their socio-economic status.

In a study that looked at nursing students' perspective for teaching and learning in nursing, Onovo (2019) found that English as-a-Second Language nursing students who enrolled in a particular course had challenges in trying to adapt to the American education system resulting in high attrition rates. Students found it challenging to learn the complex action verbs within the cognitive domain of Bloom's Taxonomy. In Namibia, English is a second language for majority of the population, yet it is the official language in academics and most, if not all, other professional fields. This can have an impact on nursing education. Closely linked to the primary language is the previous education level for the nursing students which ranged from high school to a master's level with an option of 'other' also provided. The nurse educators responded on the highest qualification obtained which could be a measure of their preparedness for the role of teaching.

Demographic characteristics were descriptively analysed as explained in the data analysis section.

Construct/Variable 2. In Class Learning/Teaching Challenges

Horikoshi (2023) defines a challenge as “... a situation, task, or problem that is difficult, new, or complex and presents the possibility of testing skills or resources and being interpreted as or transformed into an opportunity” (p. 3). A review of a few scholarly articles around the field of nursing education reveals that challenges in nursing education take a definition not far from Horikoshi’s. From their integrated review on ‘Nursing education challenges and solutions in Sub Saharan Africa’, Bvumbwe and Mtshali (2018) identified *challenges* in advancing nursing education such as lack of resources and infrastructure, and ineffective teaching strategies. Part of the recommendations from the review was that financial resources should be increased for infrastructure and educational materials. The implication herein is that a *challenge* is a barrier to effective nursing education.

Another review by Gause et al. (2022) concluded that there is a gap in the acceptance of technology in nursing education even though its use is growing exponentially, and this was seen as a *challenge*. Rush (2022) also states that nursing is *challenged* with the need to shift from the traditional classroom-based educational programmes to web-based programmes; the training of adequate numbers of nurses to meet the growing healthcare demands and the fast healthcare changes which seek constant re-assessment of the nursing curricula and the recruitment and retention of qualified staff to teach student nurses. Moradi et al. (2022) in a qualitative study on challenges of the sudden shift to asynchronous virtual education in nursing education during the COVID-19 pandemic found that the *challenges* included unpreparedness and a reduced propensity towards virtual education.

Drawing on how challenges in nursing education have been viewed by other scholars, in-class learning/teaching challenges are factors that impeded to the acquisition of the theoretical knowledge that the nursing student requires to build a strong foundation to nursing practice. These challenges were measured using Likert scale items. Some of the items used the generic

5-point Likert scale (Strongly disagree, disagree, neutral, agree, and strongly agree). Items assessing quality in terms of technological enabled learning environment used 6/7 points (poor, fair, neutral, good, excellent, not available, and not applicable) with scores 1 – 5 assigned to points 1 – 5 measuring the quality of the resources. Points 6 and 7 were included to provide options for those who did not have these resources at all and those who had no need for them respectively. Not having the resources had the highest score (6) indicating a challenge bigger than having poor quality resources challenge. Point 7 was only available to students and had a null (zero) score when selected and this corresponded with ‘Not applicable’.

Construct/Variable 3. Clinical Learning Challenges

Referring to the clinical learning environment, Elbilgahy et al. (2020) found that the most reported result of an ineffective learning environment was that it made teaching difficult and resulted in the non-implementation of some nursing procedures. Thus, the ineffective learning environment here is the identified *challenge*. Fawaz et al. (2018) also add on that in addition to dealing with the *challenges* related to nursing education in the 21st century, other *challenges* include trying to match theoretical nursing education with the practice environments; sufficiently preparing and continuously developing nursing educators; technological, economical, and ethnic challenges. Furthermore, Kavanagh and Sharpnack (2021) argue that nurse educators need to prepare future nurses for successful clinical practice which is AI-infused and that the need to transform needs to match the pace of change. Thus, Kavanagh and Sharpnack (2021) imply that nursing education is *challenged* by an immediate need to fully embrace a technologically advanced clinical setting. Elsewhere, Jamshidi et al. (2016) concluded that the challenges that nursing students face when in the clinical area included lack of effective communication skills, lack of theoretical knowledge and practical skills, stress, and inferiority complex.

In the current context the definition of clinical learning challenges does not fall far from the views presented above. A clinical learning experience can be positive or negative or something in-between. It is the impression left on the student nurse after a practical contact with a clinical environment. A less favourable clinical experience poses a *challenge* to the nursing student's learning in that it negatively affects the attainment of the clinical placement goal which is to enable the student nurse to gain expected competencies.

The section of the tool that examined the clinical learning experiences of students was subdivided into 5 further sections which looked at the experiences with the learning environment, leadership, and management, and in nursing on the ward, as well as those associated with preceptor/clinical instructor's contribution to the student's learning and use of technology at the bedside.

Some of the items used in this section were informed by the CLES+T scale which was originally used to measure the students' perceptions of nurse teachers during primary care public health practices (Ozbicakci et al., 2022). To determine the experience that the student had in clinical learning a 5-point Likert scale was used.

Construct/Variable 4. Clinical Teaching Challenges

On challenges facing nursing education in India, Preksha (2022) opines that the *challenges* are, among other causes, due to lack of teaching hospitals, shortage of clinical and academic staff, and dealing with Gen-Z. Clinical teaching challenges are thus difficulties faced by nurse educators in their quest to prepare a nurse with competencies commensurate with serving a 21st century patient in evolving care settings.

The opinions of the instructors on the difficulties they experienced in the clinical environment were examined under 6 categories by Dağ (2019): instructor-related difficulties, student-related difficulties, patient care-related difficulties, physical environment-related difficulties, nurse team-related difficulties and health care team-related difficulties. In the

current study the categories were slightly edited to issues about nurse educators; issues about students; issues about patient care; patient monitoring; issues about physical environment; issues about healthcare team, however the response options were the same. The scale used had 3 scores: (1) I do not experience difficulties (2) There are some difficulties (3) There are quite serious difficulties.

Study Procedures and Ethical Assurances

This section discusses the ethical issues, and the steps followed in data collection. The description is detailed to ensure replicability.

Participant recruitment occurred following ethical clearance from Unicaf University (Appendix 5) and after permissions from MoHSS (Appendix 6) and the respective institutions (WU and IUM) had been obtained (Appendix 7 & 8). Additional information on the study, including the researcher's and supervisor's contact details, were part of the invitation to participate which was accompanied by the research information to participants sheet (Appendix 11).

The institutions were asked to provide a list of students undertaking the BSc Nursing Science degree, in Years 2 to 4, and a list of nurse educators who taught clinical subjects and were also involved in following up students in clinical practice. The lists included the contact details and email addresses of the said individuals. Selection of participants followed the process described under sampling after which the selected participants were contacted via email or mobile phone and sent the participant information sheet electronically. The informed consent statement and /or the informed consent form (Appendix 9) preceded the rest of the survey questions and participants indicated their consent before proceeding. There were six nursing students who, after going over the information sheet, opted for the paper version of the questionnaire and for these a paper version of the consent form was used. The rest (153) of the nursing students and all 28 nurse educators completed the questionnaire online.

During the pilot study the researcher became aware of the fear of being scammed that some of the participants had when they were approached by someone they did not know. This is because technological advances come with an increase in online scams and phishing. This fear was observed to be more among nursing students than nurse educators. The researcher then asked a lecturer at each campus to introduce her to potential participants. These lecturers were excluded from participation. The participants who used paper questionnaires submitted the completed questionnaires to one of the said lecturers; they were all from the same campus which is in an area that experiences significant internet connectivity challenges. Quantitative data collection took place from 27/11/2023 to 06/01/2024.

Prospective individual interviewees were listed as described under purposive sampling. Those who were approached were re-sent the information sheet as it had been edited to reflect the change from focus group discussions to online individual interviews. This change also necessitated re-consenting the participants who were interested in taking part in this qualitative phase using an amended informed consent form (Appendix 10). Each interview was scheduled for and commenced after a signed consent form had been scanned back to the researcher by each respective participant. The final number of the interviewees was 11 for nursing students and 7 for nurse educators. Qualitative data collection occurred from 10/04/2024 to 05/05/2024.

Ethical Assurances

According to World Health Organization ([WHO], n.d.) ethics in research spell out how scientific researchers should conduct themselves and are important as they ensure the protection of the dignity, rights, and welfare of research participants. The researcher endeavoured to uphold the principles of beneficence, nonmaleficence, respect and justice.

Principle of Beneficence. Beneficence is about minimising harm and maximising benefits, and the principle covers the right to freedom from harm and discomfort and the right to protection from exploitation (Polit & Beck, 2021). The researcher did not only provide the

participants with a detailed information sheet but was also available to respond to any concerns. In addition, data collected has been used for the intended purpose and no deception was exercised. Participants were not chosen because of their vulnerability but because they were found to be the most suitable for answering the research question. The risk of harm in this observational study was deemed low. There was the possibility that issues discussed in the interview sessions could cause a degree of discomfort and as such, the researcher assured the participants that their identity was protected and anything they shared would not be linked to them.

Principle of Nonmaleficence. “The principle of nonmaleficence states a prohibition on causing harm to others in the absence of justifying circumstances” (DeGrazia & Millum, 2021, p. 18). There was a possibility that some of the participants could feel so strongly failed by systems in place, their employers, their educators, or mentors, which could make the information shared sensitive and capable of invoking fear of those in authority. To safeguard participants from this possible harm, assurance was given on the confidentiality of all information shared.

Principle of Respect for Human Dignity. Respect for human dignity stipulates that research involving humans be conducted with sensitivity to their inherent worth and with respect and consideration (Government of Canada, 2019). This principle encompasses the right to self-determination and right to full disclosure (Polit & Beck, 2021). Participant information sheets were available to prospective participants detailing the purpose of the study, what was expected of them, and that participation was voluntary. Informed consent was received from those willing to participate. Name lists, email addresses and contact numbers were accessed to enable sampling, sharing of study information and data collection. The survey responses were received by the researcher. The google form had a field for entering an assigned participant number enabling the safe sharing of the data with the statistician who could only differentiate

one participant from the other through these unique identifiers. The participant numbers were included in the invitation message to the participants. In addition, the six paper questionnaires were de-identified by use of participant numbers in place of real names to ensure confidentiality.

Interviewees chose pseudo names which were used during the interview sessions and in the subsequent data analysis. Complete anonymity is not possible in individual interviews, but the researcher endeavoured to ensure confidentiality. The perceived risk associated this method of data collection is that which relates to anonymity as this cannot be guaranteed. However, only the researcher had access to information that could link the quantitative responses to the participants to enable purposive sampling and the recruitment of the interview participants. Password protected files were used to store data. The paper questionnaires were couriered to the researcher's place of residence and these, together with the printed scanned copies of consent forms, are stored in a lockable trunk. All data will be destroyed 5 years after completion of the dissertation, in accordance with institutional policies.

Principle of Justice. The principle of justice demands that participants be treated fairly and have their right to privacy upheld (Polit & Beck, 2021). Participants were treated equally. There were no direct benefits to participation, but it is envisaged that the strategies developed to address challenges facing nursing education will benefit the field in a way that will be appreciated by nurse educators, students, professional nurses of today and tomorrow. Participants who stated that they did not have access to data for the online interviews had their data costs covered – the provision was equal among those who required it, and it covered the cost of unlimited data for 7 days to enable flexibility of interview scheduling.

Scientific Integrity. Scientific integrity enables the audience to have confidence and trust in the research findings and data presented (McKerr & Boncan, 2021). The researcher did

not only adhere to the ethical principles as described above but also ensured honesty and accuracy in the reporting of study procedures and findings.

Reflexivity. Reflexivity relates to how researchers remain self-aware as they critically assess the effect they have on the construction and interpretation of knowledge (“What is reflexivity?”, n.d.).

Personal reflexivity — The researcher is a practising nurse, a nurse educator, a clinical research coordinator and a postgraduate educator in public health. Having been a nurse for close to 2 decades and involved in nurse training over a period of 4 years gave the researcher the impetus to examine the current research problem. Having said this, a thorough literature review was done to unravel the nature of the problem and support the existence of the research problem so that the study would not be based solely on the researcher’s opinions on the problem. The researcher consulted a statistician to objectively advise on the most suitable methods of analysing the survey data and to also assist with quantitative data analysis.

Interpersonal reflexivity — For the quantitative data collection objectivity was ensured by adapting previously used tools and referencing literature for the development of the instruments thus ensuring the extraction of the participants’ knowledge on the phenomenon of interest. The researcher was the interviewer in the qualitative phase of the data collection and endeavoured to minimise bias by appreciating the participants’ contributions and uniqueness. By clearly presenting herself as a student, the researcher took the position of one who seeks knowledge thereby positioning the participant as the expert of the information sought. During the interview the participants were given sufficient time to respond to the questions, clarifications were given while keeping at bay any leading probes. The software, MAXQDA, aided in thematically analysing the data.

Contextual — One of the reasons the tool used borrowed aspects of the CLES+T tool and other previously used tools, as opposed to adopting these tools as they were, was to ensure that

the study was context-bound. It was imperative that the study would positively impact the context of Namibia.

Data Collection and Analysis

In this final section of the chapter data collection procedures, data analysis techniques and qualitative and integrative analysis are laid out.

Data Collection

Following the receipt of permissions to approach prospective participants an invitation to participate and the research information was sent to selected participants. The survey link was then shared with those willing to participate. They indicated their consent on the first page of the form by ticking a mandatory checkbox next to the consent text. By clicking the submit button at the end of the google form, responses were submitted immediately. Participants completed the survey in their own time, and from any place using any device that allowed them to open the link. Six nursing students preferred the paper version of the questionnaire. These students were from the same campus, and they collected the consent forms and questionnaires and from the lecturer who had helped introduce the researcher to the students of this campus, returning them upon completion. These were later couriered to the researcher who manually captured the responses. The online survey responses were received over a period of 6 weeks and the paper questionnaires were also completed within this time.

Although the interviews were guided, the researcher was cognisant to avoid controlling the pace and allowed participants to move at their own pace. This ensured participants were comfortable enough to fully express themselves. The number of participants was determined by data saturation. The researcher invited those who had been purposively selected, scheduled interview dates and times and conducted the interviews only stopping when no new information could be obtained.

It has become increasingly popular for researchers to use virtual platforms to collect data post the COVID pandemic. The use of virtual interviews has been found to cause feelings of excitement among participants (Sah et al., 2020). The present researcher agrees with Sah et al. (2020) on the flexibility of virtual interviews regarding session scheduling and in that they are resourceful in terms of travel time and removing the need for using research assistants. Microsoft Teams is one of the virtual platforms that allow the researcher and the participant to connect in real time and when using the platform participants can control whether they want their faces to be seen or not as they can decide to turn on or off the video camera (Wakelin et al., 2024). The ability to have such control and make such choices arguably contributes to participant self-determination and autonomy (Borbasi & Jackson, 2016, as cited in Wakelin et al., 2024). In the current study some of the nursing students and nurse educators preferred to have the cameras turned off citing that this improved internet connectivity. The researcher had her camera turned on during all interviews.

Disruptions can occur during virtual interviews. These could be in the form of background noises and interruptions from family members or housemates. In this study the main disruption related to glitchy internet connectivity. Each interview session lasted 34 minutes on average.

Data Analysis Techniques

This section describes how the collected data was analysed.

Questionnaire Reliability Test. The response rate of the respondents was reported as a percentage. Cronbach's alpha was used to measure the internal consistency of the questionnaire responses and for in-class and clinical learning/teaching challenges and it was between 0.875 and 0.946 indicating a high level of internal consistency (See Chapter Three).

Descriptive Statistics. Section A of both the student and nurse educator questionnaire collected demographic data. This data was analysed using descriptive statistics. Descriptive

statistics enable the description and summarisation of data because an attempt to interpret individual data sets could be too cumbersome especially when the sample is large (Cooksey, 2020). Thus, academic institution, academic year, age-group, gender, marital status, accommodation type, ethnic background, primary language, previous education level, religion, monthly family income were descriptively analysed and presented in frequencies and percentages. The data was presented in tables.

Coding of Responses. The quantitative data was coded prior to being subjected to factor analysis. For the Likert scale items, that is the in-class learning/teaching challenges (for both students and nurse educators), and the clinical learning experiences (for students) the responses were encoded on a scale from 1 to 5 as follows:

Coding (where agreeing represented a challenge)	Response	Coding (where disagreeing represented a challenge)
1	Strongly disagree	5
2	Disagree	4
3	Neutral	3
4	Agree	2
5	Strongly agree	1

For the responses in Section B, which were on a technology-enabled learning environment the Likert scale was used to measure quality and these were encoded as follows:

Coding	Response
1	Excellent
2	Good
3	Neutral
4	Fair
5	Poor
6	Not available
0	Not applicable

While the clinical teaching challenges responses were encoded on a scale of 1 to 3 as follows:

Coding	Response
1	I do not experience difficulties
2	There are some difficulties
3	There are quite some serious difficulties

Factor Analysis. Factor analysis simplifies complex interrelationships among objects and allows for the identification of those that can be blended into unified concepts (Polit & Beck, 2021). Exploratory Factor Analysis (EFA) was considered as a suitable method because of its ability to confirm correlations among the observed variables with the assumption that any underlying factors can account for these variations (Lee et al., 2023). Prior to the EFA, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test of sphericity were used to test for the suitability of the data for factor analysis.

The KMO measure tests the sampling adequacy. The value for KMO ranges from 0 to 1. According to Kaiser (1974) acceptable values have a minimum of 0.5 whereas Hoelzle and Meyer (2013) recommend values greater than 0.7. The observed KMO values were greater than the 0.5 threshold in the current study rendering the sample adequate for EFA.

Bartlett's test of sphericity is used to determine whether correlations between simultaneously examined variables do not differ significantly from zero and when the correlations do differ from zero factor analysis can be conducted (Cramer & Howitt, 2004). When the test is significant, p less than 0.05, the null hypothesis that the correlation matrix is an identity matrix is rejected, and FA can take place ("KMO and Bartlett's test of sphericity", n.d.). Thus, to determine if the observed items were correlated the Bartlett's test of Sphericity was measured on all items. In this study the observed p -values of 0.000 indicated that the variables were related and hence suitable for factor analysis.

Exploratory Factor Analysis. EFA is a "factor analysis undertaken to explore the underlying dimensionality of a set of variables" (Polit & Beck, 2021, p. 786). In FA, statistical measures are used to explore the underlying dimensions that explain interrelationships among complex variables thereby allowing for the simplification of the variables. simplify a set of complex variables (Tavakol & Wetzel, 2020).

The EFA consisted of two phases:

Factor extraction: This first phase groups items into a smaller number of factors with the aim of extracting clusters of highly interrelated items from a correlation matrix (Polit & Beck, 2021). In this phase several factors were extracted using the Common Factor Analysis. This simplified data complexity by finding the unobserved factors that were associated with the observed factors.

Factor rotation: This is executed on factors that have met the extraction criteria to enable interpretation of the factors (Polit & Beck, 2021). The Varimax rotation method was applied because of its ability to produce a simple structure as confirmed by Kaiser (1958).

After the tests and assumptions had been satisfied, the resultant factors were presented from each of the sections together with the associated variables.

Qualitative and Integrative Analysis. The researcher used qualitative thematic analysis (TA). Thematic analysis “is a method for developing, analysing and interpreting patterns across a qualitative dataset, which involves systematic processes of data coding to develop themes ...” (Braun & Clarke, 2022, p. 4). It is most suitable when the researcher intends to gain a deeper understanding of people’s experiences, ideas and perceptions about the phenomenon under study (Jowsey et al., 2021). Ahmed et al. (2025) add, “...it is ideal for researchers aiming to identify patterns of meaning without being constrained by specific epistemological commitments” (p. 1).

The approach used by the researcher was inspired by “Thematic Analysis” (n.d.) and comprised the following steps:

Familiarization with the data: By the time the transcriptions had been sufficiently edited the researcher already had a ‘feeling’ of the data. The edited transcriptions were imported onto MAXQDA. Thoroughly reviewing the transcriptions through reading and re-reading them enabled the researcher to become immersed in the data. Initial ideas and impressions were noted.

Generating codes: Codes were predetermined with reference to the qualitative research questions and literature. Bingham and Witkowsky (2022) posit that deductive analysis is an approach which involves assigning predetermined codes to data collected. The researcher read through each transcript assigning the codes. Below is an extract from this process:

Educator

Yes, because that sometimes you have to ration. If you have, you have to, for example, someone is there to supervise 2 institutions, for example, maybe two health centres. Focusing on one hand, saying that in the only focusing on those students who are there you ration the days, one day you are there, then the other day you are there.

Code: ● Unmet needs > Failing to cope with the workload (+) Weight score: 0
Peter Transcript FA WL022 ready, Pos. 45

Student

Okay, about eLearning, I would say. Not everyone knows. Okay, not everybody knows how to use that. Okay, let's say, for instance, a lecturer has uploaded notes on Moodle there. Oh, whatever platform they are using at school. Okay, it's very difficult. It's very difficult for a student to like, see the notes without being oriented to it.

Code: ● Failing to connect and stay connected > Technologically challenged Weight score: 0
Tuli Transcript FA W038 ready, Pos. 4

Searching for and reviewing themes: Related codes were grouped ensuring that the themes were relevant to the research and the study. This was followed by the refining of the themes. Some themes were combined while others were spilt and yet others were discarded during this process.

Defining and naming themes: Themes were named and defined. The researcher described how the themes related to the challenges faced by nurse educators/nursing students in in-class/clinical learning/teaching.

Writing the thematic analysis: The thematic analysis and quantitative findings were integrated with the researcher describing how the qualitative findings explained the quantitative findings. Examples were used to illustrate each theme adding depth to the analysis.

Interpreting the findings: The study findings were interpreted within the context of the mixed methods study. The researcher highlighted how the qualitative insights contributed to answering the research questions.

Ensuring rigor: To ensure rigor the process of data analysis has been clearly presented. In addition, the researcher engaged in reflexivity as described in the ethical assurances section.

Software. SPSS version 23 was used to summarise the questionnaire responses and for EFA. Microsoft Excel was utilised for the descriptive statistics. Thematic analysis of the qualitative data was done using the MAXQDA software.

Chapter Summary

This chapter presented the research methods. The following have been detailed in the chapter: the research approach and design; population and sampling; instrumentation; operational definition of variables; study procedures and ethical assurances; and data collection and analysis. To recap, by using both the quantitative and qualitative approach, mixed methods research reduces the limitations of each approach leading to more credible findings. The purpose of MMR is to yield an extensive understanding of research problems and phenomena which would be impossible if a monomethod was used. In an explanatory sequential design, which was used in this study, the researcher begins by conducting a quantitative phase and explains specific results through a subsequent qualitative phase. The explanatory sequential design, which is popular in MMR, gives weight to the quantitative data. The survey, which was the first phase in this study, falls within the postpositivist paradigm whereas the second phase, which utilised online individual interviews, is within the constructivist paradigm.

The explanatory sequential design is a straightforward design that can be done by a single researcher with an added advantage of that results can be presented in two separate papers. A weakness of this design is that the second phase cannot begin until data analysis from

the first phase has been completed. The researcher believes that findings from the quantitative approach can be greatly enhanced by a second source of data. Using this design taps into the advantages of MMR, which include complementarity, practicality, incrementality, enhanced validity and collaboration. Following the steps of conducting MMR the researcher designed and implemented the quantitative strand, connected quantitative results to the qualitative phase, design and integrated the results.

The target population consisted of all nurse educators who taught clinical subjects to and supervised baccalaureate nursing students in the clinical area, and all baccalaureate nursing students in Namibia. To be in the study population the educators and students had to be part of the two institutions – IUM and WU. The study included BSc Nursing degree students in their second, third or fourth years, from the two institutions and their respective clinical courses lecturers/instructors. Nursing students below the age of 18, nurse educators who did not teach clinical courses and campuses which did not have all 4 academic years in operation were exclude from participation.

The setting comprised two nursing institutions in Namibia that offer the baccalaureate nursing degree qualification IUM and WHTC. The quantitative phase employed stratified random proportionate sampling whereas participants were purposefully selected for the qualitative phase.

To ensure objectivity the quantitative research instrument was completely structured, and uniformly self-administered. Only parts of the questionnaire were extracted from validated instruments developed by other researchers; other sections were developed with reference to literature. Thus, to ensure questionnaire validity and reliability, experts in the field were engaged to check for face and content validity and the tool was also piloted and adjustments made as needed. In addition, the research instrument was designed in such a way that homogeneity and convergence could be evident. Furthermore, external validity was ensured by

applying probability sampling. The CA value of the questionnaire items, which lay between 0.875 and 0.946 for the different sections of each of the questionnaires, indicated internal consistency.

To ensure credibility the researcher endeavoured to not deviate from the research design and methodology, enabled automatic transcription during the online individual interviews and ensured prolonged engagement with the data. Detailing the research process and following it enhanced dependability. Directly quoting participants' words prior to interpreting them contributed to confirmability. In the same vein the interpretations were not based on the researcher's beliefs or own understanding but on exactly what the participants said and meant. Adequately described research procedures ensured transferability.

The quantitative research instrument was designed to collect demographic characteristics, in-class teaching/learning challenges and clinical teaching/learning challenges. Demographic characteristics give the reader some background detail on the nature of the population under study. Depending on whether the participant was a nursing student or a nurse educator the demographics sought in this study included institution, academic year, age group, gender, marital status, accommodation type, ethnicity, primary language, previous education level, religion, household monthly income/ monthly income, years of experience, usual place of residence, or highest qualification.

In-class learning/teaching challenges are factors that can hinder the acquisition of the theoretical knowledge among nursing students. The first 12 questions of the questionnaire were mostly developed from literature and the rest were adapted from previously used tools. Challenges in in-class learning/teaching were measured using Likert scale items. Some of the items used the generic 5-point Likert scale and had the options of strongly disagree, disagree, neutral, agree, or strongly agree. Items assessing quality in terms of technological enabled learning environment used 6 or 7 points which are poor, fair, neutral, good, excellent, not

available, and not applicable with scores 1 – 6 measuring the quality of the resources, 7, an extra option represented not applicable and was an option only in the student questionnaire.

The clinical learning and teaching challenges section for both the student and the nurse educators utilized content from instruments previously used by other researchers. A clinical learning experience can be positive or negative or something in-between. It is the impression left on the student nurse after a practical contact with a clinical environment. A less favourable clinical experience poses a challenge to the nursing student's learning in that it negatively affects the attainment of the clinical placement goal. Clinical teaching challenges are difficulties faced by nurse educators in their quest to prepare a nurse with competencies commensurate with serving a 21st century patient in evolving care settings. To determine the experience that the student had in clinical learning the 5-point Likert scale was used. Challenges in clinical teaching were measured using an adapted tool in which the nurse educators indicated whether they experienced difficulties or not.

The interview guide was informed by the quantitative results. The questions were designed to get a better understanding of the challenges nursing students and nurse educators face in in-class and clinical learning/teaching.

Approval was received from UREC before data collection could commence. Following this approval, the researcher applied and received approval to approach the study settings from MoHSS. Permissions to collect data were received from the respective institutions. Participants gave their consent prior to completing the survey online/paper questionnaires. Quantitative data was collected over a period of 6 weeks and qualitative data collection, which commenced 12 weeks after the end of quantitative data collection, took approximately 4 weeks.

The researcher upheld ethical considerations in research. Participants were provided with a detailed information sheet and the researcher was available to respond to any concerns. In addition, participants were not chosen because of their vulnerability but because they were

found to be the most suitable for answering the research question. The risk of harm in this observational study was low. To safeguard participants from harm that could arise the sensitivity of information the researcher assured the participants that all information shared will be kept confidential. Several actions were put in place to ensure respect for human dignity. In addition to providing full information about the study and ensuring that completed questionnaires were de-identified, the researcher password protected personal data such as the sampling frame list and contact details. Paper documents have been stored in a lockable trunk. Collected data will be destroyed in accordance with institutional policies.

To ensure justice participants were treated equally. Data costs were covered for interviewees who could not afford the cost. In terms of benefits, strategies developed to address challenges facing nursing education will benefit nursing education as a whole. Scientific integrity was maintained by adhering to the ethical principles, ensuring honesty and accuracy in the reporting of study procedures and findings.

The researcher endeavoured to keep personal biases at bay through reflexivity. This included conducting a thorough literature review to unravel the nature of the problem and support the existence of the research problem and maintaining objectivity. A statistician was employed to objectively analyse the quantitative data which was collected using objectively developed data collection instruments. During the interviews the participants were afforded adequate time to respond to the questions, and leading probes were avoided. In addition, the researcher made a conscious effort to position each interviewee as an expert of the phenomenon being studied.

Following the receipt of permissions to approach prospective participants, an invitation to participate detailing the research information was shared with the selected participants heralding the commencement of data collection procedures. The survey link was then shared

with those willing to participate and paper questionnaires with the six students who requested these. All participants provided consent prior to taking part.

A subset of the participants was approached, after purposive sampling, to participate in the online individual interviews. The interviews took place via Microsoft Teams on a date and time agreed with each participant.

Descriptive statistics were used to analyse demographic data. Exploratory factor analysis was performed on data collected in Sections B and C of the questionnaire which were designed to answer the research questions. Qualitative data was thematically analysed with the aid of MAXQDA. Findings from both phases were integrated to gain an extensive understanding of the challenges facing baccalaureate nursing education in Namibia.

CHAPTER FOUR: FINDINGS

Introduction

This is a report of the study findings. The first section is dedicated to the quantitative phase of the study while the second section presents the qualitative results with the third section integrating these in an integrative analysis.

Overview of Study Purpose

Nursing education comprises two areas: clinical education and theoretical (in-class) education. The purpose of this study was to examine challenges facing baccalaureate nursing education in the 21st century in Namibia and determine if an any relationship exists between challenges faced in clinical education and those encountered in theoretical education.

As was stated in the first chapter a healthcare provider with deficient clinical skills does not only place the patient at risk but can cause frustrations among colleagues and team members. This can lead to unhealthy work environments which reduces productivity in addition to negatively affecting the clinical learning of student nurses. Clinical skill acquisition is a product of what is learnt in class and in clinical practice hence challenges faced in the former can compound those faced in the latter. Addressing these problems, which was one of the objectives of this study, can help interrupt an otherwise vicious circle.

The identification of the challenges was done through quantitative research, and these were thereafter explained through individual online interviews in a mixed methods research approach. Exploring the challenges further, using a qualitative approach, led to a deeper understanding of these challenges and their perceived effects on nursing education. This has helped inform strategies of addressing the issues.

Chapter Organisation

The findings are presented in four parts. Section One presents the quantitative results while Section Two presents the relationship between in-class and clinical learning/teaching

challenges. These sections are followed by a presentation of the qualitative results in Section Three. And Section Four presents the integration of the findings in line with the explanatory nature of the study.

The introduction and the overview of the purpose of the study are presented above. Within the first section, which presents the quantitative results, measures of ensuring instrument reliability and validity are presented. This is followed by a description of the questionnaire reliability test and the response rate. Demographic characteristics are then outlined to provide a background of the study sample. These are presented in two parts: academic and sociodemographic characteristics.

Since Exploratory Factor Analysis (EFA) was used in this study it is prudent to describe what tests were used to assess for the suitability of this approach. Thus, CA, the KMO and the Bartlett's Test of Sphericity, which were used for this purpose, are described prior to the presentation of the findings from the EFA. The results allowed for the rejection of the null hypothesis H_0 *Nursing education in the 21st century is not faced with challenges* in favour of the alternative H_1 *Nursing education in the 21st century is faced with various challenges*. The challenges faced by each sample group, that is nursing students and nurse educators, are presented in the following manner:

- Assessment of suitability of in-class/clinical learning/teaching challenges items
- Determination of optimal in-class/clinical learning/teaching challenges
- Description of the extracted in-class/clinical learning/teaching challenges.

The second section presents the qualitative results. The results answered the question *How do nursing students/nurse educators describe the challenges faced in in-class/clinical learning/teaching?* This section starts off with the detailing of how trustworthiness was ensured. Themes and sub-themes that emerged from the analysis of the transcripts are presented under the following main topics:

- Challenges faced by nursing students in in-class/clinical learning
- Challenges faced by nurse educators in in-class/clinical teaching.

The recommendations by each sample group are included in this section. The integration of the study results follows thereafter, in Section Three. Those quantitative results that were explored in the qualitative phase are presented in an integrative analysis. The integration was per sample group.

In the fourth section, quantitative findings from the analysis of the relationship between theoretical education and clinical education challenges are presented. The null, *H₀ Clinical education has no association with in-class education* was rejected in favour of the alternative hypothesis, *H₁ Clinical education has an association with in-class education*.

An evaluation of the results presents a brief discussion of the study findings. For the quantitative results this is presented in this order:

- Description of the nursing students extracted in-class/clinical learning challenges
- Description of the nurse educator extracted in-class/clinical teaching challenges

While the qualitative evaluation followed this order:

- Challenges faced by nursing students in in-class/clinical learning
- Recommendations by nursing students
- Challenges faced by nurse educators in in-class/clinical teaching
- Recommendations by nurse educators.

And that of the integrated findings was split as follows:

- Nursing students in-class/clinical learning challenges
- Nurse educator in-class/clinical teaching challenges.

Concluding with the evaluation of the findings on:

- The relationship between student in-class/clinical learning challenges

- The relationship between nurse educator in-class/clinical teaching challenges.

Section One: Quantitative Data Analysis

In this section quantitative results are presented using descriptive statistics as well as Exploratory Factor Analysis (EFA). Descriptive statistics were used for respondent demographic, academic and social characteristics. The practice and theory-related challenges for nurse educators and nursing students were analysed through EFA. And any relationships between the in-class and clinical practice challenges were determined.

Validity and Reliability. The research instrument was designed partly from literature and partly from parts of instruments previously used in other published papers. This contributed to increased reliability and content validity. The researcher further asked experts to assess whether the instrument truly covered the intended content.

In addition, the research instrument was designed in a way that ensured homogeneity and convergence. It measured one construct, which is challenges facing baccalaureate nursing education and more than 50% of the items in the instrument were used by authors who measured a similar concept, as was explained in the instrumentation section, thus enabling convergence. Furthermore, external validity was ensured by applying probability sampling as described under sampling and face and content validity by conducting a pilot study. The 7 nursing students and 3 nurse educators who formed the pilot sample were excluded from the final study.

Questionnaire Reliability Test. Cronbach's alpha (CA) was used to measure the internal consistency of the questionnaire responses. For each questionnaire the CA was calculated separately for each component, that is in-class and clinical learning/teaching challenges. The CA values ranged between 0.875 and 0.946, thus, they were greater than 0.7 which is recommended by Bujang et al. (2018) and even higher than the 0.8 recommended by

Polit and Beck (2021), implying internal consistency of the responses on in-class/clinical learning/teaching challenges items.

Response Rate. The researcher distributed questionnaires to a total of 220 nursing students, and a response rate of 72.27% was achieved, with 159 out of the 220 students completing and returning the questionnaires. Similarly, for nurse educators, a total of 38 questionnaires were distributed, and the response rate was 73.68%, with 28 out of the 38 nurse educators successfully completing and submitting the questionnaires. The sample size for the nurse educators was initially calculated as 40, however, 2 of the educators did not want to be approached hence the questionnaire was sent out to 38. In the same vein the nursing student initial sample size as stated in Chapter Three was 305, however, only 220 students were reachable. It was discovered during data collection that some students, although listed as registered students with the registrar's office, had withdrawn, never commenced studies or were uncontactable on the contact details provided. Had it been possible to distribute the questionnaire to all 305 students the denominator in the response rate calculation would have been 305 and not 220 and it is reasonable to assume that more than 159 responses would have been obtained. The justification of the final sample size is presented in the discussion of results.

Demographic Characteristics. Table 8 below shows the demographic characteristics for nurse educators and nursing students who participated in the study. Female respondents constituted majority of respondents represented by proportions of 89% (n=25) and 87% (n=138) for nurse educators and nursing students respectively. Whereas most nurse educators were married most nursing students were single as represented by proportions of 71% (n=20) and 94% (n=150) respectively. The highest proportion of nurse educators were between the ages of 25 to 44 with a proportion of 61% (n=17) and majority of nursing students (65%; n=103) were aged between 18 and 24 years.

Table 8*Demographic Characteristics*

Demographic characteristic	Category	Nurse Educators		Nursing Students	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Gender	Male	3	11%	21	13%
	Female	25	89%	138	87%
	Total	28	100%	159	100%
Marital Status	Single	7	25%	150	94%
	Married	20	71%	7	4%
	Prefer not to say	1	4%	N/A	N/A
	Living with a partner	N/A	N/A	2	1%
	Total	28	100%	159	100%
Age group	18-24		0%	103	65%
	25-34	8	29%	49	31%
	35-44	9	32%	6	4%
	45-54	5	18%	1	1%
	55-65	5	18%	0	0%
	Above 65	1	4%	0	0%
	Total	28	100%	159	100%

Academic Characteristics. Table 9 below shows the academic characteristics of the research respondents. The highest proportion of respondents were from WU, constituting 82% (n=23) and 82% (n=130) of the total nurse educators and nursing students respectively. The respective remaining proportions were from the IUM. Majority of the nurse educators (36%, n=10) had more than five years of experience. Whereas most (79%, n=22) of the nurse educators had attained a master's degree most nursing students (80%, n=127) had attained a high school education.

Table 9*Academic Characteristics*

Academic Factors	Category	Nurse Educators		Nursing Students	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Academic Institution	International University of Management	5	18%	29	18%
	Welwitchia University	23	82%	130	82%
	Total	28	100%	159	100%
Years of Experience	1-2	9	32%	N/A	N/A
	3-5	9	32%	N/A	N/A
	More than 5	10	36%	N/A	N/A
	Total	28	100%		
Highest education level	High school		0%	127	80%
	Diploma	1	4%	8	5%
	Bachelor's degree	2	7%	13	8%
	Masters	22	79%	1	1%
	Post Graduate Diploma in Clinical practice Instructions	1	4%	N/A	N/A
	PhD	2	7%	N/A	N/A
	Tertiary certificate		0%	9	6%
	Certificate in Enrolled Nursing		0%	1	1%
	Total	28	100%	159	100%

Social Characteristics. Table 10 below shows the social characteristics of the research participants. On ethnicity, the highest proportion of nurse educators and nursing students were natives. This is shown by proportions of 82%(n=23) and 92%(n=147) respectively. The respondents showed that they had native primary languages shown by proportions of 82%(n=23) and 88%(n=140) for nurse educators and nursing students respectively. Christianity was the dominant religion for both groups with proportions of 86%(n=24) and 97%(n=154) for nurse educators and nursing students respectively. Most of the nurse educators had urban owned accommodation constituting 54%(n=15) of the respondents whereas more nursing students relied on off-campus accommodation, with a proportion of 52%(n=82). A higher proportion of nurse educators, 32%(n=9) had income between \$25 000 and \$30 000 whereas majority of nursing students, 81%(n=128) relied on a household family income below \$15 000.

Table 10

Social Characteristics

Social	Category	Nurse Educators		Nursing Students	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Ethnic background	Native	23	82%	147	92%
	Foreigners	5	18%	12	8%
	Total	28	100%	159	100%
Primary language	Official	4	14%	9	6%
	Native	23	82%	140	88%
	Foreign	2	7%	10	6%
	Total	28	100%	159	100%
Religion	Christianity	24	86%	154	97%
	The African Apostolic Church	1	4%	2	1%
	Catholic	1	4%	2	1%
	Prefer not to say	2	7%	1	1%
	Total	28	100%	159	100%
Type of accommodation	Urban owned accommodation	15	54%	0	0%
	Homestead (village)	1	4%	4	3%
	Urban rented accommodation	11	39%	61	38%

	Resettlement	1	4%	N/A	N/A
	Off campus student accommodation			82	52%
	On-campus	N/A		12	8%
	Total	28	100%	159	100%
Monthly family income	Less than \$15000	3	11%	128	81%
	\$15000-\$20000	2	7%	4	3%
	\$20000-\$25000	8	29%	8	5%
	\$25000-\$30000	9	32%	7	4%
	\$30000-\$50000	6	21%	5	3%
	Above 50000	0	0%	7	4%
	Total	28	100%	159	100%

Tests for Assessing Suitability of EFA. Various tests were used in assessing the suitability of EFA of challenges faced by both nurse educators and nursing students. The CA was used to measure the internal consistency of the responses, and this has been described in the questionnaire reliability section. The KMO was also measured on theory- and clinical-related items to determine the sample adequacy of the items to carry out EFA. The observed KMO values were greater than the 0.5 threshold implying the sample was adequate for EFA (Kaiser, 1974). Lastly, the Bartlett's test of Sphericity was measured on all items to determine if the observed items were correlated. The observed values of 0.000 which is below the threshold of 0.05 indicated that there were significant correlations between the items thus, they were factorable. For an item to contribute or influence a factor the responses to it on the questionnaire needed to be in such a position, on the Likert scale, that it indicated a less favourable experience or a poverty of quality. For example, strongly disagreeing to 'I was very satisfied with the supervision' or a rating of the 'experience with Wi-Fi' as poor would each indicate a challenge.

Challenges Faced by Nursing Students.

Hypothesis 1

H₀ Nursing education in the 21st century is not faced with challenges.

H₁ Nursing education in the 21st century is faced with various challenges.

EFA was applied on in-class and clinical learning challenges items for students to determine the challenges prevalent in baccalaureate nursing education in Namibia. Some of the factors were excluded from the analysis due to low factor loadings and cross-loadings to improve on EFA validity.

Assessment of the Suitability of In-Class Learning Challenges Items For EFA. Table 11 below shows various tests which were used in assessing the suitability of the EFA of in-class learning challenges faced by nursing students. The CA had a value of 0.875, the KMO a value of 0.837 and the Bartlett's test of Sphericity had an observed value of 0.000.

Table 11

EFA Suitability for In-class Learning Challenges

Cronbach's alpha		0.875
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.837
Bartlett's Test of Sphericity	Approx. Chi-Square	2 481.322
	Df	465
	Sig.	0.000

Determination of Optimal In-Class Learning Challenges. Table 12 below shows the eigen values and proportion of variance explained by each of the extracted factors which were used in determining the optimum factors. As shown in the table, thirty-one factors could be extracted from the given items, however, only seven factors were retained in the analysis as they had eigen values above 1 (Guttman, 1954; Mahdaviyazad et al., 2018). The first factor explained the highest variance from the in-class learning challenges items and had an eigen

value of 7.736 which was 24.955% of the total variance observed from all items. The second factor had an eigen value of 4.25 which constituted 13.708% of the total variance. The third factor had an eigen value of 2.408, explaining 7.768% of the total variance. This was followed by the fourth factor which had an eigen value of 1.93 accounting for 6.225% of the total variance. The fifth factor had an eigen value of 1.453 with a percentage variance of 4.689%. The sixth factor had an eigen value of 1.266 with a percentage variance of 4.085%. And the final factor had an eigen value of 1.098 with a percentage variance of 3.541%. The cumulative variance explained by all the seven factors was 64.972% which is considered adequate since it is above the 50% threshold suggested by Dawson (2017). The remaining factors accounted for 35.028% of the total variance but they were individually insignificant to be included.

Table 12

Determination of the Optimum Number of In-class Learning Challenges

Component (factor)	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.736	24.955	24.955	7.736	24.955	24.955
2	4.250	13.708	38.663	4.250	13.708	38.663
3	2.408	7.768	46.431	2.408	7.768	46.431
4	1.930	6.225	52.656	1.930	6.225	52.656
5	1.453	4.689	57.345	1.453	4.689	57.345
6	1.266	4.085	61.430	1.266	4.085	61.430
7	1.098	3.541	64.972	1.098	3.541	64.972
8	0.943	3.041	68.012			
9	0.865	2.789	70.801			
10	0.847	2.734	73.535			
11	0.786	2.536	76.071			
12	0.667	2.150	78.222			
13	0.664	2.143	80.364			
14	0.618	1.994	82.359			
15	0.530	1.708	84.067			
16	0.503	1.622	85.689			
17	0.476	1.536	87.225			
18	0.466	1.504	88.729			
19	0.437	1.411	90.140			
20	0.390	1.257	91.398			
21	0.374	1.205	92.603			
22	0.369	1.190	93.792			
23	0.284	0.917	94.710			
24	0.276	0.892	95.601			

25	0.271	0.875	96.476
26	0.222	0.717	97.193
27	0.204	0.658	97.851
28	0.190	0.613	98.464
29	0.186	0.601	99.064
30	0.147	0.476	99.540
31	0.143	0.460	100.000

Description of the Extracted In-Class Learning Challenges. Table 13 below shows the determined factors and their associated items, factor loadings, communalities, and CA. All but one factor (which had a CA value of 0.515) had CA values above 0.7 suggesting the reliability of the factors to lie under each respective factor. Communalities for all items were above 0.4 which indicated that they were adequately explained by the extracted factors (Fabrigar & Wegener, 2011). When communalities are above 0.4, it implies that the extracted factor explains more than 40% of the variance explained in each of the items. Factor loadings suggest a positive correlation between the items and the determined factor.

The first challenge to be determined was ‘challenges related to access of e-resources for research’. The item that influenced this factor the most was ‘access to citation databases’ with a factor loading of 0.872 which indicates that a strong and positive relationship was observed between this item and challenges related to access of e-resources for research. The second highest factor with a factor loading of 0.863 was ‘access to bibliographic databases.’ The other items influencing this factor were ‘access to e-journals’ (0.807), ‘access to e-newspapers’ (0.801); ‘access to e-books’ (0.799); ‘access to e-theses and dissertations’ (0.774); ‘access to e-proceedings’ (0.742); ‘access to patent databases’ (0.710); ‘access to statistical databases’ (0.662) and ‘access to repository for research’ (0.697). The communalities for these items ranged from 0.537 to 0.790 and the CA was 0.939.

The second challenge identified was related to ‘quality of e-learning resources’. The item that greatly contributed towards this factor was ‘download and use of free and open-source software for teaching and learning’ with a factor loading of 0.764. In second place was ‘access

to software' with a factor loading of 0.751. The rest of the items were 'access to online or virtual technologies' (0.739); 'learning management services' (0.693); 'support for maintenance and repair of ICT' (0.649); and 'speed of internet' (0.537). The communalities for these items ranged from 0.416 to 0.643. The CA had a value of 0.81.

The third factor identified was 'financial constraints' associated with the 'cost of tuition' (0.883), 'other costs e.g., transport, accommodation, printing etc' (0.835), and the 'lack of technologically advanced simulators for learning/teaching clinical skills' (0.710). The communalities for items related to financial challenges ranged from 0.649 to 0.803. A CA value of 0.787 was observed.

Next were the 'IT-related challenges' a factor which was mainly influenced by 'access to computer labs' with a factor loading of 0.714 and least by 'access to e-classroom facilities' (e.g., computers, projectors, SMART boards) which had a factor loading of 0.560. The respective communalities for access to computer labs and e-classroom facilities were 0.702 and 0.648. The CA had a value of 0.787.

'Challenges related to the receiving of the curriculum' constituted the fifth factor. The challenge was influenced by 'shortage of educators' with a factor loading of 0.812 followed by 'inexperienced educators' with a factor loading of 0.789. The other items that contributed to this factor were, 'an irrelevant curriculum', 'large classes' and 'lack of classroom space' with factor loadings of 0.708, 0.713, 0.669 and 0.527 respectively. The respective communalities ranged from 0.504 to 0.673. The observed CA value was 0.736.

The students also highlighted 'data storage and visualisation challenges' which were reported through 'access to data visualisation software', 'access to data storage', and 'access to citation/reference management software' with factor loadings of 0.719, 0.643 and 0.516 respectively. The communalities shown for these ranged from 0.559 to 0.709. The CA had a value of 0.726.

Lastly, the students indicated issues related to ‘age at enrolment and entry requirements’ influenced by the ‘entry requirements for studying nursing’ (0.774) and the ‘age at enrolment into nurse training’ (0.705). The communalities for each item were 0.664 and 0.586 respectively. The CA had a value of 0.515.

Table 13

Description of the Extracted In-class Learning Challenges

In-class learning challenges	Items	Factor loadings	Communalities	Cronbach's alpha
Challenges related to access of e-resources for research (Factor 1)	Access to citation databases	.872	.781	.939
	Access to bibliographic databases	.863	.762	
	Access to e-journal	.807	.733	
	Access to e-newspapers	.801	.676	
	Access to e-books	.799	.706	
	Access e-theses and dissertations	.774	.741	
	Access to e-proceedings	.742	.790	
	Access to patent databases	.710	.756	
	Access to statistical databases	.662	.724	
Quality of e-learning resources' (Factor 2)	Download and use of free and open-source software	.764	.620	.81
	Access to software	.751	.589	
	Access to online or virtual technologies	.739	.643	
	Learning management services	.693	.569	
	Support for maintenance and repair of ICT	.649	.540	
	Speed of internet	.537	.416	
Financial constraints (Factor 3)	The cost of tuition	.883	.803	.787
	Other costs e.g., transport, accommodation, printing etc	.835	.717	
	The lack of technologically advanced simulators	.710	.649	

	for learning/teaching clinical skills			
IT related challenges (Factor 4)	Computer labs	.714	.702	.747
	e-classroom facilities (e.g., computers, projectors, SMART boards etc)	.560	.648	
Challenges related to the receiving of the curriculum (Factor 5)	Shortage of educators	.812	.673	.736
	Inexperienced educators	.789	.633	
	An irrelevant curriculum	.708	.543	
	Large classes	.669	.596	
	Lack of classroom space	.527	.504	
Data storage and visualisation challenges (Factor 6)	Access to data visualisation software	.719	.709	.726
	Access to data storage	.643	.570	
	Access to citation / reference management software	.516	.559	
Issues related to age at enrolment and entry requirements (Factor 7)	The entry requirements for studying nursing	.774	.664	.515
	The age at enrolment into nurse training	.705	.586	

Assessment of the Suitability of Clinical Learning Challenges Items for EFA. Table 14 below shows various tests which were used in assessing the suitability of the EFA of clinical practice challenges faced by nursing students. The CA had a value of 0.917, the KMO a value of 0.872 and the Bartlett's test of Sphericity had an observed value of 0.000.

Table 14

EFA Suitability for Clinical Learning Challenges

Cronbach's alpha		0.917
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.872
Bartlett's Test of Sphericity	Approx. Chi-Square	2429.882
	Df	351
	Sig.	.000

Determination of the Optimal Number of Clinical Learning Challenges. The eigenvalue approach was used to determine the optimal number of factors for clinical learning challenges. Table 15 below shows the eigenvalues and proportion of variance explained by each of the extracted factors. The results show that from the clinical learning items, 27 factors could be derived but only 6 factors were retained as these had eigenvalues greater than 1.

The first factor explained the highest variance from the clinical learning challenges items and had an eigenvalue of 9.279 which had a contribution of 34.368% of the total variance observed. The second factor had an eigenvalue of 3.071 which constituted 11.374% of the total variance. The third factor had an eigenvalue of 1.703 which was explained by 6.306% of the total variance. The fourth factor had 1.529 as its eigenvalue, contributing to 5.665% of the total variance. The fifth factor had an eigenvalue of 1.235 with a percentage variance of 4.574%. And the last factor had an eigenvalue of 1.065 with a percentage variance of 3.943%. The selected factors had a cumulative variance of 66.230% which is considered adequate since it is above the 50% threshold suggested by Dawson (2017). The extracted factors adequately explained the variance in the retained items.

Table 15*Determination of the Optimum Number of Clinical Learning Challenges*

Component (Factor)	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.279	34.368	34.368	9.279	34.368	34.368
2	3.071	11.374	45.742	3.071	11.374	45.742
3	1.703	6.306	52.049	1.703	6.306	52.049
4	1.529	5.665	57.713	1.529	5.665	57.713
5	1.235	4.574	62.288	1.235	4.574	62.288
6	1.065	3.943	66.230	1.065	3.943	66.230
7	.886	3.281	69.511			
8	.814	3.014	72.525			
9	.780	2.890	75.415			
10	.699	2.588	78.003			
11	.688	2.548	80.551			
12	.580	2.147	82.698			
13	.555	2.055	84.753			
14	.518	1.920	86.673			
15	.471	1.744	88.417			
16	.418	1.549	89.966			
17	.400	1.482	91.448			
18	.350	1.297	92.745			
19	.322	1.191	93.936			
20	.298	1.104	95.040			
21	.278	1.031	96.070			
22	.260	.962	97.032			
23	.206	.763	97.795			
24	.190	.705	98.500			
25	.174	.646	99.146			
26	.128	.475	99.620			
27	.102	.380	100.000			

Description of the Extracted Clinical Learning Challenges. Table 16 below presents the selected clinical learning challenges with the associated items, factor loadings, CA and communalities. The factor loadings represent the strength of the relationship between the item and the factor. Three of the factors had a CA value above 0.7 while two had a CA value above 0.6 and below 0.7 suggesting the reliability of the factors to lie under each respective factor. One factor had a CA value of 0.39 which, although low, was retained because the Eigen value of greater than 1 satisfied the condition of retaining it. Communalities for all items were above 0.4 which indicated that they were adequately represented by the extracted factors.

Table 16

Distribution of Factor Loadings for Clinical Learning Challenges

Clinical learning challenges	Item	Factor Loadings	Communalities	Cronbach's alpha
Supervision and preceptorship challenge (Factor 1)	The preceptor/clinical instructors giving constant feedback'	.822	.739	.937
	Preceptors/clinical instructor helped with meeting learning objectives	.807	.745	
	Preceptor/clinical instructor was a team player	.802	.707	
	Preceptor/clinical instructor helped put theory into practice	.788	.743	
	Meetings with preceptors/clinical instructor focused on learning	.787	.719	
	Satisfaction with supervision	.776	.730	
	Received individual supervision	.772	.636	
	Relationship with preceptor/clinical instructor was a trusting one	.765	.648	
	Preceptor/clinical instructor competent in teaching nursing skills	.755	.664	

Leadership and management challenges (Factor 2)	Nurse in charge was a team player	.840	.821	.847
	Nurse in charge valued staff	.833	.821	
	Nurse in charge's feedback contributed positively to learning	.692	.685	
	Adequate staff to provide safe care	.604	.569	
	Areas worked described as good leaning environments	.597	.640	
Unsupportive learning environment (Factor 3)	I felt accepted when I started my clinical placement	.770	.660	.812
	The staff were interested in student supervision	.738	.664	
	I felt included during clinical discussions	.683	.615	
	I found the atmosphere conducive for learning	.677	.574	
	I was treated equal to other nursing students	.589	.552	
Lack of consumables and resources for learning (Factor 4)	Computers were easily accessible	.822	.715	.697
	Internet was available, so students could look up information relating to patient diagnosis and care	.727	.640	
	Consumables such as gloves, aprons were easily available	.546	.508	
Challenges with communication and technology (Factor 5)	It was easy to communicate with patients	.721	.579	.615
	Patient care records were clear	.683	.619	
	I felt prepared to use technology at the bedside	.522	.576	
The role of social media (Factor 6)	Found useful information relating to patient diagnosis and social media	.747	.686	0.39
	Could use smartphone to look up anything not understood	.712	.629	

The first clinical learning challenge was 'supervision and preceptorship challenges', with 9 items having factor loadings between 0.755 and 0.822. Supervision and preceptorship were mainly influenced by 'the preceptor/clinical instructors giving constant feedback'. The item had the highest factor loading of 0.822, representing a strong and positive contribution

towards supervision and preceptorship challenges. This factor was also driven by the 'preceptor/clinical instructor's ability to help the student(s) meet their learning objectives', with a factor loading of 0.807. The least contribution towards supervision and preceptorship challenges was observed from 'the clinical instructor was able to help me meet my learning objectives' associated with the least factor loadings of 0.755. The observed communalities for items influencing this first factor ranged from 0.636 to 0.745. The observed CA value was 0.937.

The second challenge to be determined was 'leadership and management challenges' which had five items with factor loadings ranging from 0.597 to 0.840. The factor was greatly influenced by the item 'the nurse in charge was a team player' with a factor loading of 0.840. In addition, 'the nurse in charge valued staff' item also contributed towards leadership and management with a factor loading of 0.833. The least item influencing leadership and management challenges was 'the areas I worked in can be described as good learning environments' with a factor loading of 0.597. This factor's items had communalities spanning from 0.569 to 0.821. The observed CA value was 0.847.

The third factor was described as 'unsupportive learning environment' which was supported by five items. The challenge was mostly driven by 'feeling accepted on starting clinical placement'. The item had a factor loading of 0.770 which showed a strong and positive contribution towards the challenge. The 'staff's interest in student supervision' also contributed to an unsupportive learning environment with a factor loading of 0.738. The other items that contributed to this factor were 'feeling included during clinical discussions' (0.683); 'atmospheres were conducive for learning' (0.677); and 'being treated equal to other nursing students' (0.589). The communalities ranged from 0.552 to 0.664. The items had a CA value of 0.812.

The fourth challenge was noted to be the 'lack of consumables and resources for learning', which comprised three items, whose factor loadings spanned from 0.546 to 0.822. The item 'computers easily accessible' contributed the most towards this factor with a factor loading of 0.822. The availability of 'internet, so students could look up information relating to patient diagnosis and care', also contributed significantly to the lack of consumables and resources for learning with a factor loading of 0.727. The least contributor to this factor was the 'availability of consumables such as gloves and aprons', which had the lowest factor loading of 0.546. The communalities for these items ranged from 0.508 to 0.715. The CA value was 0.697 which is acceptable in suggesting internal consistency.

The fifth factor was described as challenges with 'communication and technology'. This factor was influenced by three items with factor loadings within the range 0.522 - 0.721. The items that influenced this factor were 'easy communication with patients'; 'clear patient care records'; and 'feeling prepared to use technology at the bedside' which had loadings of 0.721, 0.683, 0.614 and 0.522 respectively. The communalities shown for these items ranged from 0.576 to 0.619. The observed CA value was 0.615 which is acceptable in suggesting internal consistency.

The sixth and final factor, was the role of social media. This was influenced by the items 'could use smartphone to look up anything not understood regarding patient care with a factor loading of 0.712 and 'found useful information relating to patient diagnosis and care on social media' with a factor loading of 0.747. The communalities for these items were 0.686 and 0.629 respectively. The CA value was 0.39 and although it is low the Eigen value approach allowed for its retention.

Challenges Faced by Nurse Educators.

Hypothesis 1

H₀ Nursing education in the 21st century is not faced with challenges.

H₁ Nursing education in the 21st century is faced with various challenges.

The researcher determined nurse educator challenges based on how their responses suggested a problem as outlined in Chapter Three. EFA was applied on in-class and clinical learning challenges items for nurse educators to determine the challenges prevalent in baccalaureate nursing education in Namibia. Some of the factors were excluded from the analysis due to low factor loadings and cross-loadings to improve on EFA validity.

Assessment for the Suitability of In-class Teaching Challenges Items for EFA. Table 17 below shows various tests which were used in assessing the suitability of the EFA of theory challenges faced by nurse educators. The CA had a value of 0.923 and the KMO a value of 0.510 while the Bartlett's test of Sphericity had an observed value of 0.000.

Table 17

EFA Suitability tests for In-class Teaching Challenges

Cronbach's alpha		0.923
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.510
Bartlett's Test of Sphericity	Approx. Chi-Square	453.532
	Df	210
	Sig.	.000

Determination of Optimal Number of In-class Teaching Challenges. Table 18 below shows the determination of the optimum factors based on the eigen values and percentage variances explained by each of the identified factors. Of the 21 possible factors, only the first seven were retained with eigen values greater than 1. The first factor had an eigen value of 7.033 explaining 33.492% of the total variance. Factor 2 had an eigen value of 3.237 and accounted for 15.414% of the total variance. The third had an eigen value of 2.093 accounting for 9.966% of the total variance. The fourth had an eigen value of 1.894 explaining 9.020% of the total variance whilst the fifth factor had an eigen value of 1.333, explaining 6.346% of the total variance. The sixth factor had an eigen value of 1.267 accounting for 6.032% of the total variance and the last had an eigen value of 1.027 explaining 4.893% of the total variance. Collectively, all the factors accounted for 85.163% of the total variance which represents an adequate capturing of the variance explained by all items included in the analysis. The remaining factors accounted for the remaining variance proportion of 14.837% whose addition was insignificant to explaining theory-related challenges.

Table 18

Determination of the Optimum Number of In-class Teaching Challenges

Component (Factor)	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.033	33.492	33.492	7.033	33.492	33.492
2	3.237	15.414	48.906	3.237	15.414	48.906
3	2.093	9.966	58.872	2.093	9.966	58.872
4	1.894	9.020	67.892	1.894	9.020	67.892
5	1.333	6.346	74.238	1.333	6.346	74.238
6	1.267	6.032	80.271	1.267	6.032	80.271
7	1.027	4.893	85.163	1.027	4.893	85.163
8	.657	3.128	88.291			
9	.580	2.763	91.054			
10	.430	2.050	93.103			
11	.336	1.600	94.704			
12	.286	1.361	96.065			
13	.220	1.046	97.111			
14	.178	.848	97.959			
15	.129	.616	98.575			

16	.091	.434	99.009
17	.074	.353	99.362
18	.060	.285	99.647
19	.036	.171	99.818
20	.028	.132	99.950
21	.011	.050	100.000

Description of the Extracted In-Class Teaching Challenges. Table 19 below shows the identified factors, associated items, factor loadings, communalities, and the CA value. All the factor loadings were above 0.5 and were positive which implies the items were positively related to the identified challenges. All except one factor (which had a CA value of 0.593) had CA values above 0.7 suggesting the reliability of the factors to lie under each respective factor. Communalities were above 0.4 implying that the items were adequately explained by the extracted factors.

The first identified factor was ‘software and data storage challenges’ and was influenced by four items: ‘download and use of free and open-source software for teaching and learning’ with a factor loading of 0.892; ‘citation/reference management software’ (0.884); ‘access to data storage’ (0.842); and ‘data visualisation software’ (0.773). All the items greatly influenced this first factor indicating a strong positive correlation. The communalities ranged from 0.864 to 0.905. The CA value was 0.925.

The second in-class teaching challenge identified from nurse educators was on ‘accessibility to e-resources for research support’. This challenge was influenced by ‘access to electronic newspapers’ with a factor loading of 0.862; ‘access to patent databases’ (0.854); ‘access to e-proceedings of conferences’ (0.793); and ‘access to bibliographic databases’ (0.772). The communalities for these items had values ranging from 0.823 to 0.900. The CA had a value of 0.915.

The third factor was ‘curriculum administration challenges’. The challenges are mostly a result of ‘inexperienced educators’ and ‘shortage of educators’ with factor loadings of 0.873 and 0.870 respectively indicating a strong and positive correlation with curriculum

administration challenges. The other influence towards this factor was from the item 'lack of consideration of learning styles' with a factor loading of 0.810 and the least was from 'lack of classroom space' also showing a strong positive correlation. The communalities for the items ranged from 0.780 to 0.888. The CA value was 0.85.

The fourth factor identified was 'institutional support for information sharing'. This was influenced by two factors, 'institutional email services' and 'learning management services' with factor loadings of 0.917 and 0.761 respectively. The corresponding communalities were 0.892 and 0.853. The CA value was 0.769.

The fifth factor was 'utilisation of the digital environment'. This was influenced by experiences with 'e-portfolio' and 'institutional repository for sharing research' with factor loadings of 0.823 and 0.577 respectively. The associated communalities were 0.916 and 0.733 and the CA was 0.762.

The sixth identified factor was 'IT related challenges'. Two items influenced this factor: 'access to e-classroom facilities' with a factor loading of 0.795 and 'access to computer labs' with a factor loading of 0.775. The communalities for the two items were 0.879 and 0.839 respectively. The CA had a value of 0.729.

The last factor identified was 'financial constraints' associated with the 'cost of tuition' (0.726); 'lack of technologically advanced simulators for learning/teaching clinical skills' (0.717); and 'other costs e.g., transport, accommodation, printing etc' (0.666). The communalities for items related to financial challenges ranged from 0.737 to 0.852. A CA value of 0.593 was observed which was acceptable in indicating that all items demonstrated internal consistency, rendering them reliable for statistical analysis.

Table 19*Description of the Determined In-class Teaching Challenges*

In-class teaching challenges	Item	Factor Loading	Communalities	Cronbach's alpha
Software and data storage challenges (Factor 1)	Download and use of free and open-source software for teaching and learning	.892	.864	.925
	Citation/reference management software'	.884	.894	
	Access to data storage	.842	.902	
	Data visualisation software	.773	.905	
Accessibility to e-resources for research support (Factor 2)	Access to electronic newspapers	.862	.900	.915
	Access to patent databases	.854	.823	
	Access to e-Proceedings of conferences	.793	.858	
	Access to bibliographic databases	.772	.857	
Curriculum administration challenges (Factor 3)	Inexperienced educators	.873	.780	.850
	Shortage of educators	.870	.861	
	Lack of consideration of learning styles	.810	.861	
	Lack of classroom space	.721	.888	
Institutional support for information sharing (Factor 4)	Institutional email services	.917	.892	.769
	Learning management services	.761	.853	
Utilisation of the digital environment (Factor 5)	e-Portfolio	.823	.916	.762
	Institutional repository for sharing research	.577	.773	
IT related challenges (Factor 6)	Access to e-classroom facilities	.795	.879	.729
	Access to computer labs	.775	.839	
Financial constraints (Factor 7)	Cost of tuition	.726	.852	.593
	Lack of technologically advanced simulators for learning/teaching clinical skills'	.717	.751	
	Other costs e.g., transport, accommodation, printing etc	.666	.737	

Assessment for the Suitability of Clinical Teaching Items for EFA. Table 20 below shows various tests which were used in assessing the suitability of EFA clinical teaching challenges faced by nurse educators. The CA had a value of 0.944, the KMO a value of 0.533 and the Bartlett's test of Sphericity had an observed value of 0.000.

Table 20

EFA Suitability Tests for Clinical Teaching Challenges

Cronbach's alpha		0.944
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.533
Bartlett's Test of Sphericity	Approx. Chi-Square	425.718
	Df	210
	Sig.	.000

Determination of the Optimal Number of Clinical Teaching Challenges. Table 21 below shows the eigenvalues and proportion of variance explained by each of the extracted factors. The results show that from the clinical teaching challenges items, 21 factors could be derived but only the first 6 factors which had eigen values greater than 1 were retained. The selected factors had a cumulative variance of 78.240% which is considered adequate since it is above the 50% threshold as suggested by Dawson (2017). The remaining factors accounted for 21.76% of the total variance but they were individually insignificant to represent clinical teaching challenges faced by nurse educators.

The first factor explained the highest variance from the clinical teaching challenges items and had an eigen value of 7.924 which had a contribution of 37.732% of the total variance observed. The second factor had an eigen value of 2.283 which constituted 10.871% of the total variance. The third factor had an eigen value of 2.001 which was explained by 9.529% of the total variance. The fourth factor had an eigen value of 1.664 with a percentage variance of 7.992%. The fifth factor had an eigen value of 1.427 with a percentage variance of 6.795%. The last factor had an eigen value of 1.132 with a percentage variance of 5.392%.

Table 21*Determination of the Optimum Number of Clinical Teaching Challenges*

Component (Factor)	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.924	37.732	37.732	7.924	37.732	37.732
2	2.283	10.871	48.603	2.283	10.871	48.603
3	2.001	9.529	58.132	2.001	9.529	58.132
4	1.664	7.922	66.053	1.664	7.922	66.053
5	1.427	6.795	72.848	1.427	6.795	72.848
6	1.132	5.392	78.240	1.132	5.392	78.240
7	.893	4.255	82.495			
8	.697	3.317	85.812			
9	.646	3.078	88.890			
10	.517	2.461	91.351			
11	.408	1.945	93.296			
12	.371	1.768	95.064			
13	.281	1.339	96.403			
14	.214	1.021	97.424			
15	.159	.756	98.180			
16	.137	.653	98.833			
17	.121	.578	99.411			
18	.044	.211	99.622			
19	.041	.197	99.819			
20	.029	.140	99.959			
21	.009	.041	100.000			

Description of the Extracted Clinical Teaching Challenges. Table 22 below presents the selected clinical teaching challenges with the associated items, factor loadings, Cronbach's alpha (CA), and communalities. All the factor loadings were above 0.5 and were positive which implies the items were positively related to the identified challenges. All except one factor (which had a CA value of 0.606) had CA values above 0.7 suggesting the reliability of the factors to lie under each respective factor. Communalities were above 0.4 indicating that the items were adequately explained by the extracted factors.

The first clinical teaching challenge was 'the nurse educator's place in the clinical environment'. This factor was influenced by the five items which indicated the difficulties nurse educators faced in the clinical practice areas. The greatest influence was from the item 'application of care protocols existing in the clinical area' with a factor loading of 0.858. The

other items of influence were 'participation in decision-making mechanisms about patient care' (0.826); 'information and opinion exchange with members of the healthcare team' (0.780); 'patient care practices' (0.647); and 'completing nursing care monitoring forms' (0.638). The communalities ranged from 0.760 to 0.874. The CA value was 0.893.

The second challenge to be determined was related to 'maximising nursing student learning experiences' which had six items with factor loadings of 0.585 to 0.887. This factor was greatly influenced by difficulties experienced in 'providing clinical practice area' with a factor loading of 0.831 and least by 'the number of patients' with a factor loading of 0.585. The items in-between included difficulties with 'daily monitoring of students' (0.705); 'cooperating with other members of the healthcare team' (0.686); 'orientation of students to the clinical environment' (0.617); 'cooperation with the nurse team' (0.609). The factor had communalities ranging from 0.611 to 0.831. The CA had a value of 0.860.

The third factor was challenges related to 'space and case diversity'. This was strongly influenced by difficulties relating to 'providing changing rooms for students' with a factor loading of 0.864. It was also influenced by 'providing meeting rooms' (0.851). The least influence was from difficulties related to 'case diversity' (0.723). The associated communalities ranged from 0.751 to 0.793 and the CA was 0.831.

The fourth factor was 'increased workload'. This was influenced by difficulties relating to 'workload' and 'number of students' with factor loadings of 0.911 and 0.848 respectively. The associated communalities were 0.830 and 0.893 respectively, and the CA was 0.817.

The fifth factor was 'nurse educator unpreparedness'. This was influenced by the items related to difficulties in 'presenting education experiences suited to learning outcomes of course'; 'being a role model for students' and 'achieving course objectives' with factor loadings of 0.872, 0.744 and 0.697 respectively. The items had communalities ranging from 0.708 to 0.898 and the CA was 0.785.

The sixth factor was ‘theory-practice gap’ which was influenced by difficulties regarding ‘students’ knowledge and skills specific to practice area’ with a factor loading of 0.778 and ‘putting learned theory into practice’ with a factor loading of 0.695. Theory-practice gap items communalities ranged of 0.663 and 0.827. A CA value of 0.606 was observed and was considered satisfactory in suggesting internal consistency.

Table 22

Distribution of Factor Loadings for Clinical Teaching Challenges

Clinical teaching challenges	Item	Factor Loading	Communalities	Cronbach's alpha
The nurse educator's place in the clinical environment (Factor 1)	Application of care protocols existing in the clinical area	.858	.874	0.893
	Participation in decision-making mechanisms about patient care	.826	.814	
	Information and opinion exchange with members of the healthcare team	.780	.862	
	Patient care practices	.647	.787	
	Completing nursing care monitoring forms	.638	.760	
Maximising nursing student learning experiences (Factor 2)	Providing clinical practice area	.887	.831	0.860
	Daily monitoring of students	.705	.711	
	Cooperating with other members of the healthcare team	.686	.729	
	Orientation of students to the clinical environment	.617	.611	
	Cooperation with the nurse team	.609	.745	
Space and case diversity (Factor 3)	The number of patients	.585	.680	0.831
	Providing changing rooms for students	.864	.751	
	Providing meeting rooms	.851	.793	
Increased workload (Factor 4)	Case diversity	.723	.793	0.817
	Workload	.911	.893	
Nurse educator unpreparedness (Factor 5)	Number of students	.848	.830	0.785
	Presenting education experiences suited to learning outcomes of course	.872	.898	
Theory-practice gap (Factor 6)	Being a role model for students	.744	.708	.606
	Achieving course objectives	.697	.869	
	Students' knowledge and skills specific to practice area	.778	.663	
	Putting learned theory into practice	.695	.827	

Section Two: Relationship Between Clinical and In-class Learning/Teaching Challenges.

Hypothesis 2

H₀ Clinical education has no association with in-class education.

H₁ Clinical education has an association with in-class education.

Relationship Between Student Clinical and In-class Learning Challenges. The assessment showed that clinical learning challenges were weakly correlated with in-class learning challenges with the correlation coefficients ranging between 0.014 to 0.259. The highest correlation was observed between challenges related to access of e-resources for research (in-class) and supervision and preceptorship challenges (clinical) with a correlation coefficient of 0.259 and a p-value of 0.001 indicating a positive correlation and statistical significance. Supervision and preceptorship challenges (clinical) were also positively correlated to data storage and visualisation challenges (in-class), and to quality of e-learning resources with coefficients of 0.258(p = 0.001) and 0.249(p = 0.002) respectively. Other significant correlations, also positive, were noted. Challenges with communication and technology (clinical) had a correlation with quality of e-learning resources (in-class) with a coefficient of 0.219(p = 0.006). And lack of consumables and resources for learning (clinical) correlated with both IT related challenges (in-class) with a coefficient of 0.218(p = 0.006) and quality of e-learning resources (in-class) with correlation coefficients of 0.218(p = 0.006) and 0.207(p = 0.009) respectively. Unsupportive learning environment (clinical) correlated with quality of e-learning resources (in-class) with a correlation coefficient 0.206(p = 0.009). (See Table 23).

Table 23*Relationship Between Student Clinical and In-class Learning Challenges*

Clinical In-class	Supervision and preceptorship challenges	Leadership and management challenges	Unsupportive learning environment	Lack of consumables and resources for learning	Challenges with communication and technology	The role of social media
Challenges related to access of e-resources for research	.259** (0.001)	0.089 (0.263)	.195* (0.014)	0.077 (0.335)	0.068 (0.397)	0.117 (0.142)
Quality of e-learning resources	.249** (0.002)	0.137 (0.086)	.206** (0.009)	.207** (0.009)	.219** (0.006)	.183* (0.021)
Challenges related to the receiving of the curriculum	.214** (0.007)	0.115 (0.149)	.169* (0.033)	0.142 (0.075)	0.083 (0.3)	0.14 (0.078)
Financial constraints	0.039 (0.624)	-0.078 (0.331)	-0.043 (0.59)	.163* (0.04)	0.026 (0.743)	-0.014 (0.864)
Data storage and visualisation challenges	.258** (0.001)	0.025 (0.759)	0.061 (0.442)	-0.072 (0.366)	0.034 (0.673)	0.069 (0.385)
Issues related to citation/reference management software	-0.039 (0.622)	0.035 (0.659)	-0.061 (0.442)	0.049 (0.537)	-0.048 (0.55)	-0.016 (0.839)
IT related challenges	.201* (0.011)	.168* (0.034)	0.136 (0.088)	.218** (0.006)	0.143 (0.071)	.162* (0.042)

Relationship Between Nurse Educator Clinical and In-class Teaching Challenges.

To ascertain the relationship between clinical teaching and in-class teaching challenges correlation analysis was performed on the established factors as shown in the table below. The analysis revealed that clinical teaching challenges exhibited weak to moderate correlations with in-class teaching challenges, with correlation coefficients ranging from 0.026 to 0.556. The strongest correlation, which was positive was noted between increased workload (clinical) and utilisation of the digital environment (in-class), with a correlation coefficient of 0.556 with a p value of 0.002, indicating a moderate and statistically significant correlation. Increased workload (clinical) was also positively correlated with accessibility to e-resources for research

support (in-class) with a correlation coefficient of 0.526 at a p-value of 0.004 also indicating moderate and statistically significant correlation. (See Table 24).

Table 24

Relationship Between Nurse Educator Clinical and In-class Teaching Challenges

Clinical In-class	Maximising nursing student learning experiences	The nurse educator's place in the clinical environment	Space and case diversity	Nurse educator unpreparedness	Theory- practice gap	Increased workload
Software and data storage challenges	0.282 (0.146)	0.322 (0.094)	0.051 (0.797)	0.142 (0.47)	.436* (0.02)	0.289 (0.136)
Accessibility to e-resources for research support	0.217 (0.267)	0.011 (0.955)	0.105 (0.596)	0.111 (0.574)	0.136 (0.489)	.526** (0.004)
Curriculum administration challenges	0.279 (0.151)	0.135 (0.494)	0.064 (0.748)	0.152 (0.441)	0.183 (0.353)	0.218 (0.265)
Financial constraints	0.148 (0.452)	0.067 (0.736)	-0.149 (0.45)	0.143 (0.468)	-0.119 (0.548)	0.232 (0.234)
Institutional support for information sharing	0.109 (0.581)	0.057 (0.772)	0.134 (0.495)	0.256 (0.188)	0.211 (0.282)	0.265 (0.173)
Utilisation of the digital environment	.408* (0.031)	0.139 (0.481)	0.1 (0.614)	0.052 (0.794)	0.299 (0.122)	.556** (0.002)
IT related challenges	0.156 (0.429)	0.222 (0.255)	0.303 (0.118)	0.009 (0.965)	0.026 (0.894)	0.284 (0.143)

Section Three: Qualitative Data Analysis

This section presents the study findings from thematic analysis of qualitatively collected data. After tidying up the transcripts, the researcher used the software MAXQDA for data coding categorisation. Theme development was done using a combination of the software, a code book typed in word document, and pen and paper. The full description of the process is in Chapter Three. Participants chose their own pseudonyms thus the names accompanying the direct quotes are not real.

Trustworthiness of Data. Five criteria were applied to ensure trustworthiness: credibility, dependability, confirmability, transferability and authenticity (Polit & Beck, 2021) as follows:

Credibility: The researcher did not deviate from the research design and methodology. The interview guide was pretested on one nurse educator and two nursing students to check for ambiguity and estimate interview session time. In addition, participants were afforded adequate time to respond to the interview questions and probes were used appropriately. The researcher has kept all the recordings of the sessions and was able to go back to these several times during the reading of the transcriptions to identify and capture any non-word verbal expressions such as sighs and laughs. Transcription was automated which helped the researcher focus on engaging the participants without the fear of missing anything.

Dependability: Detailing the research process and following it enhanced dependability. There were amendments to the initial proposal which the researcher fully described and has no doubt that any other researcher can easily follow the same research methods in a different setting to meet similar study objectives. The purposive sample was informed by scores per participant from the survey with individuals with the higher and borderline scores forming the purposive sampling frame. Higher scores were indicative of a challenge. The sampling process is detailed in Chapter Three.

Confirmability: Directly quoting participants' words prior to interpreting them ensured confirmability. Fillers were edited out. Any other amendments were applied to where grammar and pronunciation distorted the meaning of what was said. Examples are where equipment was referred to as 'equipments' and the platform Bhuku had been automatically transcribed as 'Book'.

Transferability: Interpretations were not based on the researcher's beliefs or own understanding but on exactly what the participants said and meant. In addition, the methods have been adequately described.

Authenticity: The researcher tried not to lose the participants' 'feeling tone' in the report write-up. Instances where participants laughed or sighed in exasperation were captured within the quotes and presented within square brackets. Grammar errors that did not distort the meaning of what was said were left un-edited.

Challenges Faced by Nursing Students in In-Class and Clinical Learning. This section presents the insights of nursing students on challenges faced in clinical and in in-class learning. The first part answers the question 'How do nursing students describe challenges faced in in-class learning?' while the second part answers 'How do nursing students describe challenges faced in clinical learning?' Table 25 presents a summary of the themes and sub-themes.

Table 25*Challenges Faced by Nursing Students: Themes and Sub-themes*

Research Question: How do nursing students describe challenges in in-class learning?
<i>Theme 1: Bitter Receiving End: Issues Related to Curriculum Administration</i>
Sub-Theme 1.1: Our Educators Just Can't Cope
Sub-Theme 1.2: When <i>Just Anyone</i> Can Enrol into Nursing
Sub-Theme 1.3: Too lengthy yet not adequate
Sub-Theme 1.4: It's All to Do with Money, Isn't It?
<i>Theme 2: Challenges Related to E-Learning and Internet Connectivity</i>
Sub-Theme 2.1: Perhaps Virtual Is Not the Best
Sub-Theme 2.2: Failing To Connect and Stay Connected
Research Question: How do nursing students describe challenges in clinical learning?
<i>Theme 3: The Communication and Technology Related Challenges We Face in The Clinical Environment</i>
Sub-Theme 3.1: Hesitant to Embrace Digitalisation
Sub-Theme 3.2: I Can't Hear It; I Can't Read It; How Can I Understand?
<i>Theme 4: Clinical Learning Environments Can Be Unsupportive</i>
Sub-Theme 4.1: I Do Not Belong
Sub-Theme 4.2: Not Much Support
Sub-Theme 4.3: Too Much of Us; Too Less of Resources
Research Question: What do nursing students recommend?
<i>Theme 5: Recommendations From Nursing Students</i>
Sub-Theme 5.1: Rethink Student Placement Strategies
Sub-Theme 5.2: Ensure Adequate Resources
Sub-Theme 5.3: Inclusivity and Mental Health Support

Two main themes emerged in response to the question *How do nursing students describe challenges faced in in-class learning?* These were: *Bitter receiving end: issues related to curriculum administration* and *Challenges related to e-learning and internet connectivity*.

Theme 1: Bitter Receiving End: Issues Related to Curriculum Administration. Nursing students shared how challenges associated with curriculum administration affect the way they receive the curriculum. They spoke of educators struggling to cope with workload and how financial challenges negatively impacted their learning. Some voiced how learning can be impacted by enrolling 'just anyone' into nursing. Yet another challenge came in the form of an overloaded curriculum.

Sub-Theme 1.1: Our Educators Just Can't Cope

Nursing students shared concerns that surround large classes. Classes are so big that the nurse educators struggle to cope with the workload and class management. Some of the participants had this to say:

It's a lot of challenge, like for now at my university ... like this year, although I explained because they normally used to take like 50 like those days until 2021. When I started, they used to take like 50 students but now heavy is the number and I feel like a lot of challenges, like with lecturers, some lecturers, they even like quit because students now they are a lot now they've increased like to 200. *Nancy.*

Yes, especially at our school, we've recently had an increase in the number of students that are now doing nursing. So, the intake is now increased, and I've only seen like 2 new members that were hired in the nursing faculty to accommodate this, and I don't think it's fair. I think there is definitely a shortage of nursing educators, and I feel like in the long run it will affect the students also, because now there isn't much attention anymore because the lecturers are so overwhelmed and yeah, the ratio between the lecturers and the students is very [trails off] it's not fair. Yeah. *Rosy.*

The students also perceived a lack of experience in some of the nurse educators. Added to this was the shortage of nurse educators. Nurse educators have also been said to lack consideration of students' different learning styles; a behaviour that could be due to lack of training and/or experience. These deficits could lead to educators failing to cope with their responsibilities. Participants shared:

I think it's affecting us mostly because for instance, there are some lecturers that look for places, maybe they teach some modules that let me say maybe they don't have experience with ... The other one let me say will replace the module that they maybe don't have knowledge about it, which is also making it a disadvantage for us 'cause we will also not really understand what they perhaps will be saying or something because they don't have experience in that module ... *Ndapandula.*

I think they're very good at what they learned in their universities, but they do not go to any CPDs or anything, so often our curriculum is based on previous studies or previous things that have now been outdated or many of them have not worked in the field for a long time and things have changed since then in the hospital and they're not aware of it. So that's sometimes an issue. *Luna.*

... Say, in first year, then you start March and there's no lecturer of let me say Ethos that whole time till, let's say May we don't, like you don't have a lecturer, and you are missing out. You are missing out on those things. On top of that Ethos is a year module, and you need to cover things time by time. Not all the things at one time. So that's how it affects us. Okay, they get to teach things, okay, many things at one time. *Tuli.*

Personally, I believe that they do not accommodate at all, every teacher or at every educator has their own style of teaching and they're very set in that way, and they do not change it. So, it's only one way. *Luna.*

Sub-Theme 1.2: When Just Anyone Can Enrol into Nursing

Some of the participants shared sentiments on what qualifies one to be enrolled into nursing. They were not enthused by the observations that some are enrolled despite not possessing any attributes of a nurse. One of the nursing students stated that they knew of fellow students who would openly state that they joined the profession just for the money. The relaxation of entry requirements by some of the institutions only makes the situation worse. Nursing students acknowledge that when entry requirements are not matched to standards such as possession of a science subject, predicaments arise. For such students the understanding of concepts could pose a challenge. Students had this to say:

... I think it's personal characteristics of a nurse, like when they are accepting students. It's not that they should judge, but by appearance, I just feel like not everybody is meant to be a ... Yeah, not everybody is eager to help 'cause you're going to find there are some really rude people that they are going to tell you. I'm just here for the money. I just want to finish and get money. And for them, it's not about the patient or doing good. *Emilia.*

Honestly, I know some universities that allow students that did not reach requirements to join the programme I feel like it. It should be stricter ... I feel like you won't understand the content if you do not do the module or do the subject in high school or you didn't pass the subject in high school or you don't meet the requirements, you're just you're going to be sitting in a first-year class and wondering what is going on ... *Jade.*

... I've noticed that most of my colleagues first year that had no science really struggled in adjusting to the programme. They were failing a lot, especially in programmes like in, especially in what modules like anatomy, physiology, pharmacology. It took them a long time. Even General Nursing Science because they did not know the fundamentals and the basic science of the body, so it affected them a lot and, also mathematics. You don't really have mathematics as a module in nursing, but ... you need to calculate your drops per minute. Your medication, you need to calculate your dosages and people really find it hard to catch on those things because you're just given as they are. No one teaches you the basic mathematics of okay ... *Rose.*

Sub-Theme 1.3: Too Lengthy Yet Not Adequate

Nursing students lamented over the length of the curriculum and the frustration of repeating content within the sociology modules was mentioned by some. The time allocated

for in-class learning is not proportionate to the amount of content. Jojo, Nancy and Lucia shared:

... but some I don't think it's very relevant like subject like sociology whereby I have to learn sociology for two years or three years of which is something that I can just do for one semester. So, I don't think it's really necessary in nursing, yeah. *Jojo.*

The content is relevant, but it's just a lot. It's a lot catch up like we have to when you are done learning in class you have to go like to go study on your own for you to understand because the content is a lot. *Nancy.*

Paradoxically the curriculum fails to address other areas that students feel should be addressed.

... And then there are certain procedures that they don't even touch like. A good example would be a suction, like how to suction a patient, suctioning the secretion of a patient. I feel like that's very important. We should know how to do that because it's a very sensitive procedure. In any wrong thing, you can hurt the patient... *Lucia.*

Sub-Theme 1.4: It's All to Do with Money, Isn't It?

Challenges relating to financial costs were 2-sided. For the most part nursing students complained of the high cost of obtaining the qualification with such costs aligned to tuition, transport, printing and so on.

Okay, let me start with the tuition fee. Okay. It's very high. Where we are based the area of where the school is now when you have to go there you have to pay, double. Like the taxi money ... There's also you buy your own books. For example, the practical books and modules books, other resources they need. I said making copies, we pay. Everything we pay; we don't get for free. But so that's very difficult for people. They have no income. *Tuli.*

Now let me take for example like for me last I was doing 3rd year, and I came late because I didn't have, like accommodation, so I missed because of the money. I missed a lot. I missed my clinical hours. I missed lectures. So now when it came to the end of year, now when they were putting all the things together, my hours were missing so I could not like, and my logbook has to be 80%. So, I came late. I did not finish so they did not allow me like to continue with my 4th year, so I have to finish the books and all those were affected by finances and us [student] nurses we are not allowed like to work ... like to take a part time job for you to finance you with your extra [trails off]. *Nancy.*

... if you haven't paid your fees, let's say for that month instalments because we pay in monthly instalments, they block you on the Moodle. That means you can't access classes, you can't access your marks, you can't access a lot of things, they block you from the e-learning, which means that will already affect your education because now you don't attend the classes that they are doing, and they won't repeat them face to face. So, you be very behind. *Rose.*

Another important issue brought to light was the inability of the institutions to afford advanced simulation resources.

Honestly, there is lack of resources at my university, I feel like they need to somehow use the tuition that majority of our schools are paying to get more advanced equipment for simulation. Especially the mannequins are very much limited. Our equipment is very much limited. We basically start our clinicals on heresy, so we don't have what is actually, if you're going to be like in the hospital what is actually going to happen like, as students, we watch a lot of videos on the internet and we see how technologies are so much advanced in a way, students are able to practise cannulation, and actual blood comes out. And for us we just feel like we're so limited. Even other universities have so much more mannequins that you can practise intubating on that you can practise so many or so much more things than we are able to do at our school. So, it's very limited and I feel like it's not the right thing because clinical or being exposed to the clinical aspect of nursing especially should be a high priority because how do you expect students to know what they're doing if they're not physically seeing how to do it? *Jade*.

I feel like we're moving into a space and in a dimension when everything is now automated, right, and now we are stuck in simulation rooms where this dummy doesn't simulate anything in terms of reality. We are still stuck in the past in, you know, even to mimic feelings or like gestures of pain and things like that. How would we know that an injection pains if our mannequin is literally dead is not doing anything. It's just lying there. How would we know the real process of birth if the mannequin is just there, we don't even see how contractions feel like because we're just looking at this abdomen, doesn't have feelings. It's just there so I feel like it would have been better if there was like a bit of reality resemblance. *Lucia*.

Theme 2: Challenges Related to e-Learning and Internet Connectivity. Some of the students preferred face-to-face tuition and printed out books and materials over the use of the virtual space, learning online, and relying on electronic resources such as e-books. For students who experienced digital exclusion this was because they failed to access the resources due to cost issues or poor internet reception.

Sub-Theme 2.1: Perhaps Going Digital Is Not the Best

Some of the participants showed some reluctance towards the use of digital platforms for learning. They felt that nurse training should be face-to-face. It was also voiced that one can be easily distracted when attending a class online. Some of the participants had this to say:

... Online, just visual online, just have to like theory so it affects them when they go to clinicals. They ... did not do practical like with their hands and see. So online learning it's like I'll say it's not good for a course like nursing because nursing, it's a practical... Yeah, it did affect me, especially in my first day. In my first year it affected me because

I experienced that when it was during COVID, so we had to switch like to online e-learning. So, we were just taught theory and it's my first year, first day I have to be like I have to be with a lecturer like in front of me teaching me. But now it was online and it's my first year, so it affected me so much that I didn't know what to do at my clinical practise. *Nancy.*

And then going back to the question when it comes to e-learning, it's kind of tricky and hard to some extent because there is no personal contact with your lecturer like face to face. Unlike face to face if you're face to face, you're in the same room you are under the same atmosphere. You can see each other, and you can communicate rather in e-learning. You can be in whatever environment that you are in and sometimes maybe not even pay as much attention because of the distraction that is around you. *Rose.*

I think they have sort of more of like a negative impact because when you are learning online and not in person. You don't really get to concentrate as much. There's like there's more risk for you becoming distracted. And just because like it's just not the same, the environment, the feel of it. *Rosy.*

One of the participants felt that online learning does not promote interpersonal relationships. The participant stated that it was strange to interact with people one cannot physically see and that this causes one to be reluctant to ask questions. She had this to say:

And it becomes a bit weird to interact with people that you can't see, especially on a phone or on a laptop. You're just like, who are these people you know and also, I feel like you don't build inter relationships with one another. You don't. You don't get to see the people for who they really are ... You also have your own questions, but you can't really ask them because there's no one to attend to you, you know. *Lucia.*

Sub-Theme 2.2: Failing To Connect and Stay Connected

Nursing students shared how difficult it was for them to fully use the digital environment because they did not have the right devices and software to support learning while some indicated that even with the right devices one could be failed by poor internet connectivity. The Wi-Fi within the learning institutions was reported as slow or weak while connectivity at home would depend on affordability and internet reception in the areas the students lived. At times the internet reception was said to be affected by power outages. Some of the participants shared:

There's a lot of like just a lot of technical difficulties. Like for example we use teams and in order to access a class in teams you have to be accepted, right? So, you end up staying in the lobby. So, you would stay in the lobby the whole class, the class is gone but you miss the class and then all that there is, is the recording. *Lucia.*

Okay, about e-learning, I would say ... okay, not everybody knows how to use that. Okay, let's say, for instance, a lecturer has uploaded notes on Moodle there or, whatever platform they are using at school. Okay, it's very difficult, it's very difficult for a student to like, see the notes without being oriented to it ... And the other thing is, okay, according to let me say my school when you got teams there was again the signing up that we have to do after you download the app in the phone. So that was very difficult for us. You have to put in your details in and there is some details the school have to provide for you and then have to put and it was very difficult for us ... Okay we have different areas, and the internet connection is different ... somebody that is in town and somebody that is at the village in terms of now attending classes online. A person that is at the village has a difficult experience ... difficulty in accessing the website. Like there is poor connection. *Tuli.*

For instance, like, let me say we are having an assignment, and it requires some internet. So, we have to struggle to look for internet cause sometimes like for the internet at school it's not available all the time 'cause our town is in the middle of the forest and the connection there is very poor. And then sometimes we experience also, for example, electricity is not always available there, so sometimes it goes and then we are supposed to write a test for instance or an assignment ... Oh, well, yeah, it's a very big challenge 'cause not everyone has access to internet and sometimes you want to ask some questions and then the network will be tripping as like we are doing now. So, I prefer learning in class than learning online. *Ndapandula.*

Oh, that's very hard because many of us do not have laptops, and the university only has a very limited amount that sometimes is not connected to the internet. So, to be able to do something online is extremely hard. *Luna.*

Two main themes emerged in response to the question *How do nursing students describe challenges faced in clinical learning?* These were: *The communication and technology related challenges we face in the clinical environment* and *Clinical learning environments can be unsupportive.*

Theme 3: The Communication and Technology Related Challenges We Face in The Clinical Environment. This theme is an explanation of barriers to communication and to the use of technology as faced by the nursing students while in the clinical learning environment. Most of the students indicated, in one way or another, that there was some hesitancy to embrace digitalisation and that there were challenges in communicating with and about patients.

Sub-Theme 3.1: Hesitant to Embrace Digitalisation

The hesitancy to embrace digitalisation was seen as emanating from within the students or as what was either directly or indirectly imposed by those in charge of the clinical environment or simply because the resources did not permit. For example, in some areas, computers were not available whereas in some students were not allowed near the only computer available in the department which could hence explain why technology was not seen as being integrated into nursing care.

Nothing. Nothing. Not in Namibia [laughing]. The only computer that is available in the ward is being used by doctors. That's how they use it. Always, they say is for doctors. Even the chair that is there is for the doctor. *Tuli*.

Like the way I normally see it like at the clinical practice like just like those computers are just normally used by doctors. That students are not allowed to go sit there and do whatever we want to do maybe the research. Maybe you found a condition you do not understand in the ward. Maybe you can come there, and you do your research. They won't allow you. They will be like no, it's not for students. It's only for doctors. Even nurses you hardly see them like using those computers is just like doctors using those computers. For us, it's just paperwork. *Nancy*.

Okay, so we have computers in the hospital in each ward, but one day they work the other day they don't work. The internet is off very often, so the doctors need to go down to NIP [National Institute of Pathology] to find the blood results because they can't trace them on the computer, things like that. *Luna*.

These deficiencies are further compounded by the students' lack of preparedness to embrace technology. Such lack is a result of the student not being ready to take the step towards accepting that the future of nursing care cannot exist without technology, or it could be a result of not having been prepared, through education, for this.

Honestly, I wasn't. I had to learn on the job. I had to learn it because in school they teach you because most of the placements are in public sector, so in school they teach you that things according to the public sector. They teach you public health, nursing in the private sector, not so much. So, you only learn when you get there. That, oh, okay, this is how this is done. Like to the smallest thing. Like what? Even fetoscopes and taking even blood for haemoglobin or for sugar. That's how different it is, yeah. *Rosy*.

I wasn't that much prepared because what we're taught at school is not what is happening in the clinicals. So, in the clinicals, we are told that you sometimes you can use computers to write some documents, but then at school they told us that you just write there's no computers, there's no cell phones, there's nothing. We just write. If you don't understand your call the sister. So, I will not be much prepared on that. *Amazing*.

“I am not [prepared to use technology at the bedside]. I prefer hands on honestly ... It's a good thing that they have computers, but I prefer hands on.” *Emilia*.

Sub-Theme 3.2: I Can't Hear It; I Can't Read It; How Can I Understand?

Language barrier as a challenge came up several times during the interviews. The reason being that a significant proportion of patients cannot converse in English which is the official language coupled with that nursing students (and qualified staff), who are from diverse ethnic backgrounds, have primary languages which are equally diverse. One student feared that if she did not capture accurately what the patient said this would result in inaccurate recording of information which will perpetuate miscommunication.

[Sighing] It was not easy. It was not easy for me. That's not easy for me because language barrier ... it's a lot like ... You go there, you want to SOAP [SOAP is a documentation method in a patient's care plan and stands for subjective, objective, assessment and plan] the patient. But now the language barrier, like you cannot communicate. You cannot share that conversation ... Some other tribes they don't understand English ... Maybe you'll be using sign language there, but now you won't write like a normal report like a correct report because you did not understand each other nicely. And now that one is part of the care of the patient. Now you have to write what the patient is feeling. But now the language is, it's not, you are not communicating. You won't get the right information to write a normal report or the correct report for the patient ... It won't be accurate and now it will affect the patient. *Nancy*.

... obviously we face challenges due to communication barriers like some patients only speak a certain language and as I said, I only speak two languages. So, in a country where there are about almost 11 different languages, I think I'm not sure. Yeah, it's challenging, especially if you're trying to obtain information from the patient. And this person cannot speak or the two of you don't speak the same language. It can be difficult. Obviously, it's easier when you have someone to translate for you or there's someone that can help you with a patient, like to speak the language and they give you the information ... *Jade*.

Some of the nursing students shared how difficult some patient records were to read. Some of the reasons given for illegible or inaccurate records was that doctors do not write clearly and that at times there is no time for accurate documentation because of increased workload.

Okay, it depends. It depends. Like for instance, in maternity we have a very big book where we need to fill in and then let me say you have 4 patients delivering at the same time. You even might end up missing up the information because you will be very busy conducting the delivery unless if there are a lot of staff members. But so far, I have experienced there is they don't use it a lot, it's only the students that we tend to help. But

sometimes I think the record don't tend to be to be appropriate because of the lack of the staff members and yeah, I think. *Ndapandula*.

“Doctor! Doctor, we are not seeing. We are not seeing anything. Yes, like we are not seeing. So, with some doctors, the prescription you have to go ask now what is written here that you can't see.” *Tuli*.

Theme 4: Clinical Learning Environments Can Be Unsupportive. It emerged from the voices of the participants that clinical learning environments, although expected to support students' clinical learning, do not always do so. Patterns seen spoke of environments where students felt like outsiders, did not receive expected support from supervisors or those meant to mentor them. Students also struggled with learning skills using improvised resources amid competing for attention as they attended practice in large groups.

Sub-Theme 4.1: I Do Not Belong

The feeling of not belonging manifested in different ways for different students. Whereas some students felt that they were not welcome some were overtly shown that they were indeed not welcome. In addition, students also felt left out in clinical discussions:

... but then most cases they tell us that we should go to the patient and guard the patients while they are holding the meetings out there. So sometimes we feel left out in the ward and it's not quite good for us. *Amazing*.

“And I don't really feel included. In the clinical discussions, I feel very isolated and not part of that.” *Rosy*.

The word ‘discrimination’ came up several times with some students stating that it was institutional discrimination they experienced while others felt it was xenophobic and others called it tribal discrimination.

I don't think the environment is really conducive to learning, because sometimes the nurses aren't welcoming and sometimes, they don't really want to teach you as well. Sometimes you have to sort of like always beg them to teach you. *Rosy*.

I call it institutional discrimination. Yeah, students from UNAM, students from ICARE, students from Welwitchia, everybody's treated different. I've noticed that most nurses prefer working with students from UNAM. Will rather work with students from UNAM, cause of a certain thing or cause they schooled there themselves. *Emilia*.

Like I would say like especially when it comes to tribalism. Sometimes it normally plays a role in the clinical practice, sometimes the sister will be like today I won't sign for you,

I'll just sign for my tribe. If you are not my tribe, please don't bring your book and she's not joking. If you are not her tribe, do not take your book. They just go home without a signature. And so, if there's no sister there who will feel pity for you like to sign, then you just go home without your book signed. Well, you did the job well. You did the work. Yes. So, I feel like sometimes the tribe normally plays a role ... *Nancy*.

It's very difficult, especially if you are not [trails off] you will break under this because a lot of nurses do it. They either see you as I don't know this person or you sometimes I feel like they feel like I'm coming in to steal their job when I'm just basically a student. I'm just trying to obtain my degree. I'm not going to do anything at the end of the day, you are my superior. You are above me. I need you more than you need me currently so, it's very difficult. I've experienced, I won't say racism, but I have experienced a lot of time where they would speak in their language, and they will talk about the white person, and they will look at me. So yeah, it's really, it's difficult ... *Jade*.

Oh, okay. I think there's some type of xenophobic the fact that I'm a foreigner, at times they'll be using foreign language when they're addressing some issues. Thereby at the end of the day, I'm left out of the conversation. Well, I guess there is some form of discrimination because of my nationality. *Jojo*.

Sub-Theme 4.2: Not Much Support

Although some students did acknowledge that staff burnout and increased workload would reasonably cause the clinical staff to not have adequate time to supervise them some attributed it to the lack of the will to do so. They shared how other multi-disciplinary team (MDT) members and those in charge preferred not to work with them and how they were not supervised and mentored. They also voiced that their clinical instructors, mentors and lecturers did not have time for them as they had a lot to juggle.

I would say that the availability is it's lacking, it's they're not very much available. As available as we need them to be, because they also have to teach classes. And like I've mentioned before, there are now so many students, so they can't really supervise you as much as you want them to. Yeah. *Rosy*.

Well, we do not know much about the competences because we do not interact with them that much and because there's so much a lack of staff that we often do not even get to have conversations with our mentors or our clinical instructors that come from school don't have time to come. *Luna*.

... and other doctors think that they are at a higher rank than us students, they will either tell you I don't want you as a student. Go fetch me a registered nurse, or the registered nurses will tell you that I don't work with second years. I want to only work with these certain years, so it's very difficult because you as a student, you're also just trying to learn and a lot of interns and a lot of MOs [Medical officers], they don't want nursing students there cause apparently, we are minor, we are below them. *Jade*.

The lack of teamwork and the way that leaders and managers disrespectfully treated and instilled fear in their subordinates could feed disharmony in the clinical units which in turn could work against them receiving the support they needed to learn.

... and some matrons that are very like rude. They don't respect each other; they just talk anyhow. Yes, they just talk anyhow. So, now if that matron comes and she talks anyhow to that sister and the students, it does not look good. So, I feel like when they're in those positions, some of them, they feel so superior to others. And they don't work like together like teamwork. That's why I also feel like that's why they are not like assisting us that much. Also, the sisters because of the hardship. *Nancy*.

Because even if the sister was demonstrating something to us, how to do the thing, and for example, if there is shortage of resources and all that, and then if the leader just walks in, they just panic, they get shocked. And then even in the middle of demonstrating a procedure to us they will be like I really need to see my leader to see what they are saying and by the time they come back it's already late and the procedure ... is wasted. *Amazing*.

Sub-Theme 4.3: Too Much of Us; Too Less of Resources

Overcrowding, and the shortage of resources, both physical (consumables and equipment) and human (nurses) were seen as constraints to learning within the clinical environment. The nurse-to-student ratio is such that each qualified nurse was responsible for many students in addition to having a lot of patients to take care of which can be exhausting.

In such situations some of the students may work unsupervised.

In most cases where I was the gloves and the aprons, they short, they short really much. Now I don't know if the staff they're using it irresponsibly or they the supply is not just coming, or the staff is taking the resources to their houses. Is what our people are telling us so. There is a challenge because if there is no syringe and you are supposed to give medication now, you have to run to the next ward to go ask if they have and most cases they refuse. They say we don't have and by the time you come back to this patient, time is already expired. And when you give this medication, it can cause harm to the patient. *Amazing*.

There is a shortage. There is we've seen it a lot and hence why I said sometimes we do get treated as permanent staff because you as a student become a permanent staff member, if there is a shortage, especially if you're a senior student, you are put in charge, not charge, but your responsibility is larger since there is a lack of registered nurses. You'll find that there's one registered nurse among two enrolled nurses and 18 students. So, the percentage difference is very high ... it makes it difficult when there's only one registered nurse and you as a student wanting to ask for something or for them to teach you something. It makes it very difficult because they don't have time to teach you as they're busy in a ward with up to sometimes 70 patients in the ward. *Jade*.

“In understaffed wards the patients are a lot with unavailable or equipment that is not enough in the ward, it is very overwhelming. So, that's one challenge that equipment is not enough that.” *Tuli*.

Theme 5: Recommendations From Nursing Students. Table 26 summarises the recommendations suggested by the nursing students.

Table 26

Recommendations from Nursing Students

Deduced recommendation	Suggestion	Suggested by
Rethink student placement strategies	First years to do more than vital signs	Lucia
	Delay and reduce clinical placement duration for first years	Lucia
	Do more groundwork in class for first years	Lucia
	Place us in other regions increase exposure to maternity cases	Nancy
	Place us in other regions increase exposure to other cultures	Nancy
Ensure adequate resources	Ensure enough equipment	Tuli; Amazing
	Recruit more nurses	Ndapandula; Amazing
	Provide students with mobile data	Emilia
Inclusivity and mental health support	Equip the library and extend operation times	Jojo
	Clinical staff should use English to communicate with students	Jojo
	Address discrimination	Jade
	Provide mental health support to students	Rose

Challenges Faced by Nurse Educators in In-Class and Clinical Teaching. This section presents the insights of nurse educators on challenges faced in clinical and in in-class teaching. The first part answers the question ‘How do nurse educators describe challenges faced in in-class teaching?’ while the second part answers ‘How do nurse educators describe challenges faced in clinical teaching?’ The themes and sub-themes are summarised in Table 27.

Table 27

Challenges Faced by Nurse Educators: Themes and Sub-themes

Research Question:
How do nurse educators describe challenges faced in in-class teaching?
<i>Theme 1: Challenges Related to E-Learning, E-Resources, And Internet Connectivity</i>

Sub-Theme 1.1: Not Fully Prepared to Embrace Digitalisation
<i>Theme 2: Issues Related to Curriculum Content</i>
Sub-Theme 2.1: Curriculum Overload!
<i>Theme 3: Physical and Human Resources Matter</i>
Sub-Theme 3.1: Not Equipped for This Thing: Lack of Human and Physical Resources
Sub-Theme 3.2: Running Out of Steam: Dealing with Work Overload
Research Question: How do nurse educators describe challenges faced in clinical teaching?
<i>Theme 4: At Times One Feels Demotivated</i>
Sub-Theme 4.1: Sometimes It's Like Students Were Forced into Nursing
Sub-Theme 4.2: Unmet Nurse Educator Needs
<i>Theme 5: There are Hindrances to Maximising Student Learning Experiences</i>
Sub-Theme 5.1: How Can They Learn When They Are Unsupported?
Sub-Theme 5.2: Students Everywhere, it's Like an Infestation: Overcrowded learning environments.
Research Question: What do nurse educators recommend?
<i>Theme 6: Recommendations From Nurse Educators</i>
Sub-Theme 6.1: Meet Us Halfway: Reduce Nurse Educator Burnout
Sub-Theme 6.2: We Need to Be Capacitated
Sub-Theme 6.3: Address Space and Nurse Shortage Issue

Three main themes emerged in response to the question *How do nurse educators describe challenges faced in in-class teaching?* These were: *Challenges Related to E-Learning and Internet Connectivity, Issues Related to Curriculum Content, and Physical and Human Resources Matter.*

Theme 1: Challenges Related to e-Learning and Internet Connectivity. This theme describes concerns about the use of online resources and the virtual space to administer the curriculum. It brings to surface the general feeling of nurse educators about the place of e-learning and e-resources within nursing education.

Sub-Theme 1.1: Not Fully Prepared to Embrace Digitalisation

The challenges shared ranged from intrinsic factors such as the reluctance of the educators to use e-resources, being technologically challenged and the struggle faced by students when trying to use the online platform, to external factors such as lack of resources, lack of training and internet related issues. One phrase can be used to summarise the standpoint of digitalisation in nursing education as expressed by the participants “not fully prepared to

embrace digitalisation”. This could be interpreted in two ways: the systems in place do not fully promote digitalisation or the educators are not quite sure about embracing it.

So ... as you find like in this case now, I have a problem with my laptop. It's lucky that it's time for clinicals. Imagine if supposed to have a class tomorrow. I don't have a desktop in my office where I say I can, if my laptop is not working, at least I can use a desktop in the office or I have a gadget that I get from the institution to use to teach students. So, this is one of the challenges you'll find; lecturers, their laptops are broken ... *XY*.

The Moodle are available, but the challenge is the access. Yeah, the same as I say the internet you can go there and it's loading, but it will take good time and there is a lot of interruptions in between. The other challenge we have is the electricity power. It interrupts the operation. *Peter*.

That one actually is. I think it's a problem. Yeah, we really don't have that. Lecturers have been actually suggesting you know to have actually a data storage. Where actually if a student also wants you know some theses which are written or assignments or old questions, exam questions but up to now, we don't. We don't have anything in place. We don't have anything. Yeah, that's that. That one is. It's actually a challenge. *Nande*.

Relating to books neh, I think it's getting much better, especially the electronic books, because there is *Bhuku* supporting the institution. What is the problem? Is lack of knowledge on students and staff. I understood this, the books are there, but we did not actually get that insight to say this is there let me use it ... I still see that the students, they do submit hard copies, so they still have in that system of the hard copies to submit the copy for the library but not the repository electronically like for example the one we can see at UNISA [University of South Africa]. I have not come across to that one. If it's available, no one has introduced that tool to me. I don't have access to that. *Judy*.

Yeah, yeah. I'll say the same with this *Bhuku*, we have been trained several times, but I don't know on the utilisation is still, maybe you can say it rate it's 20%; we are not using this. Moodle, it's ok, even if it's available, people are not really using. *Selma*.

Theme 2: Issues Related to Curriculum Content. What emerged from the interviews was that, although the curriculum was generally relevant, some of the content was unnecessarily repeated across modules and the comprehensiveness of the curriculum was not accepted by all. Within the comprehensive curriculum students are not only trained as general nurses but also as midwives and community nurses leaving the student without the choice of disregarding whatever component they know will not be part of their nursing career. The sub-themes under this theme are presented below.

Sub-Theme 2.1: Curriculum Overload!

The repetition of content coupled with the design of the comprehensive curriculum has led to what the educators describe, either covertly or overtly, as curriculum overload. One of the educators explained how difficult it is to teach midwifery to a student who is only interested in general nursing while others failed to understand why sociology modules took up a significant portion of the curriculum considering the same content is covered across the different sociology modules. These observations would then directly result in too little time to cover the content, a concern shared by some of the educators.

Well, the nurses need this, for example, sociology and the psychology modules. It's supposed to be only introduction not to go into detail. And the curriculum, also it is congested. For example, we are training a nurse in community, midwifery, and general nursing. The student has to choose where to work, but some students they are not even interested in midwifery. And you know, honestly then that's not good. Then if the students have no interest in that specific module and they do not desire to go in the work in that specific area, then it give us trouble because students most of the time they are not interested. They are failing in that module, but they are excelling in others. *Peter.*

I would say some of the modules, I don't think they are that much relevant like for example maybe on my own or observation, but there are some modules which are overlapping each other. For example, so, you have social problems then you have sociology. I mean, that's all the same thing. Why do we have them separate? So social problems can be integrated in the sociology instead of having two modules just to give you more pressure on student. And then there is this, a new module which was just added called entrepreneurship in nursing. Okay, I don't know. Maybe I'm a bit backwards, but I want to understand what is that module is all about. *Judy.*

... an example of sociology itself. I'm not comparing but looking at where I came from, you'd find that now you find that you see that students are having maybe sociology three times. I wonder what the content is, but I always have a question though I have not actually, but I've asked students there are some students who actually tell you that, why do we keep on repeating some of these things? *Chuchu.*

“Hey, the Introduction to Midwifery, this is now only 4 hours and that is the backbone of midwifery whereby the students should actually grasp the concepts, but it's only 4 hours. But the content is not reduced.” *Bird.*

Theme 3: Physical and Human Resources Matter. The means to achieving a goal is at the centre of any strategies designed to achieve the goal. This theme zeroes in on what could be seen as too obvious; what resources are there to execute the goal? Because it does matter.

Sub-Theme 3.1: Not Equipped for This Thing: Lack of Human and Physical Resources

Nurse educators spoke of the general lack of resources such as simulation equipment and models, and libraries that are not adequately resourced. Another challenge related to human resources where educators are found lacking in experience and training. The lack of experience encompassed both the lack of experience of one as an educator and the lack of clinical experience. One educator pointed out that lack of clinical experience negatively impacts in-class teaching as one is not able to draw from clinical knowledge. Participants had this to say:

I think the challenge is some of the nursing educators, they don't have the relevant in the clinicals. You know, sometimes the person or the educator maybe got postgraduate qualification recently after she's done with the undergraduate. You know she won't have enough experience in the clinical. That's why if you are having enough information from the clinical, you should also put more input when you are teaching your student on the theory. *Selma.*

... some are not experienced we are recruiting new from the hospital because mostly we get lecturers who are coming straight from the hospital, they don't have the background of education. Some they have master's, let me say they have master's in public health, they have master's in epidemiology, or they have a master's of which they did only by theses. So, these lecturers they don't really have a background and knowledge about education. Things like Bloom's taxonomy might be a challenge to them because they never heard of it. Because they either did public or they did nursing science, especially with, you know, where they just did by thesis. Yeah. *XY.*

... The first one is a lack of equipment. We don't have necessary equipment that we require so that we can deliver the content. This one, including the material ... the resources, especially the physical resources, books, we always are struggling to have the latest resources for the teaching materials. *Peter.*

Yeah, that one is quite, it's terrible because we; I want to be honest; our library is not actually doesn't give us. What is it? We do not have enough. Especially the resources ... I mean the sources of looking for information when we want to look for information. I think it's too limited and it's quite a small library talking of students, what of us? Lecturers, yeah. *Chuchu.*

Sub-Theme 3.2: Running Out of Steam: Dealing with Work Overload

Imbalanced work distribution and large classes are contributors to increased workload and can individually or in combination lead to nurse educator burnout. Adding to the burnout is the running from one campus to the other as shared by one of the participants who teaches at two different campuses and has classes at both, even on a single day. The nurse educators

must also supervise research and the number of students under their supervision is considerably high with one educator stating they had 19 research students to supervise at the time data was collected.

There comes the two campuses for example. I'm now teaching 2 campuses. You are in this campus. You are in that campus you are driving. You are driving, you are going. I mean that's not possible. That's just not possible. Yeah. So, it's a big challenge because then you give a test you have a load, a load number of students for you to mark. What quality of marking are we having in that one? Yeah. So, it may affect my quality of marking as well ... and now the research has increased because the number of students it went just up. I end up having 19 students for research. What quality are we employing in that one? That's why you don't read much of those. You end up not reading anything. You will you are like, okay, whatever. So, yeah, no, it's quite a big number. *Judy.*

To know students their ah learning experience or learning is very difficult because it's not easy. If you have 90 students and need to know their learning challenges ... some are struggling. Some are slow learners some are fast learners. It's really difficult to pinpoint what are the problems that ... *Peter.*

“There is no balance of what, can I say, balance of work or distribution of work. There are some who work more than the others. Then they give you more modules. I've got 5 modules.” *Bird.*

Two main themes emerged in response to the question ***How do nurse educators describe challenges faced in clinical teaching?*** These were: *At Times One Feels Demotivated* and *There are Hindrances to Maximising Student Learning Experiences.*

Theme 4: At Times One Feels Demotivated. This theme sums up how educators felt regarding some issues that they felt were beyond their control. It explores feelings of exasperation surrounding having to deal with unbecoming student behaviour and perceived inattentiveness of the employer towards some basic needs. These are external factors that affect performance. When one is demotivated their mental and emotional state is affected, and this can derail the means to achieving a goal. The following are the sub-themes within this theme:

Sub-Theme 4.1: Sometimes It's Like Students Were Forced into Nursing

Nurse educators voiced how some of the nursing students cheat by creating entries in their logbooks based on non-existent patients and how they do not take attendance seriously.

Yet others are found to be outright truant or just lack interest. It was noted that cheating, although not excusable, was understood to be due to a situation students could not control – that of the unavailability of cases. The following are sentiments of some of the educators:

... and yet when you ask them what diagnosis they have [the patient] the students don't know. This shows that they are not interested at all. I always ask them “were you forced to do nursing”? Maybe your aunt forced you to do nursing ... *XY*.

It's really something, you know, I don't know, but you go to the clinic, you're supposed to find there ten students. Yeah, four or five, because one asked to go to another facility or went to another region without informing. Or they're just not there. And they come late. They also come late, yeah. *Judy*.

I was also having this, and they end up creating procedure if they can't find them. I was talking about ... episiotomy itself. Probably they were phasing it out. They are not encouraging it. Then I was asking but why do we keep on putting two episiotomies? My worry was just that yes, much as we want our students to learn, where do they get these episiotomies? *Chuchu*.

Sub-Theme 4.2: Unmet Nurse Educator Needs

Nurse educators expressed, in different ways, that their needs were not met thereby resulting in disgruntlement. Some further explained how this affected how they support students in clinical practice. Whereas some expressed this as lack of support others cried of an increased workload resulting from high educator-to-student ratios. Others felt that the need for smooth relationships between them and the clinical teams was perhaps disregarded when clinical staff did not cooperate with the educators. Educators may feel unfamiliar with clinical environments considering that these are not their day-to-day places of work and hence harbour the need of feeling accepted by those ‘hosting’ them. Educator Bird had this to say:

You agree on some principle, protocols, but at the end of the day, when you are not there they are not even followed. You will even hear ... from the students, especially when you are back from the clinicals they will tell you that we were told that if Bird is there, please don't do ABCD but ... lack of transparency and cooperation. *Bird*.

Others were concerned about not having ‘protected time’ to teach and mentor students as they are at times called back to campus for other duties resulting in them dropping whatever plans they had for students in clinical practice. This is how educator Judy felt:

Yeah, for me it is a lot because now we have more campus. So, when you will go to the facilities, we find a big number of students. So, teaching in practical, you know practical is a place where you need not so many students surrounding you so but now you find 15 students. It's just not ... there is no justice in that because what you want to see when you go to practice is to see the student doing it. Now, if they are 15, each one requires 30 minutes to do so. How will you observe? And then you are in practicals, then they call you, there is research presentations. Then there is a meeting. I mean the workload is just too much. Because you are the same lecturer for theory. *Judy.*

Yet another challenge presented in the form of simply not having the financial capacity to commute from one clinical setting to the other. Closely linked to this is the general discontentment arising from poor remuneration. This is supported by the voices of the following participants:

And the monetary issue. Things being done, you don't know how much you are being paid per day or what, you're just given a certain amount, and that amount is to cover for everything ... For us as nurse educators. 'Cause it is being reduced every day ... because you are driving augh [exasperated utterance]. It's actually a demotivator ... That's so difficult and also like what I've said, these challenges at the hospital you try to raise an issue, but it's just crushed by your own administration ... *Bird.*

“Specifically for our institutions, there is nothing according to my knowledge that is retaining the lecturers, incentive that makes a person to stay. That is the main thing that is also related to the remuneration.” *Peter.*

Theme 5: There are Hindrances to Maximising Student Learning Experiences. When students arrive at their respective clinical placement areas the intention is to put what they would have learnt in class into practice. Likewise, the educators would prefer that the learning experiences of students are maximised, and every learning opportunity is fully utilised. Anything less than this would be a negative experience. A pattern that emerged showcased discontentment regarding the maximisation of student experiences, suggesting that there are barriers to achieving the shared goal. Whereas some of the educators spoke of ways or situations which worked against a supportive clinical environment most were plainly exasperated about navigating overcrowded clinical practice areas in a quest to supervise, mentor and teach students. The following sub-themes were identified under this theme:

Sub-Theme 5.1: How Can They Learn When They Are Unsupported?

The shortage of staff, specifically nurses, in the clinical area could mean that students receive less guidance as the meagre staff would need to prioritise the care of patients. Even the use of shortcuts could be linked to this shortage: the need to do tasks within a limited space of time for example, could promote the use of quicker ways of getting the job done. Students who are there to learn might have to either adopt the ways they observe or figure out on their own how to do it right. Ingrained or closely linked to the use of shortcuts are practices that are not in line with what the students are taught or what is known as the correct way of practising.

Let me give an example of IV assessment ... [explains how students are taught] ... so when they go there, the sisters are tingling the line and stretching it out to remove the air or they are flushing the air bubbles in the patient's vein, so you see now. Yeah. Now, what we are teaching at the school students be like ah but also sisters do this. They think it's correct while they're just trying to do shortcut and putting patients at risk. XY.

In addition, nurse educators also indicated how the limited time they have with students could negatively impact their learning as they (the educators) do not spend enough time with the students to be able to observe students put into practise what they would have been taught. Moreover, the time spent in theoretical teaching was said to be so short that students left for clinical practice without fully covering the content required prior to skills practice which could then lead to theory-practice mismatch.

Yeah, that one might be a challenge too, cause most of the time we don't really have time to see you know students. You know, actually they are drawing up, you know, nursing care plans according to the patient's, you know diagnosis or need etcetera 'cause we are not there most of the time and that time that they supposed to do it in the morning where they are writing the report etcetera only the sisters you know who are able to do that but as a lecturer sometimes you know you don't have that time 'cause of you know of many student in a clinical setting or hospital you have to visit and then by that time you are going to arrive at that clinical setting. It's already actually late we don't really assess students on that. *Nande*.

So, we had a big problem with putting theory into practice because the way the system was designed whereby students are introduced to theory for two weeks. Not much of the content, which is very important, you can cover before they go to practise. So, when they go to practise most of the content is not yet introduced. So, they don't connect, they can't connect because they did not learn it because there was no time ... *Judy*.

Nurse educators also spoke of negative attitudes of clinical staff which could be counterproductive to the efforts of the nurse educators who are there to guide students. Another challenge manifested as lack of resources ranging from lack of consumables to lack of physical space.

My experience is 1. The attitude of the qualified staff members in the departments. 2. Lack of resources. Can I say lack of knowledge or resistance to change of qualified staff? Those are the challenges. You teach the students one thing but going on the ground it's another. Actually, I try to talk with member of staff in the department, I just see that they are showing attitudes. That is really the challenge. The staff members are not forthcoming; they are resistant to change. *Bird*.

It's not really easy because the facilities also they don't have space. Yeah. So, I want to have a patient in the room whereby I can go through the whole process of, for example, I want to do the history taking of 1 patient. But then I request for a room, but there is no space. There is no room. So, I end up not doing it because I don't have a place to be to, to sit. Yeah. *Judy*.

“Yeah. The challenges are there because there's a lack of space. We are struggling, you might have maybe you are having a time to assist them some way to demonstrate things, but there's no space at all. Nothing.” *Selma*.

One educator felt that clinics (this would include health care centres) were not considered during student orientation; a robust student orientation strategy being in place only in hospitals. Educators also acknowledged their deficiency in role modelling. They felt that nursing students, today, do not see positive modelling in their educators.

So, then the nurses in the hospital, they are in cooperation with the institution, they have a day for orientation. But for the clinics for example, I went there today, and I asked them let's go to the staff room. Students were looking on all the sides. They didn't really know where the staff room is. So, they don't get orientation, so I had to walk them through the whole facility to show them, okay, this is this place ... *Judy*.

Yes, I think it actually the situation has changed. It's not like you know 30 years ago, or 10 years ago, or where actually educators were role models, nowadays, not the way they are dressing, it's not proper. A student, you know, they can copy what actually they are observing from the educators. So, they are not actually the role model today I can really say a few role models but not all. Yeah, their behaviours, their attitude, the way they speak to students, addressing students, they are not actually showing actually positive, you know attitude. *Nande*.

Sub-Theme 5.2: Students Everywhere, it's Like an Infestation: Overcrowded Learning Environments.

As one educator put it, the student population in the clinical area can easily surpass that of patients, clinical and non-clinical staff combined. The picture painted is that of a clinical practice environment so full of nursing students that they take up considerable space and overwhelm the nurses who are supposed to mentor them despite being in short supply. Even though in reality the number of patients or people who seek health care services has most likely increased with increasing populations the number of students in practice areas has been so much such that less cases are available for students to practise. A single educator could easily find themselves with up to 15 students to demonstrate a procedure to using a single patient.

Students have nothing to do now. There are too many students there. But we're looking at the staff, of course. They are overwhelmed, but because at the end of the day they get help from students. But the students, like I've said, they are so, so many. Like I've said that even the patients that they even outnumber the patients, the cleaners, everyone who is working there ... security itself. They are so, so many. There are times when you do not know where to touch, what to do ... *Chuchu.*

Yeah, in Windhoek I think our cases are many. Patients that are actually many. But the problem now. We have so many students, so many students. Most of the time the hospital and clinics are overcrowded and then you know, you know, sisters can also not even absorb. They cannot actually help those student 'cause they are many ... *Nande.*

... but it's unfortunate numbers of students nowadays in Namibia, nursing students they are a lot because we have quite a lot of nursing institutions in Namibia. So, the wards are so overcrowded with students you'll find, like in maternity, there were eighty students only in labour from different institutions. So, it's quite a big challenge ... *XY.*

Theme 6: Recommendations from Nurse Educators. The recommendations suggested by the nurse educators are presented in Table 28.

Table 28*Recommendations from Nurse Educators*

Deduced recommendation	Suggestion	Suggested by
Meet us halfway: reduce nurse educator burnout	Work on recruitment and staff retention	Chuchu
	Reduce modules to 2 per lecturer	Judy
	Each campus to have own lecturers	Judy
	Reduce class sizes	Selma; Peter
We need to be capacitated	More lecturers should be available to follow-up students in clinicals	Nande
	Have a committee for research presentations	XY
	Train us on research supervision	XY
Address space and nurse shortage issue	Provide simulation practice for lecturers	
	MoHSS to build a training hospital	Chuchu
Quality assurance improvement	Recruit more clinical staff	Nande
	Standardise equipment and ensure availability	Peter; Nande
	Nursing council to do spot checks	Bird

Section Four: Results Integration

Following the sequential analysis of the quantitative and qualitative data, the integration of the results, which is presented in this section was conducted.

Nursing Student In-class and Clinical Learning Challenges. Table 29 presents the integration of the nursing students in-class and clinical learning challenges.

Table 29*Nursing Student In-class and Clinical Learning Challenges*

IN-CLASS	
Qualitative result	Quantitative result
Sub-theme 1.1: Our educators just can't cope	Challenges related to the receiving of the curriculum
Sub-Theme 1.2: When just anyone can enrol into nursing.	Issues related to age at enrolment and entry requirements
Sub-Theme 1.3: Too lengthy yet not adequate.	Challenges related to the receiving of the curriculum
Sub-Theme 1.4: It's all to do with money, isn't it?	Financial constraints
Sub-theme 2.1: Perhaps virtual is not the best	Quality of e-learning resources/IT related challenges
Sub-Theme 2.2: Failing to connect and stay connected.	Quality of e-learning resources
CLINICAL	
Qualitative result	Quantitative result
Sub-theme 3.1: Hesitant to embrace technology	Challenges with communication and technology
Sub-theme 3.2: I can't hear it; I can't read it; how can I understand?	Challenges with communication and technology
Sub-theme 4.1: I do not belong	Unsupportive learning environments
Sub-theme 4.2: Not much support	Unsupportive learning environments
Sub-theme 4.3: Too much of us; Too less resources	Lack of consumables and resources for learning

Challenges related to receiving the curriculum which were influenced by shortage of educators, inexperienced educators, an irrelevant curriculum, large classes and lack of classroom space connected with the sub-themes 'our educators just can't cope' and 'too lengthy yet not adequate'.

Nursing students were concerned about classes that were so large that the nurse educators became inundated with the workload and class management. Nancy shared her concern: '... but now heavy is the number and I feel like a lot of challenges, like with lecturers, some lecturers, they even like quit because students now they are a lot now they've increased like to 200.' The students also communicated the frustration of a lengthy curriculum, and the inadequate time allocated to cover content in-class. Jojo shared how the repetitious nature of the sociology modules did not save much purpose besides lengthening the curriculum. "...

whereby I have to learn sociology for two years or three years of which is something that I can just do for one semester. So, I don't think it's really necessary in nursing, yeah.”

Nursing students shared how it seemed there were no restrictions on who can enrol into nursing as entry requirements were too relaxed. From the survey results the entry requirements for studying nursing were found to positively influence the factor ‘issues related to age at enrolment and entry requirements.’ Jade felt that institutions should adhere to the requirements; “Honestly, I know some universities that allow students that did not reach requirements to join the programme I feel like it should be stricter ... I feel like you won't understand the content ...” And Rose felt that this can then become a barrier to learning; “They do impact learning because I've noticed that most of my colleagues in first year that had no science really struggled in adjusting to the programme. They were failing a lot, ... especially in modules like Anatomy, Physiology, Pharmacology.”

Financial challenges constituted some of the extracted factors in the FA. Tuli explained that the tuition fees, transport and other costs are very high, “So, okay on top of the expensive, I mean on top of the high tuition fee there is double paying of taxi money. There's also you buy your own books. For example, the practical books and modules books ...”.

When the interviewees explained how virtual learning is not always the best and the difficulties surrounding failing to connect and stay connected, they provided a deeper insight on the quality of e-learning resources and IT related challenges. Speed of internet was one of the items which contributed to the factor ‘quality of e-learning resources’ in the survey results. The nursing students during the interviews explained that Wi-Fi connectivity was an issue both within the learning institutions and at home with affordability issues further compounding connectivity at home. IT-related challenges were influenced by computer labs and e-classroom facilities and in further explanation, nursing students stated that the digital environment was affected by lack of the right devices and software to support learning. Luna explained, “Oh,

that's very hard because many of us do not have laptops, and the university only has a very limited amount that sometimes is not connected to the internet. So, to be able to do something online is extremely hard.”

The lack of consumables and resources, a factor extracted in the EFA was largely influenced by lack of computers and the internet in the clinical environment and only moderately by the availability of consumables. However, from the interviews the lack of consumables was spoken of by many. Amazing stated, “In most cases where I was the gloves and the aprons, they short, they short really much.” The qualitative data analysis also brought to light the aspects of resource shortage which relates to equipment and human resources. As Tuli and Jade respectively stated, “In understaffed wards the patients are a lot with unavailable or equipment that is not enough in the ward, it is very overwhelming. So that's one challenge that equipment is not enough that” and “You'll find that there's one registered nurse among two enrolled nurses and 18 students. So, it's the percentage difference is very high ... it makes it difficult when there's only one registered nurse ...”. Jade also added, “It makes it very difficult because they don't have time to teach you as they're busy in a ward with up to sometimes 70 patients in the ward.”

Computers and internet availability as resources were found to be more aligned with the sub-theme ‘hesitant to embrace technology’ which was more aligned with the factor ‘challenges with communication and technology’. Two of the items that greatly influenced this factor were ‘feeling prepared to use technology at the bedside’, ‘integration of technology into nursing’. As Tuli put it, “Nothing. Not in Namibia [laughing]. The only computer that is available in the ward is being used by doctors. That's how they use it. Always, they say is for doctors.” And Emilia stated, “I am not [prepared to use technology at the bedside]. I prefer hands on. Honestly, I ever get with hands on. It's a good thing that they have computers, but I prefer hands on.”

The other two items that influenced the factor ‘challenges with communication and technology’ were ‘easy communication with patients’ and ‘clear patient care records’ and they fell into a separate sub-theme ‘I can’t hear it; I can’t see it; how can I understand it?’. Nursing students interviewed explained language and poor record keeping as barriers to communication. Nancy shared, “... You go there, you want to SOAP the patient but now the language barrier like you cannot communicate. You cannot share that conversation. Like to understand each other,” and she went on to sum it all up by stating:

You won't get the right information to write a normal report. All the correct report for the patient ... if now you cannot communicate well with your patient because of the language barrier then the record keeping won't be accurate. It won't be accurate and now it will affect the patient. *Nancy.*

The factor unsupportive learning environments was supported by the sub-themes ‘I do not belong’ and ‘not much support’. The items ‘I felt accepted when I started my clinical placement’ ‘I felt included during clinical discussions’ and ‘I was treated equal to other nursing students’ which influenced the factor unsupportive learning environments resonated with the sub-theme ‘I do not belong’. The reasons for not feeling as if they *belonged* included being left out in clinical discussions and being discriminated. Rosy explained, “And I don't really feel included. In the clinical discussions, I feel very isolated and not part of that.” And Emilia spoke of institutional discrimination: I call it institutional discrimination. Yeah. Yeah, students from UNAM, students from ICARE, students from Welwitchia, everybody's treated different ...”

The items ‘the staff were interested in student supervision’, and ‘I found the atmosphere conducive for learning’ which also influenced unsupportive learning environments were more aligned with the sub-theme ‘not much support’. Students explained how staff burnout contributed to unsupportive learning environments. They also shared that those expected to supervise them were unwilling to do so. Rosy put the lack of supervision down to large students numbers; “And like I've mentioned before, there are now so many students, so they can't really

supervise you as much as you want them to”, while Luna voiced that it is the lack of staff that leads to this; “Because there's so much a lack of staff that we often do not even get to have conversations with our mentors or our clinical instructors that come from school don't have time to come”, and Jade put it down to unwillingness “... and other doctors think that they are at a higher rank than us students, they will either tell you I don't want you as a student.”

Nurse Educator In-Class and Clinical Teaching Challenges. The integration of nurse educator in-class and teaching challenges is presented in Table 30.

Table 30

Nurse Educator In-class and Teaching Challenges

IN-CLASS	
Qualitative result	Quantitative result
Sub-theme 1.1: Not fully prepared to embrace technology	Software and data storage challenges/accessibility to e-resources for research support/institutional support for information sharing/utilisation of the digital environment/IT related challenges
Sub-Theme 3.1: Not equipped for this thing: Lack of human and physical resources	Curriculum administration challenges/Financial constraints
Sub-Theme 3.2: Running out of steam: Dealing with work overload	Curriculum administration challenges
CLINICAL	
Qualitative result	Quantitative result
Sub-theme 4.2: Unmet nurse educator needs	The nurse educator's place in the clinical environment
Sub-theme 5.1: How can they learn when they are not supported?	Maximising nursing student learning experiences/Space and case diversity/Theory practise gap
Sub-theme 5.2: Students everywhere, it's like an infestation: Overcrowded learning environments	Space and case diversity/Increased workload

From the quantitative analysis it was identified that nurse educators faced challenges related to software and data storage challenges; accessibility to e-resources for research support; institutional support for information sharing; utilisation of the digital environment and IT related challenges. These, when further explored in the qualitative phase resulted in the sub-theme ‘not fully prepared to embrace technology’. The nurse educators spoke about the reluctance among some of them to use e-resources, and how some, including nursing students

were technologically challenged. Educator XY shared that the lack of desktops in offices was inconvenient especially when one's laptop was not working; "... I don't have a desktop in my office where I say I can, if my laptop is not working, at least I can use a desktop in the office ...” Selma was unsure why available e-resources were not used even when training had been received; "... I'll say the same with this *Bhuku*, we have been trained several times, but I don't know on the utilisation is still, maybe you can say its rate it's 20% we are not using this ...”

Participants were able to explain the issue related accessibility of e-resources as Peter stated, “The Moodle is available. But the challenge is the access to yeah, ... the internet you can go there and its loading, but it will take good time and there is a lot of interruptions in between,” and Nande stated, “... Lecturers have been actually suggesting ... to have actually a data storage, where actually if a student also wants you know some theses which are written or assignments or old exam questions but up to now, we don't.” Thus, the accessibility issues were specific to both internet connectivity and the unavailability of the e-resources.

Whereas it was clear from the survey results that educator inexperience, shortage of educators, lack of consideration of learning styles and lack of classroom space contributed to curriculum administration challenges participants who later participated in the interview shared insights on another aspect that contributed to this challenge. An irrelevant curriculum. They explained how the repetition of content, and how the comprehensive curriculum, whose benefit of producing nurses who can work in a variety of nursing fields cannot be overstated, may be too congested and not appreciated by students who preferred specific fields. “... we are training a nurse who is in community, midwifery, and general nursing. The student has to choose where to work, but some students they are not even interested in midwifery”; “So, social problems can be integrated in the sociology instead of having two modules just to give more pressure on student”; “... sociology itself ... you'd find that now you find that you see that students are

having maybe sociology three times. I wonder what the content ... why do we keep on repeating some of these things?" shared Peter, Judy and Chuchu respectively.

As per survey results nurse educators faced difficulties in fitting in in the clinical practice areas. Such difficulties were significantly influenced by challenges in the application of care protocols, participation in decision-making regarding patient care and information and opinion exchange with members of the healthcare team. These difficulties resonated with the sub-theme 'unmet nurse educator needs'. Some of the educators felt that the relationship they had with those in the clinical practice areas was nothing but rocky. They felt unaccepted. Nurse educator Bird would say: You agree on some principle, protocols, but at the end of the day, when you are not there they are not even followed."

Three challenges identified from the survey were explained within the sub-theme 'how can they learn when they are not supported.' The first of these challenges was maximising nursing student learning experiences which was fed into by the difficulties in providing clinical practice area, daily monitoring of students, cooperation with other members of the healthcare team, orientation of students, and the number of patients. The second was space and case diversity which was influenced by availability of rooms for changing and meetings and by case diversity. And the third, influenced by students' knowledge and skills specific to practice area and putting learned theory into practice, was theory-practice gap.

Interviewees explained that the gap between theory and practice was due to the shortage of staff, specifically nurses, which led to students observing the use of shortcuts. They also said that this was because of the limited time that nurse educators had for teaching not only in the clinical area but also in class. They stated that students leave for clinical practice without adequately covering the content they needed to cover prior to practising what they would have learnt. Other contributing factors from the perspectives of the nurse educator interviewees were

negative attitudes of clinical staff, lack of resources which ranged from lack of consumables to lack of physical space, student orientation issues, and negative role modelling.

Commenting on lack of time, staff attitude and lack of resources and role modelling Nande, Judy, and Bird shared, “You know, actually they are drawing up, you know, nursing care plans according to the patient’s, you know diagnosis or need etcetera 'cause we are not there most of the time.” (*Nande*); “Not much of the content, which is very important you can cover before they go to practise. So, when they go to practise most of the content is not yet introduced. So, they don't connect, they can't connect ...” (*Judy*); “My experience is, 1. The attitude of the qualified staff members in the departments, 2. Lack of resources ...” (*Bird*); “So, they are not actually the role model today I can really say a few role models but not all. Yeah, their behaviours, their attitude, the way they speak to students addressing students ...” (*Nande*).

The sub-theme ‘students everywhere, it’s like an infestation: overcrowded learning environment is a further explanation of issues related to space and case diversity and increased workload. The number of students was identified from the survey as influencing the increased workload. Nurse educators expressed how the way they support students in clinical practice is affected by an increased workload resulting from high educator-to-student ratios. They also faced a predicament of juggling between clinical practice duties and other duties such as research supervision. As Judy explained: “... Now, if they are 15, each one requires 30 minutes to do so. How will you observe? And then you are in practicals, then they call you, there is research presentations ... I mean the workload is just too much.” One nurse educator could easily find themselves with a lot of students to demonstrate a procedure to using a single patient. As Nande put it, “... Patients that are actually many but the problem now we have so many students, so many students. Most of the time the hospital and clinics are overcrowded and then you know, sisters can also not even absorb.” And Selma shared the concern regarding space, “... The challenges are there because there’s a lack of space. We are struggling, you

might have ... a time to assist them some way to demonstrate things but there is no space at all. Nothing.”

Evaluation of Findings

This section explains, in brief, what the findings mean.

Quantitative Results. An evaluation of the quantitative findings is presented. This comprises a brief interpretation of the results with reference to literature.

Challenges Faced by Nurse Educators and Nursing Students.

Hypothesis 1

H₀ Nursing education in the 21st century is not faced with challenges.

H₁ Nursing education in the 21st century is faced with various challenges.

Description of the Nursing Student Extracted In-Class Learning Challenges

One of the extracted factors under the in-class learning challenges by nursing students was related to ‘access of e-resources for research’. Results indicated that students faced challenges with access to resources such as citation databases, bibliographic databases, e-journals, e-newspapers, e-books, and e-theses and dissertations. Closely linked to challenges related to access of e-resources for research was quality of e-learning resources. In this regard nursing students had challenges relating to the download and use of free and open-source software, access to software, access to online or virtual technologies, learning management services, support for maintenance and repair of ICT and speed of internet. In addition, IT related challenges were identified, and results indicated that nursing students faced challenges relating to accessibility/availability of computer labs and by e-classroom facilities. Yet another challenge was in the form of access to data storage and visualisation.

The challenges presented above relate to a learning environment which is not as technology enabled as it should be. According to Booth et al. (2021) the nurse is challenged with the use of digital technologies, and this restricts the profession from fully

benefiting from their use in nursing practice and patient care. Indeed, nursing must transform and embrace digitalisation to be better equipped to respond to the complex healthcare environments (Booth et al., 2021). Nursing education cannot shy away from technology. There is a need to prepare nurses to comfortably incorporate technology into patient care and to include technological competence in the nursing curricula (Scottish Government, 2017). It must be acknowledged that the student may still struggle to either meet the cost of the technological devices or to access the internet as reported by other scholars (Makhene, 2023; Zarei & Mohammadi, 2022).

Another challenge identified was related to 'receiving the curriculum'. Results showed that nursing students indicated that the shortage of educators, inexperienced educators, an irrelevant curriculum, large classes and lack of classroom space affect how the curriculum is received. This finding lies close to what literature says, for example, in a study by Nhokwara et al. (2022) students opined on the disadvantages of large classrooms. They went on to suggest various ways of counteracting the disadvantages of large classes such as increasing the number of lecturers and reducing the number of students enrolled into nursing.

Financial constraints were identified as a challenge in the current study. Such constraints included the cost of tuition, other costs, and the lack of technologically advanced simulators for learning clinical skills. Nurse training, like any other training, comes with tuition costs which most students struggle with. There are other costs too, as Moradi et al. (2022) found from their study that both faculty and students complained of the cost of equipment and the internet when nursing education had to make the sudden shift to online learning during the COVID-19 lockdown.

The last challenge was 'age at enrolment and entry requirements'. Students indicated that there were challenges related to the entry requirements for studying nursing and the age at enrolment into nurse training. Even in the 19th century there was some form of prerequisite to

enrolling into nurse training. Today, specific subjects such as mathematics and science are required prior to enrolling into nursing education with some schools adhering to these requirements more strictly than others.

Description of the Nursing Student Extracted Clinical Learning Challenges

One of the clinical practice challenges was ‘supervision and preceptorship challenges’. Here students indicated that there were challenges regarding receiving constant feedback from preceptors/clinical instructors; preceptors/clinical instructors having competence in teaching nursing skills and the ability of preceptors/clinical instructors to be a team player. They also indicated that there were challenges with receiving help from preceptors/clinical instructors in putting theory into practice, having meetings which focussed on learning with preceptors/clinical instructors, satisfaction with supervision, receiving of individual supervision, having trusting relationships with preceptors/clinical instructors. Sabone et al. (2018) in a study in Botswana shared how difficult it could be to advertise nursing as a career with good prospects to the 21st century generation when students in training lacked resources such as a diversified faculty and supervisors to mentor and guide them in clinical learning. Qualified nurses also play a crucial role in clinical learning. They take the role of preceptors and mentors; however, this is a role they are not always effective in as it can be negatively impacted by other factors. Factors such as staff shortage and inadequate support from their supervisors. Such lack of support from those in charge could result in leadership and management challenges. From the current study, nursing students indicated that there were challenges associated with the nurse in charge being a team player or valuing their subordinates.

Another challenge was described as ‘unsupportive learning environment’. Herein nursing students indicated they did not feel accepted when they started their clinical placement, that staff did not show interest in student supervision, they felt excluded during clinical

discussions, they did not find the atmosphere conducive for learning and were not treated equal to other nursing students. Literature supports how unsupportive clinical environments can be. Amukugo et al. (2017) speak of shortage of staff in the clinical area, and an orientation towards task completion instead of comprehensive patient care which both would make an environment unconducive for learning. Another concern raised by students when in clinical practice environments was discrimination by nurses (Hatupopi & Nuuyoma, 2019).

Closely linked to the challenge of an unsupportive learning environment was the 'lack of consumables and resources for learning'. Results showed that there were challenges relating to the accessibility of computers, the availability of internet and consumables such as gloves and aprons. Lack of resources such as lack of adequate staff, lack of space, and lack of consumables subject nurses to the use of 'shortcuts' and/or improvisations of which this may mean that the student may never get to learn how to do things right. Munangatire and Nambuli (2022) identified the use of shortcuts as a barrier to the implementation of the nursing process.

Communication and technology was yet another challenge to clinical learning. Students had challenges related to the ease of communicating with patients, the clarity of patient records, and feeling unprepared to use technology at the bedside. Language affects the communication with patients. Hatupopi and Nuuyoma (2019) mention language as one of the barriers to learning in the clinical environment. The use of technology at the bedside increases efficiency and reduces errors. The automation of processes can help reduce costs, medication waste and drug errors (Hitt & Tambe, 2016, as cited in Da Silva et al., 2022) while computerised tools aid in reducing excessive documentation (Da Silva et al., 2022), however, as Loureiro et al. (2021), concluded, some of the users may face technical difficulties.

The role of social media was one of the challenges identified in this current study. Nursing students faced challenges related to finding useful information relating to patient diagnosis and care on social media and to the use of the smartphone at the bedside. In contrast

in a case study by Giroux and Moreau (2022) some of the nursing students stated that they used the social media informally at the patient's bedside to assist them with health education citing YouTube videos as one of such media.

Description of the Nurse Educator Extracted In-Class Teaching Challenges

The first in class-related challenge identified from nurse educators was on 'software and data storage'. Nurse educators faced challenges related to the download and use of free and open-source software for teaching and learning, citation/reference management software, access to data storage and data visualisation software. The second challenge was 'accessibility to e-resources for research support' and findings indicated that nurse educators found challenges with access to electronic newspapers, access to patent databases, e-proceedings of conferences and to bibliographic databases. Another challenge was institutional support for information sharing under which nurse educators indicated challenges with institutional email and learning management services. The other challenges related to the utilisation of the digital environment and IT under which nurse educators indicated challenges with e-portfolio, institutional repository for sharing research, access to e-classroom facilities and computer labs. The above challenges indicate challenges with embracing technology despite its numerous advantages to nursing education. As Loureiro et al. (2021) assert, some of the advantages of digital educational technologies include that they allow the integration of multiple learning tools, are affordable, and that they allow asynchronous access. There is of course the disadvantage of cost when setting up a digital environment. In the long run such costs are offset by the efficiency associated with its use in education.

The other factor extracted in this study was 'curriculum administration challenges'. Nurse educators indicated that there were challenges related to inexperienced educators, shortage of educators, lack of consideration of learning styles and lack of classroom space. Large classes coupled with a shortage of educators would impact curriculum administration

negatively. Nursing students who took part in a study by Nhokwara et al. (2022) suggested, among other suggestions, increasing the number of lecturers and reducing the intake of students. It is important to vary teaching styles as students usually have different learning style preferences. In a study by Mbirimtengerenji et al. (2015) students complained that lecturers talked throughout an entire lesson which resulted in them losing concentration.

And another challenge was financial constraints. Here nurse educators indicated that the cost of tuition, lack of technologically advanced simulators for learning/teaching clinical skills and other costs were challenges faced in in-class teaching. The inability to afford tuition could mean students miss classes which would affect their learning. The cost of the internet and hardware needed for learning could also be a barrier to teaching and learning. Moradi et al. (2022) shared how both faculty and students complained of the high cost of equipment and internet with members of the faculty failing to even afford to buy personal laptops.

Description of the Nurse Educator Extracted Clinical Teaching Challenges

The extracted factors indicated experiences of challenges faced by nurse educators in the clinical teaching environment. Responses from the educators showed that educators faced challenges related to their place in the clinical environment, maximising nursing student learning experiences, space and case diversity, increased workload, nurse educator unpreparedness, and theory-practice gap.

Difficulties relating to the application of care protocols in the clinical area, participation in decision-making about patient care, information and opinion exchange with members of the healthcare team, patient care practices, and completing nursing care monitoring forms speak of the nurse educator's place in the clinical environment. Nurse educators need to feel welcome and supported in the clinical environment. When the nurse educators work in harmony with the clinical staff the resultant atmosphere benefits the student who is there to learn.

Another challenge was ‘maximising nursing students learning experiences’. Within this challenge the nurse educators identified difficulties related to providing clinical practice area, daily monitoring of students, cooperating with other members of the healthcare team, orientation of students to the clinical environment, cooperation with the nurse team and the number of patients. The ideal place for clinical learning is the clinical practice area, so when this is not available clinical teaching and learning can be affected. Nurse educators also require the capacity to monitor students and the cooperation of clinical staff if the efforts of clinical teaching are to be successful. When the number of patients is overpowered by that of students clinical learning could be affected. Sabone et al. (2018) speak of the ‘recycling of patients’ for practising skills. This is something which is common where clinical environments are overcrowded by the student population. The orientation of students is also equally important. According to Mbirimtengerenji et al. (2015) clinical accompaniment and supervision of students is influenced by lack of orientation or induction programmes.

Space and case diversity, and increased workload were other challenges identified. Nurse educators faced difficulties related to the availability of changing and meeting rooms, case diversity, workload and the number of students. The space to practise and the cases to practise on are invaluable resources to student learning. As stated earlier, Sabone et al. (2018) argue that students suffer due to limited diversity and space in clinical settings. Regarding workload, the tutors who took part in the study by Mbirimtengerenji et al. (2015) indicated that they struggled to balance clinical teaching duties and other duties and were faced working with limited resources amidst increasing student numbers (Mbirimtengerenji, 2015).

Nurse educator unpreparedness was yet another challenge. Nurse educators faced difficulties in presenting education experiences suited to learning outcomes of the course, being role models for students and achieving course objectives. In a study by Mbirimtengerenji et al.

(2015) only 54.3% of the 129 students who took part in the study agreed that nurse tutors demonstrated clinical procedures effectively both in class and in the clinical area.

The last challenge was theory-practice gap. Herein nurse educators indicated difficulties relating to students' knowledge and skills specific to practice area and putting learned theory into practice. It is during clinical placement that students practise, in real life, what they would have learned in class. In an ideal situation, the learning in-class should adequately prepare students for clinical practice. The student is thus expected to have some knowledge and skills specific to the area they are placed in. However, this is not always the case as is explained in the qualitative findings of this current study.

Qualitative Results. A brief interpretation of the qualitative results is presented. Reference to literature has been limited to the quantitative section to avoid repetition as these results are an explanation of the quantitative results.

Challenges Faced by Nursing Students in In-Class and Clinical Learning. Nursing students also provided insights that helped answer the question 'How do nursing students describe challenges faced in in-class and clinical learning?' The following sub-themes resulted from this theme:

Theme 1: Bitter Receiving End: Issues Related to Curriculum Administration

Nursing students spoke of how nurse educators struggled to cope with workload. They also shared about the financial challenges which nursing students face. Some shared their concerns about how 'just anyone' can enrol into nursing. And another challenge came in the form of a congested curriculum. The impact of these challenges on learning is negative.

Nursing students spoke of classes that are so big that the nurse educators struggle to cope with the workload and class management. The students also perceived that lack of experience may fail the educator who is trying to deliver the curriculum, and this will not benefit the student who is on the receiving end. The lack of educator experience is further

compounded by their shortage where in some cases the few who are available are unqualified by training or by experience. The inability to consider students' different learning styles reflects on the training received and/or experienced possessed.

Some of the nursing students shared how they observed that some are enrolled into nursing without the right passes or the attributes of a nurse. Some were known to have enrolled into nursing just for the money. The relaxation of entry requirements could give rise to challenges such as a difficulty in understanding concepts taught.

Nursing students spoke of how congested the curriculum was with this being compounded by the repetition of content in modules such as sociology. The same sentiment was shared by nurse educators. The students also felt that the time set aside for in-class learning was never sufficient to cover the amount of content yet at the same time the curriculum failed to address other areas that should have been addressed.

Nursing students mostly complained of the high cost of tuition in addition to other costs. They also indicated that the nurse training institutions could not afford advanced simulation resources.

Theme 2: Challenges Related to e-Learning and Internet Connectivity

Whereas for some of the students the virtual space, learning online, relying on electronic resources such as e-books have a lesser appeal than face-to-face tuition and printed out books and materials for others the main concern is digital exclusion. Digital exclusion occurs because they fail to access the resources due to either the inability to afford electronic devices, data or failing to connect because of poor internet reception.

Some of the participants cited that one can be easily distracted when attending a class online which could have caused them to be reluctant towards the use of digital platforms for learning. It was also shared that online learning does not promote interpersonal relationships. Face-to-face was thus the preferred mode of learning. In support Aristovnik et al. (2020, as

cited in Oducado & Estoque, 2021) contend that globally, students feel burdened by online learning which increases their workload and are faced with internet connectivity challenges.

One can struggle with using technology and without the right kind of support one can relegate themselves to avoiding it or not fully utilising it. The use of the digital environment requires one to have the right devices and software which some of the nursing students did not have. In addition, there was the challenge brought up by poor internet connectivity. The Wi-Fi was reported as slow or weak both at the learning institutions and at home, and at times affected by power outages.

Theme 3: The Communication and Technology Related Challenges We Face in The Clinical Environment

This theme explains the barriers to communication and to the use of technology as faced by the nursing students during clinical practice. Most of the students voiced that they observed some hesitancy to embracing digitalisation either in themselves or in others, that the clinical environment did not always promote the use of technology, and that there were challenges in communicating with and about patients.

In some clinical areas computers were not available whereas in others there was only that one computer that was usually reserved for the doctors. In addition, students felt that they had not been prepared, by education, to embrace technology. Nursing care today in the developed countries, and indeed even in developing countries' private sector, takes place in environments which have been invaded by technology.

Nursing students shared how a significant proportion of patients cannot speak or understand English which is the official language in Namibia. They voiced how this was a barrier to communication considering that most of the students (and qualified staff), came from diverse ethnic backgrounds, and that their primary languages were equally diverse. Inaccurate

recording keeping could thus ensue as students would not understand what the patient would have said.

Other students voiced how difficult some patient records were to read, and this can be quite a challenge considering that record keeping is the backbone of communicating patient needs and care processes in clinical settings. Illegible or inaccurate records were said to be at times a result of the way doctors write. In addition, the increased workload meant that there was no time for accurate documentation.

Theme 4: Clinical Learning Environments Can Be Unsupportive

The voices of the participants communicated how unsupportive clinical learning environments were. Some students shared how they felt like outsiders and did not receive expected support from supervisors and mentors. They also indicated how they struggled with learning skills using improvised resources and how it was difficult to get the attention of nursing staff as they attended clinical practice in large groups.

Some of the nursing students had a feeling of not belonging. This was because they felt unwelcome or left out in clinical discussions or felt discriminated against. The discrimination was said to be institutional by some, xenophobic by others and tribal based by others.

Some of the students acknowledged that staff burnout and increased workload resulted in clinical staff not having adequate time to supervise them. However, some attributed the lack of support to the lack of will to support them. Students also shared how other MDT members and those in charge were not prepared to supervise and mentor them and in addition, they also felt that their clinical instructors, mentors and lecturers did not have time for them as they had a lot to juggle.

Other challenges were in the form of lack of teamwork among the clinical staff. And some of the participants shared that they observed some of the leaders and managers

disrespecting and instilling fear in their subordinates. This could feed disharmony in the clinical units thereby negatively impacting the support students needed for learning.

Besides the issue of overcrowding, the shortage of resources, both physical (consumables and equipment) and human (nurses) was seen as a constraint to learning within the clinical environment. Large groups of students look forward to a disproportionately small group of qualified nurses to supervise and teach them. This inevitably leads to a dilemma. The nurses cannot cope with such large numbers and the students find themselves with no one to supervise them, a situation which becomes even worse when the nurses tire and suffer burnout.

Recommendations by Nursing Students. Nursing students suggested the following:

Rethink student placement strategies: It was suggested that first year nursing students could practise other skills other than the taking of vital signs and that they should be in-class more than they are in clinical practice areas to grasp the fundamentals of nursing. Another suggestion was that students should be placed in other regions to increase exposure to more maternity cases and other cultures.

Ensure adequate resources: Nursing students suggested that responsible authorities should ensure adequate equipment, recruit more nurses, provide students with mobile data, equip the library and extend its operation times.

Inclusivity and mental health support: The nursing students suggested that clinical staff should use English to communicate with students, that discrimination should be addressed and that students be provided with mental health support.

Challenges Faced by Nurse Educators in In-Class and Clinical Teaching. The question ‘How do nurse educators describe challenges faced in in-class and clinical teaching?’ resulted in the following themes:

Theme 1: Challenges Related to E-Learning and Internet Connectivity

Nurse educators were concerned about the use of online resources and the virtual space in the administration of the curriculum. There was an insinuation that e-learning and e-resources have a not so clear position within nursing education.

It appeared that some nurse educators were reluctant to use e-resources, while some were technologically challenged, and others stated that students struggle when trying to use the online platforms. In addition, lack of training and issues with internet came up as some of the challenges to embracing digitalisation. To sum up, the systems in place do not fully promote digital inclusion and the educators were not quite sure about embracing digitalisation.

Theme 2: Issues Related to Curriculum Content

Nurse educators shared that although the curriculum was generally relevant, there was a lot of content repetition, and the comprehensiveness of the curriculum was not accepted by all. For example, some students might prefer to graduate as general nurses and have no intention of working as midwives yet within the comprehensive curriculum these two fields are not separated.

The repetitious nature of curriculum content coupled with its comprehensiveness has led to curriculum overload according to the nurse educators. One of the concerns was how difficult it is to teach midwifery to a student who is only interested in general nursing. Another was that sociology was split up into several modules each covering almost the same content. All this would then result in too little time to cover the content.

Theme 3: Physical and Human Resources Matter

Without the right resources efforts of achieving a goal may be futile. This theme resulted from a pattern that was indicative of inadequate resources. Nurse educators spoke of the lack of simulation equipment and models, and ill-equipped libraries. Another challenge was in the form of inadequacies of human resources such as the lack of experience and training.

Participants shared how some nurse educators lacked experience specifically in education and some lacked clinical experience. The lack of clinical experience would mean that one would struggle with ‘drawing from experience when teaching’.

Burnt out. That is how some of the nurse educators felt. Teaching at two campuses and having classes in both on a given day was one source of burnout. Another came in the form of the high number of students that each nurse educator had to supervise for their undergraduate mini thesis. One nurse educator stated that this number could be as high as 19.

Theme 4: At Times One Feels Demotivated

It was evident that some of the nurse educators felt strongly about issues that they perceived as beyond their control. Some were exasperated by having to deal with improper student behaviour and perceived inattentiveness of the employer towards some basic needs. These are external factors that affect performance. Demotivation can affect one’s will to achieve a goal.

Cheating by students was said to occur in the form of forging cases. The students were also said to show lack of interest and to absent themselves from attending clinical practice. There was an understanding that the unavailability of cases led to the cheating. This should not, however, justify such actions. If anything, it can only jeopardise patient safety as a student will be signed off for a skill or procedure that they are not conversant in.

Nurse educators expressed disgruntlement at having their needs not met. Some further explained that this affected the way they supported students to learn in the clinical practice environment. Nurse educators also lamented about increased workload which was mostly due to high educator-to-student ratios while others were concerned about not having ‘protected time’ to teach and mentor students due to having to juggle between supervising students in the clinical area and other duties back at campus such as attending student research presentations. Another challenge related to finance. Nurse educators stated how difficult it was to commute

from one clinical setting to the other without adequate financial support while some were generally discontent because of poor remuneration.

Some of the nurse educators felt disregarded by clinical staff who were uncooperative. As most nurse educators spend less of their working time in clinical areas these environments may feel unfamiliar, and lack of cooperation can only compound such feelings.

Theme 5: There are Hindrances to Maximising Student Learning Experiences

When students arrive at their respective clinical placement areas the intention is to put what they would have learnt in class into practice. Likewise, the educators would prefer that the learning experiences of students are maximised, and every learning opportunity is fully utilised. Anything less than this would be a negative experience. Results showed that some of the educators saw barriers to the maximisation of student experiences, suggesting that there are barriers to achieving the shared goal. Clinical environments were seen as unsupportive and overcrowded making it hard to supervise, mentor and teach students.

Students were seen as lacking support which was a result of factors such as the shortage, lack of time of staff, negative nurse attitudes and a not up to par orientation system. Where there is nursing staff shortage student needs may be neglected as nurses would need to prioritise the care of patients. In addition, the need to do tasks within a limited space of time could promote the use of shortcuts exposing students to incorrect practices.

Furthermore, nurse educators indicated that they had limited time with students and that this negatively impacted their learning as they were not able to observe students put into practice what they would have been taught. Nurse educators also indicated that the time spent in theoretical teaching was so short that students were not fully prepared for clinical practice before leaving for the clinical practice environments. The resultant effect is that there may be theory-practice mismatch.

The negative attitude of clinical staff was another challenge voiced by the nurse educators. Such attitudes could work against the efforts put by the nurse educators in guiding students. Another challenge was lack of resources such as consumables and physical space. This makes clinical teaching difficult as the educators do not have the right resources and the space to demonstrate procedures

One educator felt that there was a glitch in the orientation system with clinics (and health care centres) not being considered much in the student orientation programme. Another challenge was in the form of deficient role modelling which leaves students with limited exposure to emulative learning.

Clinical practice areas are overcrowded. The picture painted by the participants is that of a hospital, clinic, or health care centre under siege, completely taken up by groups of nurse trainees. A group that looks up to the meagre number of nurses for guidance which could frustrate not only the clinical staff but also the patients who may find it unflattering to have so many 'nurses' who cannot work independently. The high number of students means that less cases are available for students to practise.

Recommendations by Nurse Educators. Nurse educators put forward the following recommendations:

Meet us halfway: reduce nurse educator burnout: Herein the nurse educators suggested that the employers work on recruitment and staff retention strategies, reduce module allocation to 2 per lecturer, in addition to ensuring that a lecturer is assigned to only one campus. They also suggested increasing the number of lecturers available to follow students up and reducing class sizes.

We need to be capacitated: The suggestions here included ensuring that there is a research committee for research presentations, training lecturers on research supervision, and providing them with simulation practice.

Address space and nurse shortage issue: Nurse educators suggested that MoHSS should build a training hospital and recruit more clinical staff.

Quality assurance improvement: The nurse educators suggested that equipment (for clinical teaching) be standardised, and the availability ensured.

Relationship Between In-class and Clinical Learning Challenges.

Hypothesis 2

H₀ Clinical education has no association with in-class education.

H₁ Clinical education has an association with in-class education.

Relationship Between Student In-class and Clinical Learning Challenges. The analysis showed that clinical learning challenges were weakly correlated with in-class learning challenges. The highest correlation was between challenges related to access of e-resources for research and supervision and preceptorship challenges with a correlation coefficient of 0.259 at a p-value of 0.001. Supervision and preceptorship challenges were also positively correlated with data storage and visualisation challenges, and with quality of e-learning resources challenges with coefficients of 0.258 at a p value of .0.001 and 0.249 at a p value of 0.002 respectively. This means that an increase in the supervision and preceptorship challenges results in an increase in challenges related to access of e-resources for research, data storage and visualisation challenges, and to those related to the quality of e-learning resources.

Relationship Between Nurse Educator In-class and Clinical Teaching Challenges.

The analysis revealed that clinical teaching challenges exhibited weak to moderate correlations with in-class teaching challenges. The strongest correlation was between increased workload and utilisation of the digital environment, with a correlation coefficient of 0.556 at a p value of 0.002. Increased workload was also positively correlated with challenges related to accessibility to e-resources for research support with a correlation coefficient of 0.526 at a p-value of 0.004 also indicating a moderate correlation. This means that an increase in increased

workload results in an increase in challenges related to the utilisation of the digital environment and to those related to accessibility to e-resources for research support.

Results Integration. This section presents a brief interpretation of the integrated results.

Nursing Student In-Class and Clinical Learning Challenges. Challenges related to the receiving of the curriculum by students connected to the sub-themes ‘our educators just can’t cope’ and ‘too lengthy yet not adequate’. Participants shared how nurse educators were overwhelmed with the increased workload. They also communicated their frustration regarding a lengthy curriculum, the inadequate time allocated to cover content in class and how content was unnecessarily repeated in some of the modules.

Interview participants passionately spoke about how it seems that just anyone can enrol into nursing due to the relaxed entry requirements. In this they were explaining the survey results of ‘issues related to the age at enrolment and entry requirements’. Participants reiterated that institutions should adhere to the requirements as not doing so adds on to the barriers to learning.

Financial constraints constituted some of the extracted factors in the FA. The qualitative results agreed with this and revealed that the tuition fees, transport and other costs were just too high.

The quality of e-learning resources and IT related challenges were explored within the sub-theme failing to connect and stay connected. The nursing students during the interviews explained that Wi-Fi connectivity was an issue both within the learning institutions and at home where both connectivity and affordability impacted ‘connecting and staying connected’.

The lack of consumables and resources, a factor extracted in the FA was voiced by many in the interviews. The interviewees explained how the lack of consumables, equipment and human resources affected their learning in the clinical environment.

Computers and internet availability were more aligned with the sub-theme 'hesitant to embrace technology'. Some of the interviewees stated that they had no access to the computers found in the wards while some shared how unprepared they felt to use technology at the bedside.

Challenges with communication and technology were aligned with the sub-theme 'I can't hear it; I can't see it; how can I understand it?' Here nursing students spoke of how difficult it was to converse with patients and to communicate accurately through patient records when they could neither understand what was said nor read what was written.

The factor unsupportive learning environments was supported by the sub-themes 'I do not belong' and 'not much support'. Interviewees explained how they felt excluded from clinical discussions and at times outrightly discriminated.

Unsupportive learning environments as a challenge was more aligned with the sub-theme 'not much support'. Interviewees shared how the unwillingness of staff to supervise them together with staff burnout negatively impacted their clinical learning.

Nurse Educator In-Class and Clinical Teaching Challenges. From the quantitative analysis it was identified that nurse educators faced challenges related to software and data storage; accessibility to e-resources for research support; institutional support for information sharing; utilisation of the digital environment and IT related challenges which together could be described under the sub-theme 'not fully prepared to embrace technology'. The nurse educators spoke about how the reluctance to use e-resources, internet connectivity and unavailability of e-resources affected the use of technology in nursing education.

Whereas nurse educator inexperience, shortage of educators, lack of consideration of learning styles and lack of classroom space contributed to curriculum administration challenges identified in the survey results participants who later participated in the interview spoke more of an irrelevant curriculum. The nurse educators explained that content repetition and the

design of the curriculum which allows the graduate to practise both as a general nurse and a midwife contributed to the curriculum congestion.

According to the survey results nurse educators faced difficulties in ‘fitting in’ in the clinical practice areas. The challenge resonated with the sub-theme ‘unmet nurse educator needs’. Some of the educators felt that the relationship they had with those in the clinical practice areas was not good. They did not feel accepted.

Three challenges, maximising nursing student learning experiences; space and case diversity; and students’ knowledge and skills specific to practice area and putting learned theory into practice, identified from the survey were explained within the sub-theme ‘how can they learn when they are not supported.’ Nurse educators explained how the students’ learning experiences were not maximised because of several factors. These included the shortage of staff, specifically nurses, the limited time they had for teaching not only in the clinical area but also in class. They spoke of negative attitudes of clinical staff, lack of resources which ranged from lack of consumables to lack of physical space, student orientation issues, and negative role modelling.

The sub-theme ‘students everywhere, it’s like an infestation: overcrowded learning environments’ provided an explanation of issues related to space and case diversity and increased workload. The large number of students per nurse educator increased workload. Increased workload was also a result of additional duties that educators were expected to take up during the clinical practice time such as research supervision.

Chapter Summary

In conclusion, the researcher analysed both in-class and clinical teaching/learning challenges faced by both nurse educators and nursing students from two Namibian universities using EFA. It was determined that in-class learning challenges faced by nursing students included those related to access of e-learning resources, the quality of such resources, financial

constraints, IT, curriculum receipt, data storage and visualisation, and those related to age at enrolment and entry requirements. They faced clinical learning challenges related to supervision and preceptorship, leadership and management, unsupportive learning environments, lack of consumables and resources for learning, communication and technology, and the role of social media.

Results revealed that for nursing student challenges clinical challenges were weakly correlated with in-class learning challenges with correlation coefficients between 0.014 to 0.259. Supervision and preceptorship challenges were positively correlated with access to e-resources for research with a correlation coefficient of 0.259 at a p-value of 0.001 and also with data storage and visualisation challenges with a correlation coefficient of 0.258 at a p value of 0.001.

Nurse educators faced in-class teaching challenges related to software and data storage, accessibility of e-resources for research support, curriculum administration, institutional support for information sharing, utilisation of the digital environment, IT, and financial constraints. The clinical teaching related challenges faced by nurse educators included the nurse educator's place in the clinical environment, maximising student learning experiences, space and case diversity, increased workload, nurse educator unpreparedness, educator and student unpreparedness, and theory-practice gap.

For nurse educators clinical practice challenges exhibited weak to moderate positive correlations with in-class teaching challenges, with correlation coefficients ranging from 0.026 to 0.556. The strongest correlation was noted between increased workload and utilisation of the digital environment with a correlation coefficient of 0.556 with a p value of 0.002. Increased workload was also correlated with accessibility to e-resources for research support with a correlation coefficient of 0.526 at a p-value of 0.004.

Themes related to nursing student in-class learning challenges included *Bitter receiving end: issues related to curriculum administration*, and *Challenges related to e-learning and internet connectivity* while those related to clinical learning challenges included *The communication and technology related challenges we face in the clinical environment*, and *Clinical learning environments can be unsupportive*.

Themes related to nurse educator in-class teaching included *Challenges related to e-learning, e-resources, and internet connectivity*, *Issues related to Curriculum Content*, and *Physical and human and resources matter* while those relating to clinical teaching challenges included *At times one feels demotivated* and *There are hindrances to maximising student learning experiences*.

The qualitative results explained the results obtained from the survey. The integration of the results provided a deeper understanding of how and why these challenges exist. Participants were also able to suggest recommendations to address the challenges faced.

CHAPTER FIVE: IMPLICATIONS, RECOMMENDATIONS, AND

CONCLUSIONS

Introduction

This chapter presents the implications, recommendations and conclusions of the study which investigated the challenges facing baccalaureate nursing education in the 21st century in Namibia. The introduction presents a review of the problem statement, purpose, methods, limitations, ethical dimensions and chapter overview.

Problem statement review. The nurse of today needs to be more prepared to care for patients with complex and diverse needs within changing healthcare environments (Fukada, 2018). Yet only 20% of the nurse graduates have been said to be confident in their general knowledge of nursing and 66% of the qualified nurses believed that today's nurse graduates are less prepared to practise than those produced 5 to 10 years ago ("How Prepared", 2020).

Challenges in nursing education contribute the unpreparedness of the graduate nurse. Such challenges can be encountered both in class and in the clinical environment (Farzi et al., 2018; Gemuhay et al., 2019; Jamshidi et al., 2016). Current research on challenges facing nursing education in Namibia is mainly qualitative (Ashipala & Shapopi, 2022; Hatupopi & Nuuyoma, 2019; Hoebes & Ashipala, 2023). And some areas, such as digitalisation and its potential challenges in nursing education in Namibia and in-class teaching/learning challenges, have not been fully explored. The current study has awarded in-class education equal attention, utilised a mixed methods approach, and recommended strategies of addressing these challenges so as to contribute to the production of baccalaureate nursing graduates who are better prepared to serve the 21st century population.

Purpose of the study. The study purported to examine challenges facing baccalaureate nursing education in the 21st century in Namibia and determine any association between

challenges faced in in-class education and those faced in clinical education. Addressing the identified challenges contributes to positive learning outcomes among nursing students enabling the production of nurse graduates who are better prepared for the nursing role.

Methods. A mixed methods approach was used in this explanatory study. The quantitative design, which was the dominant of the two, informed the qualitative phase. Data was collected from two tertiary institutions which train nurses at a baccalaureate level in Namibia: WU and IUM. The study population consisted of nursing students in Years 2-4 undertaking a BSc Nursing Science degree and nurse educators who had a clinical teaching component in their role. Stratified proportionate sampling was used to select the quantitative sample while the qualitative sample was selected purposively. Whereas 159 nursing students completed the structured questionnaires 28 nurse educators did the same. Out of the 159 nursing students all but 6 completed the questionnaire online via Google Forms; the remaining 6 were so challenged with internet connectivity that they opted to complete physical copies of the questionnaire. All 28 nurse educators used the Google survey link.

The nursing student sample size was initially calculated as 305, but only 220 students were reachable. Of those selected to form the sampling frame some had withdrawn from their studies, while some never commenced or were uncontactable on the contact details provided. This suggests that the lists from the registrars' offices were not as contemporaneous as was expected. According to Wu et al. (2022), on average, the response rate of online surveys in published research is 44.1%. Wu et al. (2022) further posit that having the survey sent to more participants is not directly proportional to response rate but what works is ensuring the recipients of the survey consist of a clearly defined and refined population. Thus, it can be assumed that had all 305 students been reachable, more than 159 would have responded to the survey. In addition, even when the original sample size had been considered the response rate would have been 52.1%, which is above the average rate for online surveys of published

research. In the current study, with the denominator adjusted to those who could be reached, the response rate from the nursing students was 72.27%. The 73.68% (28 out of 38) response rate from the nurse educators was acceptable.

Individual online interviews were conducted through Microsoft Teams. Data saturation was reached with 7 nurse educators and 11 nursing students. Exploratory Factor Analysis was used to analyse quantitative data, and thematic analysis formed the basis of qualitative data analysis. An integration of the results was subsequently conducted.

Assumptions. According to Ewing and Gruwell (2023) assumptions are what is believed to be correct although not proven and are used to promote logical reasoning. The study was conducted in Namibia, at two nurse training institutions. The assumptions included that all participants experienced challenges in one way or another in learning or teaching; that they would objectively respond to the survey questions and that they would explain these challenges in the second phase of data collection. Nursing students were assumed to want to learn and their educators to be driven to effectively administer the curriculum both in class and in the clinical learning environment. Nursing students and educators were assumed to have had sufficient exposure to both classroom and clinical environments to be able to perceive the existence of challenges faced in these areas. Another assumption was that efforts to reduce bias in the conduction of this study were exercised by the researcher.

Limitations. The lists of students provided by faculty were found to have errors as some students had left or never commenced training. The response rate of 72.27% was thus based on a denominator of 220 students who could be reached. An ideal situation would have been to have a sampling frame that was congruent with the elements in the population. The registrar of one of the institutions suggested that contact be made via the students' mobile phones as that was the platform the institution used; this was then applied to all students to ensure uniformity. Although not seen as ideal initially, the use of mobile phones did not cause

a challenge as most of those who received the google survey link were able to respond albeit some of the responses took over a month to be submitted. There were glitches with internet connectivity during the interviews and this necessitated the repetition of some of the interview questions consequently increasing the time of the sessions.

A third institution had to be dropped as it was difficult to access the faculty lists and the list of students despite having received permission to collect data from it. The intention had been to include all three institutions offering nurse training at the baccalaureate level. This could affect the generalisation of results; however, the researcher is satisfied with the measures taken to ensure rigour hence allow for the generalisation of the study findings. Of note is that the name of this third institution was erroneously not edited out of the study information sheet.

The data collection phase took far more time than was planned due to delays in receiving permissions from the gatekeepers and because of an amendment that had to be made amid data collection. It was noted during quantitative data collection and during pretesting of the qualitative tool that the initially suggested focus group discussions would be a failure because semester activities varied so much among the participants such that agreeing on a set time for the focus groups was near impossible. Whereas for some it was examination time some were in clinical practice while some were in class and others on semester breaks which meant the feasible way to agree on a time was to go with what was convenient for each participant. This necessitated an amendment to online individual interviews and contributed to the prolonged period of data collection. The results from the analysis of the association between in-class learning/teaching and clinical learning/teaching did not form part of the qualitative tool. Although the correlations were weak, they could have been included as part of 'unexpected' findings.

By nature, self-reports can lead to responses that may not be true but may be considered socially desirable or just a quick tick of options to 'get over' with the questionnaire, and the

researcher was aware of the possibility of such occurrences. Having said this, credibility of the findings was enhanced by the mixed methods nature of the design in addition to the measures of ensuring reliability, validity and trustworthiness. The Microsoft Teams interviews should ideally have been video recorded but due to internet connectivity issues most were only audio-recorded. Transmission improved when the video camera was turned off for most of the participants. The researcher's video camera was on during all sessions to ensure that she was visible to all participants.

Delimitations. Delimitations are boundaries that the researcher intentionally sets in their study to ensure they have control over the research and that the aims and objectives remain achievable (Theofanidis & Fountouki, 2018). The researcher focused on the challenges faced by baccalaureate nursing students and educators who taught clinical subjects and supervised students in the clinical environment in learning/teaching. Educators with no clinical input in the education of the student nurse and non-academic healthcare professionals involved in the students clinical learning did not form part of the study focus and this decision was made with the intention of making the study manageable while still meeting its objectives. In addition, the researcher excluded campuses that did not have students in their fourth year – this removed possible confounders such as ‘teething problems’ of newly established campuses.

Ethical assurances. Ethical clearance was received from Unicaf Research Ethics Committee prior to receiving approval from the MoHSS and obtaining permission to recruit from the gatekeepers at each institution (WU and IUM). Informed consent was received from each participant. When an amendment was approved for online individual interviews further consent was received from the individual participants.

The researcher upheld the principles of beneficence, nonmaleficence, respect and justice. All participants were provided with a detailed information sheet to ensure they understood the purpose of the study and what was required of them thus ensuring self-

determination and full disclosure. Data was collected for the intended purpose and no deception was exercised. Some of the participants exhibited intense feelings regarding the issue of discrimination and they were asked if they needed extra support, but they cited that they had found ways of coping.

Interview participants were informed that the sessions were recorded, and that the false names they chose would ensure protection of their identity. Name lists with mobile contact numbers and email addresses were accessed to enable sampling, sharing of study information and data collection. Each respondent had a unique participant number which was linked to the survey responses. Only the researcher has access to the list which matches the participant numbers to each participant as this was needed for contacting the participants who were selected for the online individual interviews. This list exists only as a password protected electronic copy. Any other person authorised to access the data can only differentiate survey participants by their participant numbers and interviewees by their false names.

Password protected files have been used to store data. The paper copies have been safely stored in a lockable trunk. All data will be destroyed after 5 years according to the institutional policies. Participants were treated equally. There were no direct benefits to participation, but the strategies developed to address challenges will benefit the nursing education in a way that will be appreciated by nurse educators, students, and professional nurses of today and tomorrow. Mobile data expenses were covered for those who participated in the interviews. None of the survey respondents indicated that they needed assistance with data bundles. Participants were assured that their data will be treated with utmost confidence.

Reflections. Although literature consistently highlighted that nursing education faces challenges with embracing digitalisation, the researcher did not initially realise when this became a real barrier to collecting data. The institution which had to be dropped out of the sampling frame could not provide electronic versions of student and faculty lists and proposed

that the researcher physically approach each campus to obtain this information – a move that the researcher had not anticipated. These are some of the barriers that should be addressed to support research within nursing education. Physical proximity should not be a hindrance to conducting observational research. Even with experimental research much of the processes can be remotely enacted.

The researcher did not foresee the challenge in trying to organise focus group sessions for nursing students. Throughout the data collection period the students were, in the literal sense, all over the country as some had classes, some had exams, some had breaks, and some were in clinical practice. This is something the researcher should have been aware of. Acknowledging this could have shortened the data collection phase because the most practical method of collecting qualitative data would have been designed and executed.

Part of the quantitative data analysis involved analysing the relationship between in-class learning/teaching and clinical learning/teaching challenges, but this was not further explored in the qualitative phase. Inasmuch as the significant correlations were between only a few of the challenges and not strong, inclusion of a question exploring this could have revealed what the participants thought about how challenges in-class influence challenges in clinical practice.

Chapter overview. This chapter has set off with the introduction as presented above. The implications are presented in the section below and these are organised around the demographic characteristics of the study sample, the four themes that emanated from the quantitative and qualitative data analysis, the presentation of the association between in-class and clinical learning/teaching challenged and how the findings fit in with the conceptual framework.

Implications

This section presents the implications of the study findings. It sets off with the discussion of the demographic characteristics followed by the implications of the integrated findings. A brief description of the resultant conceptual framework concludes the section.

Demographic Characteristics

Female respondents constituted majority of respondents represented by proportions of 89% and 87% for nurse educators and nursing students respectively. This is unsurprising considering the nursing profession is female dominated. Whereas most nurse educators were married most nursing students were single as represented by proportions of 71% and 94% respectively. The highest proportion of nurse educators were within the ages of 25 to 44 with a proportion of 61% and majority of nursing students (65%) were aged between 18 and 24 years. This was quite expected since students are more likely to be younger than their educators and educators are more likely to be married than students because a married status would be prevalent in those who have completed their first degree than those still undertaking it.

The highest proportion of respondents were from WU constituting 82% of the total nurse educators and the same proportion of nursing students. This is because sampling was stratified and proportionate. Majority of the nurse educators (36%) had more than five years of experience. This implies that most of the respondents were not new to the role of nurse educator.

Whereas most (79%) of the nurse educators had attained a master's degree most nursing students (80%) had attained a high school education. This is consistent with the fact that most educators hold a post graduate qualification whilst majority of those who enrol into a first degree do so after obtaining a high school certification.

On ethnicity, the highest proportion of nurse educators and nursing students were natives shown by proportions of 82% and 92% respectively. This indicates that a minority were foreigners. Most of the respondents had native primary languages shown by proportions of 82% and 88% for nurse educators and nursing students respectively. According to WorldAtlas (2024) majority (48%) of the population of Namibia are Oshiwambo speakers and the official language is English. Thus, most of the respondents did not have English, the official language, as a primary language. Bernhofer and Tonin (2022) opine that taking an exam in a second language leads to a loss in grade points of approximately 9.5%. One of the recommendations by Bernhofer and Tonin (2022) is that educational institutions grant access to second language acquisition. Higher education institutions in Namibia offer support courses such as English for Academic Purposes, however, the effectiveness of this intervention needs further research. Julius et al. (2023) contend that within these support courses language is not addressed within the context of its use in academy.

Christianity was the dominant religion for both groups with proportions of 86% and 97% for nurse educators and nursing students respectively. About 80% to 90% of the Namibia population identifies as Christian (Namibia Religions - Demographics, n.d.). This was thus reflected in the current study.

Most of the nurse educators had urban owned accommodation constituting 54% of the respondents whereas more nursing students relied on off-campus accommodation, with a proportion of 52%. A higher proportion of nurse educators, 32% had income between \$25 000 and \$30 000 whereas majority of nursing students, 81% relied on a household family income below \$15 000. The best estimates on the cost of living in Namibia stand at N\$ 34,943.1 for a family of four and N\$10,026.4 for a single person rent excluded (Numbeo, n.d.). The results of the study thus indicate that for most of the respondents making ends meet would not be easy. The language used for instruction, communication and technology and financial standing are

lower priority needs which, according to the humanist theory (“Maslow’s Hierarchy of Needs”, 2020), should be met if learning is to take place.

Challenges Faced by Nurse Educators and Nursing Students

The challenges discussed herein were obtained from the integration of the EFA results and the thematic analysis.

Hypothesis 1

H₀ Nursing education in the 21st century is not faced with challenges.

H₁ Nursing education in the 21st century is faced with various challenges.

The null hypothesis was rejected, and the alternative hypothesis was accepted from the quantitative data analysis while the qualitative data responded to the research question ‘How do nursing students/nurse educators describe the challenges faced in in-class/clinical learning/teaching?’

The four themes that emanated from the quantitative and qualitative data analysis were: ‘nursing student in-class learning challenges’, ‘nurse educator in-class teaching challenges’, ‘nursing student clinical learning challenges’ and ‘nurse educator clinical teaching challenges’. Following the discussion around these themes the researcher explored the results obtained from analysing the correlation between in-class learning/teaching and clinical learning/teaching.

Nursing Student In-Class Learning Challenges. The challenges faced by nursing students related to the access of e-resources for research, quality of e-learning resources, IT and data storage and visualisation and these work against technology-enabled learning. Of the 19 items contributing to these challenges all but 2 had factor loadings above 0.6 suggesting a moderate to strong positive correlation between the items and the determined factor.

According to Booth et al. (2021) the nurse is challenged with the use of digital technologies, and this restricts the profession from fully benefiting from their use in nursing practice and patient care. Digital educational technologies have several advantages and

according to the findings by Nes et al. (2021), these include that they allow the integration of multiple learning tools, they are affordable, and that they allow asynchronous access.

Nursing education cannot shy away from technology. Booth et al. (2021) argue that nursing must transform and embrace digitalisation to be better equipped to respond to the complex healthcare environments. For the graduate nurse to smoothly transition to the use of technology at the bedside the familiarisation should have occurred in-class. Indeed, there is a need to prepare nurses to comfortably incorporate technology into patient care and to include technological competence in the nursing curricula (Scottish Government, 2017).

The quality of e-learning resources and IT related challenges which were identified from the EFA were explored within the sub-theme '*failing to connect and stay connected*' in the qualitative phase. It emerged that Wi-Fi connectivity was an issue both within the learning institutions and at home. Students shared how learning has become blended post the COVID-19 pandemic and how this has brought some challenges. Failing to connect and staying connected was a result of two barriers: not affording to pay for data and the speed of internet. As the participants shared; the speed of internet was a concern both within and off campus whereas the inability to pay for data meant they could not attend virtual classes or access e-resources when off campus. Al-Worafi (2023a) on *Technology in nursing education in developing countries* lists limited access, digital illiteracy and high costs as associated challenges. In some cases, however, the challenge was due to neither cost nor speed but due to power cuts, a challenge occurring more at national level and common in developing countries. Digital divide was evident between the more rural (described as villages) and the urban settings with students residing in the former suffering the consequences of power cuts and poor internet connectivity more than their urban residing counterparts. Zarei and Mohammadi (2022) agree that students residing in rural and underprivileged communities are challenged with poor internet connectivity. According to humanist theory lower priority needs ("Maslow's

Hierarchy of Needs”, 2020) such as the access to e-resources and the internet need to be met before learning can take place.

The implications of the poverty of e-resources on research cannot be over-emphasised. Undergraduate education includes a considerable amount of self-directed learning with the expectation that students can engage in some research for course related tasks and for their mini-thesis research projects. It probably should not have taken the COVID-19 pandemic to strengthen the use of the virtual space in nursing education.

Another challenge faced by nursing students during learning in-class was related to ‘receiving the curriculum’. The results of the EFA showed that nursing students faced challenges related to the shortage of educators, inexperienced educators, an irrelevant curriculum, large classes and lack of classroom space. These factors affect how the curriculum is received. Of the five items contributing to this challenge all but one had a factor loading above 0.6. Most of the nurse educators who teach clinical subjects would have worked in the clinical areas after training, before going into nurse education, thus the current shortage of nurses translates into a shortage of nurse educators. The AACN (2024) reports of the nursing faculty shortage which has an impact on the nursing shortage as less students are enrolled into nurse training programmes yet the results from the current study indicated the opposite as student numbers were nowhere near being reduced. The large number of students (which results in large classes) enrolled into nurse training in Namibia, combined with the shortage of educators, educator inexperience and lack of classroom space do not present a good learning environment. Any irrelevant aspects of the curriculum would only strain the already insufficient resources. Nursing students who took part in a study by Nhokwara et al. (2022) shared their concerns on large classes and went on to suggest that lecturer numbers should be increased and less students should be enrolled.

The above-stated challenges were explained by the sub-themes '*our educators just can't cope*' and '*too lengthy yet not adequate*' in the qualitative phase of the study. Participants shared how nurse educators were overwhelmed with the increased workload. In addition, they communicated frustrations related to a lengthy curriculum, the inadequate time allocated to cover content in class and the unnecessary repetition of content in some of the modules such as sociology. And yet others shared that they felt they did not always cover content relevant to their clinical practice. The danger of not matching the content covered in class with what is expected in clinical practice is having students who feel unprepared to navigate the clinical learning environment. The insufficient readiness of the student disturbs the clinical education process (Farzi et al., 2018). And according to Al-Worafi (2023b) outdated curricula pose a challenge to nursing education in developing countries. Educator workload and curricula length are external factors which, according to the SLT and the SCT (Bandura, 1971; Bandura, 1986, as cited in Schunk & DiBenedetto, 2023) affect learning. The sentiments shared call for curriculum revision to avoid redundancy and ensure an alignment of theory with practice.

Financial constraints were another challenge. The items influencing this factor had factor loadings above 0.7. Students pay tuition and this can be quite burdensome for some especially if they do not have access to student funding. Added to this are other day to day costs such as transport, purchase of electronic devices and paying for the internet. Moradi et al. (2022) found that equipment and internet costs affected both faculty and students when nursing education had to make the sudden shift to online learning during the COVID-19 lockdown. Whereas acquiring the relevant equipment for and setting up advanced simulation stations could be quite steep cost wise the advantages do outweigh the expense. Speaking of virtual reality simulation Pottle (2019) contends that it does save money and faculty time as less staff and training is needed since the software is intuitive. The VR simulators have the advantage of allowing for repeated practice and immediate feedback (Moran et al., 2018). The

revitalisation of IT departments that was driven by the COVID-19 pandemic (Shindjabuluka et al., 2022) should not slacken just because the pandemic is over; nurse training institutions should continue to push for digitalisation.

From the qualitative interviews it was gathered that tuition fees were beyond the reach of many with those with no access to student loans bearing a much higher burden. The exploration of the financial challenges yielded the sub-theme *'It's all about money, isn't it?'* Interviewees also shared concerns about the high taxi fares. The demographic results indicated that most of the students (52%) lived in out of campus accommodation hence needed to travel to classes daily. Other costs stated to be quite burdensome were related to the cost of printing and internet. The students shared how missed tuition payments resulted in being barred from attending classes be it face-to-face or online. The high costs of commute also resulted in the missing of classes. The humanist theorists would argue that without addressing this priority need ("Maslow's Hierarchy of Needs", 2020) of cost and affordability, learning cannot take place.

Students also indicated that there were challenges related to the entry requirements for studying nursing and the age at enrolment into nurse training with the items under this factor holding factor loadings of 0.705 and 0.774. The consideration of some pre-requisite to enrolling into nursing dates as far back as the 19th century. In the 19th century Nightingale School of Nursing, of the two groups, the nurse-probationers and the lady-probationers, the former received free lower standard training while the latter paid for a better standard education (Lane, 2020). According to Lane (2020) these divisions were necessary because the two groups did not have the same prior education. The implication is that not considering prior learning could negatively affect learning. Today, specific subjects such as mathematics and science are required prior to enrolling into nursing education with some schools adhering to these requirements more strictly than others. The results of the current study indicate that there are

issues pertaining to this as was shared by student nurse interviewees who indicated that relaxing the entry requirements meant that some of those enrolled into training struggled cognitively.

Those who later participated in the interviews also spoke about how it seems that just anyone can enrol into nursing due to what they perceived as relaxed entry requirements. The matching sub-theme was *'when just anyone can enrol into nursing'*. The nonadherence to these requirements adds on to the barriers to learning. Participants shared how challenging it can be for those who were enrolled without meeting the requirements to grasp concepts or do simple calculations for example.

Nurse Educator In-Class Teaching Challenges. The challenges faced by nurse educators in in-class teaching which related to 'software and data storage', 'accessibility of e-resources for research support', 'institutional support for information sharing', 'the utilisation of the digital environment' and 'IT' indicate challenges with embracing technology. And this is despite its numerous advantages to nursing education. Of the 14 items contributing to these factors all but one had factor loadings above 0.7. It certainly should not have taken a pandemic to push nursing education to embrace technology. Technology is central to healthcare in this 21st century. Indeed, some of the advantages of educational technologies as stated by Loureiro et al. (2021) are that they allow the integration of multiple learning tools, are affordable, and that they allow asynchronous access. There is the potential cost related challenge when setting up a digital environment but in the long run, as stated previously, such costs are offset by the efficiency associated with its use.

The above challenges were explored within the sub-theme *'not fully prepared to embrace technology'*. The nurse educators spoke about how the reluctance to use e-resources, internet connectivity issues and unavailability of e-resources affected the use of technology in nursing education. Some of the educators spoke about platforms that were made available for their convenience but were not fully utilised as some lacked knowledge on how to use them

and others had no interest. They also indicated that the support for digitalisation was inadequate with some stating that there were no data storage systems in place and that offices were not equipped with computers. Internet connectivity, a concern shared by students, was also a concern among the nurse educators. Whereas being unprepared to embrace technology could be attributed to cost (Al-Worafi, 2023a) and lack of institutional support in some cases it can be because an individual is not keen to embrace it. Such lack of interest is common among those who are generally resistive to change. Regarding their acceptability of technology Nsouli and Vlachopoulos (2021) categorise this group as resisters and argue that they have negative attitudes towards the use of technology and believe they do not have time to attend relevant trainings. It could be that the resistance is due to the lack of a technical know-how.

The other factor extracted in this study was related to 'curriculum administration challenges'. This was due to inexperienced educators, shortage of educators, lack of consideration of learning styles and lack of classroom space; items falling under this challenge had factor loadings above 0.7 indicating strong positive correlation between the items and the determined factor. Apart from the lack of consideration of learning styles these challenges have been discussed already as they are not different from those faced by nursing students, implications included. Constructivists (Aliakbari et al., 2015) would argue that the preferred learning style has an influence on learning. In a study by Mbirimtengerenji et al. (2015) students complained that lecturers talked throughout an entire lesson which resulted in them losing concentration. Varying teaching styles increase the chances of reaching out to all students considering that students' learning style preferences usually differ. When teaching is learner centred educators can easily appreciate how differently individual students learn and thereby reduce barriers to learning.

The above challenges were explored within the sub-themes '*curriculum overload*'; '*not equipped for this thing: lack of human and physical resources*'; and '*running out of steam*:'

dealing with work overload.' The nurse educators explained that the repetition of content and the design of the curriculum, which allows the graduate to practise both as a general nurse and a midwife, contributed to curriculum congestion. Nurse educators also spoke of lack of resources. They shared that there was lack of simulation equipment and models, and that libraries were ill-equipped and human resources were not only in short supply but also lacked experience. Implementing evidence-based practice in teaching and learning is dependent on the available resources. Mthiyane and Habedi (2018), from their study on *'The experiences of nurse educators in implementing evidence-based practice in teaching and learning'* found that the lack of resources, such as the lack of or poor access to computers and libraries was one of the challenges mentioned by most of the nurse educators. Human resources matter. It is imperative for the nurse educator who teaches clinical modules to possess some clinical experience for without it they cannot draw from clinical knowledge when teaching.

Another challenge related to financial constraints. The items falling under this challenge had factor loadings of 0.717 and 0.726. These have been discussed under the results from the nursing students, but it is worth adding that the inability to afford tuition could cause students to miss classes which could mean the realisation of learning outcomes could be negatively impacted. Both the educator and the nursing student may need to put in extra work to enable the latter to compensate for the missed learning opportunities. Educators also shared how they had to teach at two campuses on a given day and how overwhelming it was to supervise large groups of students on their research projects. The increased workload can lead to nurse educator burnout.

Nursing Student Clinical Learning Challenges. One of the challenges nursing students faced in clinical learning was related to 'supervision and preceptorship'. The items contributing to this factor had factor loadings above 0.7 indicating a strong positive correlation between the items and the factor. Sabone et al. (2018) in a study in Botswana shared how the

21st century student in training lacks resources such as a diversified faculty and supervisors to mentor and guide them in clinical learning. Qualified nurses play a crucial role in clinical learning as preceptors and mentors; however, how they can effectively execute this role is negatively impacted by other factors such as staff shortage and inadequate support from their supervisors. Participants who took part in the qualitative phase explained that there was a general lack of staff to do the supervision. Other factors that can affect supervision and preceptorship include the inability to have feedback-focused meetings and lack of competence or confidence in demonstrating procedures. Nurse educators need to have the relevant skill set to be efficient in clinical teaching. Zhang et al. (2022) concur that in addition to good professional attitude, clinical nurse educators' skills serve as catalysts to furthering the students' ability. Challenges with supervision and preceptorship represent the external factors which, according to the SLT and SCT (Bandura, 1971; Bandura, 1986, as cited in Schunk & DiBenedetto, 2023) influence learning.

This brings us to the next challenge which is leadership and management challenges. Results of the EFA showed that nursing students had challenges associated with the nurse in charge being a team player or valuing their subordinates. Of the items influencing this factor all but one had factor loadings above 0.6. As one participant shared in this study, clinical demonstrations can be disrupted by the mere presence of a clinical leader who is feared by the junior staff. On the other hand, one who has the clinical skills, is professionally knowledgeable and responsible with a positive attitude is a role model (Zhang et al., 2022). At the systematic level leadership and management challenges pose as external factors that affect learning and at the individual level role modelling represents the influence of social learning on learning. Positive role modelling contributes to positive learning experiences.

According to the study results, nursing students also faced challenges related to 'unsupportive learning environments'. The items which influenced this challenge were 5 and

all but one had factor loadings above 0.6. Nursing students indicated they did not feel accepted when they started their clinical placement, they felt excluded. In support, Amukugo et al. (2017) speak of shortage of staff in the clinical environment, and a focus on task completion versus comprehensive patient care. This would make an environment un conducive for learning. The issue of discrimination, whatever form it may come in, can have a negative impact on a student's learning in the clinical learning environment. This finding is supported by Hatupopi and Nuuyoma (2019) who found that one of the concerns raised by students when in clinical practice environments was discrimination by nurses. Panda et al. (2021) concluded, from the results of a systematic review, that being accepted and recognised as part of the team is important to learning in the clinical environment.

The factor unsupportive learning environments was explored within the sub-themes '*I do not belong*' and '*not much support*'. Some of the nursing students explained how they felt excluded from clinical discussions and how at times they were outrightly discriminated. They either felt unwelcome or were shown that they were not welcome. They categorised discrimination into racial, tribal, institutional, and xenophobic. This could make the clinical learning environment 'toxic.' Interviewees also shared how support was not enough as some of the clinical staff were either unwilling to supervise or were too burnt out to help with their clinical learning. The potential for burnout cannot be ignored for nurses who, even though their priority is patient care, are expected to be preceptors for the student nurses. Preceptorship can be seen as a stressor and a challenge as it increases the workload which can lead to job dissatisfaction and burnout (Livingstone, 2024).

Other scholars speak of a rather different type of discrimination; the way medical students received better support. According to Farzi et al. (2018) and Jamshidi et al. (2016) student nurses at times deal with a negative atmosphere and feelings of being inferior to medical students in the clinical learning environment. Hadian Jazi et al. (2022) also state that

nursing students face discrimination from doctors and medical students. Interestingly, from the current study participants shared how even race, tribe, institution and nationality dictated how much support one got from qualified nurses. This shows how real the issue of discrimination is in the clinical learning environments.

Lack of consumables and resources for learning which included computers, staff, the internet, and consumables such as gloves and aprons, was yet another challenge identified from the EFA. Of the 3 items which influenced this challenge only one had a factor loading below 0.7. The lack of resources such as lack of adequate staff, space, and consumables can result in the use of ‘shortcuts’ and / or improvisations by nurses leading to the student internalising these incorrect ways. Munangatire and Nambuli (2022) identified the use of shortcuts as a barrier to the implementation of the nursing process while Panda et al. (2021) mention the lack of resources to facilitate need-based training including staff shortages as some of the key challenges faced in the clinical learning environment.

The above challenge was explored within the sub-theme *‘too much of us; too less of resources.’* The unavailability of resources was voiced by many participants. They explained how the lack of consumables, equipment and human resources affected their learning in the clinical environment especially in the face of the large number of students. They also shared how they had to either buy their own gloves or work without them; how syringes were in short supply and how unavailable equipment meant they did not learn the ‘right way’ of doing procedures. The clinical learning environment was thus depicted as unsupportive due to not only the lack of resources but also due to the discrimination which makes these environments unwelcoming, highlighting how the external environment (SCT) (Bandura, 1986, as cited in Schunk & DiBenedetto, 2023) has an impact on learning.

The lack of resources as it relates to computers and internet availability was explained within the sub-theme *‘hesitant to embrace technology’*. Some of the interviewees shared how

they had no access to the computers found in the wards and how unprepared they were to use technology at the bedside. The process of embracing technology appears to be at a snail pace. Students stated that in most public hospitals the computers were reserved for doctors and for limited use such as to access laboratory results. Those who had an opportunity to have a placement in the private hospitals realised how much they did not know how to use digital technology in nursing care. Those who felt unprepared to embrace technology indicated that this was either because they did not prefer it or that they had not been familiarised to it in class. As stated earlier, the significance of incorporating digitalisation into nursing education especially in most African countries was perpetuated by the COVID-19 pandemic. This means the system was not prepared but rather reacted to a situation. Since technology in healthcare is here to stay there is need to keep pace. It is unlikely that institutions will revert to a situation where instruction is predominantly face-to-face. Technology is part of the future of nursing education. Leaver et al. (2022) opine that the future of nursing education is not going back to the pre-pandemic state and that, technology, in addition to disaster and public health preparedness, was brought to surface as a gap in nursing education.

The above sub-theme, *'hesitant to embrace technology'* does also explain the challenge related to the role of social media. Nursing students faced challenges in finding useful information relating to patient diagnosis and care on social media and in using smartphones at the bedside, and from the EFA these items that contributed to this challenge had factor loadings of 0.712 and 0.747. As was concluded from the qualitative data collection, there is no support for students to use their mobile gadgets responsibly at the bedside. Giroux and Moreau (2022) found that some of the nursing students used the social media informally, such as YouTube videos, at the patient's bedside to assist them with health education. Therefore, measures should be put in place to support the responsible use of social media to mitigate the negative impact of it being used without control. There is a call for nurse educators to lead the integration

of social media into curricula. According to Sarginson and Cecilia (2024) social media has the “potential to enhance student growth and learning across complex skill sets, facilitating success and supporting student development” (p. 8). And according to a systematic review by Almutairi et al. (2022) using social media to support students’ learning was found to promote rapid interaction and communication. Its use should however not undermine good professional conduct. The readiness to embrace technology would indicate an acceptance of how learning style preferences differ among learners (Aliakbari et al., 2015).

Communication and technology was yet another challenge related to clinical learning. Here students indicated that they had challenges related to the ease of communicating with patients, the clarity of patient records, and that they felt unprepared to use technology at the bedside; these items had factor loadings of 0.721, 0.683 and 0.522. Language can be a barrier to communicating with patients. Hatupopi and Nuuyoma (2019) state that language is one of the barriers to learning in the clinical environment. The use of technology at the bedside increases efficiency and reduces errors. For instance, the typing of notes and prescriptions would reduce the illegibility of records. The automation processes are cost effective, and they reduce medication waste and drug errors (Hitt & Tambe, 2016, as cited in Da Silva et al., 2022) and Da Silva et al. (2022) contend that computerised tools aid in reducing excessive documentation. There is a downside however, as Loureiro et al. (2021), concluded; some of the users of this technology may be technologically naïve. Nursing education can and has, to some extent, stepped up in preparing graduates who can take up the challenge of learning how to use technology in the clinical learning environment.

Part of the challenges with communication and technology were aligned with the sub-theme ‘*I can’t hear it; I can’t see it; how can I understand it?*’. Language barrier and illegible documentation hamper communication. Nursing students spoke of how difficult it was to converse with patients and to communicate accurately through patient records when they could

neither understand what was said nor read what was written. Indeed, language barrier leads to miscommunication between the medical team and the patient and can decrease the quality of patient care and compromise patient safety (Al Shamsi et al., 2020). This predicament not only frustrates those trying to communicate but may also jeopardise patient safety. Understanding the language and the clarity of communication are basic necessities to learning which the humanist theorists refer to as lower priority needs (“Maslow’s Hierarchy of Needs”, 2020).

Nurse Educator Clinical Teaching Challenges. Nurse educators indicated that they faced challenges related to their place in the clinical environment, maximising nursing student learning experiences, theory-practice gap, space and case diversity, increased workload, and nurse educator unpreparedness.

A misfit. Or feeling unwelcome. This was explained by the challenge relating to the nurse educator’s place in the clinical learning environment. When nurse educators follow students in the clinical practice areas the intention is to work symbiotically and not to work in silos. This approach not only ensures patient safety but creates the spirit of teamwork between the educators and the clinical staff which can only benefit the student who is there to learn. The research findings, however, indicated a less harmonious relationship which presents a challenge to clinical learning. Jafarian-Amiri et al. (2020) contend that one of the challenges to clinical learning includes the lack of coordination between faculty and clinical staff. Some of the participants in the current study spoke passionately about the lack of unity between the two teams. In a study by Hooven (2024), while the nurse educators voiced how hard they had to work to foster relationships with the nurses in the clinical environment the staff nurses felt that the communication between them and the nurse educators was insufficient. This indicates how creating a harmonious relationship goes both ways.

This challenge of not ‘fitting in’ in the clinical practice areas resonated with the sub-theme ‘*unmet nurse educator needs*’. Whereas some nurse educators indicated that their

inability to support students was due to increased workload because of high student numbers some stated that this bore down to their not being welcome in the clinical environments. They did not feel accepted. Nurse educators are not in charge of the clinical environments and need the cooperation of the clinical staff if they are to effectively carry out clinical teaching activities. As Jafarian-Amiri et al. (2020) contend, the lack of harmony between faculty and clinical staff poses a challenge to nursing education while Ekstedt et al. (2019) state that good clinical learning environments are dependent on the engagement and collaboration between preceptors and the academic nurse educators. The clinical team and the nurse educators are challenged to form a united front and work together to help the student learn.

Another challenge faced by nurse educators related to ‘maximising nursing student learning experiences’. Of the 6 items contributing to this challenge all but one had factor loadings above 0.6. Clinical learning should take place in the clinical practice area, in addition to that which occurs in the simulation environment. The lack of space negatively impacts clinical teaching. The capacity to monitor students and the cooperation of clinical staff is of paramount importance if the efforts of clinical teaching are to be successful. At times the number of students is so disproportionate to the number of patients and that of the nurse educators supervising the students for effective clinical learning to take place. This usually occurs when clinical environments are overcrowded. It creates an atmosphere less convenient for learning. Al-Worafi (2023b) contend that limited clinical placements constitute a challenge to nursing education in developing countries. Sabone et al. (2018) speak of the ‘recycling of patients’ for practising skills. This is something common when clinical environments are overcrowded. The orientation of students is also equally important. According to Mbirimtengerenji et al. (2015) clinical accompaniment and supervision of students is influenced by lack of orientation or induction programmes. Gcawu and van Rooyen (2022)

contend that the orientation of nursing students is crucial as it informs the student about the nature of clinical practice.

Nurse educators also face challenges related to theory-practice gap. The items under this challenge had factor loadings of 0.695 and 0.778. During clinical placement students can practise real life patient care. They put into practice what would have been learned in class. Ideally, learning in-class should adequately prepare students for clinical practice. In addition, they should have some knowledge and skills specific to the area they are placed in. However, this is not always the case as is explained in the qualitative findings of this current study. The findings are consistent with those of Hatupopi and Nuuyoma (2019) where one of the themes spoke of a disparity between theory and practice where the teaching in the classroom is not consistent with that in the clinical area.

Nurse educator unpreparedness was another challenge identified. The educators faced difficulties in presenting education experiences suited to learning outcomes of the course, being role models for students and achieving course objectives: all these items had factor loadings above 0.6. In a study by Mbirimtengerenji et al. (2015) only 54.3% of the students who participated in the study agreed that nurse educators were able to effectively demonstrate clinical procedures both in class and in the clinical practice environment. When the educators cannot effectively do this, negative role modelling can occur. Gcawu and van Rooyen (2022) agree that students evaluate role modelling in line with the quality of clinical teaching they receive from the educators, and their attitude towards them.

The three challenges: maximising nursing student learning experiences, theory-practice gap and nurse educator unpreparedness were explained within the sub-theme '*how can they learn when they are not supported.*' Nurse educators explained how the students' learning experiences were not maximised because of the shortage of staff, specifically nurses, the limited time they had for teaching not only in the clinical area but also in class. They voiced

the negative attitudes of clinical staff, lack of resources which ranged from lack of consumables to lack of physical space, student orientation issues, and negative role modelling. The implications of the lack of resources, both human and physical, have been already discussed. Positive role modelling is a resource for learning. Nursing students learn, practise and develop their skills through observing examples demonstrated by professional nurses (Ayu Eka et al., 2023). According to a study by Jack et al. (2017) nursing students value positive role modelling both in clinical and university settings and their exposure to poor practice has a negative impact to their learning. In addition, Amukugo et al. (2017) found that 19% of the students who participated in their study stated that negative attitudes by registered nurses/midwives were a barrier to learning during night shift. And orientation days, among other factors, contribute to good learning environments (Bøe & Debesay, 2021).

Other challenges identified included space and case diversity, and increased workload. Of the 5 items contributing to these factors, one had a factor loading of 0.723 and the rest had factor loadings above 0.8 indicating a strong positive correlation between these items and the determined factors. Nurse educators faced difficulties related to the provision of changing and meeting rooms, case diversity, workload and the number of students. The space to practise in and the cases to practise on are invaluable resources for clinical practice. Sabone et al. (2018) argue that students suffer due to limited diversity and space in clinical settings. And regarding workload, the tutors who took part in the study by Mbirimtengerenji et al. (2015) indicated that they struggled to balance clinical teaching duties and other duties and faced working with limited resources amidst increasing student numbers (Mbirimtengerenji, 2015).

The sub-theme '*students everywhere, it's like an infestation: overcrowded learning environments*' provided an explanation of issues related to space and case diversity, and increased workload. The large number of students per nurse educator contributes to increased workload. The clinical practice areas are overcrowded by students. One participant pointed out

that the sum of students in the clinical areas could easily surpass that of all staff in the clinical area, non-clinical staff included. The participants painted a picture of a hospital, clinic, or health care centre under siege, almost completely taken over by large groups of nurse trainees who look up to the meagre number of nurses for guidance. This could be rather frustrating to the clinical staff. In addition, this could be annoying to the patients; to see so many ‘nurses’ who cannot work independently and to be practised on by so many students. In such situations patient privacy and dignity may be compromised. Results from a systematic review by Panda (2021) showed that 17 studies reported that lack of resources, including required facilities was a barrier to student learning while 7 studies reported clinical staff being busy and stressed, both, physically and mentally, as a demotivator to learning among other factors. These factors compound the problems brought by overcrowding in the clinical learning environments. The few nurse educators and shortage of clinical staff would mean that students are not adequately supervised. The influence of the external environment on learning cannot be ignored. When educators feel unwelcome it affects their ability to teach and maximise the clinical environment as a learning resource; equally the lack of space, case diversity and the overcrowding complicates the clinical teaching process.

Relationship Between In-class and Clinical Education Challenges.

Hypothesis 2

H₀ Clinical nursing education has no association with in-class nursing education.

H₁ Clinical education has an association with in-class education.

The null hypothesis was rejected in favour of the alternative. However, the statistical analysis of the association between challenges in in-class nursing education and clinical education showed weak to moderate correlations between some aspects of the two components.

Correlations between student in-class and clinical learning challenges were weak. The correlation worth reporting was that between supervision and preceptorship challenges and:

- challenges related to access of e-resources for research with a correlation coefficient of 0.259 at a p-value of 0.001.
- data storage and visualisation challenges with a correlation coefficient of 0.258 at a p-value of 0.001.
- challenges related to quality of e-learning resources with a correlation coefficient of 0.249 at a p-value of 0.002.

Thus, an increase in the supervision and preceptorship challenges would result in an increase in challenges related to access to e-resources for research, storage and visualisation, and quality of e-learning resources. This translates to that supervision and preceptorship challenges are directly proportional to challenges related to a technology-enabled learning environment.

The correlations between clinical teaching challenges and in-class teaching challenges were moderate and positive. The strongest correlation was between increased workload and challenges related to:

- utilisation of the digital environment, with a correlation coefficient of 0.556 at a p value of 0.002, and
- accessibility to e-resources for research support with a correlation coefficient of 0.526 at a p-value of 0.004.

Thus, an increase in workload results in an increase in challenges related to the utilisation of the digital environment and to those related to the accessibility of e-resources for research support.

The correlations, although significant, were not as strong as would have been expected. Studies have reported on the issues of theory-practice gap indicating that there is or there should be a relationship between theory and practice and that such a relationship requires intentional efforts of bridging the gap between the two. For example, in Namibia, knowledge-practice gap,

was among some of the challenges arguably stated as contributing to challenges in nursing education (Hatupopi & Nuuyoma, 2019; Munangatire & Nambuli, 2022) while elsewhere, Oducado et al. (2019) report on the positive influence of academic success in-class on clinical nursing education. Furthermore Shoghi et al. (2019) contend that the gap between theoretical education and clinical practice is long-standing. In addition, participants from the present study did occasionally refer to how in-class nursing education had an influence on clinical education.

The limitations herein would include the sample size which was probably not large enough. Another confounding factor could be the instrument design. It can also not be said that the responses from the participants truly reflected the challenges faced because people may not always be honest when completing self-reports. These limitations could have affected the analysis of the association between in-class and clinical nursing education. Nonetheless the presence of some significant correlations did allow for the rejection of the null.

The overlap – challenges faced by both the educator and the student. The interconnectedness of the challenges in nursing education as faced by both the student and the nurse educator is apparent. Both nursing students and nurse educators faced challenges relating to embracing technology. Whereas for students the main issue related to failing to connect and stay connected for the nurse educators the issue had more to do with not being fully prepared to embrace technology. The lack of preparedness was due to a combination of individual reluctance and institutional systems that do not support digitalisation. The curriculum related challenges revealed that the main concern for both population groups was a congested ineffective curriculum with students feeling that it is long yet not adequate and educators feeling they were not fully equipped to deliver the overloaded curriculum due to lack of both capacity and resources. Financial constraints was a common theme in both population groups. When the student is hindered from attending classes due to tuition or commuting costs the

impact is felt by both parties: the student misses out on lectures while the educator may need to repeat content taught to accommodate those who missed a lecture.

Nursing students felt that they did not belong to the clinical learning environment. They lacked support, faced discrimination and were excluded from clinical discussions. Similarly, nurse educators spoke of unwelcoming clinical learning environments. When overcrowding in the clinical learning environment is combined with lack of resources clinical learning can be heavily impacted. Nursing students indicated that their groups were large, yet resources were few while educators felt that clinical learning was not maximised because of the lack of staff and other resources. In addition, the overcrowding brought up by large numbers of students resulted in lack of space for clinical teaching and an increase in the nurse educator workload.

Conceptual Framework

The researcher posits that for learning to take place lower priority needs must be met, and that the effects of prior experience and other external factors, and the preferred learning style would influence learning.

Lower priority needs whose origins are from the humanists would include the following, as extracted from the study findings:

- English as language of instruction, communication and technology
- Household income / financial status
- Access to e-resources and the internet
- IT

Whereas external factors as posited by the Social Cognitive Theory influence learning and from the current study the following factors were found to influence learning:

- The human, physical and technology resources that affect the administration and receiving of the curriculum
- Supervision and preceptorship

- Leadership and management
- Support in the learning environments
- Consumables, staff and space in the clinical practice environments
- The welcome in the clinical learning environments
- Space and case diversity
- Educator workload and curricula length

The preferred learning style as an influence on learning, is supported by the constructivists and SLT: Whereas constructivists refer to auditory, which is used in group discussions and kinaesthetic, used in simulations and demonstration of clinical procedures the SLT speaks of role modelling. The following influences on learning were extracted from the current study:

- Role modelling
- Social media use
- Consideration of learning styles
- Readiness to embrace technology.

Thus, the integration of these learning theories in addressing challenges facing NE has the potential of improving nursing students' theoretical and clinical learning experiences.

Recommendations for Application

The recommendations were informed by the findings of the study. Some of these recommendations were retrieved from the suggestions given by those who participated in the qualitative interviews.

Student Placement

One of the short to medium term recommendations is the need to rethink student placement strategies. It is recommended that nurse training institutions place students outside the capital city, Windhoek, and that clinical placement be delayed for first years until they have

grasped the foundations of nursing. In addition, the length of clinical placement in the first year can be reduced as students only do vital signs, or more skills could be introduced. Currently, nursing students in first year mostly learn to take vital signs, that is temperature, blood pressure, pulse, oxygen saturations and respirations in the clinical area, activities that could be easily covered within, for instance, the first two weeks of their second year. Restructuring the placement for first years is quite feasible. During the first year a focus could be placed on pre-clinical courses that prepare nursing students for practice. Considering the magnitude of this recommendation it would be prudent to conduct research on feasibility and acceptance prior to its implementation.

The institution which places students in the capital city could have valid reasons for doing so such as real barriers to placing them in other regions, however, this does not maximise the nursing student's clinical learning experience. The patient demographics are likely to differ between Windhoek, the capital city, and other cities/towns and rural areas. It is recommended that nursing students be exposed to different patient populations around the country.

Inclusivity, Diversity and Mental Health Support

Inclusivity and mental health support emerged as a sub-theme from the suggestions by nursing students. This is something that can be achieved in the short term and maintained. In today's world where social justice is threatened in more ways than one, nursing education should fight racism, discrimination and micro-aggressions. Nurse educators and nurse leaders are challenged to promote safer and more inclusive learning environments. Students' mental health should be supported, discrimination addressed and the official language, English should be used among healthcare professionals and students.

The promotion of equality, diversity and inclusivity should be a responsibility taken seriously by both academic institutions and the healthcare providers. Nursing students need to have an awareness of how they treat others, and this should be a topic covered within the

curriculum. Employers, that is the nurse training institutions and the MoHSS, can ensure that this is part of worker induction and continuous learning development. A lack of awareness can cause one to act in a way that is discriminatory without noticing it or without thinking deeply of the implications.

Embrace Technology

Nursing education institutions in Namibia are urged tap into the benefits of technology. Whereas VR simulation set-up could be a long term and resource demanding goal the revitalisation of IT departments can be a short to medium term goal. One thing the COVID-19 pandemic forced us to accept was that we can trust technology to work in nursing education. Simulation, for example, does not need to be face-to-face; VR simulation can be accessed remotely. For this to work, however, it must be taken up together with another recommendation which is to ensure internet connectivity by providing students with mobile data as was suggested by one of the participants. In addition, VR simulation could be designed to be accessed within campus where students can use the institutional Wi-Fi services with the option of remote access for those who can access internet away from campus.

Namibia, like many other low- and middle-income countries (LMICs), is resource limited hence setting up VR simulation could be financially challenging, however, as Muinga and Paton (2019) argue, it is quite feasible. They opine that not only is the cost of headsets decreasing but these have become available as standalone devices not requiring a computer or laptop. Use of high-fidelity simulation reduces student anxiety and increases their confidence in nursing care tasks, and reduces the time spent in medical institutions (Saitoh et al., 2024). In a study conducted in South Africa, nursing students reported overwhelmingly positive experiences with VR simulation (Botha et al., 2021).

Needless to say, for VR simulation to be successfully implemented institutions will have to incur costs in acquiring the resources and training staff. Nurse training institutions in

Namibia will need to partner with VR hardware suppliers and VR simulation developers/trainers to create training packages and this is without cost implications. Virtual reality hardware in Namibia can be found in electronic and computer stores. Whilst it is not clear whether VR simulation developers/trainers exist in Namibia, consultation and/or partnerships can be initiated with those based in South Africa such as Custom VR Training Solutions & Services and VR Training & Educational Solutions (“Custom Virtual Reality Training Solutions”, n.d.; “Virtual Realities South Africa”, n.d.). What would be even better is taking advantage of ongoing courses. Skills for Africa Training Institute (SATI) is currently offering an Immersive Training Simulators Using VR/AI Training Course. Part of the target audience includes training and learning development professionals, simulation engineers and software developers. Several sessions are scheduled for this year (2026) at a cost of 4000 USD (SATI, n.d.). Institutions can send select clinical nursing educators for this comprehensive course. The trainees will also get an opportunity to network which could help in identifying affordable hardware providers either locally or within the region. Those trained can then cascade the training to their colleagues.

The training institutions should also invest in high fidelity simulators such as computerised manikins to create real life scenarios to enhance nursing students’ critical thinking and clinical skills. The researcher is cognisant that this recommendation may require further research before institutions can trial its implementation. A systematic review on the feasibility of setting up VR and high-fidelity simulation in resource limited settings would be in order.

As it was apparent from the study findings, learning in nursing in Namibia is now blended, at least to some extent. Nurse training institutions could support nursing students with online learning by facilitating the acquisition of the necessary devices and data; the cost of which could be filtered into tuition fees. IT departments also need to be revitalised while nurse

educators should be continuously developed to use virtual platforms. There is also a need to ensure requisite resources are in place such as office desktops and institutional laptops for nurse educators, and well-resourced computer labs for nursing students.

Another advantage that comes with online tuition is a reduction in overheads for institutions. Blended learning, for example, saves space and utilities as students can be off campus for part of their learning. Again, this is not a benefit that can be realised during the setting up phase but rather gradually. With the reduction in overheads students may enjoy some reduction in tuition and in addition, their transport costs will be reduced.

The findings showed significant correlations between supervision and preceptorship challenges and challenges related to access of e-resources for research, data storage and visualisation and quality of e-learning resources (all to do with embracing digitalisation) for nursing students. Similarly, utilisation of the digital environment and accessibility to e-resources for research support were significantly correlated to increased workload for nursing educators. This shows how important it is to embrace technology in in-class nursing education, for by so doing challenges related to supervision and preceptorship and increased workload in clinical practice can be reduced.

Enhance Nursing Education Resources

What is suggested here can be implemented in the long term except for the adjustment of the library opening times which should be practical in the short term. Nurse faculty shortages need to be addressed. This can be done by retaining those who are in the profession and through making the profession sell. Meeting nurse educators halfway will help reduce burnout which is one of many ways of increasing staff retention. Suggestions include a reduction in the number of modules per educator and that an educator should be assigned to only one campus. In addition, more lecturers are needed to follow-up nursing students in clinical practice in the

interim while working on other more sustainable measures such as developing practice educators.

This study recommends retention of staff through capacitation. One such way is mounting workshops that aim at developing the nurse educators to be better research supervisors. This recommendation is in line with what the University of South Africa (UNISA) does although it is aimed at postgraduate supervision; the programme is run online and is asynchronous thereby allowing any supervisor to join at their convenience (“Supervision Capacity Development Programme”, 2023). The same idea can be adopted by institutions in Namibia and tailored to the needs of undergraduate research supervisors. In addition, instead of having the supervisor handpick whoever they prefer to sit in when their student is presenting, a research committee can be established to undertake the role of evaluating the proposals and guiding students accordingly.

Another recommendation towards capacitation of nurse lecturers would be the use of a buddying system. In a buddying system a new employee is assigned to a current employee who knows the organisation well and is quite knowledgeable about their role. The buddy takes the newly recruited under their wings during induction into a new job. This recommendation is supported by Ross and Kerrigan (2020) who argue that the provision of support to novice educators promotes reflection and dialogue between a newly recruited faculty member and a trusted mentor. Nurse educators who have had to struggle in finding footing when they started their career in nurse education understand the importance of having someone ‘hold your hand’ when you are new. Nurse training institutions could make this a culture, and it could contribute to job satisfaction and staff retention.

Teaching and simulation resources should be commensurate with the student numbers and curriculum needs. Robust simulation centres will not only provide a valuable resource for clinical learning but could also help reduce the congestion in the clinical practice areas.

Institutions are recommended to invest in high fidelity simulation and / VR simulation which have already been discussed above. Alternatively, nurse training institutions could also work together to put up well-resourced simulation hubs. The Nightingale college in Utah introduced a simulation hub, which was overseen by faculty, where students could meet to practise nursing procedures during the COVID-19 pandemic (“Nightingale College Nursing Students”, n.d.). The training institutions would benefit in that the costs can be distributed. Access to the hubs can be set at different times for each institution.

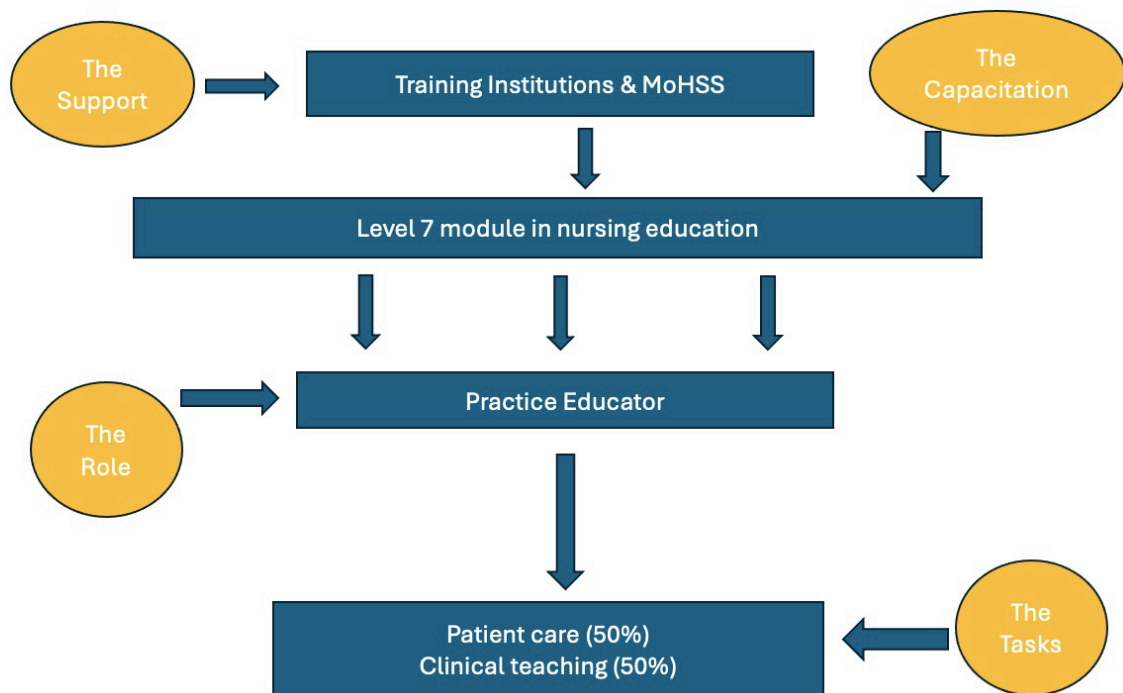
A well-equipped library is a valuable resource for learning. Libraries should be equipped with computers and should be open for use beyond the normal working days and hours. When days are filled with lecture activities students will most likely want to access the library at the end of a working day or on weekends. Thus, it is advisable to extend the library operation hours.

Regarding consumables in the public healthcare institutions, the researcher recommends that MoHSS sources funding for the acquisition of such resources. This should not be for only ensuring that healthcare profession students have the resources needed for learning but most importantly to also ensure patients receive appropriate and safe care. Healthcare institutions elsewhere have embraced the ‘gloves are off’ campaign which helps reduce the unnecessary use of gloves (National Health Services [NHS] England, 2018). Namibia could benefit from this strategy. Reducing the use of gloves would ensure that these are available for when they are really needed. This is an example of efficient use of resources.

There is need to address ‘space and nurse shortage issues.’ There should be more clinical staff to help students in clinical learning. Whereas Ashipala and Shapopi (2022) argue that the shortage of nurses is doing a disservice to nursing education Nhokwara et al. (2022) speak of the problems surrounding large classes. The co-occurrence of both situations fuels unsupportive clinical learning environments. Where there is a shortage of nurses cutting class

sizes could perpetuate the shortage as less students would then graduate into the profession. The recommendation is therefore that space issues be addressed. As one of the participants shared, the MoHSS should start looking into the construction of teaching hospitals. This will help accommodate more students. Another way of decongesting the clinical areas is erecting and equipping simulation units within these areas. Students in practice could then be rotated between the simulation units and the wards/clinic rooms during their placement. Simulation units would provide more focused and standardised practice with room for errors. Private hospitals can be encouraged to donate out of use equipment and out of date consumables for simulation purposes.

Closely linked to the shortage of nurses in the clinical area is the burnout experienced by clinical preceptors. Since the clinical preceptors have the responsibility of teaching students in the clinical area without an additional incentive, other ways of supporting them could be put in place. Livingstone (2024) contends that the support that preceptors receive from their employer and the academic institutions determine their effectiveness in this role. Anderson et al. (2020, as cited in Livingstone, 2024) suggest that clinical preceptors should have their workloads adjusted when they oversee nursing students' learning. As a suggestion, this may be a long shot for clinical units that are short staffed, but it is possible with some adjustments in registered nurse numbers. Such a move would be beneficial to both the student and the patient. Another way of tackling this is for policy makers and stakeholders to consider the development a practice educator role. Practice educators strengthen the link between the healthcare training institutions and the clinical placement settings and support the clinical education of the students (Royal College of Midwives, n.d.). This individual will have a dual role of patient care and clinical teaching. This would lessen the teaching burden faced by the clinical staff while providing nursing students with expert guidance from an educator who is part of the clinical environment. The suggested model is illustrated in Figure 8 below.

Figure 8*The Practice Educator Role*

Source: Author

Quality Assurance

Another long-term recommendation pertains to quality assurance. The proliferation of nurse training institutions should be curtailed. The study findings revealed concerns from both nursing students and nurse educators regarding the mushrooming of nurse training institutions in Namibia with some of these institutions relaxing entry requirements. A move that can negatively affect the quality of education received. This is an issue that Prof Makala Lilemba, an academician and author, raised in an article published in a local paper, *The New Era*, in which he iterated how concerning it is that the ‘mushrooming’ of tertiary institutions appeared

to be at the expense of quality education and motivated mostly by the drive to make money (The New Era, 2022, Feb 25). He gave examples of how South Africa, with a much higher population, is doing the opposite by merging universities to improve the quality of education and how Zimbabwe, also with a much higher population, is managing to maintain good standards with few tertiary institutions. The Health Professions Council of Namibia (HPCNA) may not have the mandate to limit the number of nurse training institutions in the country but perhaps it could, together with other stakeholders such as MoHSS and the MHETI, work on tightening the requirements for curricula approval. Participants who took part in the interview shared how some campuses did not have basic simulation resources and well-equipped libraries; these should be mandatory pre-requisites to obtaining approval to train nurses. The researcher also suggests that provision of student accommodation and/or student buses be included in such requirements.

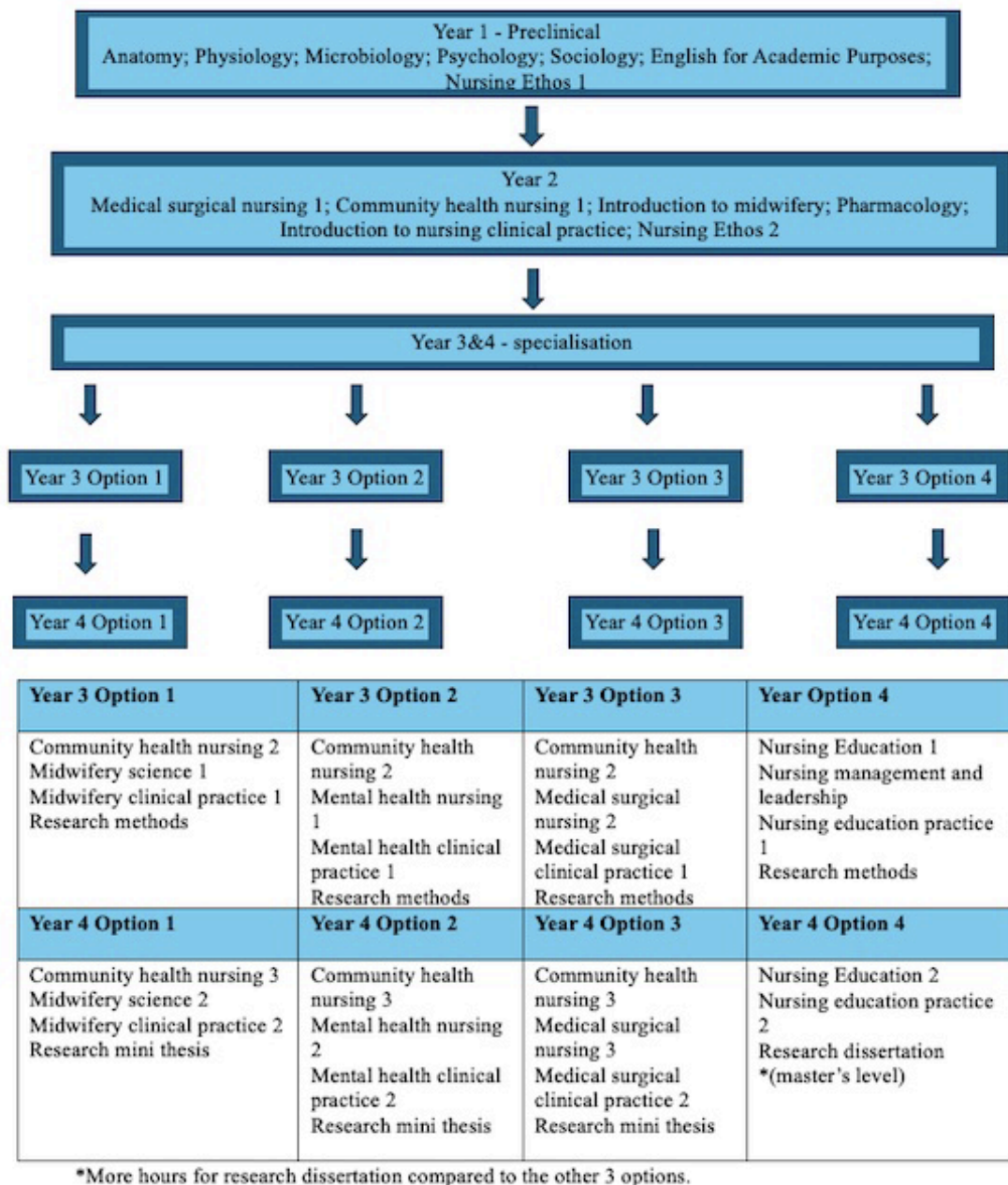
The rate at which new nurse training institutions emerge could lead to various challenges. Recently some were found to have started training before their curricula had been approved by the HPCNA (info_e12wt4cs, 2024). The HPCNA has since stated that from the past year (2025) only 50 students will be enrolled per institution per year in a move to promote quality of practice, patient safety and reduce high rates of unemployment and that each institution will have a single intake per year. (“HPCNA Reduces Nursing and Midwifery Intake Numbers”, n.d.). The bottom line is that the number of nursing students in training should be such that the existing clinical practice areas can adequately accommodate them and that those who graduate can be absorbed into the healthcare workforce. Moreover, the regulators should ensure that equipment used for training is of good standard and the HPCNA should do spot checks on the training institutions, as some were said to not adhere to curriculum requirements from the findings of this study.

A Revision of the Curriculum

The baccalaureate nursing education qualification is quite comprehensive. The graduate nurse produced is not only qualified in general nursing but also in midwifery and community nursing. When the curriculum was designed the intention was to ensure that each nurse could fit into any role, a move which was meant to benefit Namibian communities. As more schools of nursing have since opened and student nurse enrolment numbers have increased, policy makers are urged to revise the curriculum and provide opportunities for specialisation right from the onset of training. The first year could be a foundation year which covers pre-clinical modules with the second year mostly dedicated to introducing clinical courses and sub-specialties introduced in the third year. The sub-specialties could include mental health nursing, midwifery, community health nursing and so on, providing students with options to follow their passion as depicted in Figure 9. One educator voiced how the comprehensive curriculum was forcing students into fields they had no interest in. The lack of interest contributes to reduced commitment and poor pass rates in the disliked subjects. This is a high impact recommendation hence the smart move would be for institutions to work together with key stakeholders such as MoHSS, HPCNA and MHETI in compiling a background paper that reviews the current curriculum and assesses the feasibility of a revision.

Figure 9

A Revised Curriculum



Source: Author

Recommendations For Future Research

The findings of the current research offer an impetus to further research. Indeed, even some of the recommendations for application may need further exploration or testing.

Research Into Nurse Educator Retention Strategies

Nurse educators usually possess a master's degree as a minimum. The same goes for educators in other disciplines. Studies can be conducted to understand if educators from other disciplines face challenges similar to those faced by nurse educators or not and to assess if there are any strategies used in these other disciplines that can be borrowed by nursing education. This could be in the form of scoping or systematic reviews or primary research.

Studies indicate that quite a substantial number of senior nurses and nurse educators leave the profession due to retirement. The American Association College of Nursing ([AACN], 2024) opines that as faculty age continues to climb, the number of productive years taught by the educator narrows. But even those who have retired can still significantly contribute to nursing education. It is quite common in nursing practice to have retired nurses return to work. Research could be conducted on ways of utilising the retired experts to support nursing education. This population could be an inadequately tapped resource. One study by Wilson (2024) has suggested that the move towards online teaching and learning could mean that senior educators could remain longer on the job as they can support nurse training from the comfort of their homes. This is an unresearched area in Namibia. It is an area worth exploring.

Even the best of nurse educators may have sections of the curriculum they are less confident with. They may be supported through guest lectureship. This is another area that needs further research. The different areas that guest lecturers have been used include in the laboratory, in the library (librarians) and in teaching nursing and leadership skills (Zou et al., 2019). There is no published evidence that nursing education in Namibia has considered the use of guest lecturers, an action that could help alleviate the impact of the nurse educator shortage. Zou et al. (2019) also contend that the effectiveness of the use of guest lecturers has not been well-researched.

The present study revealed that qualified nurses were, aside from the issue of work overload, not always willing to act as preceptors for the nursing students in the clinical area. The reasons given for such behaviour was from the perspective of those who seek the service of the nurses, namely the nursing students and their educators. It is therefore important that the views of the nurses about preceptorship be heard. Dube and Rakhudu (2021) posit that the role of the preceptor is neither clearly understood nor supported. Further research could also explore what the preceptors consider as support and /or motivation.

It also emerged that there was no clarity on where the clinical staff preceptorship roles end and where academic nurse educators take over. Some of the participants felt that academic nurse educators were not that supportive and should go beyond just conducting student assessments in clinical practice. Further research could be conducted to explore this area.

Curriculum Revision

It emerged from the findings that there were qualms relating to some parts of the curriculum. Elsewhere, when Wijngaards-de Meij and Merx (2018) were investigating how research skills were taught in a psychology undergraduate curriculum at a university in the Netherlands they found that some of the aspects of doing research had been taught multiple times in different courses while others had not been addressed at all. Recommendations for application already suggested curriculum revision. Taking this a step further, research could be conducted to review the curricula of the different nurse training institutions. This could bring to surface what differences and similarities exist and how these could inform the curriculum revision and alignment for the individual institutions.

Entry Requirements

Although entry requirements for the same programme can vary from institution to institution it is reasonable to assume that such variations would be marginal and that, at the least, should be adhered to. If this is not the case and the graduate nurse is still found to have

the competencies required and ability to practise safely and effectively regardless of whether they met the entry requirements or not, then perhaps these need to be re-assessed. It was found in this study that such requirements are not always adhered to yet the trainees falling short of such requirement still manage to graduate and practise. Therefore, it might be time to conduct research which could help in deciding whether the eligibility criteria needs to be reviewed or not. For example, the availability of technological gadgets and equipment could mean mathematical skills are no longer that essential as a pre-requisite to undertaking nursing.

A Different Approach to Training the Nurse Educator

Edge Hill University saw a gap in the decision-making process when decisions had to be made on whether patients should be cared for at home, how they should be treated or whether they need admission hence it introduced the nurse paramedic qualification to help bridge this gap (RCN, 2022). This idea could be adopted in nurse education – an integrated master’s qualification could see one qualify with a masters in nurse education as opposed to completing 4 years of comprehensive nurse training when their passion is in nurse education. This is an area that needs further research.

Another approach that could be researched is exploring ways of capacitating experienced nurses who have specific expertise to take teaching roles through short courses on student instruction and assessment. Wilson (2024) refers to such an approach as using ‘clinical expertise as a foundation’ explaining that the aim is to translate expertise into engaging and effective classroom instruction. The postgraduate pathway which is presently available in Namibia for those who are keen on moving into nursing education could be rather demanding compared to short fast track courses which could be all that an expert nurse needs to gain the confidence and effectiveness in instruction. The clinicians who undertake such courses would not need to leave clinical practice but could have teaching days either at the institution campuses or within the clinical practice environment. To sell such an idea to the key

stakeholders and policymakers requires an establishment of evidence that this could work. Further research could establish that evidence.

Digitalisation in Nursing Education

It emerged from the findings of this study that most of the challenges surrounded the use of technology in nursing. Although the nature of such challenges could be ascertained from the exploratory factor analysis (EFA) and from what the participants shared, the examination of the full extent of these was beyond the scope of this study. Further studies could be conducted in this area focusing on both theory and clinical practice aspects of nursing education. As far as digitalisation in nursing education is concerned, it seems Namibia is ‘not there yet’; thus, it is essential to find out more about the hindrances to embracing digitalisation and the best way forward. If anything, the COVID-19 pandemic forced us to face our unpreparedness and there is no going back to the approaches used pre-pandemic.

There is also need for further research that explores hindrances to embracing technology among those with decision making roles within nursing education. The population for such research could involve academic institution and healthcare managers and leaders and key persons within MoHSS.

A Different Approach to Clinical Learning

The hindrances to clinical learning identified in this study call for strategies to enhance learning in the clinical environment. According to Ghasemi et al. (2020) not much is known on how to promote academic engagement in clinical activities.

The idea of clinical education units and student led clinical units could be implemented in Namibia. The CEUs have been implemented in Australia where they, according to Dos Santos and Jayesakara (2020), were found to be cost effective. In student-led clinical learning environments “learning is scaffolded to each individual student’s experience and students supported by peers, staff and clinical educators, thereby enabling them to take responsibility

for leading care” (Pearce et al., 2022 para. 42). An additional advantage of the student-led clinical learning environments is that they increase student capacity. These are strong contending points for trialling these approaches locally but before this can happen further research needs to be done as part of a feasibility exercise.

Previous research (Farzi et al., 2018) has identified how disengaged other members of the multidisciplinary team, such as doctors, can be towards nursing students’ clinical learning. Some of the participants from the present study supported this notion while some indicated that there were some doctors who were willing to teach them. However, not much is known about whether these other professionals are aware of their position in the nursing student nurse’s learning trajectory or what support they need if they were to contribute significantly to the training of the nurse. Future research could look at investigating the perceived roles of medical doctors, nutritionists, physiotherapists, occupational health therapists and so on in nursing students’ clinical learning.

Addressing Discrimination

Some of the nursing students who participated in the qualitative interviews aired how unwelcome they felt in the clinical practice areas. They described the discrimination as either tribal based, racial, xenophobic or institutional. The commonly researched form of discrimination is that which occurs between students of different disciplines such as between medical students and nursing students (Hadian Jazi et al., 2022; Jamshidi et al., 2016). To address discrimination in the clinical practice environments there is need to explore the root causes of the same and to assess if ever there is an awareness of behaviour among those who act in discriminatory manner. The researcher did not find evidence of research conducted on the discrimination faced by nursing students in the clinical area in Namibia. The study which addressed one of the issues, xenophobia, was that conducted by Baratedi et al. (2024) in Botswana whose population was nurse educators: the nurse educators in that study had faced

dehumanising comments, labelling and discrimination. More studies could be conducted to explore the issue of discrimination among both nurse educators and nursing students.

Most work environments embrace inclusivity and diversity. The nursing curriculum should cover this aspect. It could be worthwhile to research on the extent of this with nurse training institutions and healthcare environments. There is no place where discrimination is acceptable but having it come up as an issue among nurses is quite worrisome considering the oath nurses take of upholding professional practice. It is recommended to further extend such research to patients who are cared for by the same staff who display discriminatory behaviour. Their insights would contribute to the body of knowledge on inclusivity and diversity which could benefit both the qualified nurses and those in training.

The Role of the Patient

The results of the study indicated how patients, who are at the centre of the clinical learning, can have their dignity and privacy compromised when they are nursed in overcrowded clinical practice environments. This perspective is from the nursing students and the nurse educators. Perhaps further research could look at how the patients, who are the most valuable resource for clinical learning, feel about the role they play in the teaching and learning of a student. Further research could also explore the expectations of patients. Another area that the patients could contribute to is communication when admitted or cared for in units that support the student clinical learning. It emerged that communication was a hindrance with some participants suggesting that having translators could be beneficial. The suggestion implies that clinical assessments are done even when the clinician and the patients are not able to converse.

Conclusion

Although the complete eradication of the challenges facing nursing education is not practical, the fight towards their amelioration should not slacken or cease. This study aimed to examine challenges facing baccalaureate nursing education in the 21st century in Namibia and

determine if any relationship exists between challenges faced in in-class education and those encountered in clinical education. This informed the recommendation of strategies of addressing the challenges, which when implemented, can improve nursing students' learning outcomes and make the clinical environment a better place not only for the students and nurses but also for other healthcare professional interns and patients.

A summary of the methodology. A mixed methods explanatory study design was used in this study. Data was collected from two tertiary institutions which train nurses at a baccalaureate level in Namibia: WU and IUM. The study population comprised nursing students in years 2-4 undertaking the Bachelor of Science in Nursing degree and nurse educators who taught both theory and clinical practice to the nursing students. Stratified proportionate sampling was used to select the quantitative sample while the qualitative sample was selected purposively. A total of 159 nursing students and 28 nurse educators selected through stratified proportionate random sampling completed the structured questionnaires. All nurse educators and all but 6 nursing students completed the questionnaire online via Google Forms. The 6 nursing students had internet connectivity challenges and opted to complete physical copies of the questionnaire. Whereas 7 nurse educators participated in the individual online interviews which were conducted through Microsoft Teams, 11 nursing students participated in the same. Quantitative data analysis utilised Exploratory Factor Analysis (EFA) while thematic analysis formed the basis of qualitative data analysis. The results were subsequently analysed, and the study findings are summarised in the paragraphs that follow.

Sample demographics. As can be expected of the nursing profession which continues to be female dominated, most of the respondents were female (89% for nurse educators and 87% nursing students). Whereas most nurse educators (61%) were aged between 25- and 44-years majority of the nursing students (65%) were between the ages of 18 and 24 years. It is quite expected that students are younger than their educators. Key herein is that most of the

nurse educators in Namibia were not within the age group close to retirement. Strategies to retain this category of staff should be strengthened. Whereas most of the nurse educators (36%) had more than five years work experience, meaning they were not new to the nurse educator role most (79%) had at least a master's degree. In general, most educators hold a post graduate qualification.

Natives of Namibia comprised most of the respondents (82% nurse educators; 92% nursing students) and most had native primary languages (82% nurse educators; 88% nursing students). Now, considering that according to WorldAtlas (2024) majority (48%) of the population of Namibia are Oshiwambo speakers in a country where the official language is English, this suggests that language barrier has a significant standing in matters of communication.

Whilst most nursing students (52%) lived off-campus majority of the nurse educators (54%) owned an urban type of accommodation. For a student, living off campus means an added cost of commuting. Whereas 32% of the nurse educators had income between \$25 000 and \$30 000, about 81% of the nursing students relied on a household family income below \$15 000. The cost of living in Namibia is estimated at N\$ 34,943.1 (Numbeo, n.d.) for a family of four and N\$10,026.4 for a single person rent excluded thus implying that for most of the respondents, meeting basic needs is a mammoth task. This is quite significant given that of the key findings, the issue of financial capability came up several times leading to the development of the sub-theme *'It's all about money, isn't it?'*.

Key findings. Four themes responded to the research question; *'What challenges are faced in the baccalaureate nursing theoretical and clinical education in Namibia? / How do baccalaureate nurse educators and nursing students describe the challenges encountered in theoretical education and in clinical education?'* These were: 'nursing student in-class learning challenges', 'nurse educator in-class teaching challenges', 'nursing student clinical

learning challenges’ and ‘nurse educator clinical teaching challenges’. The ‘what’ was answered by the quantitative findings while the integration of the quantitative and the qualitative results responded the ‘how’ of the question. The key findings relating to these questions are summarised in Table 31 below:

Table 31

Key Findings

Nursing student/Nurse educator in class learning/teaching challenges	
Key challenge areas	Key challenges
Ensuring a technology enabled learning environment	<ul style="list-style-type: none"> - Access and quality of e-resources - Hesitancy to embrace technology
Curriculum receipt/administration	<ul style="list-style-type: none"> - Congested/irrelevant curriculum - Large classes and space issues - Lack of human and physical resources - Failing to cope with workload
Financial constraints	<ul style="list-style-type: none"> - Tuition costs - Day to day expenses - Cost of e-devices - Cost of simulation equipment
Entry requirements	<ul style="list-style-type: none"> - Relaxed entry requirements
Nursing student/Nurse educator clinical learning/teaching challenges	
Supervision and preceptorship	<ul style="list-style-type: none"> - Lack of staff - Deficiencies in nursing skills
Unsupportive learning environments	<ul style="list-style-type: none"> - Feelings of exclusion - Discrimination - ‘Not fitting in’
Lack of consumables and other resources	<ul style="list-style-type: none"> - Use of shortcuts / improvisations - No support for digitalisation (e.g., no internet access, no computers)
Communication and technology	<ul style="list-style-type: none"> - No support for social media use - Language barrier - Illegible documentation
Maximisation of student learning experiences	<ul style="list-style-type: none"> - Negative attitudes of staff - Overcrowded clinical environments - Lack of time - Space issues - Increased workload
Theory-practice gap	<ul style="list-style-type: none"> - Mismatch between taught content and clinical learning
Nurse educator unpreparedness	<ul style="list-style-type: none"> - Negative role modelling - Difficulties in matching clinical education experiences and learning outcomes
Space and case diversity	<ul style="list-style-type: none"> - Lack of space - Limited cases

According to the results of the EFA nursing students faced challenges in-class learning related to the 'access of e-resources for research', 'quality of e-learning resources', 'IT' and 'data storage and visualisation' and these work against technology-enabled learning. Nurse educators faced similar challenges in in-class teaching and in addition, those that related to, 'institutional support for information sharing', and 'the utilisation of the digital environment'.

From the qualitative data analysis, the above technology related challenges were summed up by the nursing students under the sub-theme '*failing to connect and stay connected*'. The main issue identified related to internet connectivity. Nurse educators summed up similar challenges within the sub-theme '*not fully prepared to embrace technology*'. The nurse educators spoke about how the reluctance to use e-resources, internet connectivity and unavailability of e-resources affected the use of technology in nursing education. Support for digitalisation was said to be inadequate.

Challenges with the use of digital technologies restrict the profession from fully realising their benefits Booth et al. (2021). Such benefits include that they allow the integration of multiple learning tools, asynchronous access and that they are affordable (Nes et al., 2021). Limited access, digital illiteracy and high costs were identified by Al-Worafi (2023a) as some of the challenges associated with digital technologies in the developing countries. Namibia is one of such developing countries and the findings show that cost impedes the utilisation of digital technologies. Another barrier to the acceptance of technology relates to disinterest which could be due to the general resistance to change. Regarding the acceptability of technology Nsouli and Vlachopoulos (2021) categorise those who are reluctant as resisters stating that they have negative attitudes towards the use of technology. Indeed, participants in the present study shared how some showed less interest in embracing technology.

The results of the EFA also showed that nursing students faced challenges related to the shortage of educators, inexperienced educators, an irrelevant curriculum, large classes and

lack of classroom space which together affect how the curriculum is received. Large student numbers combined with the shortage of educators, educator inexperience and lack of classroom space do not support effective curriculum delivery. The AACN (2024), contends that nursing education is struggling with faculty shortages and Nhokwara et al. (2022) shared their concerns on large classes in Namibian nurse training institutions. Nurse educators faced almost similar challenges, which were related to curriculum administration, the causes of which were not different from those indicated by nursing students except for the lack of consideration of learning styles. Varying teaching styles would ensure that nursing students' different learning style preferences are accommodated. In a study by Mbirimtengerenji et al. (2015) students complained how they lost concentration when lecturers talked throughout an entire lesson.

Sub-themes '*our educators just can't cope*' and '*too lengthy yet not adequate*' from the nursing student qualitative interviews further explained the EFA results. Participants shared how nurse educators were overwhelmed with work overload, how the curriculum was unnecessarily lengthy due to repetition of content, and how what was covered in class was at times not connected to clinical practice. When content taught in class does not tally with what is expected in clinical practice students go into clinical practice areas feeling unprepared. Farzi et al. (2018) contend that the insufficient readiness of the student disturbs the clinical education process. The findings of the current study also indicated that learning styles are usually not considered by some of the educators.

The challenges faced by nurse educators which related to curriculum administration were explored within the sub-themes '*curriculum overload*'; '*not equipped for this thing: lack of human and physical resources*'; and '*running out of steam: dealing with work overload.*' The nurse educators, just like the nursing students, had concerns about the repetition of content and the congestion of the curriculum. In addition, they shared on the lack of simulation equipment and models, ill-equipped libraries and human resources which were either in short

supply or were deficient in experience. Implementing evidence-based practice in teaching and learning is dependent on the availability of resources. Mthiyane and Habedi (2018), found that the lack of resources, such as the lack of or poor access to computers and libraries is one of the challenges faced by nurse educators. The lack of resources and heavy workload are challenges that are more likely to be directly correlated than not. For instance, the findings from this study indicated lack of both physical and human resources which leads to improvisation and having to take responsibility of large numbers of students both in class and in the clinical learning environment.

Financial constraints posed another challenge. These ranged from tuition, day to day costs such as transport and internet costs, and the inability to afford electronic devices. Nonpayment of tuition could cause students to miss classes. Both the educator and the nursing student may need to put in extra work to enable the latter to compensate for the missed learning opportunities. The qualitative interviews with the nursing students explored the financial challenges further and yielded the sub-theme *'It's all about money, isn't it?'* Nursing students who participated in the interviews shared their concerns about the high taxi fares, the cost of printing and internet and how their institutions could not afford advanced simulation equipment. Agreeing on the cost of education Moradi et al. (2022) contend that the cost of equipment and the internet were an issue when nursing education was driven to online learning by the COVID-19 lockdown. However, these costs can be contained in the long run because, for example, setting up an advanced simulation unit and virtual reality (VR) simulation may be expensive but once up they could save money as fewer human resources will be needed for the simulation classes. Pottle (2019) contends that VR does save money and faculty time as less staff and training is needed since the software is intuitive.

Nursing students also indicated that there were challenges related to the entry requirements for studying nursing and the age at enrolment into nurse training. Those who later

participated in the interviews shared their concerns regarding relaxed entry requirements. This was explained by the sub-theme '*when just anyone can enrol into nursing*'. Lack of consideration of prior learning could negatively affect learning and relaxing the entry requirements meant that some of those enrolled into training struggled cognitively.

One of the challenges nursing students faced in clinical learning was related to 'supervision and preceptorship'. Those who participated in the qualitative interviews explained that these were due to a general lack of staff to do the supervision, feedback-focused meetings and competence in demonstrating clinical skills. Sabone et al. (2018) in a study in Botswana shared how the 21st century student in training lacks resources such as a diversified faculty and supervisors to mentor and guide them in clinical learning. Nurse educators should have the relevant skill set to be efficient in clinical teaching because, as Zhang et al. (2022) concurs, in addition to good professional attitude, clinical nurse educators' skills serve as catalysts to students' clinical learning. Not only were the nursing skills of some of the educators questioned by nursing students but also some of the educators felt that their colleagues did not demonstrate a possession of the required skills in the present study.

Nursing students also faced challenges related to 'unsupportive learning environments'. They indicated that they did not feel accepted when they started their clinical placement; they felt excluded. The factor unsupportive learning environments was explored within the sub-themes '*I do not belong*' and '*not much support*'. Nursing students explained how they felt excluded from clinical discussions and how they also felt discriminated. They explained how race, tribe, institution and nationality dictated how much support one got from qualified nurses. Interviewees also shared that the clinical staff were either unwilling to supervise or were too burnt out to help. In support of how clinical environments can be unsupportive, Amukugo et al. (2017) contend that the shortage of staff in the clinical environment, and a focus on task completion versus comprehensive patient care could make clinical environments less

supportive. Discrimination was said to be one of the factors that contribute to unsupportive clinical environments. Hatupopi and Nuuyoma (2019) agree that one of the concerns raised by students when in clinical practice environments is discrimination by nurses.

Another challenge faced by nursing students was in the form of lack of consumables and resources for learning which included computers, staff, the internet, and consumables such as gloves and aprons. The lack of resources can result in the use of ‘shortcuts’ and/or improvisations; a behaviour noted to be common in clinical practice areas by Munangatire and Nambuli (2022). Panda et al. (2021) state that the lack of resources to facilitate need-based training is one of the key challenges faced in the clinical learning environment.

The lack of resources was explored within the sub-theme *‘too much of us; too less of resources.’* and *‘hesitant to embrace technology’*. Participants explained how the lack of consumables, equipment and human resources compounded by large student numbers affected their clinical learning. Interviewees shared how they had no access to the computers found in the wards and how unprepared they felt to use technology at the bedside. Being unprepared to embrace technology was due to not preferring it or lack of familiarity. It is unlikely that institutions will revert to the pre-pandemic situation where instruction was predominantly face-to-face. Technology is part of the future of nursing education. Leaver et al. (2022) contend that technology, in addition to disaster and public health preparedness emerged as a gap in nursing education during the COVID-19 pandemic.

Closely linked to the sub-theme, *‘hesitant to embrace technology’* are the challenges related to the role of social media. As was gathered from the qualitative interviews, nursing students felt unsupported in using mobile gadgets at the bedside. Giroux and Moreau (2022) found that some of the nursing students used the social media informally, such as YouTube videos, at the patient’s bedside to assist them with health education. Indeed, according to Sarginson and Cecilia (2024), social media enhances student growth and learning.

Communication and technology was another challenge related to clinical learning. Nursing students indicated that they had challenges related to the ease of communicating with patients and the clarity of patient records. Challenges with communication and technology were aligned with the sub-theme *'I can't hear it; I can't see it; how can I understand it?'*. Language barrier and illegible documentation are barriers to communication. Nursing students shared how difficult it was to communicate accurately through patient records when they could neither understand what was said nor read what was written. Hatupopi and Nuuyoma (2019) state that language is one of the barriers to learning in the clinical environment.

Use of technology at the bedside should be promoted because it increases efficiency and reduces errors. For example, typing of notes and prescriptions would reduce the chances of illegible documentation. In agreement Hitt and Tambe (2016, as cited in Da Silva et al., 2022) state that the automation of processes can help reduce costs, medication waste and drug errors.

Results of the EFA showed that nurse educators faced challenges related to their place in the clinical environment, maximising nursing student learning experiences, theory-practice gap, space and case diversity, increased workload, and nurse educator unpreparedness. When the relationship between the nurse educators and the clinical staff is less harmonious the former could feel unwelcome in the less familiar environment, and this could affect the nursing student's learning. This challenge of not 'fitting in' in the clinical practice areas was further explained within the sub-theme *'unmet nurse educator needs'*. Nurse educators indicated that their inability to support students was partly due to feeling unaccepted in the clinical environments. A harmonious relationship is a product of the efforts of all parties involved. While Jafarian-Amiri et al. (2020) contend that one of the challenges to clinical learning includes the lack of coordination between faculty and clinical staff in a study by Hooven (2024)

the nurse educators voiced how hard they had to work to foster relationships with the nurses in the clinical environment.

Within the sub-theme '*how can they learn when they are not supported*' nurse educators explained the three challenges: maximising nursing student learning experiences, theory-practice gap and nurse educator unpreparedness further. They spoke of challenges related to shortage of staff, specifically nurses, the limited time they had for teaching not only in the clinical area but also in class, the negative attitudes of clinical staff, and lack of resources. They also shared their insights on negative role modelling. Clinical learning environments were generally found to be overcrowded thereby creating an atmosphere less convenient to learning. While Al-Worafi (2023b) agree that limited clinical placements pose a challenge to nursing education in developing countries, Sabone et al. (2018) share how patients are 'recycled' for practising nursing skills.

Ideally, learning in-class should adequately prepare students for clinical practice and they should have some knowledge and skills specific to the area they are placed in. However, this is not always the case and theory-practice gap exists. In a study by Hatupopi and Nuuyoma (2019) one of the themes explained how teaching in the classroom was not consistent with that in the clinical area. Nurse educators felt unprepared to support students in the clinical learning environment. They faced difficulties in presenting education experiences suited to learning outcomes of the course. Some felt there was a lack of positive role modelling among them. In a study by Mbirimtengerenji et al. (2015) only 54.3% of the students were content with the competence of their educators in demonstrating clinical procedures. And according to Gcawu and van Rooyen (2022) role modelling is important since students evaluate role modelling in line with the quality of clinical teaching they receive from the educators. According to a study by Jack et al. (2017) nursing students value positive role modelling both in clinical and university settings and their exposure to poor practice has a negative impact to their learning.

The sub-theme '*students everywhere, it's like an infestation: overcrowded learning environments*' explained issues related to space and case diversity, and increased workload issues. Nurse educators are responsible for large student numbers and clinical practice areas are overcrowded with the sum of students in the clinical areas surpassing that of all clinical area staff. Both nurse educators and the clinical staff are challenged with supporting the large group of students in limited clinical environment space and without adequate resources. Not only is this difficult but it threatens the maintenance of patient dignity and privacy. Sabone et al. (2018) agreed that students suffer due to limited diversity and space in clinical settings. And nurse educators struggle to balance clinical teaching duties and other duties amid working with limited resources and increasing student numbers (Mbirimtengerenji, 2015).

The other question which this study sought to answer was '***What is the relationship between challenges faced in in-class education and those in clinical education within the baccalaureate nursing education in Namibia?***'

When an analysis of the relationship between in-class and cleaning learning/teaching challenges was made the correlations were found to be weak to moderate. For nursing students, supervision and preceptorship challenges were found to be correlated to access of e-resources for research (correlation coefficient 0.259, p-value of 0.001); data storage and visualisation challenges (correlation coefficient 0.258, p-value of 0.001); and challenges related to quality of e-learning resources (correlation coefficient 0.249, p-value of 0.002). And for nurse educators increased workload was found to be related to utilisation of the digital environment challenges (correlation coefficient 0.556, p value of 0.002) and accessibility to e-resources for research support challenges (correlation coefficient 0.526, p-value of 0.004). The limitations in the analysis of the relationship between in-class and clinical learning/teaching challenges could be due to small sample size, instrument design and response bias.

The findings of this study, when conceptualised, reflect that maximised theoretical (in-class) and clinical learning experiences are a product of addressing lower priority needs (communication and technology, finance, internet access, access to e-resources); external factors (supervision and preceptorship, leadership and management, supportive learning environments, resource availability, workload management, space and case diversity) and preferred learning styles (role modelling, social media use, consideration of learning styles, readiness to embrace technology).

The final question addressed was *‘What strategies can help theoretical and clinical learning experiences for baccalaureate student nurses in Namibia?’*

The examination of the challenges in baccalaureate nursing education in Namibia has provided insights into strategies that could be used to achieve the following:

- maximise clinical learning experiences for baccalaureate student nurses,
- address challenges faced in theoretical education, and
- promote digitalisation in nursing education.

Recommendations for application as outlined in the recommendation section include strategies to enhance nursing education resources and strengthen quality assurance activities; and suggestions on curriculum revision and alignment; rethinking student placement strategies; and enhancing inclusivity and mental health support. In addition, the researcher recommends further research on nurse educator retention strategies; curriculum revision; entry requirements different approaches to training the nurse educator; digitalisation in nursing education; different approaches to clinical learning and teaching and the role of the patient in nursing education.

The researcher has contributed to research by employing mixed methods research in an area and context that has relied mostly on monomethod. Including challenges faced in-class offers a different angle to understanding challenges in nursing education considering the focus,

in Namibia, has been mainly on challenges faced in the clinical environment. By integrating the Social Learning Theory and Social Cognitive Theory, humanist and constructivist learning theories in understanding challenges facing nursing education, the researcher has contributed to knowledge on how to improve nursing students' theoretical and clinical learning experiences. Innovative recommendations include the buddy system to facilitate nurse educator onboarding, the proposal of two models – one for developing practice educators (Figure 8) and the other for a revised curriculum (Figure 10).

In summary: Curriculum administration and receipt challenges contribute to the clinical practice unreadiness of the nursing student and nurse graduates who are not ready to deliver nursing care. The cost of education which included not only the high tuition fees but other day to day expenses situate both nurse educators and nursing students in a precarious position that can only hinder learning. There are reasons why specific prior learning is prerequisite to enrolling into nurse training and unless further research suggests otherwise institutions should adhere to the requirements they set.

The poverty of e-resources has dire consequences on education, research and clinical practice. Undergraduate education includes a considerable amount of self-directed learning, and students engage in research for course related tasks and for their mini-thesis research projects hence they need access to good quality e-resources. Clinical practice environments are moving or have already moved towards digitalisation depending on location as such in-class activities should keep pace to remain relevant and reduce the ever-present gap between theory and practice.

Whereas the lack of equipment, consumables and other resources contribute significantly to unsupportive clinical learning environments certain behaviours would still render the environments unsupportive even if resources were available. These include attitudes which make the users of the clinical learning environment unwelcome, negative role modelling,

and hesitancy to embrace technology. The importance of addressing communication issues in the clinical space cannot be over-emphasised. Such issues include poor record keeping and language barriers which were shared by participants who took part in the qualitative interviews.

The researcher urges nurse training institutions to employ the buddy system as part of new nurse educator induction and proposes the development of a practice educator role and a revised curriculum within which specialisation can be introduced in the third year of training. Much work still remains. Future studies could focus on nurse educator retention strategies, digitalisation in nursing education and on patients as resources for learning in nursing education.

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APPENDICES

Appendix 1: Quantitative data collection tool

STUDENT QUESTIONNAIRE

My name is Sikhangezile Gwatikunda, a student with the UNICAF University. I am studying for a PhD in education. As part of the requirements of my studies I am carrying out a study titled: "**Challenges facing baccalaureate nursing education in the 21st century: the context of Namibia**" I am kindly asking you to assist me in carrying out this study by answering this questionnaire. Identifying any challenges, you may be facing as a nursing student may help inform strategies of addressing them. Participation includes the completion of a survey, and if chosen for the second phase, participation in an online focus group discussion (FGD). For the survey, you have been chosen through random selection from a list of nursing students in Year 2 – Year 4. Should you be part of the FGDs, by signing this consent form, you also agree to keep all information shared by you or other participants and the researcher confidential. **[Qualitative data collection was later amended to online individual interviews and this was reflected in the consent form for the interviews].**

The survey questionnaire consists of 3 main sections: A, B & C representing demographic characteristics (11 items), in class learning challenges (36 items) and clinical learning experiences (34 items) respectively. It will take you between 15 and 20 minutes to the questionnaire. Online survey responses will collect email addresses, and these will only be accessible to the researcher and kept confidential. Paper based responses will be assigned study numbers. The FGD interviews are expected to last 30-60 minutes and you will choose a pseudo name (false name) to use during the discussions to protect your identity.

By participating in this study, you are indicating that you understand that your responses will be kept in confidence and only the researcher will have access to any identifiable material such as email addresses. You may skip any survey questions that you find intrusive or offensive, but it will help me if you respond to as many questions as you feel comfortable with. You can also exit the FGDs if you feel uncomfortable to proceed. You 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 this case, the data collected will be deleted.

Before you proceed read the following paragraph and indicate your consent by ticking the checkbox at the end:

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, and where anonymity cannot be assured, only the researcher will have access to the identifiable data, in this case, email addresses. I consent voluntarily to be a participant in this study.

Tick this box to indicate consent:

Please complete all questions and make sure you follow the instructions for each question.

A. Demographic characteristics (11 items)

This first part of the questionnaire consists of items meant to solicit information relating to your demographic characteristics. Use a tick to select the option that applies to you.

Study No.....

1.

Academic institution	Tick to select
Welwitchia Health training Centre	
International University of Management	

2.

Academic year	Tick to select
Second	
Third	
Fourth	

3.

Age group	Tick to select
18-24	
25-34	
35-44	
45-54	

55-65	
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4.

Gender	Tick (if other specify)
Male	
Female	
Other
Prefer not to say	

5.

Marital status	Tick to select
Married	
Single	
Living with a partner	
Widowed	
Prefer not to say	

6.

During the semester accommodation type	Tick to select (if other specify)
On campus student accommodation	
Off campus student accommodation	
Off campus rented accommodation on my own	
Off campus accommodation with family – urban owned	
Off campus family accommodation – urban rented	
Off campus family homestead (village)	
Other

7.

My ethnic background	Tick to select (if other specify)
San	
Kavango	
Damara	
Herero	
White	
Nama	
Himba	
Tjimba	
German	
Baster	
Lozi	
Shona	
Ndebele	
Tswana	
Zulu	
Other

8.

Primary language	Tick to select (if other specify)
Oshiwambo	
Otjiherero	
Rukwangali	
Khoekhoegowab	
Setswana	
Silozi	
Afrikaans	
German	
English	
Shona	
Ndebele	
Zulu	
Other

9.

Previous education level	Tick to select (if other please specify)
High school	
Tertiary diploma	
Tertiary certificate	
Tertiary degree	
Masters	
Other

10.

Religion	Tick to select (if other please specify)
Islam	
Hinduism	
Judaism	
Christianity	
Other
Prefer not to say	

11.

Monthly family income (rounded off)	Tick to select (if other specify)
Less than \$5000	
\$5000-\$10000	
\$11000-\$15000	
\$16000-\$20000	
\$20000-\$25000	
\$26000-\$30000	
\$30000-\$50000	
Above \$50000	

B. In class learning challenges (36 items)

Indicate to what extent the following negatively impact in-class learning. Use a tick to indicate whether you strongly disagree, disagree, neither agree nor disagree (neutral), agree, or strongly agree with each statement.

1. The age at enrolment into nurse training

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
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2. The entry requirements for studying nursing

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
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3. Inexperienced educators

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

4. Shortage of educators

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

5. Lack of classroom space

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

6. Large classes

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
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7. Lack of consideration of student learning styles

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
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8. Irrelevant curriculum

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

9. A curriculum that does not prepare the student to attend to special population groups such as the lesbian, gay, bi-sexual, transgender & queer (LGBTQ) community

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

10. The cost of tuition

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

11. Other costs e.g., transport, accommodation, printing etc

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

12. The lack of technologically advanced simulators for learning/teaching clinical skills

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

Technology-enabled learning environment

Please rate your experiences with the following resources/services/spaces provided by your institution. Indicate with a tick whether your experience has been poor, fair, neutral, good, excellent or whether the resource/service is not available.

13. eClassroom facilities (eg computers, projectors, SMART boards etc)

Poor	Fair	Neutral	Good	Excellent	Not available
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14. Computer labs

Poor	Fair	Neutral	Good	Excellent	Not available
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15. Learning management services (eg moodle)

Poor	Fair	Neutral	Good	Excellent	Not available
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16. ePortfolio

Poor	Fair	Neutral	Good	Excellent	Not available
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17. Speed of internet (download/upload)

Poor	Fair	Neutral	Good	Excellent	Not available
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18. Wi-fi access

Poor	Fair	Neutral	Good	Excellent	Not available
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19. Online or virtual technologies (eg Web portals)

Poor	Fair	Neutral	Good	Excellent	Not available
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20. Access to software (eg statistical software, graphics software)

Poor	Fair	Neutral	Good	Excellent	Not available
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21. Download and use of free and open-source software for teaching and learning

Poor	Fair	Neutral	Good	Excellent	Not available
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22. Support for maintenance and repair of ICTs

Poor	Fair	Neutral	Good	Excellent	Not available
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For questions 24 to 37 if you do not know about these you can select 'Not applicable'

23. Access to data storage

Poor	Fair	Neutral	Good	Excellent	Not available	Not applicable
------	------	---------	------	-----------	---------------	----------------

24. Data visualisation software

Poor	Fair	Neutral	Good	Excellent	Not available	Not applicable
------	------	---------	------	-----------	---------------	----------------

25. Citation/reference management software

Poor	Fair	Neutral	Good	Excellent	Not available	Not applicable
------	------	---------	------	-----------	---------------	----------------

26. Plagiarism detection software

Poor	Fair	Neutral	Good	Excellent	Not available	Not applicable
------	------	---------	------	-----------	---------------	----------------

27. Institutional repository for sharing research

Poor	Fair	Neutral	Good	Excellent	Not available	Not applicable
------	------	---------	------	-----------	---------------	----------------

28. e-Journals

Poor	Fair	Neutral	Good	Excellent	Not available	Not applicable
------	------	---------	------	-----------	---------------	----------------

29. e-Books

Poor	Fair	Neutral	Good	Excellent	Not available	Not applicable
------	------	---------	------	-----------	---------------	----------------

30. Citation databases

Poor	Fair	Neutral	Good	Excellent	Not available	Not applicable
------	------	---------	------	-----------	---------------	----------------

31. Bibliographic databases

Poor	Fair	Neutral	Good	Excellent	Not available	Not applicable
------	------	---------	------	-----------	---------------	----------------

32. e-Newspapers

Poor	Fair	Neutral	Good	Excellent	Not available	Not applicable
------	------	---------	------	-----------	---------------	----------------

33. e-Theses and dissertations

Poor	Fair	Neutral	Good	Excellent	Not available	Not applicable
------	------	---------	------	-----------	---------------	----------------

34. Patent databases

Poor	Fair	Neutral	Good	Excellent	Not available	Not applicable
------	------	---------	------	-----------	---------------	----------------

35. e-Proceedings of conferences

Poor	Fair	Neutral	Good	Excellent	Not available	Not applicable
------	------	---------	------	-----------	---------------	----------------

36. Statistical databases

Poor	Fair	Neutral	Good	Excellent	Not available	Not applicable
------	------	---------	------	-----------	---------------	----------------

C. Clinical learning experiences (34 items)

Indicate, with a tick whether you strongly disagree, disagree, neither agree nor disagree (neutral) agree or strongly agree with each statement.

Learning environment

1. I felt accepted when I started my clinical placement

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

2. I felt included during clinical discussions

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

3. I found the atmospheres conducive for learning

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

4. The staff were interested in student supervision

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

5. There was sufficient exposure to cases

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

6. I was treated equal to other nursing students

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

7. I was treated equal to students from a different discipline e.g. medicine

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

Leadership and management

8. The areas I have worked in can be described as good learning environments

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

9. The nurse in charge valued staff

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

10. The nurse in charge was a team player

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

11. There was adequate staff to provide safe care

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

12. The nurse in charge's feedback contributed positively to learning

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

13. Arrangements were made for students to benefit from other disciplines e.g. physiotherapists, nutritionists

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

Nursing on the ward

14. The patients received individualised nursing

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

15. It was easy to communicate with patients

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

16. Patient care records were clear

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

17. Consumables such as gloves, aprons were easily available

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

Preceptor/clinical instructor's contribution to my learning

18. I think the preceptors/clinical instructor is competent in teaching nursing skills

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

19. The preceptors/clinical instructor was able to help me meet my learning objectives

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

20. The preceptors/clinical instructor helped me to put theory into practice

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

21. I received individual supervision

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

22. Meetings with the preceptor/clinical instructor focused on my learning

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

23. The preceptors/clinical instructors gave constant feedback

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

24. I was very satisfied with the supervision

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

25. The relationship with the preceptor/clinical instructor was a trusting one

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

26. The preceptor/clinical instructor was a team player

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

Technology at the bedside

27. Technology was easily integrated into nursing care

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

28. I felt prepared to use technology at the bedside

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

29. Computers were easily accessible

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

30. Internet was available, so students could look up information relating to patient diagnosis and care

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

31. I could use my smartphone to look up anything I did not understand regarding patient care

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

32. The use of smartphones was strictly prohibited

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

33. I found useful information relating to patient diagnosis and care on social media

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

34. When I think of the future, I become fearful of a digitalised healthcare system

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

..... Thank you

NURSE EDUCATOR QUESTIONNAIRE

My name is Sikhangezile Gwatikunda, a student with the Unicaf University. I am studying for a PhD in education. As part of the requirements of the research I am carrying out a study titled: "**Challenges facing baccalaureate nursing education in the 21st century: the context of Namibia**" I am kindly asking you to assist me in carrying out this study by answering this questionnaire. Identifying any challenges, you may be facing as nurse educator may help inform strategies of addressing them. Participation includes the completion of a survey, and if chosen for the second phase, participation in an online focus group discussion (FGD). For the survey, you have been chosen through random selection from a list of nurse educators. Should you be part of the FGDs, by signing this consent form, you also agree to keep all information shared by you or other participants and the researcher confidential. **[Qualitative data collection was later amended to online individual interviews and this was reflected in the consent form for the interviews].**

The questionnaire consists of 3 main sections: A, B & C representing demographic characteristics (12 items), in class teaching and learning challenges (37 items) and clinical learning experiences (31 items) respectively. It will take you between 15 and 20 minutes to the questionnaire. Online survey responses will collect email addresses, and these will only be accessible to the researcher and kept confidential. Paper based responses will be assigned study numbers. The FGD interviews are expected to last 30-60 minutes and you will choose a pseudo name (false name) to use during the discussions to protect your identity.

By participating in this study, you are indicating that you understand that your responses will be kept in confidence and only the researcher will have access to any identifiable material such as email addresses. You may skip any survey questions that you find intrusive or offensive, but it will help me if you respond to as many questions as you feel comfortable with. You can also exit the FGDs if you feel uncomfortable to proceed. You 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 this case, the data collected will be deleted.

Before you proceed read the following paragraph and indicate your consent by ticking the checkbox at the end:

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 and, where anonymity cannot be assured, only the researcher will have access to the identifiable data, in this case, email addresses. I consent voluntarily to be a participant in this study.

Tick this box to indicate consent:

Please complete all questions and make sure you follow the instructions for each question.

A. Demographic characteristics (12 items)

This first part of the questionnaire consists of items meant to solicit information relating to your demographic characteristics. Use a tick to select the response/s that applies/apply to you.

Study No.....

1.

Academic institution	Tick to select
Welwitchia Health training Centre	
International University of Management	

2.

Academic years taught/instructed	Tick all that apply
First	
Second	
Third	
Fourth	

3.

Years of experience	Tick to select
1 -2	
3-5	
More than 5	

--	--

4.

Age group	Tick to select
18-24	
25-34	
35-44	
45-54	
55-65	
Above 65	

5.

Gender	Tick (if other specify)
Male	
Female	
Other
Prefer not to say	

6.

Marital status	Tick to select
Married	
Single	
Living with a partner	
Widowed	
Prefer not to say	

7.

Usual place of residence	Tick to select (if other specify)
Urban owned accommodation	
Urban rented accommodation	
Homestead (village)	
Other

8.

My ethnic background	Tick to select (if other specify)
San	
Kavango	
Damara	
Herero	
White	
Nama	
Himba	
Tjimba	
German	
Baster	
Lozi	
Shona	
Ndebele	
Tswana	
Zulu	

Other
-------	-------

9.

Primary language	Tick to select (if other specify)
Oshiwambo	
Otjiherero	
Rukwangali	
Khoekhoegowab	
Setswana	
Silozi	
Afrikaans	
German	
English	
Shona	
Ndebele	
Zulu	
Other

10.

Highest qualification	Tick to select (if other please specify)
Bachelor's degree	
Masters	
PhD	
Other

11.

Religion	Tick to select (if other please specify)
Islam	
Hinduism	
Judaism	
Christianity	
Other
Prefer not to say	

12.

Monthly income (rounded off)	Tick to select (if other specify)
Less than \$15000	
\$16000-\$20000	
\$20000-\$25000	
\$26000-\$30000	
\$30000-\$50000	
Above \$50000	

B. In class teaching challenges (37 items)

Indicate to what extent the following negatively impact in-class teaching and student learning. Use a tick to indicate whether you strongly disagree, disagree, neither agree nor disagree (neutral), agree, or strongly agree with each statement.

1. The age at enrolment into nurse training

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

2. The entry requirements for studying nursing

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

3. Inexperienced educators

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

4. Shortage of educators

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

5. Lack of classroom space

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

6. Large classes

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

7. Lack of consideration of student learning styles

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

8. Irrelevant curriculum

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

9. A curriculum that does not prepare the student to attend to special population groups such as the lesbian, gay, bi-sexual, transgender & queer (LGBTQ) community

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

10. The cost of tuition

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

11. Other costs e.g., transport, accommodation, printing etc

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

12. The lack of technologically advanced simulators for learning/teaching clinical skills

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

Technology-enabled learning environment

Rate your experiences with the following resources/services/spaces provided by your institution. Please rate your experiences with the following resources/services/spaces provided by your institution. Indicate with tick whether your experience has been poor, fair, neutral, good, excellent or whether the resource/service is not available.

13. eClassroom facilities (eg computers, projectors, SMART boards etc)

Poor	Fair	Neutral	Good	Excellent	Not available
------	------	---------	------	-----------	---------------

14. Computer labs

Poor	Fair	Neutral	Good	Excellent	Not available
------	------	---------	------	-----------	---------------

15. Institutional email services

Poor	Fair	Neutral	Good	Excellent	Not available
------	------	---------	------	-----------	---------------

16. Learning management services (eg moodle)

Poor	Fair	Neutral	Good	Excellent	Not available
------	------	---------	------	-----------	---------------

17. ePortfolio

Poor	Fair	Neutral	Good	Excellent	Not available
------	------	---------	------	-----------	---------------

18. Speed of internet (download/upload)

Poor	Fair	Neutral	Good	Excellent	Not available
------	------	---------	------	-----------	---------------

19. Wi-fi access

Poor	Fair	Neutral	Good	Excellent	Not available
------	------	---------	------	-----------	---------------

20. Online or virtual technologies (eg Web portals)

Poor	Fair	Neutral	Good	Excellent	Not available
------	------	---------	------	-----------	---------------

21. Access to software (eg statistical software, graphics software)

Poor	Fair	Neutral	Good	Excellent	Not available
------	------	---------	------	-----------	---------------

22. Download and use of free and open-source software for teaching and learning

Poor	Fair	Neutral	Good	Excellent	Not available
------	------	---------	------	-----------	---------------

23. Support for maintenance and repair of ICTs

Poor	Fair	Neutral	Good	Excellent	Not available
------	------	---------	------	-----------	---------------

24. Access to data storage

Poor	Fair	Neutral	Good	Excellent	Not available
------	------	---------	------	-----------	---------------

25. Data visualisation software

Poor	Fair	Neutral	Good	Excellent	Not available
------	------	---------	------	-----------	---------------

26. Citation/reference management software

Poor	Fair	Neutral	Good	Excellent	Not available
------	------	---------	------	-----------	---------------

27. Plagiarism detection software

Poor	Fair	Neutral	Good	Excellent	Not available
------	------	---------	------	-----------	---------------

28. Institutional repository for sharing research

Poor	Fair	Neutral	Good	Excellent	Not available
------	------	---------	------	-----------	---------------

29. e-Journals

Poor	Fair	Neutral	Good	Excellent	Not available
------	------	---------	------	-----------	---------------

30. e-Books

Poor	Fair	Neutral	Good	Excellent	Not available
------	------	---------	------	-----------	---------------

31. Citation databases

Poor	Fair	Neutral	Good	Excellent	Not available
------	------	---------	------	-----------	---------------

32. Bibliographic databases

Poor	Fair	Neutral	Good	Excellent	Not available
------	------	---------	------	-----------	---------------

33. e-Newspapers

Poor	Fair	Neutral	Good	Excellent	Not available
------	------	---------	------	-----------	---------------

34. e-Theses and dissertations

Poor	Fair	Neutral	Good	Excellent	Not available
------	------	---------	------	-----------	---------------

35. Patent database

Poor	Fair	Neutral	Good	Excellent	Not available
------	------	---------	------	-----------	---------------

36. e-Proceedings of conferences

Poor	Fair	Neutral	Good	Excellent	Not available
------	------	---------	------	-----------	---------------

37. Statistical databases

Poor	Fair	Neutral	Good	Excellent	Not available
------	------	---------	------	-----------	---------------

C. Clinical teaching challenges (31 items)

Indicate your experience of challenges in teaching in the clinical environment. Use a tick to indicate whether you do not experience difficulties, you face some difficulties or you face quite serious difficulties.

Issues about nurse educators

1. Providing clinical practice area

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

2. Official correspondence

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

3. Creating an environment that facilitates learning

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

4. Presenting education experiences suited to learning outcomes of course

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

5. Achieving course objectives

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

6. Being a role model for students

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

7. Cooperating with nurse team

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

8. Cooperating with other members of health care team

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

9. Workload

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

Issues about students

10. Number of students

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

11. Motivation of students

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

12. Orientation of students to the clinical environment

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

13. Attendance status of students

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

14. Basic knowledge and skills specific to practice area

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

15. Students' knowledge and skills specific to practice area

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

16. Daily monitoring of students

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

17. Assessments of students

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

Issues about patient care

18. Putting learned theory into practice

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

19. Application of care protocols existing in the clinical area

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

Patient monitoring

20. Patient care practices

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

21. Drawing up nursing care plans

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

22. Application of nursing care plans

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

23. Completing nursing care monitoring forms

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

24. Participation in decision-making mechanisms about patient care

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

Issues about physical environment

25. Number of patients

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

26. Case diversity

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

27. Providing meeting rooms

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

28. Providing changing rooms for students

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

Issues about healthcare team

29. Information and opinion exchange with members of the healthcare team

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

30. Participation in decision-making mechanisms about patient care and treatment

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

31. Creating an environment facilitating learning with members of health care team.

I do not experience difficulties	There are some difficulties	There are quite serious difficulties
----------------------------------	-----------------------------	--------------------------------------

..... Thank you

Appendix 2: Interview Guide

Nursing Student

Date conducted.....

Participant pseudonym.....

***Greet participant and inform them that the interview is recorded. Be prepared to show participant some form of identification.**

Inform of the purpose and goal of the interview:

My name is Sikhangezile Gwatikunda, a student with the UNICAF University. I am studying for a PhD in education. As part of the requirements of my studies I am carrying out a study titled: "**Challenges facing baccalaureate nursing education in the 21st century: the context of Namibia**" You are here today because you are a participant in this study and have already contributed to it when you completed a survey a few months ago. You are here to shed light on some of the findings from the survey.

Stress confidentiality:

Be assured that whatever you share here, though it may be quoted, will not be attributed back to you as your real name and any person identifiable material will not be used.

Introduce the interview:

The interview focuses on challenges in theoretical (in-class) learning and in clinical learning. You will be led towards talking about specific challenges because the interview seeks to explain results already obtained from the survey but, towards the end you will have an opportunity to share any other challenges you may think of and to suggest ways of addressing these challenges.

Challenges in theoretical learning:

One of the challenges that was identified from the survey relates to eLearning, e-resources, and internet connectivity.

What are your comments on how these impact learning in class (that is theoretical learning)

- Share your thoughts about online or virtual technologies.
- How about access to software? The ease of downloading it?

- Share your thoughts about the suitability of hardware (e.g., devices) and infrastructure (e.g., learning management systems) for eLearning.
- Any comments about internet access? Affordability? How about speed?
- And the support for maintenance and repair of ICT equipment?

Another challenge noted related to financial issues.

What is your take on how finance impacts in-class learning?

- Any comments on tuition costs? Accommodation costs? Cost of transport and other resources e.g., printing, books?
- How about the availability of technologically advanced simulators? What are your thoughts about their affordability to your institution?

And another challenge related to curriculum administration.

- How do educators accommodate students' different learning styles? Such as learning through doing, seeing, hearing – which differs from person to person?
- What are your thoughts on the shortage of educators as a challenge?
- How about their lack of experience (the educators)?
- And the relevancy of the curriculum – what are your comments on how relevant or irrelevant it is to your needs and the needs of the patients you will care for?

Another challenge related to pre-enrolment age and requirements.

- In what ways does the age at enrolment impact in-class learning (how old one is at entry into nursing)?
- How about the entry requirements for studying nursing (such as the subjects and passes required)?

One of the challenges that was identified from the survey relates to curriculum administration specifically educator experience and curriculum relevancy.

- What can you say about the experience (or lack of it) of nursing educators as a challenge to nursing education? (How has been your experience regarding this?)
- How about the relevancy of the curriculum? (What are your comments on how relevant the curriculum is?)

Another challenge related to the accessibility and quality of databases and e-resources.

- What are your comments on the accessibility and quality of databases and e-resources?

(examples of the above are statistical databases, e-proceedings and conferences, theses and dissertations etc)

And yet another challenge identified relates to software and data storage.

- What can you say about availability of open-source software for learning and teaching? (eg moodle, canvas)
- How about access to data storage (eg google workspace).
- And citation / reference management software.
- What are your comments on your institution's repository for research sharing? How does this impact in-class teaching?

Challenges in clinical learning

Some of the challenges identified from the survey related to supervision and preceptorship challenges.

What are your comments on this in terms of?

- Competency of the supervisors/preceptors/clinical instructors?
- Supervision?
- How are you assisted to translate theory to practice?
- Teamwork between you and the preceptor/instructor?
- Meetings and feedback?

Yet other challenges related to leadership and management.

- What can you share regarding the clinical area being a good learning environment (in terms of leadership and management)?
- How about the way staff were treated by those in charge?
- How was the contribution to your learning from the nurses in charge?
- Any comments on the adequacy of staff to provide safe and individualized care?

Some of the challenges pointed towards unsupportive learning environments.

- What can you say about being accepted and included in clinical discussions?
- What are your comments about the environment being conducive for learning?
- And the support from staff members? How was it?
- How can you compare how you were treated with how other nursing students were treated?

Some of the challenges were related to lack of consumables and resources for learning.

- What are your comments about the availability of computers and the internet in the clinical area?
- How about the availability of consumables such as gloves, aprons, syringes etc?

And yet other challenges related to communication and technology.

- How easy was it to communicate with patients?
- What can you say about patient records being clear?
- What can you say about the integration of technology into nursing care
- And how prepared were you to use technology at the bedside?

Any other challenges you would like to share and recommendations (ways to improve the situation)

- Challenges relating to in-class learning?
- Challenges relating to learning in the clinical area?
- Recommendations

This marks the end of the interview. Thank you so much for your time.

.....

Nursing Educator

Date conducted.....

Participant pseudonym.....

***Greet participant and inform them that the interview is recorded. Be prepared to show participant some form of identification.**

Inform of the purpose and goal of the interview:

My name is Sikhangezile Gwaticunda, a student with the UNICAF University. I am studying for a PhD in education. As part of the requirements of my studies I am carrying out a study titled: "**Challenges facing baccalaureate nursing education in the 21st century: the context of Namibia**" You are here today because you are a participant in this study and have already contributed to it when you completed a survey a few months ago. You are here to shed light on some of the findings from the survey.

Stress confidentiality:

Be assured that whatever you share here, though it may be quoted, will not be attributed back to you as your real name and any person identifiable material will not be used.

Introduce the interview:

The interview focuses on challenges in theoretical (in-class) teaching/learning and challenges in clinical teaching. You will be led towards talking about specific challenges because the interview seeks to explain results already obtained from the survey but, towards the end you will have an opportunity to share any other challenges you may think of and to suggest ways of addressing these challenges.

Challenges in theoretical teaching/learning

One of the challenges that was identified from the survey relates to curriculum administration specifically educator experience and curriculum relevancy.

- What can you say about the experience (or lack of it) of nursing educators as a challenge to nursing education? (How has been your experience regarding this?)
- How about the relevancy of the curriculum? (What are your comments on how relevant the curriculum is?)

Another challenge related to the accessibility and quality of databases and e-resources.

- What are your comments on the accessibility and quality of databases and e-resources?

(examples of the above are statistical databases, e-proceedings and conferences, theses and dissertations etc)

And yet another challenge identified relates to software and data storage.

- What can you say about availability of open-source software for learning and teaching? (eg moodle, canvas)
- How about access to data storage (eg google workspace).
- And citation / reference management software.
- What are your comments on your institution's repository for research sharing? How does this impact in-class teaching?

Challenges in clinical teaching:

One difficulty faced in clinical teaching relates to theory practice gap.

What was your experience in:

- Helping students put learned theory into practice?
- Apply care protocols found in the clinical area?
- Draw up nursing care plans?
- Apply the nursing care plan?

Another concern related to communication and maximizing student experiences.

- How would you describe correspondence and corporation with the clinical team?
- What are your observations regarding the orientation of students?

- How about student attendance?
- How about the number of patients in relation to student numbers? / What can you say about the availability of cases for students to maximise student experiences?

And another challenge related to how prepared educators are for clinical practice.

- How feasible was it for you to create an environment that facilitates learning in the clinical area?
- How about creating education experiences to meet course learning outcomes? Was it easy or difficult to achieve course objectives in the clinical area?
- How about your observations about educators being role models for students?

Another difficulty related to increased workload.

- What are your thoughts on this? / How do you find the workload in the clinical area or when you follow students up?
- How does this affect student learning?

Any other challenges you would like to share?

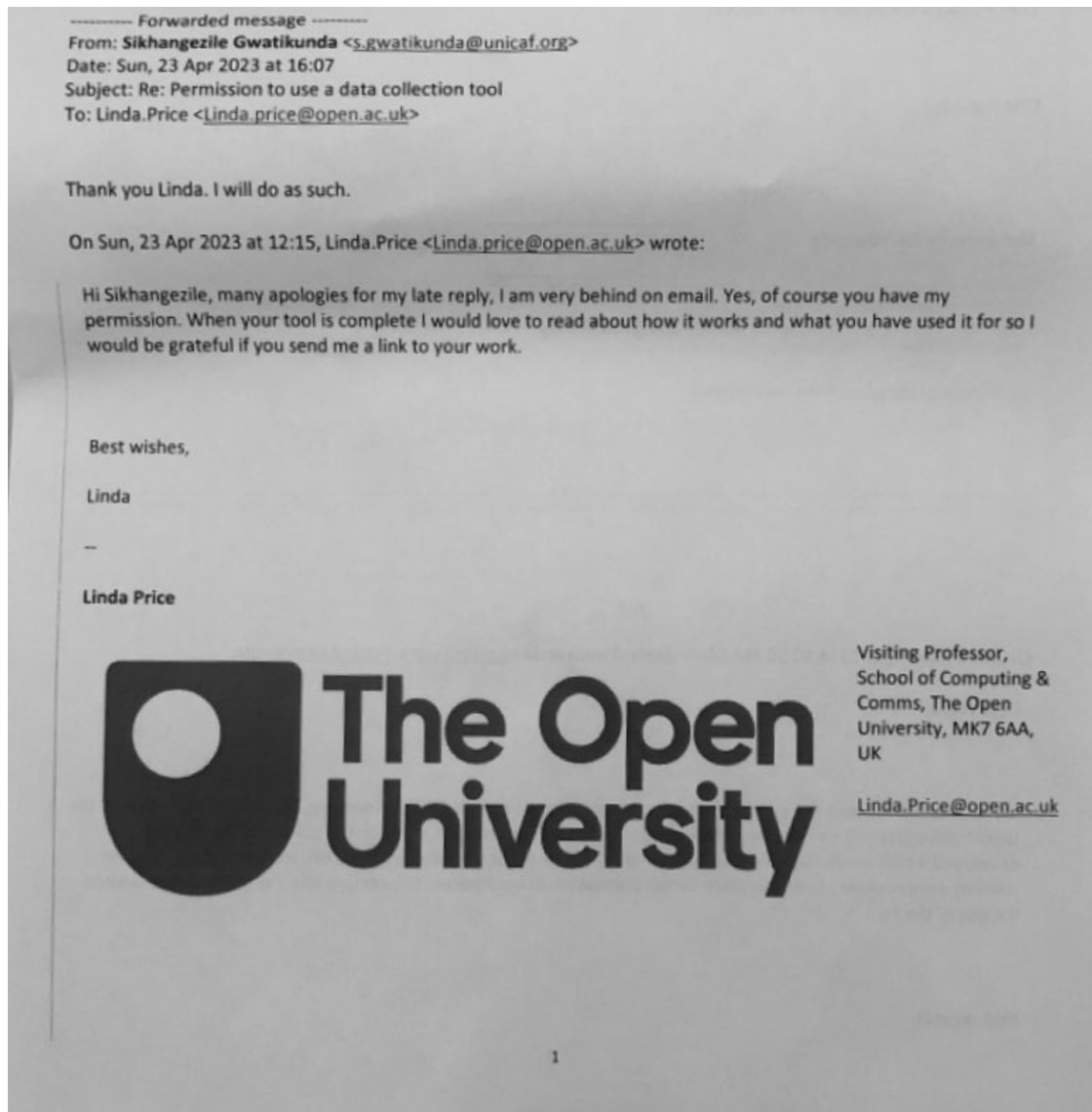
- Relating to in-class teaching/learning
- Relating to clinical teaching

Suggestions for improvement.

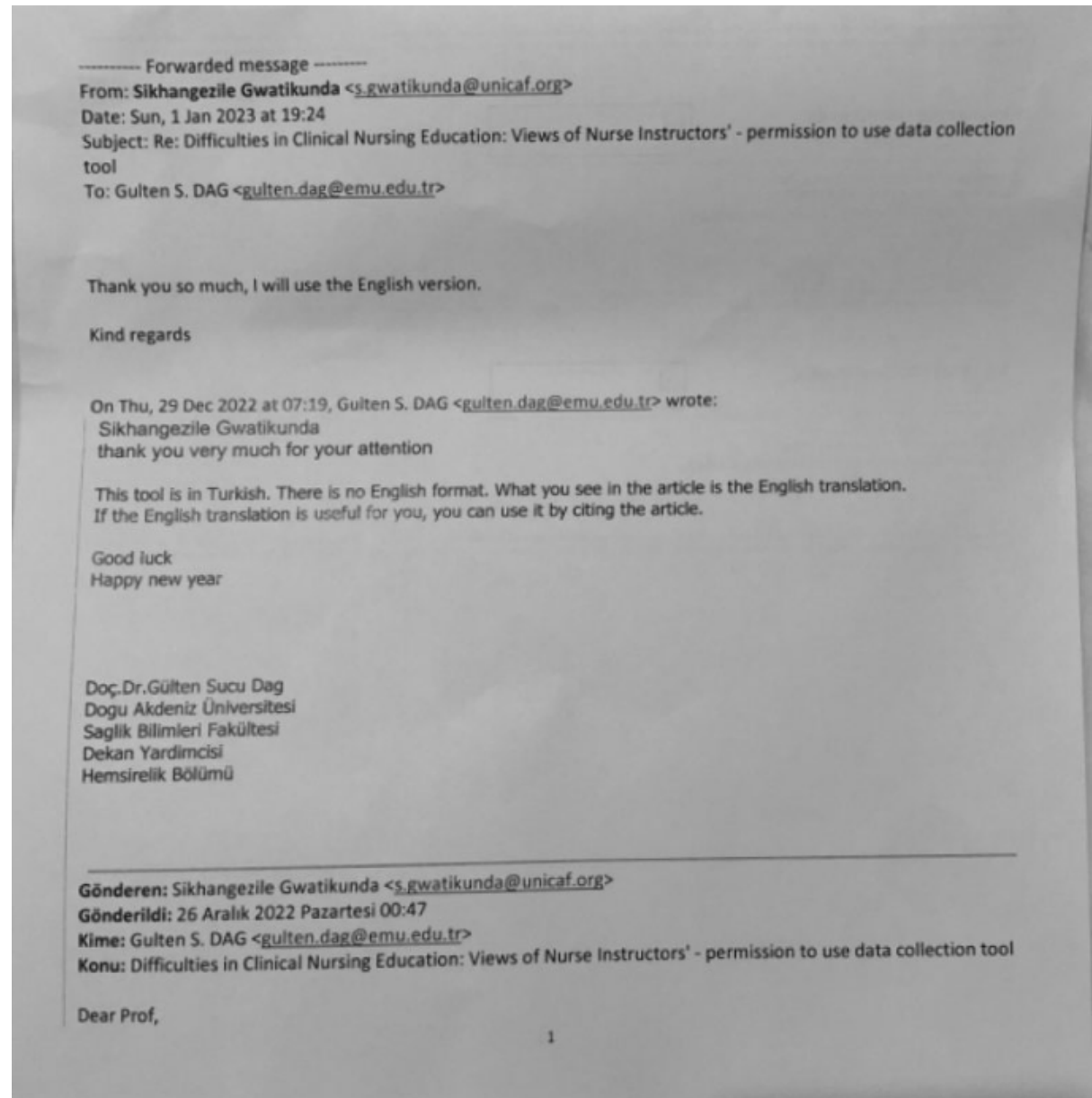
What suggestions do you have for addressing any of the issues raised?

..... Thank you

Appendix 3: Permission to use items for ‘technology enabled learning environments’



Appendix 4: Permission to use items from 'opinions of educators on difficulties in the clinical environment'



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Appendix 5: UREC decision



UREC Decision, Version 2.0

Unicaf University Research Ethics Committee Decision

Student's Name: Sikhangezile Gwatikunda

Student's ID #: R1710D3686665

Supervisor's Name: Prof Leonorah Nyaruwata

Program of Study: UU-PhD-Edu-900-3

Offer ID /Group ID: O47760G49088

Dissertation Stage: DS3

Research Project Title:

Challenges facing basic baccalaureate nursing education in the 21st century: The context of Namibia

Comments: No comments.

Decision*: A. Approved without revision or comments

Date: 14 Jun 2023

*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 6: Approval from MoHSS



REPUBLIC OF NAMIBIA

MINISTRY OF HEALTH AND SOCIAL SERVICES

Ministerial Building
Harvey Street
Private Bag 13198, Windhoek

OFFICE OF THE EXECUTIVE DIRECTOR

Tel: No: 061 -203 2507
Fax No: 061-222 558
Andreas.Shipanga@mhss.gov.na

Ref: 22/4/2/3

Enquiries: Mr. A. Shipanga

Date: 17 August 2023

Ms. Sikhangezile Gwatikunda
7 Warrender Drive
Prenton, UK
CH437SD

Dear Ms. Gwatikunda

Re: Challenges facing basic baccalaureate nursing education in the 21st century: the context of Namibia.

1. Reference is made to your application to conduct the above-mentioned study.
2. The proposal has been evaluated and found to have merit.
3. **Kindly be informed that permission to conduct the study has been granted under the following conditions:**
 - 3.1 The data to be collected must only be used for academic purpose;
 - 3.2 No other data should be collected other than the data stated in the proposal;
 - 3.3 Stipulated ethical considerations in the protocol related to the protection of Human Subjects should be observed and adhered to, any violation thereof will lead to termination of the study at any stage;
 - 3.4 A quarterly report to be submitted to the Ministry's Research Unit;
 - 3.5 Preliminary findings to be submitted upon completion of the study;
 - 3.6 Final report to be submitted upon completion of the study;
 - 3.7 Separate permission should be sought from the Ministry for the publication of the findings.
4. All the cost implications that will result from this study will be the responsibility of the applicant and not of the MoHSS.

Yours sincerely,


BEN NANGOMBE
EXECUTIVE DIRECTOR



All official correspondence must be addressed to the Executive Director.



18. 2023

Appendix 7: Permission to collect data from WU



WELWITCHIA HEALTH TRAINING CENTER
RESEARCH DIVISION

Enquiries: Ms EN Nashiwaya	Mobile: +264 81 2614767
P. O. Box 98604, Pelican Square	Email: nashiwayae@welwitchia.com.na
183 Industria Street, Lafrenz Ext. I, Windhoek, Namibia	

All correspondence must be addressed to the office of the Research Coordinator

Date: 12/09/20²₃

Dear Mrs Sikhangezile Gwatikunda

RE: ETHICAL APPROVAL: Challenges facing basic baccalaureate nursing education in the 21st century:the context of Namibia

Reference is made to the above-mentioned subject:

The office hereby extends the permission to conduct your study at Welwitchia Health Training Centre which seeks to determine challenges facing basic baccalaureate nursing education in the 21st century:the context of Namibia

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 academic 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.
- Take note that this approval is valid for 12 months.
- A separate application for approval letter must requested after 12 months elapsed if the study is not completed.
- The institution reserves the right to withdraw the application if stipulated ethical considerations are not adhered to.

I hope you find all this in order.

Regards,

Eunike Ndapunikwa Nashiwaya
Acting Research Coordinator
Cc: Dean of Academics

Appendix 8: Permission to collect data from IUM



IUM
THE INTERNATIONAL
UNIVERSITY OF MANAGEMENT

CHAIRPERSON: RESEARCH ETHICS COMMITTEE

Tel: +264-61-4336000/ Fax: +264-61-4336152

E-mail: a.vandyk@ium.edu.na

Windhoek – Namibia

25.10.2023

Dear Ms Gwatikunda

RE: Research Permission

TITLE: CHALLENGES FACING BASIC BACCALAUREATE NURSING EDUCATION IN THE 21 CENTURY; THE CONTEXT OF NAMIBIA

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. C Makanyesa (Pro-Vice-Chancellor) for any policies or documents of the university.

Email address: c.makanyesa@ium.edu.na

Mr. H Hainghumbi (Deputy Director; Human Resources) for data or Interviews/questionnaires from staff members.

Email address: h.bainghumbi@ium.edu.na

Dr. A Nashilundo (Registrar) for entering the data base and information from students interviews/questionnaires.

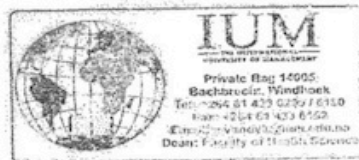
Email address: a.nashilundo@ium.edu.na

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.

Sincerely,

A. Van Dyk
Prof. A. Van Dyk



Main Campus

Dorado Park Ext 1
21-31 Hercules Street
Private Bag 14005, Bachbrecht
Tel: (+264 61) 433 6000
Fax: (+264 61) 433 6152
E-Mail: ium@ium.edu.na

City Branch

59 Satehof Street
Tel: (+264 61) 245 150 / 84
Fax: (+264 61) 248 112
E-Mail: ium@ium.edu.na

Coastal Campus

Pelican Mall
Cnr. /O Sam Nujoma Avenue &
Getrud Kandonga Road
P.O. Box 346, Walvis Bay
Tel: (+264 64) 206 647
Fax: (+264 64) 206 647
E-Mail: adm.wbay@ium.edu.na

IUM Ongwediva Centre of Excellence for Education

4380 Dr. Libertina Amathila Str
P.O. BOX 2775, Oshakati
Tel: (+264 65) 230 145/49
Fax: (+264 65) 230 159
E-Mail: adm.ong@ium.edu.na

Nkurenkuru Campus

678 Nkurenkuru
P.O. BOX 6038, Nkurenkuru
Tel: (+264 66) 264500/264957
E-Mail: adm.nku@ium.edu.na

Website: www.ium.edu.na

Appendix 9: Informed consent form



UU_IC - Version 2.1

Informed Consent Form

Part 1: Debriefing of Participants

Student's Name: Sikhangezile Gwatikunda
Student's E-mail Address: sigkum@gmail.com
Student ID #: R1710D368665
Supervisor's Name: Dr T Nyaruwata
University Campus: Unicaf University Malawi (UUM)
Program of Study: PhD Education
Research Project Title: Challenges facing basic baccalaureate nursing education in the 21st century: The context of Namibia

Date: 15-Jan-2023

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).

As part of the requirements of my PhD studies I am carrying out a study titled: "Challenges facing basic baccalaureate nursing education in the 21st century: the context of Namibia" I am kindly asking you to assist me by taking part in this study. Identifying any challenges, you may be facing as a nursing student/nurse educator may help inform strategies of addressing them. You have been chosen through random selection from a list of nursing students in Year 1(semester 2)* – Year 4/nurse educators. Participation includes the completion of a survey, and if chosen for the second phase, participation in an online focus group discussion (FGD). There will be two separate FGDs for students and educators. Should you be part of the FGDs, by signing this consent form, you also agree to keep all information shared by you or other participants and the researcher confidential.

*Later amended to Year 2 - Year 4.

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, Sikhangezile Gwatikunda, ensure that all information stated above is true and that all conditions have been met.

Student's Signature: Sgwatikunda

Informed Consent Form

Part 2: Certificate of Consent

This section is mandatory and should to be signed by the participant(s)

Student's Name: Sikhangezile Gwatikunda

Student's E-mail Address: sigum@gmail.com

Student ID #: R1710D368665

Supervisor's Name: Prof Leonorah Nyaruwata

University Campus: Unicaf University Malawi (UUM) ▼

Program of Study: PhD Education

Research Project Title: Challenges facing basic baccalaureate nursing education in the 21st century: The context of 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 10: Amended informed consent form for qualitative interviews



Informed Consent Form

Part 1: Debriefing of Participants

Student's Name: Sikhangezile Gwatikunda

Student's E-mail Address: sigkum@gmail.com

Student ID #: R1710D368665

Supervisor's Name: Prof Leonorah Nyaruwata

University Campus: Unicaf University Malawi (UUM) ▼

Program of Study: PhD Education

Research Project Title: Challenges facing basic baccalaureate nursing education in the 21st century: The context of Namibia

Date:

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).

As part of the requirements of my PhD studies I am carrying out a study titled: "Challenges facing basic baccalaureate nursing education in the 21st century: the context of Namibia" I am kindly asking you to assist me by taking part in this study. Identifying any challenges, you may be facing as a nursing student/nurse educator may help inform strategies of addressing them. You have been chosen through random selection from a list of nursing students in Year 2 – Year 4/nurse educators. Participation includes the completion of a survey, and if chosen for the second phase, participation in an online individual interview. Initially you consented to taking part in focus group discussions post the survey, however, this has been amended to online individual interviews due to some logistical challenges. The individual interviews will allow you to choose a time most convenient for you and will last about 30 minutes. You will choose a pseudonym (false name) for use during the interview to protect your identity. The researcher will be the interviewer and the interviews, done via Microsoft teams, 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, Sikhangezile Gwatikunda, ensure that all information stated above is true and that all conditions have been met.

Student's Signature:  _____

Informed Consent Form

Part 2: Certificate of Consent

This section is mandatory and should to be signed by the participant(s)

Student's Name: Sikhangezile Gwatikunda

Student's E-mail Address: sigum@gmail.com

Student ID #: R1710D368665

Supervisor's Name: Prof Leonorah Nyaruwata

University Campus: Unicaf University Malawi (UUM) ▼

Program of Study: PhD Education

Research Project Title: Challenges facing basic baccalaureate nursing education in the 21st century: The context of 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 11: Research information to participants

CHALLENGES FACING BACCALAUREATE NURSING EDUCATION IN THE 21ST CENTURY: THE CONTEXT OF NAMIBIA

Research information to participants

What is the study about?

As part of the requirements of my PhD studies I am carrying out a study titled: "**Challenges facing baccalaureate nursing education in the 21st century: the context of Namibia**" I am kindly asking you to assist me in carrying out this study by answering this questionnaire. Identifying any challenges, you may be facing as a nursing student may help inform strategies of addressing them. Participation includes the completion of a survey, and if chosen for the second phase, participation in an online individual interviews. Please take some time to read the information presented here, which will explain the details of this research. You can ask the study researcher any questions about any part of this study that you do not fully understand.

Why me?

For the survey, you have been chosen through random selection from a list of nursing students in Year 2 – Year 4/a list of nurse educators who teach clinical courses. From the list of those eligible to participate within your institution participants will be selected using random sampling techniques. You have been invited to participate because you are either:

A student in Year 2 – Year 4 and have had an experience of learning both in class and in the clinical area hence are able to identify challenges you may have faced in your learning.

OR

You are a nurse educator who has some experience in clinical teaching/supervision hence may have an insight into any existing challenges that impact nursing education.

The total number of nursing students participating in this study is approximately 303 and that of nurse educators is 37, the final numbers being dependent on response rate. Participating sites are IUM and WHTC.

Can I refuse?

It is very important that you are fully satisfied that you clearly understand what this research entails and how you could be involved. Also, your participation is **entirely voluntary**, and you are free to decline to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you initially agree to take part.

Are you allowed to approach me?

This study has been approved by the Research Ethics Committee at Unicaf University. Approval has been obtained from Ministry of Health and Social Services (MoHSS) and permission has also been received from your institution (IUM/WHTC) to approach you as a prospective participant.

What do I have to do?

If you are willing to participate informed consent will be received from you via google forms where you will mark a checkbox to indicate consent and should you be selected for the online individual interviews, you will be taking part in the online interviews which will be conducted via Microsoft teams and be recorded. The researcher will be the interviewer, and you will choose a pseudonym (false name) to use to ensure confidentiality.

You will complete a survey online using Google Forms and you might participate in the online individual interview via a virtual platform (Microsoft teams). It will take you between 15 and 20 minutes to the questionnaire and about 30 minutes for the online individual interviews. The survey link will be shared by either email address or be sent to your mobile number, and these contact details will only be accessible to the researcher and kept confidential. You will be assigned a participant number to enable sharing of your responses with the statistician without exposing your identity. Paper based responses, for those who may not be able to access the survey link will be assigned participant numbers too.

The survey questionnaire consists of 3 main sections: A, B & C representing demographic characteristics (11 items), in class learning challenges (36 items) and clinical learning experiences (34 items) respectively for the student questionnaire and demographic characteristics (12 items), in class teaching and learning challenges (37 items) and clinical learning experiences (31 items) respectively for the student questionnaire.

Are my responses safe?

By participating in this study, you are indicating that you understand that your responses will be kept in confidence and only the researcher will have access to any identifiable material such as email addresses and phone numbers. Questions that were assessed as being sensitive have an 'other' / 'prefer not to say' option so that you are not forced to choose the listed options. You can terminate the interview if you feel uncomfortable to proceed. You 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 this case, the data collected will be deleted.

What will I benefit?

There are no direct benefits to you, but it is expected that the findings will inform strategies of addressing challenges in nursing education. You will not be paid to participate. Data bundles for internet connectivity can be availed for students who have no access to reliable internet connectivity.

Any risks?

Completion of the survey carries no anticipated risks. Individual interviews may invoke sensitive issues but whatever you share will be treated with confidentiality and not be attributed back to you. There are no anticipated injuries that may result from participation.

What if I have questions?

You can contact the research or Unicaf University using the following contact details if you need more clarity or have concerns.

Researcher:

Sikhangezile Gwatikunda

7 Warrender Drive Prenton, CH43 7SD England

sikgum@gmail.com/khangegwati@gmail.com

+447951130891

Unicaf University (Malawi):

Unit 1, Shoppers Mall, Area 4, Plot 67, P.O. Box 1420, Lilongwe, Malawi

info@unicafuniversity.com

+265175533

Thank you.....