A description of pedagogical practices and student nurses' critical thinking at a private nursing education institution in Pietermaritzburg, KwaZulu-Natal – a case study

by

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DECLARATION

I declare that the dissertation submitted entitled “A description of pedagogical practices and student nurses’ critical thinking in a private college of nursing in Pietermaritzburg, KwaZulu-Natal – a case study” conducted under the supervision of Dr P. Orton and co-supervision of Ms M Coopasami is my original work. I declare that all the sources used or quoted in this study are acknowledged by means of references.

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4th June 2021 Date	4th June 2021 Date	4th June 2021 Date

DEDICATION

This dissertation is dedicated to my husband Prakash for his unconditional love, unwavering support and his uncompromising belief and faith in my capability to accomplish this level of study.

I also dedicate this dissertation to my grandchildren Zuay Azaria, Seth Asher, Zara Eden and Kai Arian as a source of inspiration for them in time to come.

Never doubt God's mighty power to work in you and accomplish all this. He will achieve infinitely more than your greatest request, your most unbelievable dream,

and exceed your wildest imagination! He will outdo them all, for his miraculous power constantly energizes you"

(Ephesians 3: 20).

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"Humanly speaking, it is impossible. But with God everything is possible."

Matthew 26:16

First and always first, I want to acknowledge my Heavenly Father, my Lord and my God, to thank Him for His immeasurable grace and uncommon favor upon me. He has been my anchor and my compass in the most challenging times in this long journey. To Him be glory and honor forever and ever!

I would like to extend my heartfelt gratitude to the following people who have been pivotal in helping me complete this study.

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ABSTRACT

Introduction and Background

Health care in South Africa has steadily evolved into a dynamic and complex environment coupled with the added burden of severely constrained resources. At the same time nurse practitioners are challenged daily, to provide safe, comprehensive and quality patient care. Clinical practice in nursing requires nurse graduates who are adequately trained in critical thinking skills (CTS). However, empirical evidence has highlighted that there is a lack of nurse graduates with this competency in the work environment. Consequently, the demand to produce self-directed, autonomous nurse professionals who are critical thinkers, has become a vital criterion in student nurse training. Therefore, it is incumbent that nurse educators integrate the development of CTS into their teaching strategies. Since critical thinking is an on-going process in using theory to guide clinical practice, it is imperative that nurses' critical thinking abilities in clinical practice be measured. This will ensure the graduation of qualified nurse professionals who will deliver safe, qualitative, optimal and comprehensive nursing care with positive outcomes. Previous studies concur that it is the nurse educator who is responsible for inculcating this fundamental concept in student nurses however, finding methods for teaching the process of critical thinking has been a challenge for nurse educators that has spanned many decades. Now more than ever before there is a need for nurses who possess high-level CTS as a key competency, who can make effective clinical decisions, solve complex clinical problems, and provide quality patient care.

This study focused on measuring student nurses' critical thinking abilities in clinical practice and describes current instructional practices of nurse educators at the selected nursing educational institution (NEI). Alfaro-LeFevre's (2016) theoretical model offers a definition of critical thinking (CT) as applied in the context of clinical practice. It describes the construct of CT as the integration of four components. For each of the components, Alfaro-LeFevre proposes a series of indicators of CT, called critical thinking indicators (CTIs). The CTIs are descriptions of behaviors that

demonstrate the knowledge, attitudes, and skills that stimulate critical thinking in clinical practice (AlfaroLeFevre 2016).

Aim

The aim of this study was to measure the CTS of student nurses in the clinical setting and to describe the pedagogical practices of nurse educators at a selected NEI in Pietermaritzburg, KwaZulu-Natal. The findings of this study will contribute to CT development of nurses which is a fundamental skill for success within the rapidly changing healthcare arena of contemporary society.

Methodology

A descriptive, qualitative case study design using a multi-method approach to collecting data within a post positivist paradigm was adopted. The population comprised nurse educators and nursing students in a nursing college. The Nursing Critical Thinking in Clinical Practice Questionnaire (N-CT-4 Practice) developed by Zuriguel-Pérez *et al.*
(2017) was chosen as the most appropriate instrument to assess student nurses' critical thinking in practice. A sample of 120 student nurses completed this self-administered quantitative data tool. Concurrently, qualitative focus group discussions were held to explore the pedagogic practices of nurse educators at the selected NEI.

Results

Qualitative and quantitative evidence in this study revealed that CTS were not being developed, initiated or supported both in the classroom and in the clinical environment. The relationship between socio-demographic factors such as age, language barriers, selection criteria, low motivation and negative attitudinal dispositions in students appeared to be major obstacles and inhibiting factors in critical thinking development. There was a lack of the use of creative and innovative pedagogic methods by nurse educators and the predominant practice was the lecture-method. The clinical setting presented further obstacles such as staff shortages, lack of clinical support, poor role modelling, lack of learning opportunities and lack of equipment and supplies.

Conclusions

The healthcare environment is dynamic and complex in and of itself, but the complexity is magnified by numerous further obstacles that exist as enumerated above. Critical thinking skills development is being severely compromised due to these issues. This has further widened the theory-to-practice gap which is a major concern in providing safe and beneficial patient outcomes. Now more than ever before, there is an urgent need for nurses who possess high-level CTS for effective clinical decision-making, problem-solving and the provision of quality patient care. Concerted efforts must be made to transform the classroom environment with creative and innovative teaching methodologies. Nurse educators lack adequate resources and must be equipped on how to teach for critical thinking development. Pedagogic practices must accommodate the millennial cohort who make up the majority of the nursing students. English comprehension as a compulsory subject in the beginning of the nurse training must be added to nursing curriculums. The effectiveness of teaching strategies must be measured for critical thinking development to demonstrate change over time. A clarion call is made for all stakeholders, the nursing faculty, nurse leaders in the clinical environment, professional bodies and legislature to come together and redesign the nursing curriculum to address the diversity of issues that infiltrate and impact the nursing profession.

Recommendations

It is recommended that further research be conducted on CTS measurement in multiple private and public NEIs and that the clinical settings be varied so as to ascertain a more comprehensive outcome. Given that personal characteristics function as an activating element in thinking ability, it is recommended that further studies be conducted to explore the demographic determinants of students such as selection criteria, age, language, diverse learning needs and backgrounds. Further research is recommended to explore the correlation between the clinical experience of nurses and the acquisition of CTS in the South African context. The addition of English language modules for students challenged in this regard should be considered. Alternative approaches in educational design in order to maximize learning for millennial students is recommended. Further studies to ascertain whether nurse educators are adequately equipped to teach for CTS development will add to the body of knowledge. This is the

first study of this nature with this specific instrument to measure CTS that has been conducted in South Africa and the findings may therefore serve as baseline data for further research in this area.

Key Concepts

Critical thinking; critical thinking skills; student nurses; pedagogical practices.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

CRITICAL THINKING	(CT)
CRITICAL THINKING SKILLS	(CTS)
NURSING CRITICAL THINKING IN CLINICAL PRACTICE QUESTIONNAIRE	(N-CT-4 Practice)
4-CIRCLE CRITICAL THINKING MODEL	(4-CIRCLE CT MODEL)
CRITICAL THINKING INDICATORS	(CTIs)
PERSONAL CHARACTERISTICS	(PC)
INTELLECTUAL AND COGNITIVE ABILITIES	(ICA)
INTERPERSONAL ABILITIES AND SELF-MANAGEMENT	(IA)
TECHNICAL ABILITIES	(TA)
KWAZULU-NATAL	(KZN)
NURSING EDUCATIONAL INSTITUTE	(NEI)

CHAPTER 1: INTRODUCTION

1.1 Introduction and background

The constantly evolving nature of health-care environments, highlights the need for critical thinking (CT) as a significant expertise in nursing education and in professional practice (Zuriguel-Pérez *et al.* 2015: 2). It has been established in a number of studies that the complexity of the healthcare arena has evolved to be a global phenomenon (Paul 2014: 1357; Pitt *et al.* 2015: 125; Chang *et al.* 2011: 3224). Reasons cited for these changes include nursing shortages, brain drain, technological advances and radical changes in healthcare policy and practice (Comiskey *et al.* 2015: 648; Paul 2014: 1357; Chang *et al.* 2011: 3224). Inside the South African context, Dr P. A. Motsoaledi who was the Minister of Health at the time (2013),called to attention that the country's situation is exacerbated by the quadruple burden of disease comprising of HIV and AIDS, communicable and non-communicable diseases, violence and injuries with resulting significant levels of morbidity and mortality (South African Nursing Council [SANC] 2013). In view of the highly complex, multidimensional healthcare settings that have emerged, the demand for self-directed, autonomous, critical thinkers has become a vital criterion in nursing (Potgieter, 2012: 4). Consequently, nurse educators must have the ability to assess critical thinking skills (CTS), in order to prepare student nurses for this phenomenon (Nelson 2017: 1).

In a South African study conducted at a higher education institution, it was documented that newly graduated student nurses were unable to successfully integrate theory and practice (Van Zyl 2014: 3). It was further suggested by the author that the component of critical thinking ability appears to have a conclusive correlation with theory-practice integration. In a much earlier study, Birx (1993) proposed that critical thinking is an on-going process in using theory to guide clinical practice. Subsequently, nurse educators are required to integrate critical thinking development skills into their teaching strategies. Edwards (2007: 303) argues that the development of CTS is extensively recognized as an essential component contributing towards student nurses becoming analytical, well qualified practitioners However, it is of concern that recent research indicates that nursing students continue to have low levels of critical thinking (Kaya, Şenyuva and Bodur 2017: 76).

In spite of comprehensive research on determining the numerous reasons for this in nursing education, queries remain about the efficacy of instructional strategies in advancing higher order thinking competencies (Kantar 2013: 789). Nurse educators have found that finding methods for teaching the process of critical thinking to nursing students has been a challenge that has spanned many decades (Von CollnAppling and Giuliano 2016: 4-5; Kaddoura 2011: 3; Chabeli 2010: 1). Von CollnAppling and Giuliano (2016: 14) claim that it is the nurse educator who is responsible for inculcating this fundamental concept in student nurses. It is further emphasized that nurse educators concentrate on engaging in further research on the validity of instructional practices that facilitate critical thinking (Kantar 2014: 789).

This study focused on measuring student nurses' critical thinking abilities in clinical practice and describing current instructional practices of nurse educators at the selected nursing educational institution (NEI). Alfaro-LeFevre's (2016) 4-Circle CT model guided the conceptual basis for this study. This theoretical model submits a definition of CT as adapted in the context of clinical practice. It describes the construct of CT as the integration of four components. For each of the components, Alfaro-LeFevre designed a series of indicators of CT, called critical thinking indicators (CTIs). The CTIs are portrayals of behaviors that demonstrate the knowledge, attitudes, and skills that stimulate critical thinking in clinical practice (Alfaro-LeFevre 2016).

1.2 Purpose of the study

The purpose of this study was to assess basic critical thinking concepts of student nurses and to describe the current instructional strategies of nurse educators at a selected private NEI in Pietermaritzburg, KwaZulu-Natal. The research study adopted a post positivist paradigm, using a descriptive qualitative, multi-method collection of data in a case study context. The target population in this case study comprised student nurses and nurse educators. The student nurses were enrolled nurses who possessed a certificate in nursing and were engaged in a two year bridging programme culminating in a General Nurse diploma. The nurse educators were engaged in the theoretical teaching and learning for bridging students at the selected NEI. A consecutive non-probability purposive sampling of four nurse educators and 120 student nurses participated in the study. The quantitative component consisted of a self-administered questionnaire called the Nursing Critical Thinking in Clinical Practice

Questionnaire (N-CT-4 Practice). The researcher chose this particular tool as the most suitable for measuring the level of CT in student nurses as it is based on the 4-Circle CT model of Alfaro-LeFevre (2016:39). The test was composed of a series of CTIs which are portrayals of behaviors' that exhibit the knowledge, attitudes, and skills that stimulate critical thinking in clinical practice. The qualitative component consisted of a semi-structured interview schedule to collect data from the nurse educators during focus group interviews. The instrument included a few open-ended questions to allow the participants to candidly articulate their opinions, experiences, perceptions and recommendations regarding instructional strategies of nurse educators.

1.3 Research problem

The multi-dimensional and constantly evolving nature of the health-care environment highlights CT as being an essential skill in nursing education and in professional practice. However, finding methods for teaching the process of CT to nursing students has been a challenge for nurse educators that has spanned many decades, and queries remain regarding the efficacy of instructional strategies in promoting higher order thinking skills (Kantar 2014: 789). Recent research indicates that nursing students continue to have a low level of CT disposition (Kaya, Şenyuva and Bodur 2017: 76). It is therefore recommended that nurse educators converge on engaging in further research on the efficacy of teaching methods that facilitate CT (Von Colln-Appling and Giuliano 2016: 5). Furthermore, to prepare student nurses to become analytical, qualified practitioners, nurse educators therefore have to be able to assess CT skills. It has been established that CT is a process that requires integration in the nursing educational period to positively impact the professional career that follows (Zuriguel-Pérez *et al.* 2015: 2).

1.4 Aim

The aim of this study was to measure the CTS of student nurses in clinical practice and to describe the pedagogical practices of nurse educators at a selected nursing institution in Pietermaritzburg, KwaZulu-Natal.

1.5 Research objectives

The objectives of this study are shown in Table 1.1

Table 1.1 Objectives of the study

Objective	Method
1. To measure the critical thinking skills (CTS) of student nurses in clinical practice.	N-CT-4 Practice Questionnaire (Annexure G).
2. To determine if existing instructional practices foster CT in student nurses.	Literature review.
3. To describe current instructional practices of nurse educators at the selected college of nursing.	Interviews with nurse educators (Annexure E).
4. To explore factors that facilitate the development of CTS and to determine possible barriers to its development in student nurses.	Interviews with nurse educators (Annexure E).
5. To establish nurse educators' views on instructional practices which develop and those that inhibit CTS in student nurses.	Interviews with nurse educators (Annexure E).

1.6 Research questions

Table 1.2 Research questions

Objective	Method
1. What are the critical thinking skills (CTS) of student nurses in clinical practice?	N-CT-4 Practice Questionnaire (Annexure G).
2. What are the existing instructional practices which foster CT in student nurses?	Literature review.
3. What are the current instructional practices of nurse educators at the selected college of nursing?	Interviews with nurse educators (Annexure E).
4. What are the factors that facilitate the development of CTS and possible barriers to its development in student nurses?	Interviews with nurse educators (Annexure E).
5. What are nurse educators' views on instructional practices which develop and those that inhibit CTS in student nurses?	Interviews with nurse educators (Annexure E).

1.7 Theoretical framework

1.7.1 Alfaro-LeFevre's (2016) 4-Circle Critical Thinking model

Alfaro-LeFevre's (2016), 4-Circle Critical Thinking (CT) model was chosen as a theoretical framework to underpin this study (Figure 1.1). The 4-Circle CT Model submits a definition of critical thinking adapted in the context of clinical practice. Four components, (a) personal characteristics (PC), (b) intellectual and cognitive abilities (ICA), (c) interpersonal abilities and self-management (IA), and (d) technical abilities (TA) are integrated in the synthesis of critical thinking. The first of these, the PCs, are a pattern of intellectual behavior (attitudes, beliefs, and values) that function as an activating element in thinking ability. The second, the ICAs, are knowledge of actions and understanding linked to the nursing process and decision-making. The third, the IAs, are the abilities that allow for therapeutic communication and for obtaining information that is relevant to the patient. And finally, the fourth component, the TAs, is the knowledge and expertise in procedures that are part of the discipline of nursing. Alfaro-LeFevre (2016) introduces a series of indicators of critical thinking, the so called CTIs, for each component. The CTIs are descriptions of behavior that promote critical thinking in clinical practice. The combination of attributes in relation to these four dimensions is expected to result in CT competence.

Below is a diagram the 4-CIRCLE CT MODEL as found in the evidence – based version of Alfaro-LeFevre's (2016) critical thinking indicators.

4-CIRCLE CT MODEL

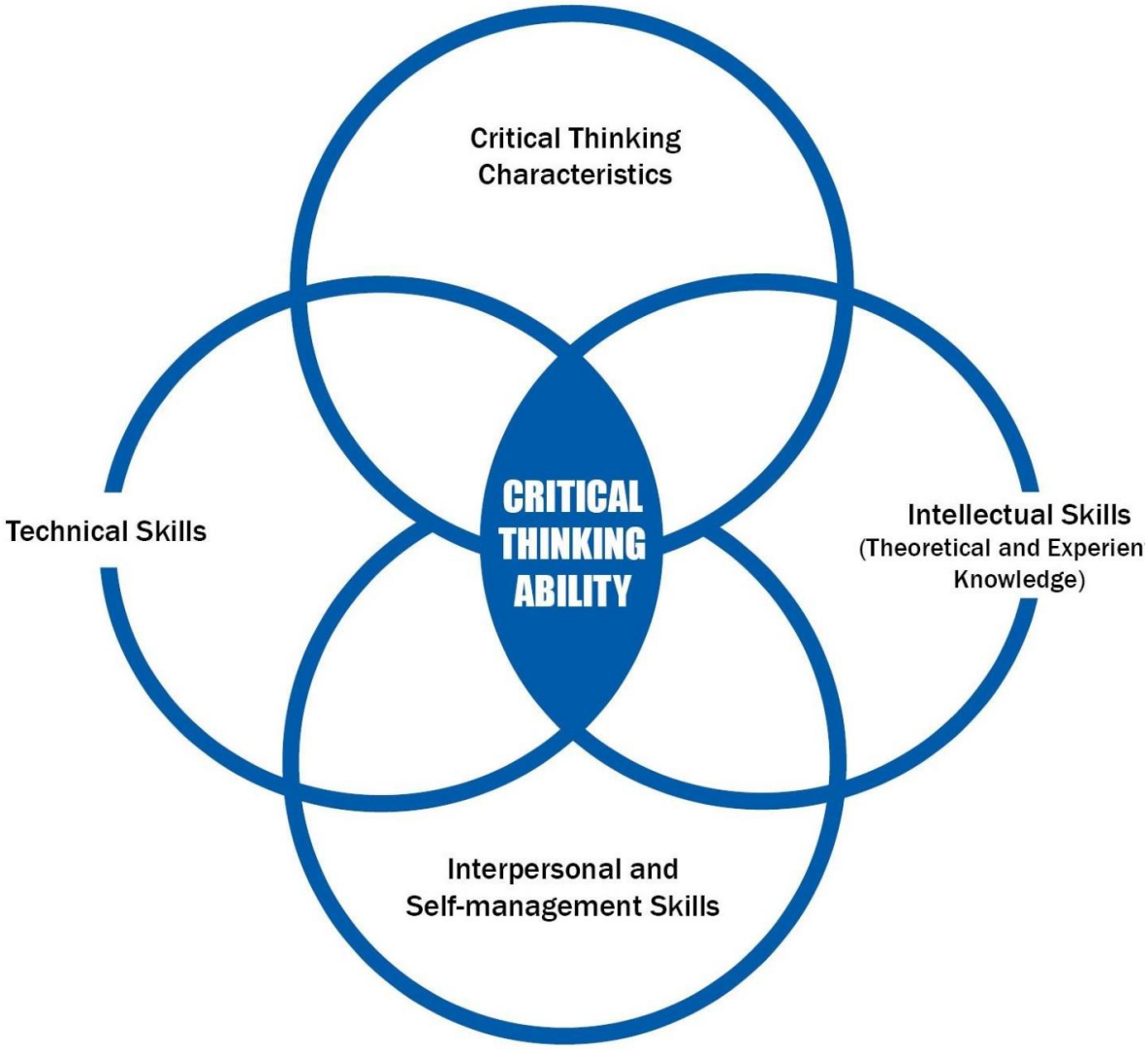

Figure 1.1: 4-Circle CT Model

Alfaro-LeFevre, R. (2016:6)

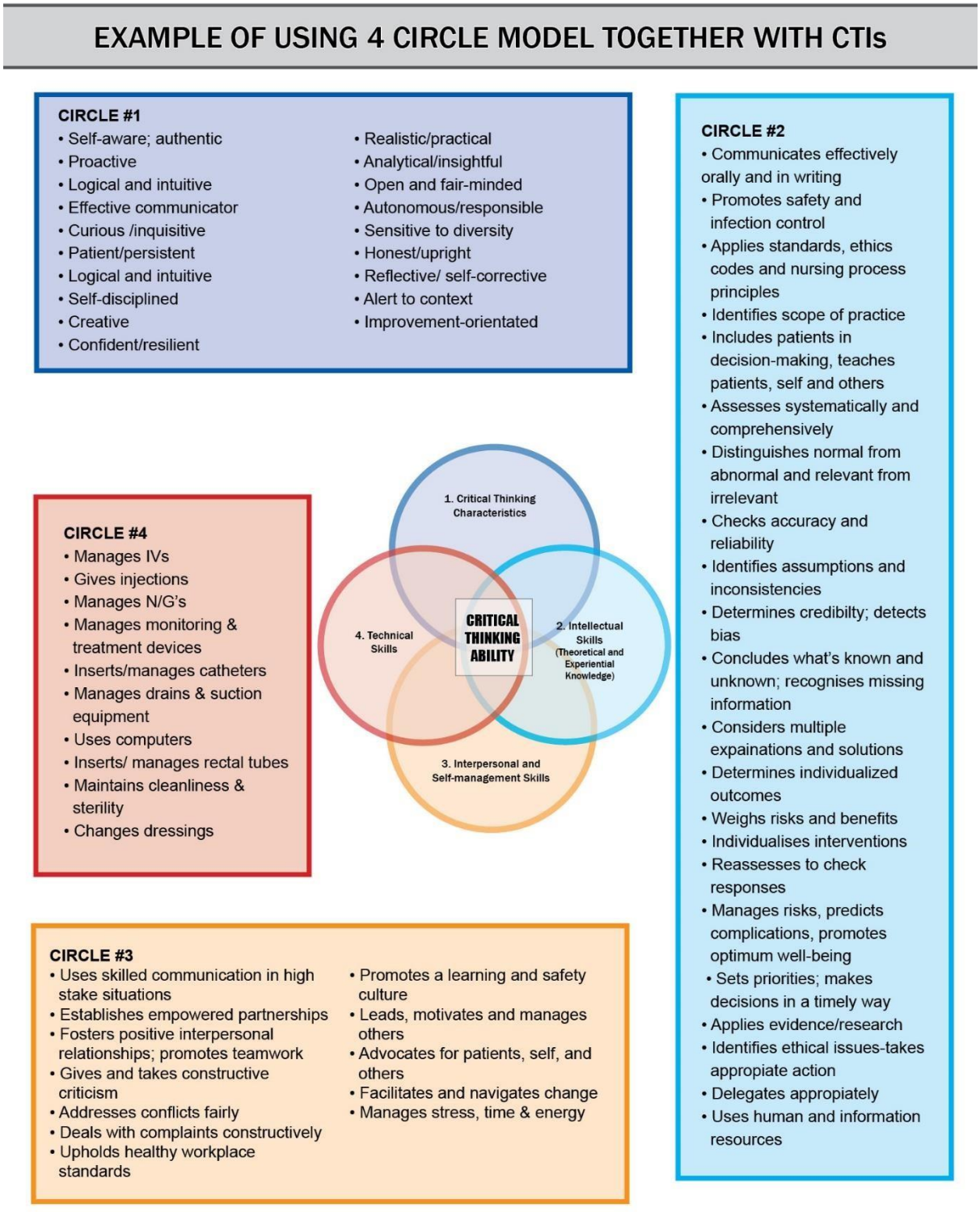

Figure 1.2: 4-Circle model with CTIs

Alfaro-LeFevre, R. (2016:9)

1.7.2 Nursing Critical Thinking in Clinical Practice Questionnaire (N-CT-4 Practice)

The researcher has chosen the Nursing Critical Thinking in Clinical Practice Questionnaire (N-CT-4 Practice) (Annexure G) as the most suitable for measuring the level of CT in student nurses. Zuriguel-Pérez *et al.* (2017) asserts that while there have been many instruments developed to benchmark critical thinking ability in the training of nursing professionals, there has not been an instrument developed to measure CTS in clinical practice. To measure CTS in practice is a pertinent domain for the provision of safe and quality care in today's complex healthcare environments. This is a self-administered questionnaire consisting of 109 items covering the four dimensions that make up the 4-Circle CT Model which are (PC) personal characteristics (39 items); (ICA) intellectual and cognitive abilities (44 items); (IA) interpersonal abilities and self-management (20 items); and (TA) technical abilities (6 items). The Likert-like response format with 4 points ranges from *never or almost never* (1) to *always or almost always* (4), to indicate the frequency with which the professional presented a specific competence in critical thinking in the clinical setting.

1.8 Significance of the study

Significance of the study informs the reader on the way or manner that the study will contribute to the well-being of a person or progress of a group or society in general (Prieto, Naval and Carey, 2017). This study is significant to establish the student nurses' level of CTS in clinical practice as to date such assessment has not been conducted at an NEI in South Africa. Critical thinking development in the undergraduate phase of nursing education is pivotal towards professional development and practice. The study findings will serve as a positive contribution to all NEIs regarding curriculum development and the implementation of instructional strategies that lend themselves towards the development of CTS in nursing students. The findings will highlight the factors that affect critical thinking in the clinical environment. The application of the recommended approach derived from the results of this study will contribute to the production of the calibre of nurse required by the rapidly changing profession. The significance for future research would be to conduct this particular study at a range of nursing education institutions in South Africa. Both public and private nursing colleges and universities could be included in order to obtain a broader

perspective of CT in student nurses. Students' who are engaged in the completion of a diploma which is offered at nursing colleges and those who are in a Bachelors programme at a university could be included. A comprehensive exploration of pedagogical practices of nurse educators in the various nursing education institutions may be of significance to the development of critical thinking in the nurse education.

1.9 Operational definitions

CRITICAL THINKING (CT)

Critical thinking (CT) is "a cognitive process that includes rational analysis of information to facilitate clinical reasoning, judgement and decision-making" (AlfaroLeFevre 2013).

CRITICAL THINKING SKILLS (CTS)

Critical thinking skills in nursing incorporate cognitive processes that include rational analysis of information to facilitate clinical reasoning, judgement, decision-making and encompasses effective communication and problem-solving skills inside and outside of the clinical setting (Alfaro-LeFevre; 2016: 43)

PEDAGOGICAL PRACTICES

Pedagogy refers to the art, science or profession of education. It also explains the method and practice of teaching, especially involving academic teaching, and is further explained as ways in which knowledge is imparted and received through social interaction/communication between teacher and learner (Csibra and Gergely 2006: 5). Pedagogy is further described as including information about "what is taught, how it is taught, what is learning and how students and teachers learn" (Horsfall, Cleary and Hunt 2012: 930).

NURSING EDUCATIONAL INSTITUTE

A nursing educational institution is a post-school "which offers professional nursing education at a basic and post-basic level, where such nursing education has been approved in terms of section 15(2) of the Nursing Act 50 of 1978, as amended" (SANC, 1978).

STAFF NURSE

A staff nurse is a person educated to practice basic nursing in the manner and to the level prescribed. The staff nurse holds a certificate of enrollment after the successful completion of training for two years (SANC 2005).

BRIDGING COURSE

The bridging course is a two year course of study. Regulation (R683) allows enrolled nurses to study and on successful completion leads to registration as a General Nurse (SANC 2005).

NURSE EDUCATORS

Those individuals who teach nursing students in the classroom, laboratory, and / or clinical settings. According to the South African Nursing Council, nurse educators must be “able to facilitate learning to promote the student’s ability to make sound clinical judgement and demonstrate metacognition in the area of nursing education” (SANC 2005).

1.10 Structure of the dissertation

The study is represented in the following chapters.

Chapter 1: This chapter introduced the reader to the study. It provided the background to the study, the study context, problem statement, purpose, the research objectives and research questions, the theoretical framework underpinning the research, the significance of the study, and operational definitions.

Chapter 2: A presentation of the available literature of the main study concepts is reviewed and presented. This chapter presents the empirical and conceptual literature review. It includes descriptions of concepts such as definition of critical thinking, pedagogics and critical thinking, and the clinical environment and clinical thinking.

Chapter 3: This chapter describes the research methodology that was followed in this study. The research paradigm, methodology, design, quantitative and qualitative

sampling techniques, data collection and analysis, issues of trustworthiness and ethical principles of the study were discussed.

Chapter 4: A presentation of the main study findings is discussed as per the 4-Circle CT Model (Alfaro-LeFevre 2016) and the N-CT-4 Practice (Zuriguel-Pérez *et al.* 2017).

Chapter 5: Discussion of the main study findings in light of empirical evidence as well as the study conclusion, recommendations and limitations. The findings from the quantitative and qualitative data were integrated to present a holistic view of the topic under study.

1.11 Conclusion

This chapter highlighted the relevance of critical thinking development for student nurses and the necessity for employment of creative and innovative pedagogical instructional methods by nurse educators. The current study has re-affirmed previous studies which emphasized the complexity of the dynamic and rapidly evolving healthcare environment. This chapter further described the background of the study, the purpose objectives, significance of the study and the significance for future research.

The next chapter focuses on the literature review pertaining to the dependent variable of the current study, i.e., critical thinking and pedagogic practices.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

Studies were identified principally by means of systematic conventional searches of electronic databases. The search strategy was carried out in Academic Search Complete, CINAHL Complete, Cochrane library, Directory of Open Access Journals (DOAJ), Health Source – Nursing Academic Edition, MEDLINE, Research Gate, Sage journals Online, Science Direct and Wiley Online Library Journals.

Various combinations of the following medical subject headings were used: 'critical thinking', student nurses, nursing, nursing education, pedagogical practices.

A review of the nursing literature indicates that critical thinking is a major topic of interest, despite the confusion of the terminology and the lack of an accepted conceptualization which conforms to the clinical setting (Zuriguel-Pérez *et al.* 2015). Challenging new scenarios for decision-making have been created by factors such as the substantial increase in the complexity of patient care and technological advances and this may explain the interest in the subject over the past decade (Jacob *et al.* 2017; Yue *et al.* 2017).

A number of studies have established that the complexity of the healthcare arena is a global phenomenon (Paul 2014; Pitt *et al.* 2015; Chang *et al.* 2011). This change is also evident in the South African context (Potgieter 2012). Authors attribute this to the increasing burden of disease, dwindling resources, and a nursing shortage in the midst of a population explosion, thus giving rise to multidimensional healthcare clinical settings (Subhan 2015; Van Zyl 2014; Potgieter 2012; Chabeli 2010). The dynamic change in the face of healthcare worldwide has subsequently precipitated the entry of highly qualified nurses into the profession (Van Zyl 2014; Potgieter 2012; Pitt *et al.* 2015). Studies disclose that the role of the nurse practitioner has expanded considerably, subsequently demanding that nurses possess high-level CTS in order to provide safe, competent and comprehensive patient care (Chang *et al.* 2011). Multiple authors concur that the complexity and evolving nature of the health-care workplace, highlight critical thinking (CT) as a key competency, both in education and in

professional practice (Hasanpour *et al.* 2018; Zuriguel-Pérez et al. 2015; Pucer et al. 2014). To this end the researcher will focus on CTS as one of the many elements pivotal to professional nurse development and practice. The focus of this study specifically addressed the field of nursing education and the assessment of CT dispositions of the student nurse in the clinical setting. The researcher focused on the views of CTS development in nursing programmes and the application of pedagogics to determine the enhancers or barriers that may be related to the competency of nurses to use CT in practice.

2.2 Defining critical thinking

'Critical thinking...the awakening of the intellect to the study of itself'.

(Glaser 1941:409)

The struggle to define CT has long plagued nurse educators (Lovatt 2014). Earlier studies suggest that there is a lack of agreement on the definition of CT, including the way it should be taught (Gaberson and Oermann 2010; Raterink 2008: 407). This is further supported in literature by Brookfield (2011) who claims that due to the broad interpretation of the term CT, few gains have been made in finding a definition which most professional nurses can agree upon. Studies indicate that seeking an appropriate definition has been a priority amongst nursing professionals (AlfaroLeFevre 2013; Chan 2013b; Kaddoura 2011). The lack of definition surrounding CT has inevitably impacted nursing education and has consequently become a barrier to learner success (Chan 2013b; Brookfield 2011).

The researcher has drawn on the available definitions from experts in the field of CT in order to gain an understanding of this intriguing concept. Lovatt (2014) notes that historically the term has been used to describe a wide variety of student outcomes, such as developing new attitudes or knowledge, to increasing student maturity and self-confidence. An expert on the subject cautions from the outset that CT is not simply being 'critical' as in a negative connotation but rather, is a distinctly controlled and purposeful phenomenon, using well-reasoned strategies to obtain desired outcomes (Alfaro-LeFevre 2013: 2,7). The author further asserts that CT is often based on a superficial understanding that it is common sense and cannot be taught. Literature has further revealed diverse definitions of CT with a general recognition of the fact that it is

a complex process whose components include cognitive abilities and attitudinal dispositions (Zuriguel-Pérez *et al.* 2015). Well known author Facione (2013: 26) state that CT is “essential as a tool of inquiry”. As recognized experts in the field the authors propose that the goal to define CT would be “to help sharpen one’s critical thinking skills and to cultivate the critical thinking spirit”. They further assert that a starting point would be to “list mental skills and habits of mind which should include cognitive skills and dispositions”. Alfaro-LeFevre (2016: 40) adds that CT means not accepting information at face value without evaluating whether it is factual and reliable as opposed to being just critical. Drawing on the work of AlfaroLeFevre (2016: 7), the study provides a concise definition of CT as being self-directed, self-disciplined, self-monitored, and self-corrective thinking, which demands rigorous standards of excellence and mindful command of these elements. The term CT is a cognitive process that includes rational analysis of information to facilitate clinical reasoning, judgement and decision-making (Alfaro-LeFevre; 2016: 43). The author cautions that the term CT is often used interchangeably with clinical reasoning, clinical judgement and decision-making and entails effective communication and problem-solving abilities inside and outside of the clinical setting. In a seminal study on CT and education, Glaser (1941) stated that the ability to think critically involves components such as thoughtful attitudes when encountered with problems and subjects and the skill to apply methods of logical inquiry and reasoning. This thought is echoed by Ennis (1989) who define CT as the “disciplined, intellectual process of applying skillful reasoning as a guide to belief or action”. DeYoung (2003) further unravels the concept of CT as the ability to “identify a problem, select pertinent information needed to solve the problem, recognize stated and unstated assumptions, select relevant hypotheses, draw valid conclusions, and justify the validity of inferences”.

Other expert authors give their perspective on the subject and concur that it is a “mode of thinking about any subject, content, or problem, in which the thinker improves the quality of his or her thinking, by skillfully taking charge of the structures inherent in thinking, and imposing intellectual standards upon them” (Paul and Elder 2008). These concepts allude to the underpinnings of rigorous standards of excellence, effective communication and problem-solving abilities. Brookfield (1987), reflects a divergent interpretation in describing critical thinking as “a process, highly sensitive to context

with emotional and rational dimensions" with perspective-taking being the centrality of this concept. He conceptualizes critical thinking as an "active process" rather than an outcome. Alfaro-LeFevre (2013) reaffirms that the process of CT requires the nurse to "think creatively, use reflection, and engage in analytical thinking".

Carter, Creedy and Sidebotham (2016) cite Warnick and Inch (1989:11) and concur with DeYoung's (2003) definition of CT as "involving the ability to explore a problem, question, or situation; integrate all the available information about it, arrive at a solution or hypothesis and justify one's position". Several authors in the nursing profession have agreed that CT is "a cognitive process that represents the capacity to reflect upon reasoning, with the aim of minimizing the errors in decision-making" (Alfaro-LeFevre 2016; Chao *et al.* 2013; Shinnick and Woo 2013).

Previous studies have indicated that the dilemma nurse educators currently experience is that there is no concise, conclusive definition of critical thinking or a reliable, dependable strategy to evaluate CTS of student nurses (Salmond 2018; Newton and Moore 2013; Chan 2012). Earlier authors have alluded to CT in nursing practice "as a skill with a focus on solving practical problems" (Brunt 2005a; Staib 2003).The author of the current study, herself being a professional nurse for over three decades, concurs that nursing demands CT as an indispensable skill and competence as a priority for practicing nurses. It is to this end that nurse educators are urged to develop strategies to inculcate CT development in their students. The use of clinical reasoning must be enhanced to deliver safe and quality patient care amidst diverse contextual factors.

However, it is encouraging to note that a definition of CT has emerged from nursing authors and that a tool has been developed to measure student nurses' critical thinking dispositions in the clinical environment (Zuriguel-Pérez *et al.* 2017).

2.3 Critical thinking and pedagogic practices

The aim of nursing education is to produce student nurses into competent practitioners who provide safe and quality health care (Wyllie *et al.* 2020). Critical thinking skills, an essential component required to address the varied health and illness needs of patients, has been identified as an indispensable, expected and essential competency of nurses at all levels of education and practice. Raterink (2008: 407) argues that since the late 1980s, CTS has been considered a fundamental competency requirement for

newly qualified graduate nurses. It is suggested that nurse educators focus on the optimization of outcomes to provoke learners to discover and unleash their yet untapped potential (Jeffreys 2014). It is important to prepare nursing students for contemporary practice in the 21st century therefore CT is earmarked as an essential skill to meet the future challenges in healthcare (Martyn *et al.* 2014).

Researchers claim that CT development ought to be an essential component of nursing programmes as many students who enter the healthcare arena lack this vital skill (Kaddoura 2016; Ferozali 2011). Pressure is placed on the higher education institutions to consider new teaching and learning approaches in order to accommodate the nurse practitioner whose role has become increasingly complex (Chabeli 2010). It is recommended that nurse educators carefully contemplate and generate new concepts from those presented, and initiate innovative strategies that will make a constructive difference in nurse education (Jeffreys 2014). The continued use of traditional learning approaches rather than the application of more innovative student-centered learning strategies have proven to be ineffective for healthcare programmes (Ferozali 2011).

Lombard and Grosser (2008: 572) state that the development of CT relies on effective teaching strategies. Chabeli (2010) appeals to nurse educators to play their role as researchers and audit the didactic efficacy of teaching, as well as lay down guidelines to improve their practice in order to promote CT in student nurses. An area of interest gleaned from various authors is the conclusion that to adequately prepare nurse graduates to integrate higher order thinking skill development, curricula must be transformed (Wagner *et al.* 2014; Barnett and Francis 2012; Fischer *et al.* 2011). Westerdahl *et al.* (2020) elaborate that nurse educators' instructional strategies must aim to develop students' CTS and abilities, regardless of the subject taught or the environment in which it is taught.

Interesting to note that while numerous authors have firmly established that patients' outcomes in nursing practice are exponentially improved by nurses' CT, its relation to performance and success in nursing programmes has attracted minimal interest (Pitt et al. 2015; Paul 2014; Kaddoura 2013; Pucer et al. 2014; Chan 2013b). Previous studies concur that teaching and learning strategies for CT are not made explicit and insufficient reflection is afforded to the development of students' cognitive abilities

(Lake and McInnes 2012). It has been established that nurse educators must strive to enhance the learning process of the students in order to prepare them to practice effectively in the clinical setting, (Daniels et al 2015; Ferozali 2011).

Several authors allude to the necessity of implementing innovative ways of learning and teaching in the classroom and the clinical environment (Jeffreys 2014; van Zyl 2014; Gul *et al.* 2014; Chan 2013b; Chabeli 2010). Strong suggestions of creating interesting and captivating learning environments that stimulate collaborative interaction and learning, dialogue and discourse is recommended as integral to the facilitation of critical thinking in nursing students. Similarly, a plethora of creative and innovative educational strategies have been researched to support critical thinking development in nursing programs. These have been identified as case studies, problem-based learning, scenarios, simulations, demonstrations, role-playing, games, concept mapping, group discussions, clinical conferences, the nursing process, brainstorming, evidence-based teaching, self-directed learning, reflection and journaling (Wyllie *et al.* 2020; Bagheri and Haghani, 2019; Burrell 2014; Van Zyl 2014; Chan 2013a; Potgieter 2012; Jones 2010: 252; Worrell and Profetto-McGrath 2007: 425; Simpson and Courtney 2007). Therefore, it is imperative that nurse educators select appropriate teaching approaches that engage students in an active learning process in an endeavor to deliver high-quality education (Xu 2016).

However, it is still a matter of concern that direct instruction in the form of 'lectures' and 'teacher-led discussion' continue to govern in the classroom (Kantar 2013; Subhan 2015; Daniels *et al.* 2015). Subhan (2015) claims that a global call for a '"paradigm shift" in nursing education has ushered in a new era, urging nurse educators to adopt a learner centered approach in nursing faculties. This refers to strategies that would be more feasible with student-centered rather than teacher-centered teaching and learning. This is supported by several authors who agree that traditional lecture-based teaching methodologies passively transfer information from educator to student, do not require active engagement from the student and thus does not foster CTS in the student (Martyn *et al.* 2014; Kek and Huijser 2011; Lekalakala-Mokgele 2010:638). Potgieter (2012) asserts that habits rather than skills are produced when nurse educators fail to stimulate critical thinking. Further to this, studies reveal that nurse educators must contend for students who are independent and responsible for their own learning (Harman *et al.* 2015). Van Zyl (2014) raises the concern of the students'

inability to successfully integrate theory to practice, attributing this to ineffective teaching and learning environments, and asserts that the overuse of formal lectures, as a didactic method, does not address the development of CTS in the student.

Another challenge that nurse educators encounter is that the majority of learners in the traditional classroom setting are the millennial generation. Toothaker and Taliaferro (2017) suggest that the emergence of millennial students in rapidly changing classroom settings present learning styles that may challenge traditional pedagogy. This demands that nurse educators shift from traditional teaching methods to those that are technology based, collaborative, engaging and meaningful to meet the challenges of millennial students.

To this end questions remain about the efficacy of teaching strategies that are employed in promoting higher order thinking competencies in nursing education (Kantar 2014). Furthermore, it has been established that nurse educators who are trained and proficient in the development of CTS will determine the extent of the effectiveness of a programme (Martyn *et al.*2014). Previous researchers have alluded to the fact that developing teaching strategies to improve CT skills remains a continuous challenge (Chabeli 2010). It is indicated that nurse educators receive the necessary formal education to augment their CTS if they are expected to enhance CT in their teaching practices (Gul *et al.* 2014). Further to this an increased awareness and training of nurse educators regarding their teaching methods may increase their teaching and facilitation skills (Van Zyl 2014). This view is supported by numerous researchers who unanimously agree that nurse educators do not have the knowledge to teach CTS development and are unequipped to meet the student nurses' diverse educational and holistic needs (Subhan 2015; Jeffreys 2014; Gul *et al.* 2014). Van Zyl (2014) proposes that for nurse educators to obtain a strong theoretical grounding and CT skills to increase theory and practice integration success, a master's degree in nursing must be an essential qualification.

2.4 Critical thinking and the clinical learning environment

One of the hallmarks of nursing education is integrating theoretical knowledge with clinical practice to ensure nursing students are adequately prepared for the clinical setting (Brown 2019). More importantly, it has been emphasized that the role of the

nurse practitioner has expanded considerably, subsequently demanding that nurses possess high-level CTS in order to provide safe, competent and comprehensive patient care (Chang *et al.* 2011). It is expected that students be able to apply theory to real life situations in order to meet the increased demands and greater accountability in the clinical practice (Pucer 2014; Potgieter 2012). It has also been suggested that critical thinking ability has a positive correlation with theory-practice integration (van Zyl 2014). Jamshidi (2012) states that a regurgitation of theoretical knowledge is what is currently seen in clinical practice and cautions that it is critical thinking, problem solving and technological skills is what is required. Wyllie *et al.* (2020) confirm that clinical experience is essential for student nurses to develop confidence, problem-solving skills and CT.

Most recent research validates that the application of CT is a cardinal competency for nursing students both in an academic and clinical context to ensure judicious everyday decision-making and problem-solving processes, (Westerdahl *et al.* 2020). While much has been written about the importance of the development of CT in nursing education, there are limited studies regarding the evaluation of CT (Chong *et al.* 2016; Lisko and O'Dell 2010; Staib 2003). Earlier studies indicate that it is important to have measurement tools to assess CTS in practice which will assist in determining work environment enhancers or barriers (Raterink 2008: 407).

Wyllie *et al.* (2020) urge nurse educators to revisit the curriculum in order to address the theory-to-practice gap highlighted as a global concern. The theory-to-practice gap has been termed as a "disconnect between the knowledge acquired in classroom settings and the application of this knowledge in clinical practice" (Odetola *et al*. 2018). It has been established that numerous challenges in the clinical environment have presented themselves as obstacles in the development of CTS in student nurses. The evidence of multiple studies have indicated that student nurses are ineffective in applying theoretical concepts in the implementation of patient care, which have resulted in poor patient outcomes (de Swardt 2019; Bagheri, and Haghani, 2019; Odetola *et al.* 2018; van Zyl 2014). Wyllie *et al.* (2020) agree that clinical learning environments play a significant role in providing an opportunity for student nurses to translate their theoretical knowledge into practice which directly impacts on the delivery of quality patient care. Researchers caution that the profession will be saturated with a generation of nurses with limited knowledge and skills and exacerbated with

inappropriate attitudes due to the consequences of unmet clinical learning outcomes (Westerdahl *et al.* 2020).

The clinical environment has evolved to a dynamic and complex setting, replete with multiple and diverse issues that emanate from the healthcare service provider, the healthcare professional and the patient. Issues include staff shortages, difficult patients, declining interest in the profession, poor morale, lack of a caring ethos, negative role modelling, differences in practices and procedures, lack of materials and tools, priorities (of patient care vs education), and political and power imbalances (Westerdahl *et al.* 2012; de Swardt 2019; Bagheri, and Haghani, 2019; Odetola et al. 2018; van Zyl 2014; Walker et al., 2014: 106; Rispel and Bruce 2014: 117). Even though the clinical learning environment has been identified as the bridge that connects theory to practice, it has been established that this gap is indeed multifaceted and remains far too wide at present (de Swardt 2019; Bagheri and Haghani, 2019; Odetola et al. 2018).

Wyllie *et al.* (2020) assert that reducing the theory-to-practice gap must be a collaborate effort from nurse educators from nursing schools, practitioners in practice and student nurses to facilitate effective learning. There is a call to train clinical instructors and professional staff in their capability to support students in the clinical environment (Van Zyl 2014). It is suggested that to maximize opportunities to integrate theoretical learning with clinical practice, clinical supervision of student nurses must be more regular and longer (Van Zyl 2014).

In conclusion it has been proven that the integration/fusion of theory and practice has resulted in positive outcomes when the strategies of outcome-based, student-centered and appropriate clinical supervision approach was adopted (van Graan and Williams 2017).

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research methodology that was used to guide the study and covers critical aspects that must be considered in empirical studies. A multi-method approach in a case study design was adopted in this study. A multi-method design combines quantitative and qualitative methods and involves collection or analysis of both quantitative and qualitative data in a single study. The use of multiple methods neutralize disadvantages of certain other methods (Tashakkori and Teddlie, 2010). According to Seawright (2016), examples of multi-method research thus include studies that combine survey data with laboratory experiments, focus groups with participant observation, statistical analysis of a corpus of text with careful qualitative interpretation of selected of texts.

3.2 Research design

The study adopted a descriptive qualitative case study design using a multi-method approach to collecting data within a post positivist paradigm.

3.3 Study setting

Research can be conducted or data can be collected in a variety of settings and can include one or more sites (Polit and Beck 2012: 49). Participants of the study were engaged by the researcher in their natural environments which was at the selected NEI. The NEI has six sub campuses in total which are located in KwaZulu-Natal, Gauteng and the Western Cape. Courses that are offered at the NEI include the bridging course (R683) programme, diploma in midwifery course (R212) and the social auxiliary worker (SAW) course. The main campus is in Pietermaritzburg, KwaZulu-Natal (KZN) which was selected for the study. An intake of 30 enrolled nurses is taken twice a year for the R683 programme. Bridging course students are allocated to public and private hospitals to complete their practical component of the programme. All of these hospitals are within a 10-kilometer radius of the NEI.

3.4 Study population

A population denotes components such as individuals; objects or substances who meet certain selected criteria that would include them in a research study (Burns and Grove 2010: 290). The population for this study were nurse educators employed at the selected NEI and student nurses studying at the NEI. A total of 120 students are in training at the NEI. The selected NEI has a principal and five nurse educators.

The target population in this case study comprised student nurses in the bridging course programme (R683) at the time the study was conducted. The course allows enrolled nurses to study for two years which leads to registration as a General Nurse. The nurse educators who are engaged in theoretical teaching for these students at the selected NEI were targeted.

3.5 Study Sample

A non-probability consecutive sampling of six nurse educators and 120 student nurses were invited to participate in the study. The principal of the NEI who is also involved in the teaching of the students was included in this number.

3.5.1 Inclusion criteria

- All male and female enrolled nurses (first and second year) who were registered in the bridging course programme that will lead to registration as a General Nurse (known as R683).
- Nurse educators who were involved in the teaching and learning of bridging course students at the selected NEI were included as well.

3.5.2 Exclusion criteria

- Students who were doing midwifery.

3.6 Data collection method

Data collection is the process of collecting the information for the study (Burns and Grove 2010: 52). The purpose of concurrent triangulation designs is to use both qualitative and quantitative data to more accurately define relationships among variables of interest (Creswell et al. 2003). In this study, concurrent triangulation was

adopted, where both qualitative and quantitative tools was used to collect data within a study at the same time. Data was analyzed separately, but interpretation was done concurrently", as proposed in a concurrent triangulation strategy (Creswell 2013).

A quantitative data tool, the Nursing Critical Thinking in Clinical Practice Questionnaire (N-CT-4 Practice) by Zuriguel-Pérez *et al.* (2017) was administered to participants. (Annexure G). Concurrently, qualitative focus group discussions explored the didactic practices of nurse educators at the selected NEI. The purpose of collecting quantitative and qualitative data together served to deliver the strengths of both forms of research to validate results.

3.7 Data Collection instruments

3.7.1 Quantitative component

The quantitative component of data collection consisted of a self-administered questionnaire called the Nursing Critical Thinking in Clinical Practice Questionnaire (N-CT-4 Practice). The researcher has chosen the Nursing Critical Thinking in Clinical Practice Questionnaire (N-CT-4 Practice) as the most suitable tool for measuring the level of CT in student nurses. This 109-item questionnaire was developed by Zuriguel-Pérez *et al.* (2017), based on Alfaro-LeFevre's (2016) 4-Circle CT Model. Zuriguel-Pérez *et al.* (2017) claims that the provision of competent and quality care in todays' health care settings demands that CTS be measured in clinical practice. However, it has been observed that while many instruments have been developed for CT ability in the training of nursing professionals, there are no instruments developed to measure nurses' CT ability in clinical practice. The questionnaire consists of 109 items covering the four dimensions that make up the 4Circle CT Model. These are as follows:

- Personal characteristics (PC) (39 items);
- Intellectual and cognitive abilities (ICA) (44 items);
- Interpersonal abilities and self-management (IA) (20 items); and
- Technical abilities (TA) (6 items).

A Likert-like response format was used with four (4) points, ranging from never or almost never (1) to always or almost always (4), to indicate the frequency with which the student presented a particular ability in critical thinking. Permission was granted by the author and developer of the N-CT-4 Practice (Annexure H).

3.7.2 Qualitative component

According to Tashakkori and Teddlie (2010), focus group interviews are useful for probing and for exploring ideas, which gives the interviewer the opportunity to observe how participants react to each other. Open-ended questions such as “how" and “tell me” were used (Yin 2014). In this study the focus group discussions were coordinated with a view to soliciting deep opinion and rich information as nurse educators stimulated conversation and arguments from one another. A semi structured instrument was used to gather data during focus group dialogues (Annexure E). The instrument included open-ended questions to permit the participants to express their thoughts, experiences, perceptions and recommendations without reservation. A demographic questionnaire was included to be completed before the discussion. This added depth to the study and was used to further corroborate findings.

The researcher recorded the information using a voice recorder with the permission of the participants. If this was not granted, notes were taken, using the interviewee’s own words (Lincoln and Guba, 1985).

3.8 Data collection process

3.8.1 Quantitative aspect

Students completed the self-administered questionnaire at the NEI in a classroom setting (Annexure G). An appropriate time was organized by the principal to meet with the students at the convenience of the NEI. The students’ invitation to participate was voluntary and they were assured of anonymity and confidentiality. The relevance of the study, the ethical aspects and the procedure was clarified in depth, and any concerns were addressed. A participant information sheet that described the procedure in detail was given to the students to read (Annexure B). Those willing to participate were requested to sign consent forms (Annexure C). The consent forms were collected and

kept separate from the questionnaires. Once the informed consent forms had been collected, the demographic questionnaire was distributed to the participants (Annexure F). On completion of the demographic questionnaire, the Nursing Critical Thinking in Clinical Practice Questionnaire (N-CT4 Practice) questionnaire was handed out. The researcher informed students that the questionnaire was expected to take approximately 20 to 25 minutes to complete. Students were asked to post their completed questionnaires into a box which was in the classroom. The researcher collected the box of completed questionnaires after 45 minutes. A total of 120 questionnaires were distributed to students at the selected NEI over seven days.

3.8.2 Qualitative aspect

The qualitative aspect of the study comprised a focus group interviews with the nurse educators. The focus group interviews was conducted concurrently during the quantitative data collection process. Permission was obtained from the principal of the college to access the nurse educators who were targeted to participate in the study. An information sheet was given to each participant, together with a summary of the study (Annexure B). Arrangements were made to meet with them at a suitable time at the nursing college. On the day of the interview, the researcher once again explained the procedure, purpose and significance of the study. Consent forms were signed and demographic forms were completed and collected prior to commencing with the interview (Annexure C and D respectively). The interviews were captured using a digital voice recorder. The data was collected by the researcher. A suitable time at the participants' convenience was scheduled. A semi structured instrument which consisted of five questions around the concept of critical thinking to guide the researcher, was used to gather data during the focus group dialogue. (Annexure E). Mcleod (2014) alludes to the focus group interview as a method that aims to obtain data from a purposely selected group of individuals rather than from a statistically representative sample of a broader population. The researcher, being a nurse educator herself, adopted the role of the interview moderator to ensure the group interact with each other and did not drift off-topic. The instrument included open-ended questions such as "how" and "tell me" that was central to the concept of critical thinking, to permit the participants to express their thoughts, experiences, perceptions and recommendations without reservation (Yin 2014). The qualitative research "gold

standard" for quality research is data saturation (Hancock *et al* 2016). The concept of data saturation, defined as 'information redundancy' or the point at which no new themes or codes 'emerge' from data, is widely referenced in thematic analysis research (Braun and Clarke:2021). Data saturation in the current study was determined when all four participants echoed the same sentiments reflected in the subsequent themes and sub-themes. English was used as a medium of communication as all participants were proficient in its use.

3.9 Validity and reliability

Validity refers to "the degree to which the instrument measures what it is intended to measure" (Polit and Beck 2012: 336). Reliability confirms that the data "consistently and accurately represents the constructs under examination", while validity authenticates whether the data represents the constructs it was assumed to capture (Tashakkori and Teddlie 2010).

3.9.1 Validation of the quantitative data

The results obtained in the study by the developers of the instrument demonstrated that the N-CT-4 Practice is endowed with notable psychometric properties and the questionnaire was shown to be exceptionally viable (Zuriguel-Pérez *et al.* 2017).

Construct validity of the N-CT-4 Practice tool was assessed by confirmatory factor analysis (CFA) based upon the four dimensions in the theoretical model submitted by Alfaro-LeFevre (2016). The assessment of the internal consistency of the questionnaire, the Cronbach's α co-efficient obtained (α = 0.96) positioned it in the same range of values as reported for other instruments (Zuriguel-Pérez *et al.* 2017). The content validity index of the N-CT-4 Practice was 0.85. Cronbach's alpha coefficient for the whole instrument was 0.96.

3.9.2 Reliability of the quantitative data

The developer of the instrument confirmed reliability by piloting the questionnaire using a test-retest method. Zuriguel-Pérez *et al.* (2017) evaluated the comprehensibility and feasibility of the N-CT-4 Practice by carrying out a pilot test with a sample group of 18 nurses, whose characteristics were similar to those of the study group. Comparison of

the responses from the two sets of data revealed consistent responses, thus indicating that the measuring instrument was reliable (Burns and Grove 2010).

3.9.3 Validation of the qualitative data

3.9.3.1 Trustworthiness

According to Polit and Beck (2012: 174) trustworthiness is described as the extent to which qualitative researchers want to reflect the truth. Trustworthiness, also known as academic rigor, refers to the logical accuracy, scientific adequacy or trustworthiness of the research outcomes with respect to openness, scrupulous adherence to the philosophical perspective of the approach and thoroughness in collecting data (Grove et al., 2012). Trustworthiness is an important element in qualitative research because the findings should actually reflect the experiences of participants from their perspective. Research cannot add value to nursing practice if there is inaccuracy and misinterpretation of findings. The concept of trustworthiness is used to make certain of the quality and value of the final results and conclusions reached in qualitative research (Lincoln, 1985). In qualitative methods, the intent is to understand the social reality in its natural settings. Lincoln (1985) suggests four techniques of trustworthiness that collectively indicate the quality of the data for qualitative inquiry. These are credibility, transferability, dependability and confirmability.

3.9.3.2 Credibility

Credibility refers to whether the data that is drawn from the participants is authentic and portrays what one is looking for (Lincoln, 1985). Although there are several means to increase the credibility of a study, the following aspects of credibility were applicable to this study; prolonged engagement, thick description of the research process, discussion of data and categories with the research supervisor. (Tashakkori and Teddlie, 2010). This being a case study, the researcher visited the NEI several times and spent an adequate amount of time in the field to build trust and learn the culture of the environment.

3.9.3.3 Transferability

Transferability is the degree to which the findings of an inquiry can apply to another situation. As generalization depends on the context of the study, it cannot apply to case

studies, except within the boundaries of the defined case (Yin, 2014). However, a thick description may be provided to assist someone interested in contemplating transferability. Thick description entails giving a detailed or dense description of the study context, settings, procedures and findings to enhance transferability.

3.9.3.4 Dependability

Techniques used to measure credibility also measure dependability as there can be no credibility without dependability (Lincoln, 1985). Dependability involves an assessment of the stability and quality of data collected through audit trails and checks. In this study records kept included the interview audio in a USB with a password known only to the researcher, transcripts in the original language the interview was conducted in, as well as the summaries of interviews. Themes and categories that emerged across the unit of analysis also served as a measure of dependability.

3.9.3.5 Confirmability

Confirmability is a measure of how well the study findings are supported by the data collected. It refers to the objectivity of the research process and findings, ensuring that they are free from the researcher's biases and that the conclusions reflect the conditions of the inquiry and not the investigator (Lincoln, 1985). In this study, the interpretations and findings were continuously verified through use of interviewees‟ own words, matching transcripts with recordings, an audit trail and document entries.

3.10 Data analysis

The quantitative raw data was analyzed by a professional statistician using the statistical software SPSS, with the application of descriptive and inferential statistics such as but "not limited to frequencies, measures of central tendency, variance and measures of association" (de Vos *et al.* 2005: 218).

A framework recommended by Clarke and Braun (2014) was used to analyze the qualitative data .gathered from the focus group discussion with the nurse educators. Thematic analysis is an accessible, flexible, and increasingly popular method of qualitative data analysis. Clarke and Braun (2014) state that thematic analysis is a method for systematically identifying, organizing, and offering insight into patterns of

meaning (themes) across a data set which allows the researcher to see and make sense of collective or shared meanings and experiences.

The following table describes the six steps of thematic analysis as described by Clarke and Braun (2006

Table 3.1: Phases of Thematic Analysis

Phase	Description of the process
1. Familiarizing yourself with your data:	Transcribing data (if necessary), reading and rereading the data, noting down initial ideas.
2. Generating initial codes:	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3. Searching for themes:	Collating codes into potential themes, gathering all data relevant to each potential theme.
4. Reviewing themes:	Checking in the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic „map" of the analysis.
5. Defining and naming themes:	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells; generating clear definitions and names for each theme.
6. Producing the report:	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

Themes and subthemes were extracted from the experiences of the participants to gain further insight into their didactic practices.

3.11 Ethical considerations

Ethical considerations in research are founded on the ethical principles of respect for people, beneficence and justice, and are embedded to ensure respect for the

participants, to protect them from harm and to ensure fairness in the course of the research study according to the Belmont report of 1979 (National Institutes of Health, 1979).

The researcher adhered to the policies of research ethics and obtained ethical clearance from the Durban University of Technology prior to data collection. The Faculty of Health Sciences' Research and Higher Degrees Committee reviewed the research proposal, after which final ethical clearance was obtained from the Institutional Research Ethics Committee. A letter to seek permission from the Principal of the selected nursing educational institute to collect data, was obtained (Annexure A).

3.11.1 Confidentiality

Following the full disclosure of information regarding the study, participants were required to voluntarily sign a written informed consent to participate in the study (Annexure C). Participation in this study was voluntary. The use of numeric codes instead of names ensured confidentiality of the data.

3.11.2 Consent and storage

All participants were required to sign informed consent forms prior to the administration of the demographic questionnaire and participation in answering the questionnaires or in the focus group. The researcher will keep the verbatim records under lock and key. Completed measuring documents will be stored in a locked steel safe and will be kept for a period of five years, with the researcher being the only person with access to these documents.

3.11.3 Beneficence and justice

Beneficence enforces on researchers to minimize harm and to maximize benefits (Polit and Beck 2010: 121). The participants in the study were not subjected to any harm and discomfort in any way physical, emotional, social or financial.

Justice refers to the appropriate selection of study participants to meet research requirements and not to take advantage or vulnerability or the compromised position of any people (Polit and Beck 2010: 124). The researcher reassured the participants

who chose to decline participation in the study or who wished to withdraw from it that they would be treated in a non-prejudicial manner and would be afforded courtesy and respect.

3.12 Conclusion

This chapter represented specifically the methodology used for the quantitative and qualitative aspects of the research process in this case study. It outlined the research approach, research design, the case study protocol, the unit of analysis, the population and the sampling methods, data collection methods and instruments used. It also defined the process of validating data and data analysis, ethical considerations and data management.

The next chapter presents the results for the quantitative and the qualitative data analysis in a multi-method format.

CHAPTER 4: PRESENTATION OF THE RESULTS

4.1 Introduction

This study aimed to describe pedagogical practices and student nurses' critical thinking in a private nursing educational institution in Pietermaritzburg, KwaZulu-Natal. A case study approach was chosen for this study.

Quantitative and qualitative research methodologies were used in the process of data collection. To re-iterate, data for this study was collected from nursing students who were in a bridging course programme. These students were already in possession of a nursing certificate and had been selected to study for a further two years to qualify as a general nurse. Data was also obtained from the nurse educators at the college. This was done to glean a holistic view of critical thinking. For the quantitative aspects, data was obtained from student nurses through a structured questionnaire assessing their critical thinking. For the qualitative aspect, data was acquired from the nurse educators of the college through a focus group discussion.

This chapter presents the research findings aligned to the study objectives, which were laid out in Table 1.1.

4.2 Sample realization

A population refers to all components that could be individuals, objects or substances who meet certain selected criteria and could be included in a particular research study (Burns and Grove 2007: 40). The population for this study were nurse educators employed at the selected nursing educational institution and student nurses studying at the college. There were 120 students in training at the college. The college had a principal and five nurse educators. The target population in this case study comprised the student nurses in the bridging course programme (R683) at the time the research study was undertaken. The course allows enrolled nurses to study for two years which leads to registration as a general nurse. Both first year and second year bridging course students were included in the study. The nurse educators who were engaged in theoretical teaching and learning for these students at the selected nursing college were targeted.

Non-probability consecutive sampling (Yin, 2003:80)) of six nurse educators and 120 student nurses were invited to participate in the study. In nonprobability samples, elements are selected by non-random methods. A total of 120 students completed the self-administered questionnaire and four nurse educators participated in the focus group discussion. The principal and the deputy principal of the college who were also involved in the teaching of the students were included in this number. The nurse educator sample reduced to four from the initial six that made up the lecturers at this college as two staff members had already resigned by the time of the focus group interview. Of the four academics, two had a nurse education qualification and were the designated lecturers and the remaining two who did not have a nurse education qualification, functioned in the capacity of clinical instructors.

4.3 Tests used in the analysis of the quantitative data

The services of a statistician was utilized in the analysis of the quantitative data Descriptive statistics including means and standard deviations, where applicable were applied to the data. Frequencies were represented in tables or graphs. Other test included:

- ANOVA. A test for several independent samples that compares two or more groups of cases in one variable.
- Binomial test: Tests whether a significant proportion of respondents select one of a possible two responses. This can be extended when data with more than 2 response options is split into two distinct groups.
- Independent samples t-test: A test that compares two independent groups of cases.
- Friedman's test: A test that compares the means of more than two variables for a single group.

The data report was provided by the statistician who used a SPSS software package, as indicated in the tests used in the analysis of the quantitative component of the study.

4.4 Part 1. Section A: Demographic data

The analysis of demographic data related to the gender, age, race, level of training, education institution where the qualification was obtained and the duration since having obtained the basic qualification.

4.4.1 Gender

The majority of the respondents were female (90.8%), with males being 9.2%. See Figure 4.1.

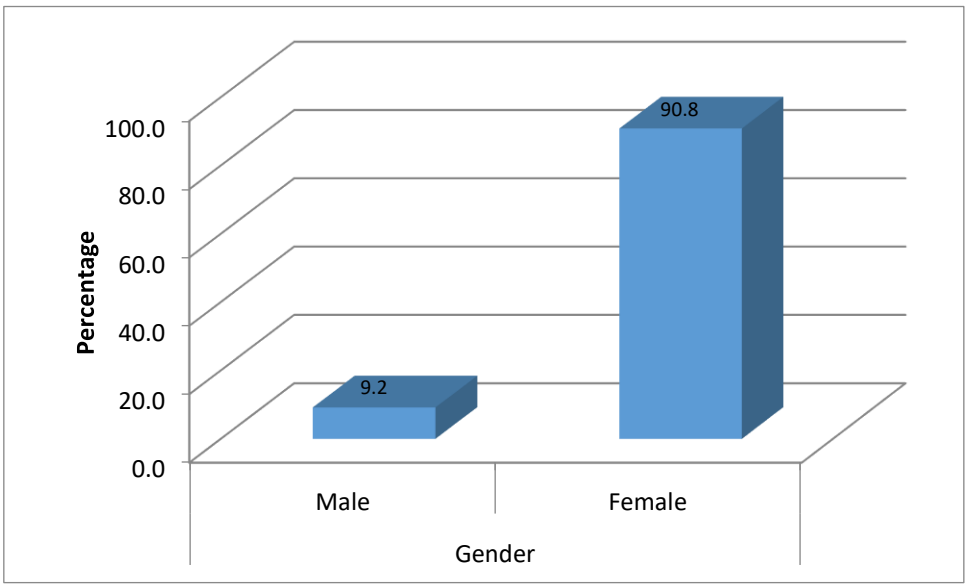

Figure 4.1: Gender distribution

4.4.2 Age

Respondents' age ranged from 21 to 50 years; 21-30 = 60,8%; 31-40 = 32.5% and 41-50 = 6.7%. The total sample was n = 120. See Figure 4.2.

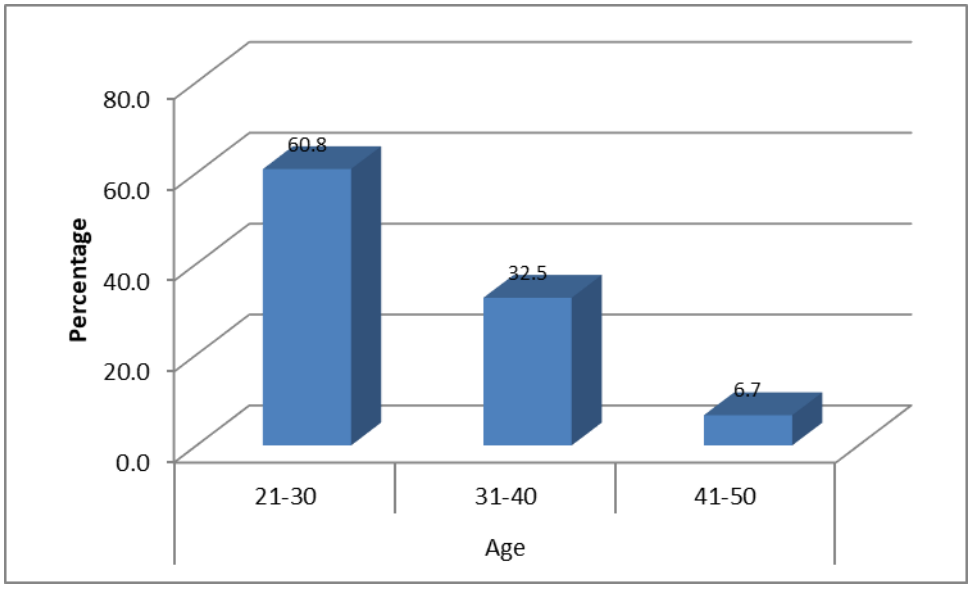

Figure 4.2: Age distribution

4.4.3 Race

The majority of respondents were Black (95.8%), followed by Indian (2.5%) and Coloured (1.7%). There were no White respondents. See Figure 4.3.

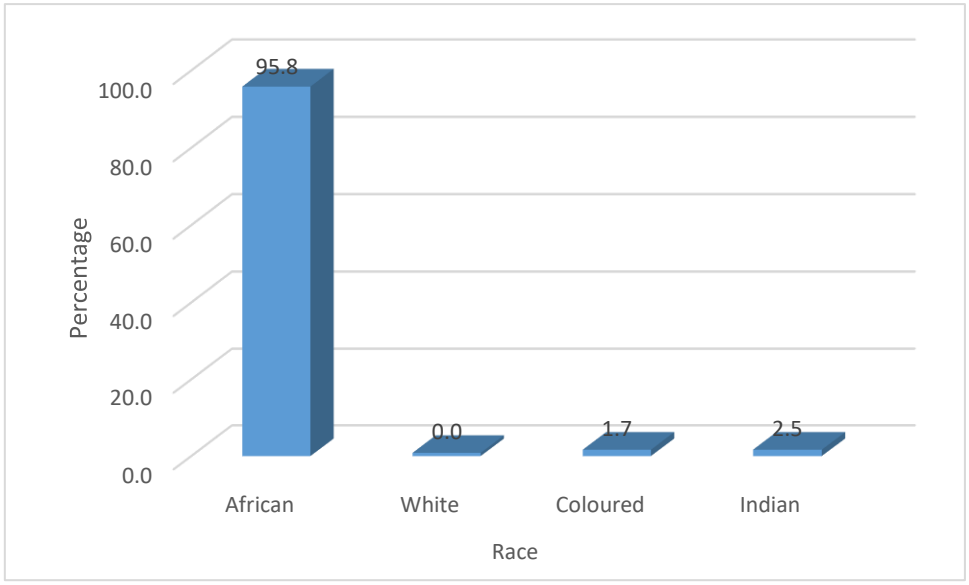

Figure 4.3: Race distribution

4.4.4 Present level of training of students

Just over half (55%, n = 66) of those sampled were in their first year of training and 44.2% (n = 53) were in their second year of training. See Figure 4.4.

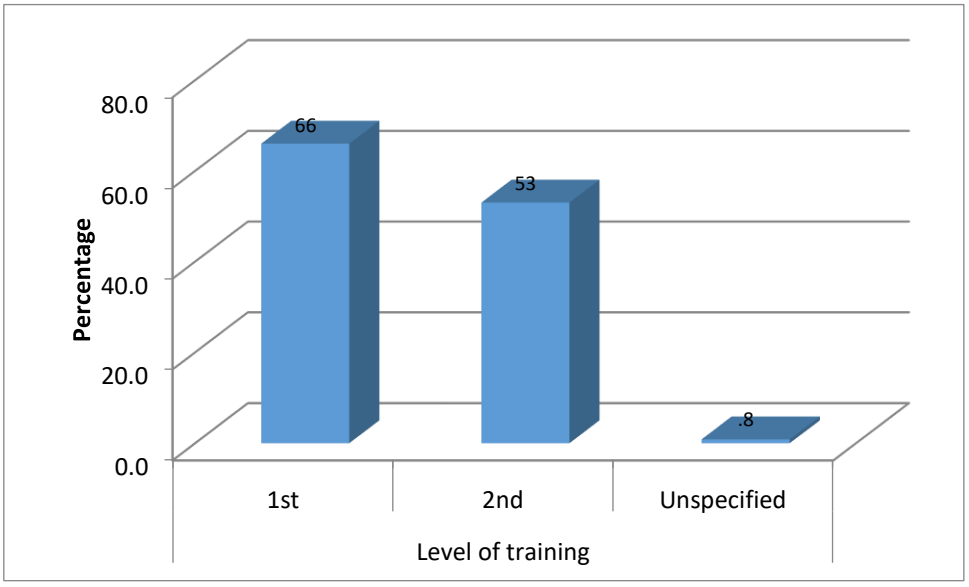

Figure 4.4: Level of training the students were at present

4.4.5 Nursing education institute of basic training

The majority of respondents had their basic training at private nursing colleges (93.3%; n = 112) while a minority (6.7%; n = 8) were trained at a public institution.

See Figure 4.5.

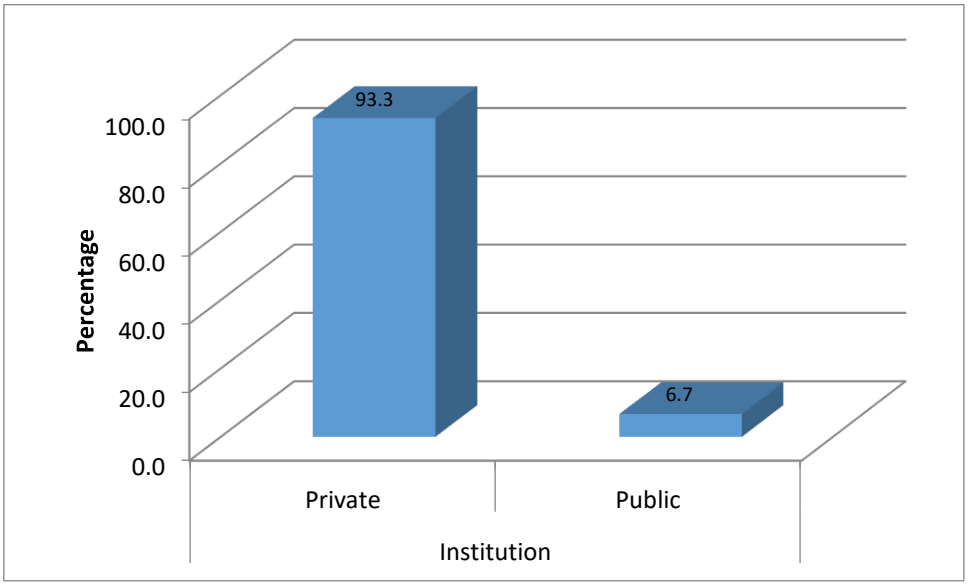

Figure 4.5: Nursing education institution

4.4.6 Time since obtainment of basic nursing qualification

Over three quarters of the sample (84.2% n = 101) obtained their qualifications < 5 years previously, followed by 10.8% (n = 13) who obtained it 6-10 years ago. Only 8%

(n = 1) of those sampled obtained their qualification 11-15 years ago and 1.7 % (n = 2) 16-20 years ago. See Figure 4.6.

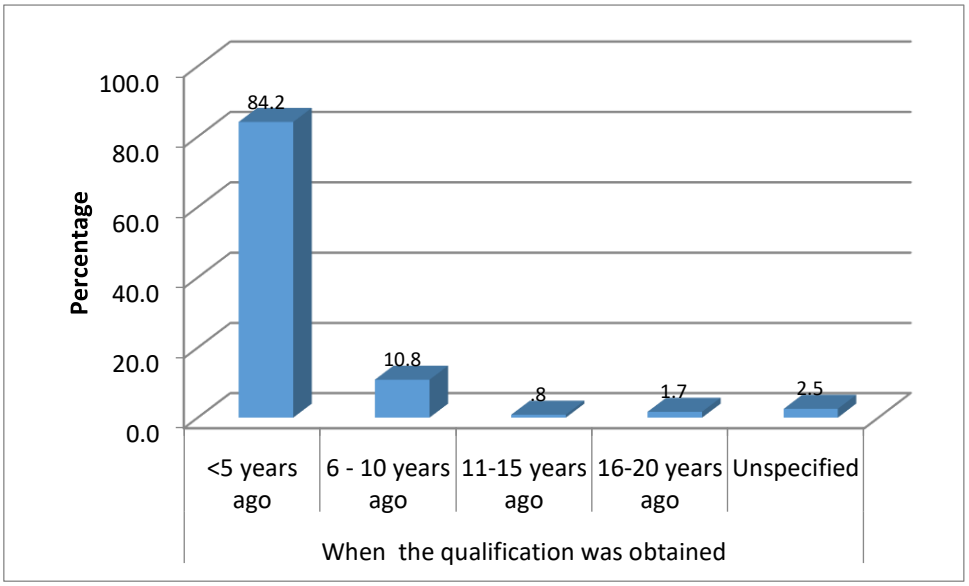

Figure 4.6: Time since obtainment of Basic Nursing qualification

4.5 Section B. The Nursing Critical Thinking in Clinical Practice Questionnaire (N-CT-4 Practice). Objective 1: To measure the critical thinking skills of student nurses in clinical practice

The Nursing Critical Thinking in Clinical Practice Questionnaire (N-CT-4 Practice) was administered to student nurses in order to assess their critical thinking. This instrument is a self-administered questionnaire. The 4-Circle CT Model consists of 109 items covering the four dimensions. They are as follows: personal characteristics (PC-39 items); intellectual and cognitive abilities (ICA-44 items); interpersonal abilities and self-management (IA-20 items); and technical abilities (TA-6 items). Scoring was by means of a Likert scale with four points ranging from never or almost never (1) to always or almost always (4) to indicate the frequency with which the participant presented a particular ability in critical thinking.

4.5.1 Personal characteristics (PC)

The first dimension consisted of questions relating to personal characteristics (PC) which is made up of 39 items. Personal characteristics refer to “patterns of intellectual

behavior (attitudes, beliefs and values) that act as triggers of critical thinking skills" (Zuriguel-Perez *et al.* 2018: 2).

Analysis using the binomial test shows that for all items, except P3, "I show my feelings to others" a significant number of the respondents responded either 'often' or 'always'. See Figure 4.7.


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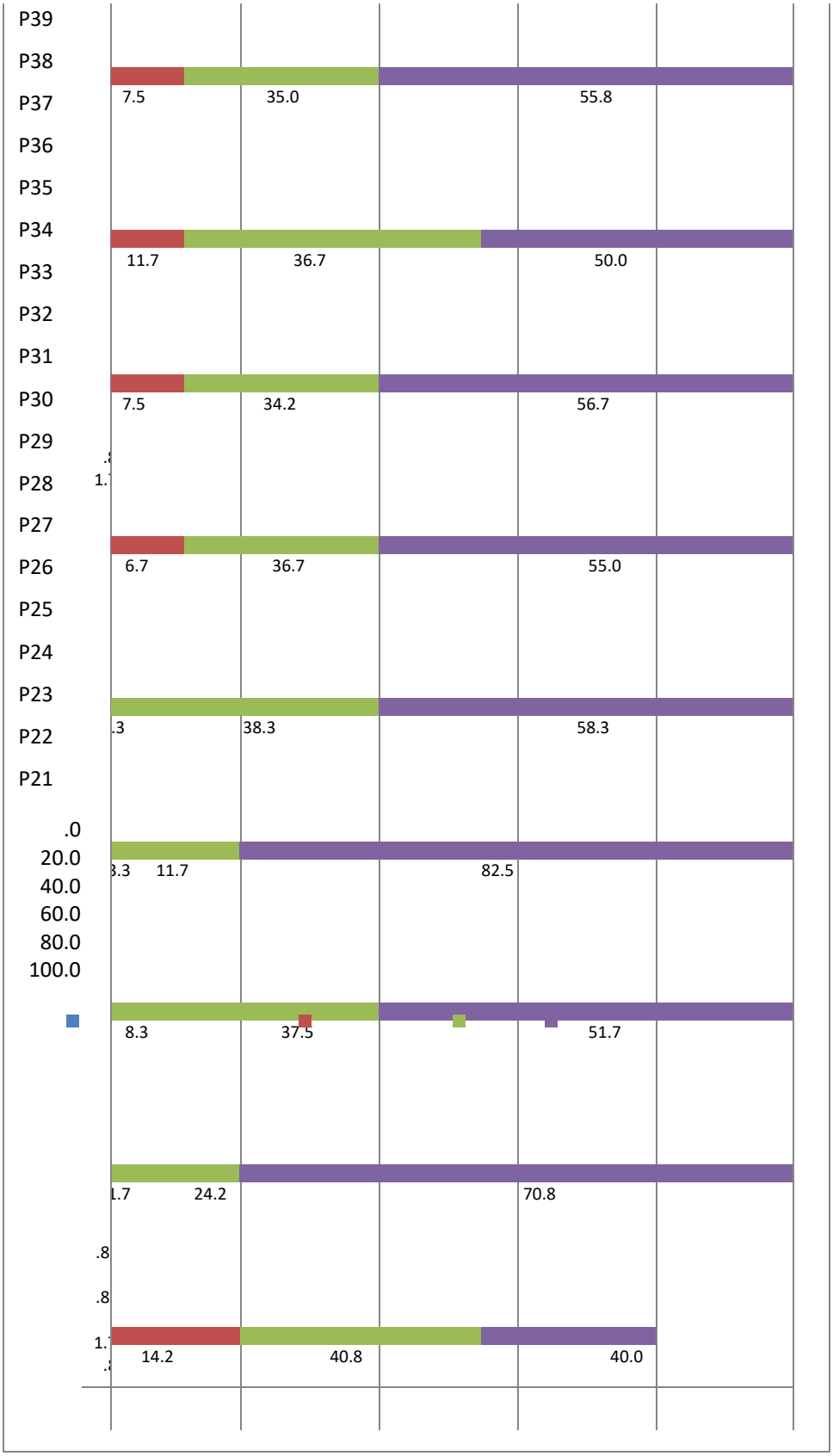
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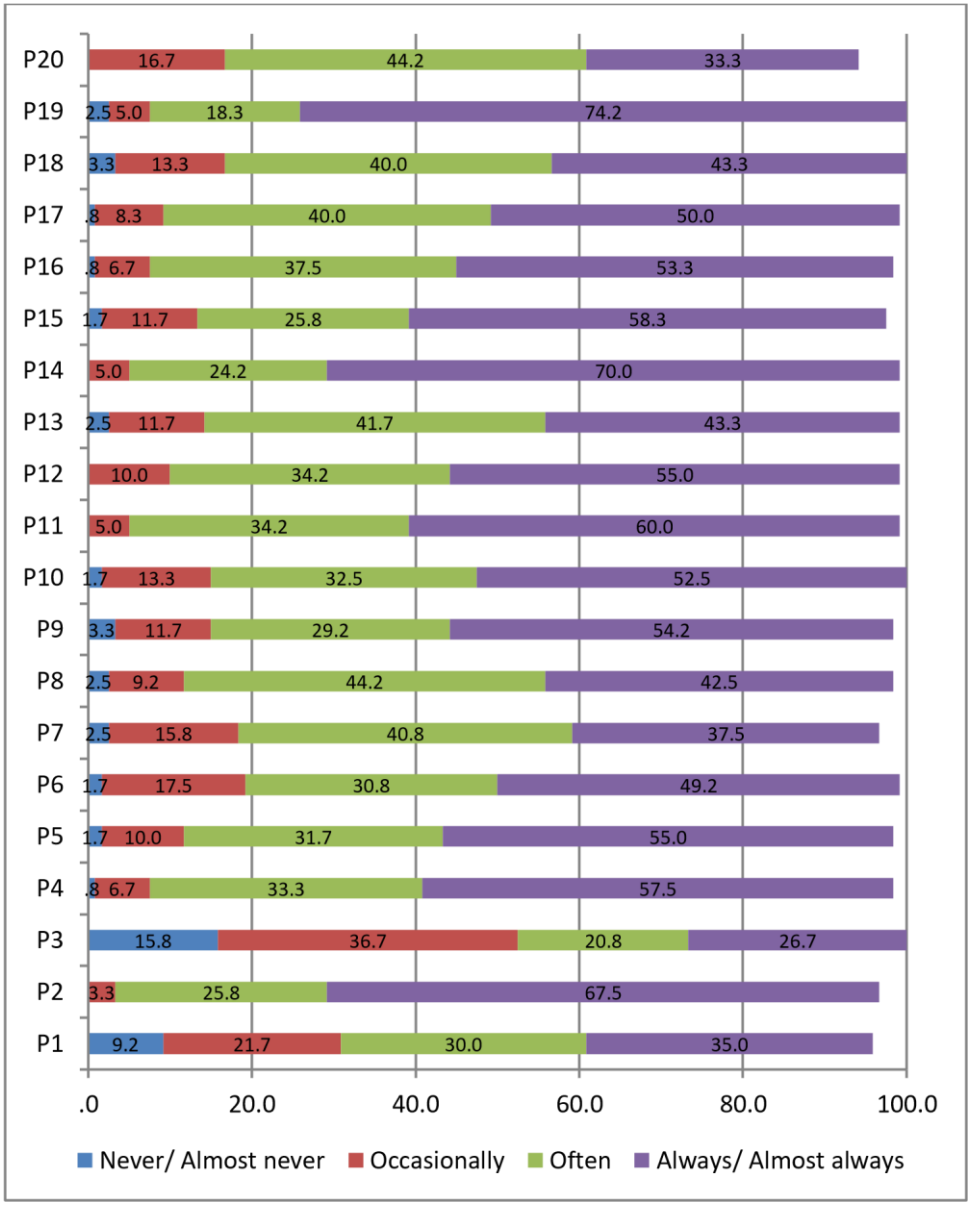


Figure 4.7: Frequencies of responses on personal characteristics (PC-39 items)

The Cronbach's alpha reliability score for this dimension indicated good reliability, alpha = 0.923 (reliable > 0.7).

Statistical scoring was tested on the average and sum across the demographic variables for significant differences of the personal characteristics, (PC-39 items) of N-CT-4 Practice Questionnaire.

For gender, level of training, institution, an independent samples t-test was used and for age, race, and qualification obtained, ANOVA was used.

4.5.1.1 Gender

Independent samples t-test used for the gender variable reveals that no significant differences were found with regards to gender in relation to the personal characteristics dimension of N-CT-4 Practice Questionnaire.

4.5.1.2 Age

The average score for this dimension (PC) differs significantly by age, F (2, 117) = 5.270, p = 0.006. The average frequency score is significantly higher for the 41-50 age group (M = 3.751) than for the 21-30 age group (M = 3.370). There were only 8 respondents in this age group so the result needs to be interpreted with caution.

4.5.1.3 Race

No significant differences were found concerning race for the personal dimension of N-CT-4 Practice Questionnaire.

4.5.1.4 Institution at which qualification was obtained

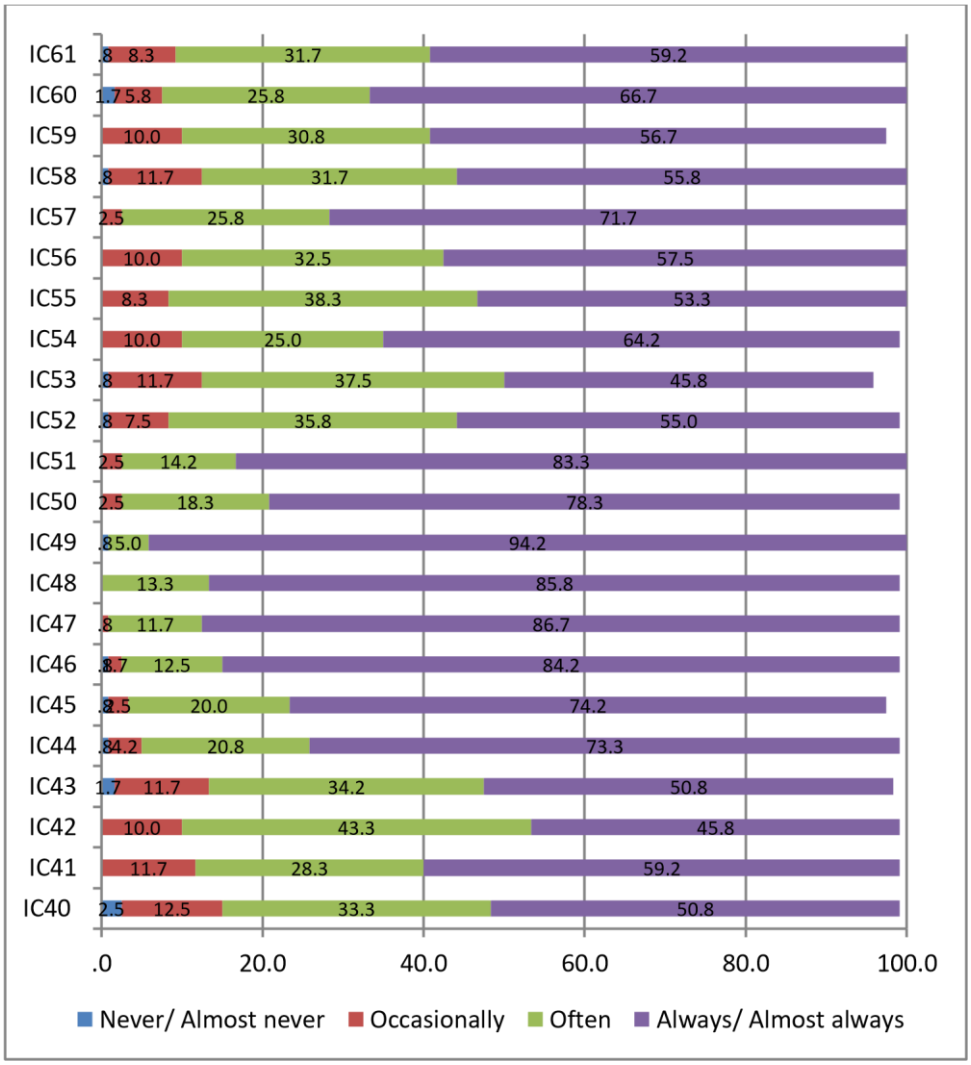
The average frequency score for this dimension (personal) is significantly higher for students from public institutions (M = 3.656) than for those from private institutions (M = 3.410), t (118) = -1.997, p = 0.048.

4.5.1.5 Time since obtainment of basic qualification

The average frequency score revealed that there were no significant differences with regards to the length of period since the obtainment of basic qualification of the student and its effect on the personal dimension of N-CT-4 Practice Questionnaire.

4.5.2 Intellectual and cognitive abilities (ICA-44 items)

The second dimension in the 4-Circle-CT Model has to do with intellectual and cognitive abilities (ICA). This circle comprises 44 elements and emphasizes the need for the student to take responsibility to seek out learning experiences to gain theoretical and experiential knowledge to think critically. It encompasses the practice of intellectual skills such as assessing systematically and comprehensively which in turn improves one's ability to perform intellectually. See Figure 4.8.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Never/ Almost never
Occasionally
Often
Always/ Almost always

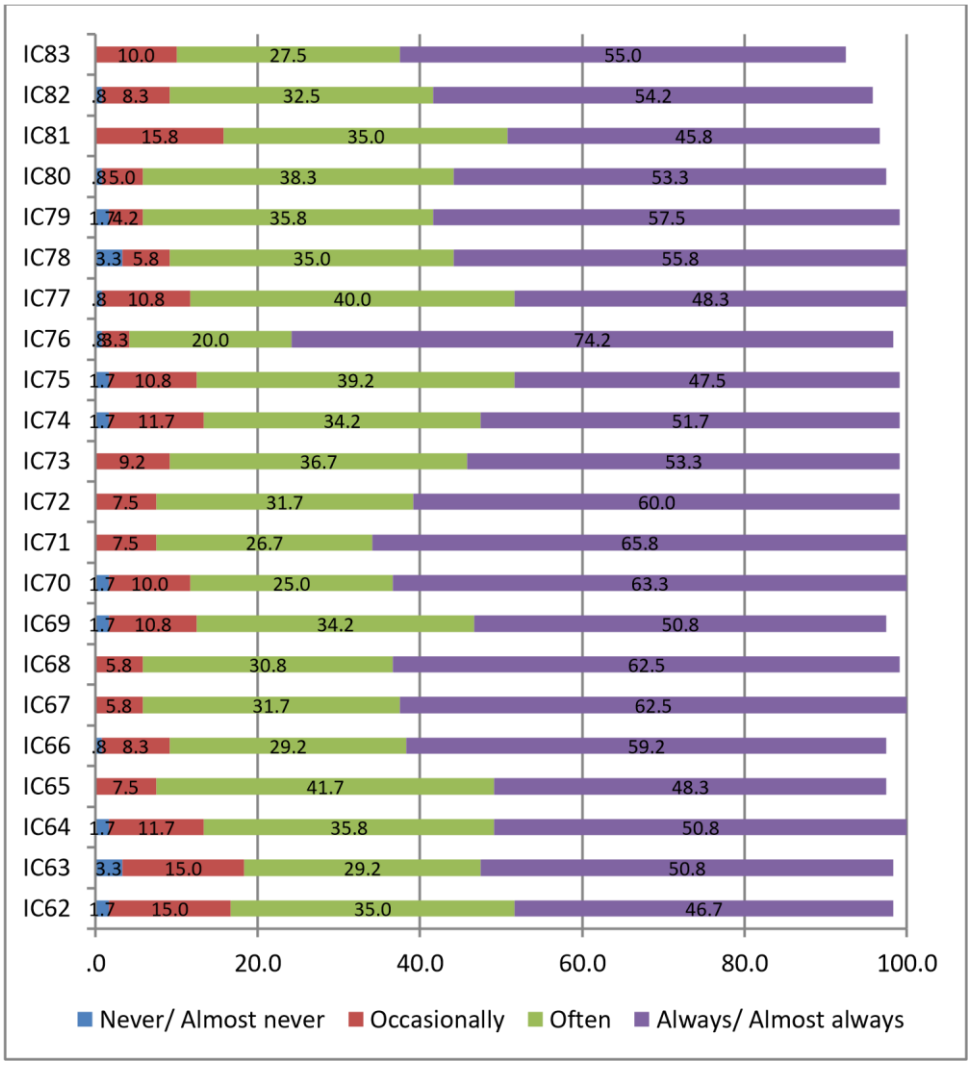

Figure 4.8: Frequencies of responses on Intellectual and Cognitive Abilities (ICA-44 items)

Analysis using the binomial test shows that for all items a significant number of the respondents responded either ‘often’ or ‘always’.

Cronbach’s alpha reliability score for this dimension: alpha = 0.961 (reliable > 0.7)

Statistical scoring was tested on the average and sum across the demographic variables for significant differences on intellectual and cognitive abilities (ICA-44 items) of the N-CT-4 Practice Questionnaire.

For gender, level of training and institution, an independent samples t-test was used and for age, race and when qualification obtained, ANOVA/Welch was used.

4.5.2.1 Gender

Independent samples t-test used denotes that gender had no significant difference on the intellectual and cognitive abilities dimension of the N-CT-4 Practice Questionnaire.

4.5.2.2 Age

The average score on the intellectual and cognitive abilities (ICA) dimension of the N-CT-4 Practice Questionnaire is significantly different, on average, for different age groups, Welch (2, 21.204) = 15.616, p <0.0005. More specifically, 41-50 year olds (M = 3.893) score significantly higher than do 21-30 year olds (M = 3.451) and 31-40 year olds (M = 3.555).

4.5.2.3 Race

Findings revealed that race had no significant differences were found concerning intellectual and cognitive abilities (ICA) dimension of the N-CT-4 Practice Questionnaire.

4.5.2.4 Institution at which qualification was obtained

The institution at which students obtained their basic qualification had no impact on the intellectual and cognitive abilities dimension (ICA) of the N-CT-4 Practice Questionnaire.

4.5.2.5 Time the basic qualification was obtained

The average frequency score revealed that there were no significant differences with regards to the length of period since the basic qualification was obtained and its effect on the intellectual and cognitive abilities dimension of the N-CT-4 Practice Questionnaire.

4.5.3 Interpersonal abilities and self-management (IA)

The third dimension in the 4-Circle-CT Model has to do with interpersonal abilities and self-management (IA). This circle comprises 20 elements which analyze interpersonal abilities that allow for the establishing of effective links with the patient, the clinical environment, and the multi-disciplinary team.

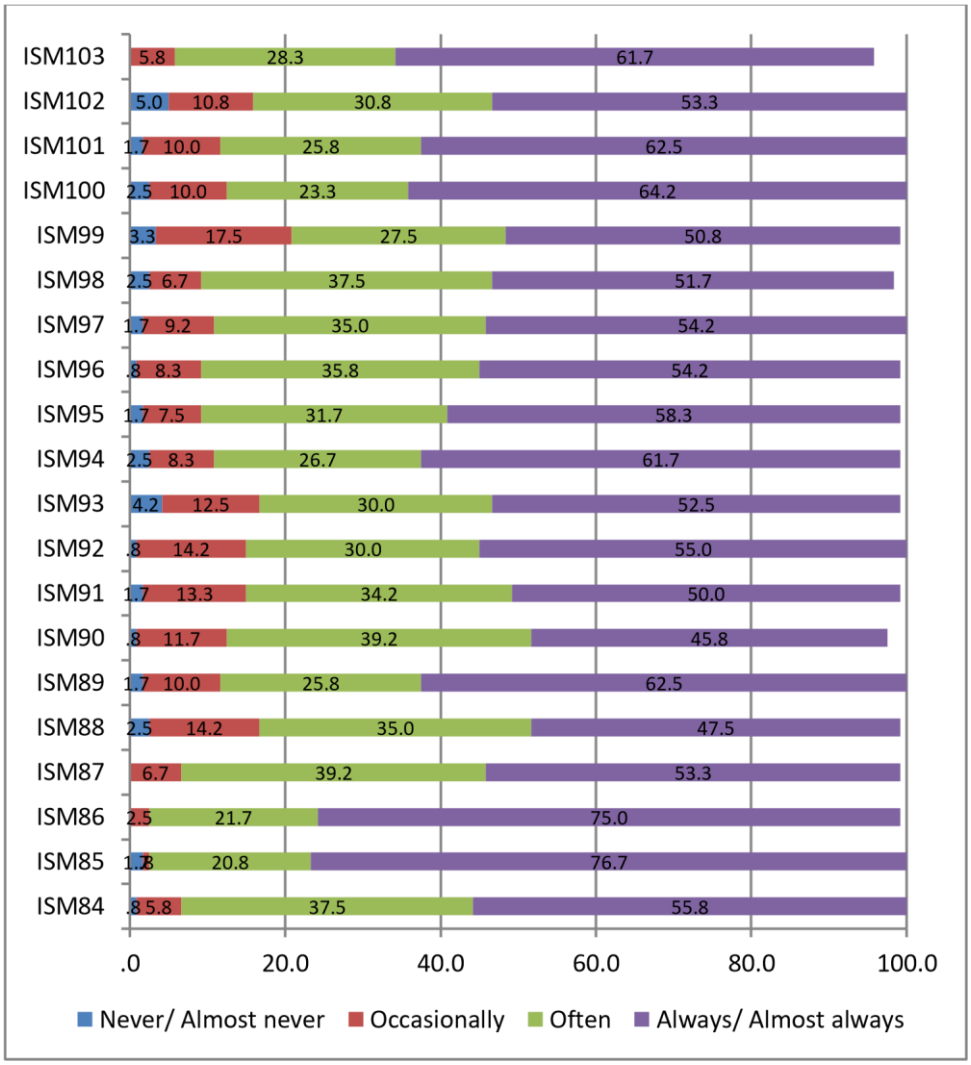

Figure 4.9: H Interpersonal and self-management dimension (IA-20 items)

Analysis using the binomial test shows that for all items, in this dimension, a significant number of the respondents responded either ‘often’ or ‘always’.

Cronbach’s alpha reliability score for this dimension: alpha = 0.940 (reliable > 0.7)

Statistical scoring was tested on the average and sum across the demographic variables for significant differences on interpersonal and self-management abilities dimension (ISM-20 items) of the N-CT-4 Practice Questionnaire.

For gender, level of training and institution, an independent samples t-test was used and for age, race and when qualification obtained, ANOVA/Welch was used.

4.5.3.1 Gender

Independent samples t-test used denotes that gender had no significant difference on the interpersonal and self-management abilities dimension of the N-CT-4 Practice Questionnaire.

4.5.3.2 Age

Findings revealed that the average score for the dimension of interpersonal and self-management abilities (ICA) is significantly different, on average, for different age groups, Welch (2, 30.146) = 17.245, $p < 0.0005$. More specifically, 41-50 year olds (M = 3.9118) score significantly higher than 21-30 year olds (M = 3.3387) and 31-40 year olds (M = 3.5589).

These findings suggest that students improve on the dimension of interpersonal skills and self-management abilities (ICA) as they get older.

4.5.3.3 Race

Findings revealed that no significant differences were found concerning race on the interpersonal and self-management abilities dimension of the N-CT-4 Practice Questionnaire.

4.5.3.4 Present level of training

The average scores for the dimension of interpersonal and self-management abilities (ICA) of the N-CT-4 Practice Questionnaire was found to be significantly higher for 2nd year level students (M = 3.5759) than for first year students (M = 3.3378), $t(117) = -2.702$, $p = 0.008$.

The above findings suggest that for the dimension of interpersonal skills and self-management abilities (ICA) the senior students (2nd year) appear to have improved skills and abilities.

4.5.3.5 Institution at which basic qualification was obtained

Participants were asked to state whether their basic nurse training was at a public nursing college or at a private institution. Findings for this variable indicated that the average score for the dimension of interpersonal skills and self-management abilities

(ICA) is significantly higher for students from public institutions (M = 3.7306) than for those from private institutions (M = 3.4238), t (118) = -1.696, p = 0.093.

These findings suggest the dimension of interpersonal skills and self-management abilities (ICA) of CTS have a definitive correlation in students who received their basic training at a public nursing institution than those who were trained at a private nursing institution.

4.5.3.6 Time the basic qualification was obtained

The participants were asked to state the period since they had obtained their basic qualification to the present nursing course. Findings reveal that the time elapsed between basic qualification and present training did not have an impact on the interpersonal and self-management abilities of the students. No significant differences were noted on the average frequency scores of this dimension of the NCT-4 Practice Questionnaire.

4.5.4 Technical abilities (TA-6 items)

The fourth dimension in the 4-Circle-CT Model has to do with technical abilities. This circle comprises six elements which are involved with the knowledge of the procedures and the practice of technical skills that are part of the nursing profession.

See Figure 4.10.

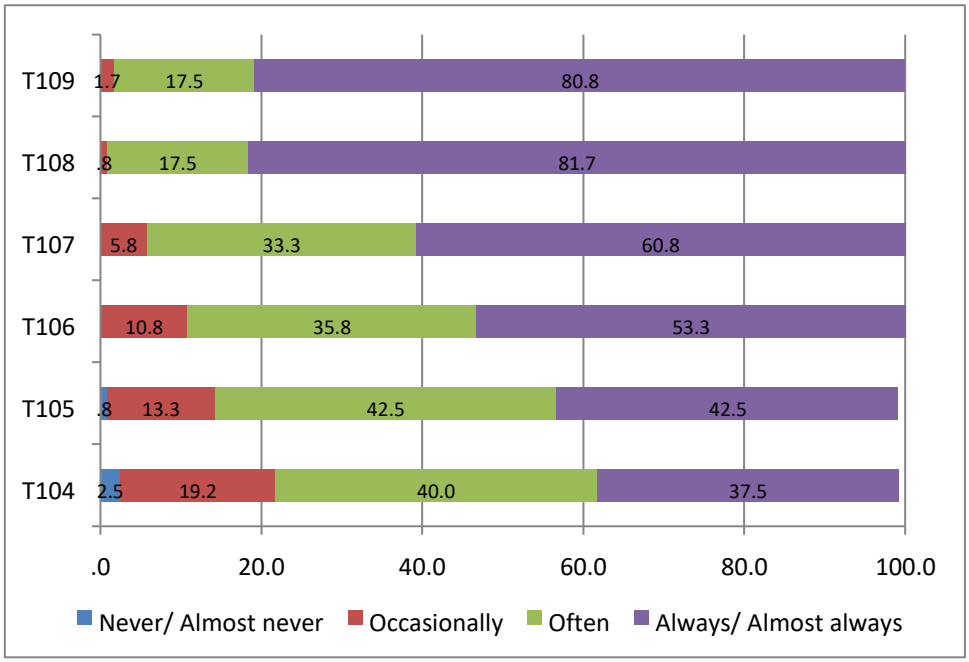

Figure 4.10: Technical abilities (TA-6 items)

Analysis using the binomial test shows that for all items, in this dimension, a significant number of the respondents responded either ‘often’ or ‘always’.

Cronbach’s alpha reliability score for this dimension: alpha = 0.841 (reliable > 0.7)

Statistical scoring was tested on the average and sum across the demographic variables for significant differences on Technical Abilities (TA - 6 items) of the N-CT4 Practice Questionnaire.

For gender, level of training and institution, an independent samples t-test was used and for age, race and when qualification obtained, ANOVA/Welch was used.

4.5.4.1 Gender

Independent samples t-test used on this dimension denotes that gender had no significant difference on the technical abilities as listed in the N-CT-4 Practice Questionnaire.

4.5.4.2 Age

Findings reveal that the average score on the technical abilities (TA) dimension of the N-CT-4 Practice Questionnaire is significantly different, on average, for different age groups, ANOVA (0.734) = 1.467, $p < 0.0005$. More specifically, 41-50 year olds (M = 3.8125) score significantly higher than do 21-30 year olds (M = 3.4215) and 3140 year olds (M = 3.5778).

4.5.4.3 Race

There were no significant differences found concerning race on the technical abilities (TA) as per the N-CT-4 Practice Questionnaire.

4.5.4.4 Level of training student at present

The report on the average scores for the dimension of technical abilities (TA) of the N-CT-4 Practice Questionnaire was found to be significantly higher for 2nd year level students (M = 3.5969) than for first level students (M = 3.4116), t (117) = -2.185, p = 0.031.

4.5.4.5 Institution at which qualification was obtained

The institution at which the basic qualification of the students were obtained had no impact on the technical abilities (TA) as listed in the N-CT-4 Practice Questionnaire.

4.5.4.6 Time of basic qualification obtainment

The average frequency score revealed that there was no significant difference in the technical abilities (TA) of students of those in the first year in comparison to the second year students.

4.6 Part 2. Qualitative data results

4.6.1 Introduction

This section presents the qualitative data that emerged from the focus group interview with the nurse educators conducted at the nursing college that was used in this case study.

The data was analyzed in terms of the objectives of the study:

- To describe current instructional practices of nurse educators at the selected NEI.
- To explore factors that facilitate the development of CTS
- To determine possible barriers to its development in student nurses.
- To establish nurse educators' views on instructional practices which develop and those that inhibit CTS in student nurses.

Thematic analysis was the method chosen to analyze the data. Thematic analysis is a method for identifying, analyzing and reporting patterns (themes) within data which organizes and describes the data set in rich detail (Braun and Clarke 2006: 79).

4.6.2 Sample realization

The nurse educator sample was n = 6; however, a response rate of 66.6 % (n = 4) was obtained because two participants had resigned by the time of the interview. Of the remaining four participants in the sample, two were lecturers with a nurse education qualification and the remaining two who were not in possession of a nurse education qualification, were clinical facilitators. All were female with ages ranging from 31 to

71+. The lecturers with a nurse education qualification was the principal and deputy principal of the college who were official retirees and were above the age of 71 years. Both the nurse educators had a Bachelor's Degree with 21-35 years of nurse education experience.

4.6.3 Themes and sub-themes

Based on the findings of this study, the researcher identified themes and sub-themes linked to the phenomenon of CT in student nurses and nurse educators (Table 4.1). Quotations from participants in the focus group are used to illustrate the themes and sub-themes.

Table 4.1; Themes and sub-themes

THEMES	SUBTHEMES
1. Characteristics of a critical thinker	
1. Current use of instructional practices	
3. Challenges in nurse education	3.1 Language Barrier 3.2 Pre-Selection Criteria 3.3 Age 3.4 Time Constraints
4. Challenges in the clinical environment	4.1 Lack of staff 4.2 Lack of equipment 4.3 Lack of supervision 4.4 Lack of professionalism in the clinical environment
5. Students' level of motivation and attitudinal dispositions	5.1 Learning to pass exams 5.2 Students' poor attitude towards their study 5.3 Students' lack of motivation

4.6.3.1 Theme 1: Characteristics of a critical thinker

The responses from the nurse educators revealed that there are various words and phrases that capture the characteristics of a critical thinker. Participants agreed that critical thinking requires "the ability to apply knowledge". The description of "applying her mind" was a recurrent phrase used by the nurse educators.

> *… and applies her mind to what she is doing, to what she is learning or to whatever question is being posed to her.* (Participant 1)

> *… can apply their minds.* (Participant 2)

The participants expressed that the critical thinker should be an effective communicator and must be able to analyze the reasoning process. This included reflection, the application of logic, intuition and creativity and being grounded in specific knowledge, skills and experience.

> *if a learner is able to make deductions from what she has learnt, what she knows and to actually think out of the box; and applies her mind to what she is doing, to what she is learning or to whatever question is being posed to her … not just to take the information and regurgitate it but to use her mind on it and bite into her own repertoire but as well learn from and connect it to what she has learnt before.* (Participant 1)

> *But also to delve deep into the deeper meaning; to be able to interpret whatever content she has been given and find meaning to it especially with respect to applying it not only to patient care but to communication in general and to his/her own world.* (Participant 2)

Findings revealed that the acquisition of theoretical knowledge learnt at school and general knowledge of a student was expected to influence critical thinking.

> *To use the knowledge that they have learnt at school and general knowledge.* (Participant 4)

The participants added that research plays a positive role in widening their knowledge base.

> *I can add that they must research the information they have so it will add to that information and to add to their knowledge.* (Participant 3)

Participants defined critical thinking as ‘thinking on their feet’.

> *… they must ‘think on their feet’.* (Participant 4)

4.6.3.2 Theme 2: Current use of instructional practices

The researcher sought to explore pedagogical practices that the nurse educators currently practiced in order to stimulate critical thinking in the student.

The participants stated that various approaches were attempted to stimulate students to achieve higher order learning which reflects critical thinking. These approaches are meant to provoke the student to think beyond the basic facts, to deepen the level of understanding and application and to use reasoned thinking in order to gain insight. Data revealed that pedagogical practices utilized included: projects in the class as a group that require students to search for information, Socratic questioning, scenario-based learning, journaling and case studies of the less common medical conditions. However, the participants stated that although these methods were attempted it was mainly the lecture method that was used.

> *… tends us to go the conventional ways of lecture and notes.* (Participant 2)

> *… working on a project so to speak, but in the classroom situation; posing questions that need them to think, need for them to think that they would not necessarily find in a book but need for them to use the information that they have what they planned previously, to apply it now, to bring it together and be able to think, to work out what the answer will be.* (Participant 1)

> *Also to here and there give them scenarios as a class or sometimes as groups or as a question during assessment so that the answer is not just straight forward but to look into the actual meaning of this and the effect etc, etc., yes so can apply their minds. We also got a form that we give them where they can get unique cases in the ward with the intention that they would bring it to class but usually you find that they just journal and keep it there but if you read their journals you can see that some of them they make good use of their journaling by getting unique cases.* (Participant 2)

We have disease profiles where they go to different wards such as surgical, ortho, medical, so they write about the case study of the patient if they came with a different diagnosis. (Participant 3)

It should be something, not the common conditions but those that are extra ordinary. (Participant 2)

4.6.3.3 Theme 3: Challenges in nurse education

The nurse educators were asked if there were any barriers that they believe could prevent the development of CTS in the student nurse. Data revealed that there are a variety of reasons that may preclude the advancement of this vital attribute in the student nurse. The subthemes that emerged from the interview are presented below.

4.6.3.3.1 Language barrier

Language barrier was cited to be a problem for the majority of the students as English was not their first language.

Quite a number of students actually have a language barrier. (Participant 1).

The remaining three participants nodded in agreement to this statement.

4.6.3.3.2 Pre-selection criteria

Respondents felt that the pre-selection criteria for nursing was a deciding factor in the choice of students who are accepted for nurse training and implied that the standard was not as high as other professions.

Also, selection criteria right from enrolled nurse to nursing across the board; we don't seem to have the latitude of choosing the cream of the crop and attract them to nursing so to me it is a big barrier to critical thinking … just absorbing whosoever and whatsoever, whereas for certain professions their selection criteria are very high. (Participant 2)

In the universities entrance is strict because at least you are taking people with Bachelors pass whereas here in a college as long as

you got a piece of paper with matric is what I mean and that becomes a barrier. (Participant 2)

4.6.3.3.3 Age

The target population for this study were Bridging Course students. These students would have already completed a two year course at the end of which they received a certificate as enrolled nurses. They then had an option to register for another two years of training to 'bridge' them to a general nurse level. The participants felt that most of the nurses had studied a long time ago and subsequently found it difficult to get back into studying.

And another thing I think we take students who have trained let's say they are coming to do their Bridging and they have done their enrolled nurse training a long time ago and it's like you are starting all over again … they want to be spoon-fed most of the time. (Participant 3)

4.6.3.3.4 Time constraints

Participants expressed that if critical thinking is to be developed in the student then the nurse educator must have sufficient time to prepare content that would stimulate the student to think critically, however, this was not possible due to time constraints.

They would then resort to the conventional lecture method of education.

If you look at the issue of critical thinking and what is involved it is also true that if you want them to be focused and want your students to be critical thinkers, there is a time issue, there is a preparation issue even on your side because you must have a lot of time to try and extrapolate what they are intending to say and whatever, bring it in and then to reflect. Let's say they were working in groups you also as a teacher you need to want to prepare a questionnaire or a guide so that you narrow the field. When you get all those responses you must put it together and reflect on it. It must conform to your objectives for that lesson. This does take a bit of more time from your side and also on the side of the student. (Participant 2)

4.6.3.4 Theme 4: Challenges in the clinical environment

The clinical environment that the student practiced in emerged as a real challenge to the development of critical thinking in the student. Participants stated that the busy environment together with the staff shortage and the lack of equipment did not give the student the opportunity to practice skills that would allow them to progress. It was mentioned that students were often used as porters to transport patients to other departments when there were no porters available. Students were not advancing to the more sophisticated skills in nursing such as the administration of intravenous medication or assisting the medical officers with procedures. Students followed the trends of the clinical environment they practiced in which revealed a deviation of principles and skills taught to them, such as aseptic techniques.

4.6.3.4.1 Staff shortages

> *But another thing is the shortage in the wards … and doing the porters job, because it ends up that the 'bridger' gets sent to the ultrasound.* (Participant 4)

Participants verbalised their concern that students were expected to do basic nursing care and were not getting the opportunity to advance to more sophisticated skills pertinent to their level of study.

> *… to change patients, vital signs… and not going near the medication trolley, or injection trolley, or IV.* (Participant 4)

> *… or helping doctors with procedures* (Participant 1 & Participant 4)

> *… but they are nowhere near there…* (Participant 2)

4.6.3.4.2 Lack of equipment

Participants alluded to the lack of equipment and surgical sundries supplies in the clinical setting. They stated that this was a contributory factor to students comprising certain principles, such as the aseptic technique when sterile procedures needed to be done.

… but I think we need staff and equipment, there is no equipment in the ward, take a simple dressing, I mean because they are short I think they just do anyhow, asepsis is sometimes … (Participant 2)

On the point of the above statement, *participant 1* nodded in agreement by saying *'it goes '* concurring with *participant 2,* that sterility of procedures are compromised by the lack of equipment and the lack of supervision from staff.

4.6.3.4.3 Lack of supervision

It was of concern that the shortage of staff consequently led to students not being adequately supervised. It was also found that students didn't comply with the skills demonstrated to them at college but instead reverted to the 'ward' way of doing procedures.

… even though they are taught here when they go to the wards you find its done this way and then when you see them doing procedures, they will scrub and take the paper from there and wipe their hands, that's not sterile. (Participant 2)

There's a 'college way' of doing it and then a 'ward way'. (Participant 1 & 2)

They are mostly in the ward so they see a ward way of doing it more than the college. (Participant 2)

4.6.3.4.4 Lack of professionalism in the clinical environment

Another concern raised by the nurse educators was that the students were at times addressed by the clinical staff in a condescending manner.

Unfortunately, some even call them 'skivvies … (Participant 1)

4.6.3.5 Theme 5: Students level of motivation and attitudinal dispositions

Students' general attitude towards their study and the low level of motivation was a dominant theme that emerged in the interview. Throughout the interview the participants consistently expressed their disillusionment and frustration that they

experienced with the students. The following sub-themes indicate the challenges that the participants have expressed.

4.6.3.5.1 Learning to pass exams

The nurse educators indicated that the students' primary goal was to 'pass the exam' and students resorted to memorization of content. Participants concern was that the students were unable to integrate theory into practice. The term 'spoon-feeding' was used to describe what the student expected from the nurse educators.

> *… they just want to pass …* (Participant 3)

> *… they separate theory from practice.* (Participant 1)

> *They don't care whether they get low marks and you would think if they get low marks they would sit up and think! ... but it's just a joke to them … the focus to pass the exam is the goal for the student, they just want to wear epaulettes.* (Participant 1)

> *… take the information and regurgitate it.* (Participant 4)

4.6.3.5.2 Students poor attitude towards their study

The nurse educators raised the concern that the majority of the students showed a general apathy to their studies and showed no motivation to do more than what is necessary.

> *… we try to get them to be interested … but they don't seem to care … walk around with 'blinkers' on, they don't see what they do … they just want notes, notes, notes but they never even look at them.* (Participant 4)

> *Yes, but here they expect you to do their homework* (Participant 1)

4.6.3.5.3 Students' lack of motivation

This phenomenon was an overwhelming trend in the interview with the nurse educators as seen in the following statements.

We also encourage them to carry their notebooks because if they see anything out of the ordinary they can jot it down but you find that it is very difficult to find it in the wards because when you ask where your notebook there is no notebook, so yeah. (Participant 1)

If the students were compliant and committed the classroom scenario would be very much different because you would come with your prep and whatever and find them knowing something. (Participant 2)

But listen, the thing is the students that we are teaching now, they are that kind that you can give them a test and they get those low marks and maybe in a months' time you give them the same test and they will
still fail. (Participant 1)

Because when we compare the student of today and students of ten years and twenty years those of previous years ago, there is a big difference. Their level of motivation is low but it's not all of them but some are just not pushing at all. (Participant 2)

Yes, some do learn but unfortunately, not the majority ... two thirds of the group you find just give it the minimum, minimum of their time, of their application. (Participant 1)

4.7 Summary of Chapter 4

This chapter presented the results of the quantitative and qualitative data findings aligned to the objectives of the study and the conceptual framework. Quantitative data focused on the findings from a structured questionnaire which was analyzed and presented in the form of graphs and tables. Qualitative data focused on findings of the focus group interview held with nurse educators at the NEI which was analyzed and presented in the form of themes and sub themes.

4.7.1 Summary of Part 1. Quantitative data

A summary of the quantitative data results includes the demographic questionnaire and the self-administered structured questionnaire.

4.7.1.1 Section A. Demographic questionnaire

- Gender: Females were the dominant gender in this sample (90.8%).
- Age: Millennials made up 60, 8% of the sample population.
- Race: Black students were predominant (95.8%)
- Level of training that students are at present: Slightly more students were in their first year of study (55%) and the remainder in their final year.
- Nursing education institute of basic training: the majority of students received their basic training at private nursing colleges (93.3%) and the remainder were trained at a public institution.
- Time since obtainment of basic nursing qualification: the majority of the students obtained their basic training < 5years ago and the remaining students between 6 and 20 years ago.

4.7.1.2 Section B. Structured questionnaire

The objective of the structured questionnaire was to measure the CTS of student nurses in clinical practice. The 4-Circle CT Model makes up four dimensions which was developed into a self-administered questionnaire which consists of 109 items. The four dimensions (personal characteristics; intellectual and cognitive abilities; interpersonal abilities and self-management; and technical abilities) were applied to the demographic profile of the students. Table 4.2 summarises the results.

Table 4.2: Summary of quantitative data results of the structured questionnaire

	Personal characteristics (PC)	**Intellectual and cognitive abilities (ICA)**	**Interpersonal abilities and self-management (IA)**	**Technical abilities (TA)**
Gender	No significant difference	No significant difference	No significant difference	No significant difference

Age	The average frequency score was significantly higher for the 41-50 age group	The average score is significantly different, on average, for different age groups. More specifically, 41-50 year olds scored significantly higher than 21-30 year olds and 31-40 year olds	The average score is significantly different, on average, for different age groups. More specifically, 41-50 year olds scored significantly higher than 21-30 year olds and 31-40 year olds. These findings suggest that students improve on the dimension of interpersonal skills and self-management abilities (ICA) as they get older	The average score is significantly different. More specifically, 41-50 year olds scored significantly higher than 21-30 year olds and 31-40 year olds
Race	No significant difference	No significant difference	No significant difference	No significant difference
Present level of training students are at	No significant difference	No significant difference	The average scores were found to be significantly higher for 2nd year level students than for first year students. The above findings suggest that for the dimension of interpersonal skills and self-management abilities (ICA) the senior students (2nd year) appear to have improved skills and abilities	No significant difference
Institution at which qualification was obtained	The average frequency score was significantly higher for students from public institutions than for those from private institutions	No significant difference	Findings for this variable indicated that the average score was significantly higher for students from public institutions than for those from private institutions. These findings suggest the dimension of interpersonal skills and self-management abilities (ICA) of CTS have a definitive correlation in students who received their basic training at a public nursing institution compared to those who were trained at a private nursing institution.	No significant difference noted
Time since obtainment of basic qualification	No significant difference	No significant difference	No significant difference	No significant difference noted

4.7.2 Summary of Part 2. Qualitative data

Table 4.3: Summary of qualitative data

THEMES	SUBTHEMES
1. Characteristics of a critical thinker	
2. Current use of instructional practices	
3. Challenges in nurse education	3.1 Language barrier 3.2 Pre-selection criteria 3.3 Age 3.4 Time Constraints
4. Challenges in the clinical environment	4.1 Lack of staff 4.2 Lack of equipment 4.3 Lack of supervision 4.4 Lack of professionalism in the clinical environment
5. Students level of motivation and attitude towards their study	5.1 Learning to pass exams 5.2 Students poor attitude towards their study 5.3 Students lack of motivation

The emphasis in this chapter was on presenting the raw data, which will be discussed in greater depth in the next chapter.

Chapter 5 follows with a discussion of the presented findings, including recommendations, limitations, suggestions for future research and conclusions.

CHAPTER 5: DISCUSSION

5.1 Introduction

The objective of this study was to measure the CTS of student nurses in the clinical setting and to describe the pedagogical practices of nurse educators at a selected nursing education institution (NEI) in Pietermaritzburg, KwaZulu-Natal. Alfaro-LeFevre's (2016) 4-Circle CT Model was used as the theoretical framework to guide the conceptual basis for this study. Both quantitative and qualitative research methodologies were used in the process of data collection. Data for this study was collected from current bridging course students and the nurse educators from the selected NEI to glean a holistic view of the concept of critical thinking. The quantitative aspect of this study consisted of a self-administered questionnaire. Zuriguel-Pérez' *et al.* (2017), Nursing Critical Thinking in Clinical Practice

Questionnaire (N-CT-4 Practice) based on Alfaro-LeFevre's (2016) 4-Circle CT Model was used to measure the CTS of student nurses (Annexure G). For the qualitative aspect of the study, a semi-structured interview was used with a focus group comprising the nurse educators, conducted concurrently during the data collection process (Annexure E).

The momentum for this study came directly from, firstly, the researchers' own concern of nurse educators' instructional methods used to educate nursing students in the classroom and whether it indeed stimulated and provoked the students to think and develop their CTS. Secondly, by the observation that nurses lacked CTS both in the classroom and in the clinical setting. The researcher recognized, herself being a nurse educator, that CT is a vital criterion in nursing practice, and concurred with findings of previous research that nursing students lack CT abilities (Kaya, Şenyuva and Bodur 2017: 76). The researcher has also taken cognizance of the radically changed face of health care needs in the South African context as alluded in several previous studies.

According to Alfaro-LeFevre (2016), CT is a "cognitive process that includes rational analysis of information to facilitate clinical reasoning, judgement and decision making". Studies indicated that the role of the nurse practitioner has expanded considerably, consequently demanding that nurses possess high-level CTS in order to provide safe, competent and comprehensive patient care (Chang *et al.* 2011). Literature reveals that

there is a paucity of evidence that CT competence is evaluated in the nursing discipline even though CT has been identified as an essential element in nursing practice. (Zuriguel-Pérez 2014). Nelson (2017: 1) echoes that to prepare student nurses for this phenomenon, nurse educators must, therefore, be able to assess CTS. Previous research recommends that studies be conducted to ascertain the teaching methods applied by nurse educators as this has a direct influence on the development of CT skills in the student (van Zyl 2014). Furthermore, Subhan (2014) cites earlier authors who found that global studies indicate that the development of critical thinking relied on effective teaching strategies.

In Chapter 4 the data collected was analyzed and presented. In this chapter the data will be critically interpreted and where possible relevant literature will be integrated into the discussion. This chapter will close with limitations to the study, recommendations and final conclusions of the current study will be presented.

This study set out to describe pedagogical practices and student nurses' critical thinking in a private NEI in Pietermaritzburg, KwaZulu-Natal.

This chapter presents the research findings aligned to the study objectives as per Table 1.1.

5.2 Discussion of the objectives

To measure the critical thinking skills of student nurses in clinical practice

Alfaro-LeFevre's (2016) 4-Circle CT Model guided the conceptual basis for this study. This theoretical model submits a definition of CT as practiced in the context of the clinical healthcare environment Four components, (a) personal characteristics (PC), (b) intellectual and cognitive abilities (ICA), (c) interpersonal abilities and self-management (IA), and (d) technical abilities (TA) are integrated in the synthesis of critical thinking. Alfaro-LeFevre introduces a series of indicators of critical thinking, the so-called CTIs, for each component. The CTIs are descriptions of behavior that promote critical thinking in clinical practice. The combination of attributes in relation to these four dimensions is expected to result in CT competence.

In the current study the researcher applied socio-demographics and professional variables to all four constructs of the theoretical framework in order to ascertain critical

thinking characteristics in student nurses. Data showed that the age variable was seen to have the most impact on all four constructs of the 4-Circle CT Model. It was evident that older students scored significantly higher regarding CT in all four categories. The researcher will integrate the findings of the quantitative results and the themes and sub themes of the qualitative data and draw from previous literature to give the findings more depth and add richness to the study.

5.2.1 Personal characteristics (PC)

The first dimension in the 4-Circle-CT Model has to do with personal characteristics. This circle comprises of 39 elements. Each element is a brief statement of attributes and behaviours that are seen in critical thinkers. Alfaro-LeFevre (2016). proposes that these are patterns of behaviour that advocate for the development of CT habits The emphasis is on developing a critical thinking character and a commitment to holding oneself to high standards. The author of the theoretical framework asserts that when the first construct of personal characteristics is visible in an individual,the skills in the other three constructs of the 4-Circle-CT Model come easily (AlfaroLeFevre 2016)

5.2.1.1 Characteristics and behaviors of a critical thinker

In this study the educators demonstrated a good understanding of the concept of critical thinking. The responses from the nurse educators revealed various words and phrases that capture the characteristics of a critical thinker such as: "*the ability to apply knowledge"; "applying the mind"; "an effective communicator".*

Nurse educators alluded to the concept of CT which was described as "*'think on their feet'"*. This notion is consistent with the theoretical framework which refers to this expression as 'thinking in action' which suggests that it is thinking that is a prompt, "dynamic reasoning that considers several cues and priorities at once" (AlfaroLeFevre 2016). Educators made reference to the ability of the student to be able to analyze the reasoning process including the concepts of reflection, the application of logic, intuition and creativity. This is reflected in phrases such as: "to *make deductions from what she has learnt"; "to think out of the box"; "to delve deep into the deeper meaning; to be able to interpret content; and apply it to patient care, communication and to his/her own world"; "not just to take the information and regurgitate it but to use her mind on it and bite into her own repertoire"; "connect it to what she has learnt before"*. Participants

were of the belief that the acquisition of theoretical knowledge learnt at school and general knowledge of a student was expected to influence critical thinking. However, Alfaro-LeFevre (2013) cautions that CT should not be based on a superficial understanding that CT is common sense and cannot be taught.

While nurse educators appeared to have a healthy understanding of the concept of CT, they believed that the students lacked this skill. Participants in this study stated that they were frustrated and disillusioned by the learning culture of student nurses at the NEI.

Nevertheless, critical thinking is acclaimed as a highly esteemed attribute for favorable patient outcomes (Noone and Seery 2018). Multiple authors concur that the complexity and evolving nature of the health-care workplace highlight CT as a key competency, both in nursing education and in professional practice (Hasanpour, Bagheri and Heidari, 2018.; Zuriguel- Pérez *et al.* 2014; Pucer 2014).

Studies suggest that the role of the nurse practitioner has expanded considerably, subsequently demanding that nurses possess high-level CTS for the provision of safe, competent and comprehensive patient care (Chang *et al.* 2011). Literature has revealed diverse definitions of CT with a common recognition of the fact that it is a multifaceted process whose components include intellectual abilities and attitudinal dispositions (Zuriguel-Pérez *et al.* 2015). Facione *et al.* (2013: 26) frequently cited authors of CT, stipulate that CT is “essential as a tool of inquiry”. As recognized experts in the field the authors propose that the goal to define CT would be “to help sharpen ones critical thinking skills and to cultivate the critical thinking spirit, and a starting point would be to list mental skills and habits of mind which should include cognitive skills and dispositions”. Alfaro-LeFevre (2016) captures the definition in its simplest form by alluding to the term “critical” denoting “important” and thus, CT being “important thinking” that is required in order to assess, prevent, or manage any situation.

5.2.1.2 Attitudinal dispositions of students

Zuriguel-Perez (2015), in reviewing the literature, notes that previous authors have concluded that diverse definitions of CT exist with a common recognition that it is a multifaceted process whose components include intellectual abilities and attitudinal dispositions. Recent research reveals that the attitudinal dispositions of students are fundamental in developing CTS (Makhene 2019).

Data in the current study revealed nurse educators' perception of students' poor attitudinal disposition as a predominant trend. Participants repeatedly voiced their disquiet at the display of negative attitudes of the student nurses towards their study. Nurse educators consistently expressed their disillusionment and frustration that they experienced with the students. They raised the concern that the majority of the students showed a general disinterest and lacked motivation to do more than is necessary. A recent study identified this feature and described students' as being irresponsible, tardy, unwilling to take responsibility for their own learning as well as their obvious disinterest in nursing, leading to serious consequences concerning their learning and subsequent competence (van Wyngaarden, Leech, and Coetzee: 2019) The participants in the current study highlighted that the students' goal was to "*pass the exam*" and "*wear an epaulette*" and were not aware of the responsibility that comes with the qualification. An epaulette is a distinguishing device worn by nurses in South Africa. Their attitude reflected that their aim was to obtain a nursing qualification irrespective of their low marks. Thus, students resorted to memorizing and rote learning which was evident in their inability to integrate theory into practice. Nurse educators mentioned that student nurses displayed an apathetic attitude towards their studies and refused to be self-directed in their learning. This was evident in their demand for "*notes*" and participants described this as being "***spoonfed****"* and content-driven. This finding is of great concern as it was contrary to the ideal that educators should strive to develop students who are independent, self-directed and accountable for their own learning (Harman *et al.* 2015). Participants felt that it was essential for students to be proactive and take the initiative to engage in research to widen their knowledge base.

It is of concern that students lack fundamental characteristics of self-discipline, being proactive, being analytical, exercising autonomy, responsibility, and insightfulness, all of which are fundamental to development of CT. The findings in the current study are in direct contrast to the personal characteristic and behavioral constructs of the critical thinking indicators. Therefore, if nursing education is intended to produce confident, autonomous, critical thinkers who provide safe patient care leading to positive patient outcomes in the present complex, dynamic clinical settings, then the data in this study reflects that we are failing to accomplish this goal.

5.2.1.3 Age

The age variable in the current study suggests that there is a robust association between the age of the students and the 4-Circle CT Model. In all four dimensions of the questionnaire (personal characteristics; intellectual and cognitive abilities; interpersonal and self-management abilities and technical skills) the results differed significantly by age. It was found that the 41-50 age group scored higher on all for dimensions of the N-CT-4 Practice Questionnaire.

The correlation of age specifically to personal characteristics is interesting to note as this construct activates critical thinking behaviors. It was found that students in their final year of study scored higher in the same dimension. This outcome is consistent with a recent study which revealed that CT levels in nurses in the age group of between 53 and 65, were higher than in younger nurses (Zuriguel-Pérez 2018).

Findings also show that the older students possessed a higher level of intellectual and cognitive abilities in the clinical setting. This is in keeping with the theoretical framework which makes reference to moral development as a CT indicator. It may be assumed that maturity is associated with older nurses as they have had more opportunities to practice clinical reasoning and decision making in various health care clinical environments. It stands to reason that older students may have had a longer period of clinical experience in nursing and have accumulated experiential knowledge and are therefore more inclined to think critically. However, there are contradictory reports from the participants in the current study. Nurse educators expressed that the older students found it difficult to orientate themselves toward the behavior of studying and were not self-directed in their learning.

Older and senior students were found to have improved interpersonal skills and self-management abilities, as higher scores for this dimension were seen in this study.

Previous research confirms the finding in the current study which shows that students' self-motivation developed, their disposition to think critically simultaneously improved. (Kaya *et al.* 2017).

On the technical abilities dimension of the N-CT-4 Practice Questionnaire, age, was again a significant variable. The older students scored higher than the younger students. This finding was repeated in the year of study where the senior second year

students scored higher than the first years in the dimension of technical abilities. It is concluded from the findings that there is a definite correlation when the age variable is applied to CTS.

5.2.2 Intellectual and cognitive abilities (ICA)

The second dimension in the 4-Circle-CT Model has to do with intellectual and cognitive abilities (ICA). The construct of this dimension refers to the acquisition of theoretical and experiential knowledge, as well as cognitive skills related to CT in each particular situation. The second circle in the 4-Circle-CT Model comprises 44 elements and emphasizes the need for the student to take responsibility to seek out learning experiences to gain theoretical and experiential knowledge to think critically. It encompasses the practice of intellectual skills, such as systematic and comprehensive assessments which subsequently leads to the improvement of one's ability to perform intellectually.

5.2.2.1 Theoretical knowledge

The aspect of theoretical knowledge in this dimension was discussed by describing the instructional practices of nurse educators at the selected college of study.

The researcher set out to explore the dynamics in nurse education and practice that would develop student nurses' critical thinking abilities. An attempt to determine the existing or potential barriers to critical thinking development in the classroom was also explored. It has been established that in preparation for nurses to practice effectively in the clinical setting, nurse educators must make every endeavor to enhance the learning process of the students (Daniels *et al.* 2015; Ferozali 2011). One of the hallmarks of nurse education is integrating theoretical knowledge with clinical practice to develop nursing students for future professional practice.

However, research indicates that the success of instructional methodologies in promoting higher order cognition competencies remain questionable (Kantar 2013). Nursing education programmes involve didactic and clinical content to train nursing students (Brown 2019). It has been suggested that ineffective teaching methods in nursing education are one of the possible causes in limiting students' ability to develop critical thinking (Van Zyl 2014:157). Several authors (Kantar 2013:792; Subhan 2014:2; Daniels *et al.* 2015: 2) postulate that direct instruction in the form of 'lectures'

and ‘teacher-led discussion’ continue to prevail in the classroom and traditional lecture-based didactic methodologies only serve to passively transfer information from educator to student.

The current study revealed that the nurse educators resorted to the lecture method as their predominant method of instruction. Although research has confirmed that the lecture, a didactic teaching method, is the most favored instructional strategy, the disadvantages of this method of teaching has been equally documented (LekalakalaMokgele 2010; Subhan 2014). Participants reported that they attempted to implement instructional practices such as group projects, Socratic questioning, scenario-based learning, journaling and case studies that were aimed to facilitate a deeper level of learning in the students. However, participants believed that they were not successful in accomplishing this goal. The nurse educators believed that the reasons for their lack of success in their creative teaching was that students lacked self-direction, were non-participative, content-driven and exam focused. Cramming to memorize information just to pass appeared to be the goal as the nurse educators alluded to rote learning being a common practice of the student nurses. Cecily and Omoush (2014) caution that information heavy presentations in a lecture format results in students cramming to memorize information in order to pass examinations and may not result in long-term knowledge retention. It has been widely commented on by many authors in the field that the lecture method is not student-centered, is content driven and is not a preferred method of pedagogics that will produce nurse practitioners that will be critical thinkers (Subhan 2014; Cecily and Omoush 2014; Kantar 2013). Furthermore, it has been emphasized that considerable use of formal lecture based instructional methodologies contributed to the theory-practice gap causation and nurse educators are cautioned that CT will not be stimulated in the students and habits, rather than skill will be produced (van Zyl 2014; Potgieter 2012)).

The current study indicates that the age of student nurses ranged from 21-50 with more than 60% being millennials. This is a strong indication that millennials show a keen interest in the profession of nursing. It is important to note that the age demographics of three out of the four nurse educator participants in this study were in the sixty to 80 age group. These participants are officially retired and work to supplement their monthly pension. It may be argued that the effects of intergenerational diversity on traditional didactic practices in nursing education may have presented a real challenge

to the participants. Erlam , Smythe, and Clair: (2018) points out that today's students represent several generations in the classroom setting and are being taught by nurse educators from a different generational cohort. It stands to reason that the millennials may have been exposed to more diverse teaching strategies than older students who come from a different educational era. It is a concern to the researcher that millennial students who were born in an age of technological advancement are being educated by a generation of baby boomers who still cleave onto the lecture method of instruction and may not be proficient in internet related technology and services. This concern is echoed by a previous study which asserts that technology not only defines this generation but shapes their expectations (Gross 2014). It is suggested that alternative approaches in educational design should be considered in order to maximize teaching and learning for millennial students. Erlam , Smythe, and Clair: (2018) suggest that as millennials are engrossed in social media such media can serve in a multifunctional dimension. Social media has many benefits that can effectively contribute to future efforts in nursing education and research. Integral factors such as increased educator-student engagement, the promotion of critical reflection, the provision of social support and the reinforcement of course content can be accomplished through the use of technology. Erlam, Smythe and Wright-St Clair, (2018) suggests that pedagogical strategies which "maximize repetition, modeling, immersive feedback, and effective communication" tend to be favored by millennial students. Erlam, Smythe, and Clair: (2018) further recommend that these components may necessitate unconventional approaches in educational design in order to maximize teaching and learning for millennial students.

While participants concurred with the disadvantages of the lecture method and admitted their dissatisfaction at having to resort to this practice, they stated that they were confronted with various challenges in the classroom. The findings in this regard corroborates earlier studies confirming that there are fundamental elements that have a direct influence on the development of CTS, and have since become chronic hurdles for nurse education and for student nurses to overcome (van Rooyen *et al.* 2006; Ali and Naylor 2010; Salamonson *et al.* 2008; Murray *et al.* 2008). There is strong evidence however, that nurse educators must keep the teaching and learning process captivating and stimulating in order to enhance the development of critical thinking despite the diversity of barriers and challenges that exist. (Watts 2018; Chan 2013a).

Another valuable methodology suggested to stimulate CT is the use of clinically based scenarios which are problem oriented and invoke questioning (Noone and Seery 2018).

Extensive research confirms that there is a call for nursing education to design an appropriate curriculum to promote CT in nursing students by the use of effective instructional strategies (Lombard and Grosser 2008; Harman *et al.* 2015) Furthermore, nurse educators are encouraged to expand their knowledge of the characteristics of CT attributes and must ensure the development of these throughout student nurse training. This practice will ensure that students will be well prepared and proficient in their use of CTS in a dynamic, complex and challenging health care environment (Noone and Seery 2018).

It must be emphasized that one of the key aims of nursing education is to stimulate nursing students' CTS to function effectively in the evolving clinical environment. Thus, the goal of producing independent critical thinkers in the classroom who practice with competence and skill in the clinical environment was found to be unsuccessful in the current study.

5.2.2.2 Experiential knowledge

The theoretical framework that underpins the current study is explicit in its intention to emphasise that CTS stimulation and classroom learning are key starting points for CT development. However, proficiency in reasoning skills and decision-making are established in the clinical environment when one has repeated experiences under varying circumstances (Alfaro-LeFevre 2016).

5.2.2.3 The clinical environment

Clinical placements are essential for nursing students because they deliver a realistic experience of day-to-day clinical practice (Price 2019). However, it has been noted that student nurses' clinical placement experiences are not always positive ones (Morrell and Ridgway 2014). The absence of this essential practice denies student nurses the opportunity to become independent, autonomous critical thinkers who are equally skilled and competent. Furthermore, this gap compromises patient safety which is a fundamental priority valued by the nursing profession (Wyllie *et al.* 2020)

Joolaee, Amiri, and Farahani, (2015) observes that nursing students are inundated with a myriad of challenges and difficulties on entry into the clinical environment, which subsequently affects their learning. Several authors have identified numerous factors that may contribute as barriers to the promotion of critical thinking (Cho *et al.* 2016; Raterink 2008; Nantsupawat *et al.* 2017). It is well established by many researchers that todays' health care environments are diverse, complex, dynamic and constantly evolving. (Paul 2014; Pitt *et al.* 2015; Chang *et al.* 2011; Potgieter 2012; Subhan 2014; Van Zyl 2014; Chabeli 2010). De Swardt (2019) elaborates that the clinical learning environment is characterized by struggles such as challenging working conditions, excessive workloads, limited resources, health and safety risks, inadequate learning opportunities and unproductive communication. This is consistent with the concern of the current study participants who echoed similar challenges experienced by them. It was reported that staff shortage, lack of learning opportunities and lack of clinical support in the clinical setting presented major disadvantages regarding their experiential learning. Previous South African authors agree that these complex and diverse clinical settings are replicated in the South African context, and present problems that are unique, multifaceted, specialized and ever-changing (van Graan, Williams and Koen 2016; Potgieter 2012). Ford *et al.* (2016: 101) emphasizes that student nurses ought to be responsible and accountable for their own learning and argue that students must be willing to deal with unpredictable clinical environments. What is of great concern, however, is that the complex clinical environment, has been cited as a reason, by some student nurses, for either abandoning or continuing their nursing training (Joolaee, Amiri, and Farahani 2015). More importantly, it is concluded by the researcher that safe patient outcomes are compromised due to the lack of technical skill and competence of the student. Evidence strongly suggests that as nurses become more knowledgeable about their profession and gain expertise in clinical practice, this experience contributes to a positive impact on CTS. (Chao *et al.* 2013; Gloudemans, Schalk, and Reynaert, .2013; Zuriguel-Pérez *et al.* 2018).

5.2.2.4 Lack of learning opportunities

It has emerged in the current study that the clinical experience of student nurses in practice are at risk for unmet clinical outcomes due to lack of learning opportunities. It

is cautioned that the consequences of unmet clinical learning outcomes will result in a generation of nurses embarking on the profession with limited knowledge and skills to meet the desired outcomes for patient care (de Swardt 2019). The nurse educator participants mentioned that student nurses are confined to basic nursing care tasks when placed in the clinical settings. This meant that they are not given the opportunity to advance to the more sophisticated skills in nursing such as the administration of intravenous medication or assisting the doctors with medical and surgical procedures. It must be reiterated that these students are not neophytes. At this stage in their training they ought to be mentored in advanced technical skills and administration duties. The nurse educators felt that the lack of learning opportunities did not auger well for the students to develop their cognitive and technical abilities. Furthermore, Wyllie *et al.* (2020) cautions against the regurgitation of theoretical knowledge, emphasizing that the goal of clinical experience is to apply the practice of critical thinking, problem solving and technological skills, Much has been mentioned about the wide theory to practice gap that is evident in nursing education. Previous authors echo that the application of theory to practice is further exacerbated by the obvious lack of opportunities that are often encountered by the student nurse (Wyllie *et al.* 2020; Salifu *et al.* 2019; van Zyl 2014).

It was reported in the current study that the reason for the lack of learning opportunities for the student nurses was that they were removed from the clinical environment to do non-nursing duties such as transporting of patients and being runners to other departments like the pharmacy. This led to a drain on the students' energy and time management to do actual nursing duties. Participants mentioned that students were referred to as '*skivvies'(*a term used for one who performs menial tasks). Students felt demoralized as they were often not treated with respect by the trained nursing staff. It may be reasonable to assume that this type of clinical environment will not only rob them of valuable learning experiences but their lack of experience at this level of training will deplete their confidence as nurses. AlfaroLeFevre (2016) focuses on the importance of confidence in the development of CT, and states that a lack of confidence compromises CT abilities. De Swardt (2019) suggests that professional nurses should give student nurses responsibility, as this is perceived by the student that they are trusted and valued as part of the team.

5.2.2.5 Lack of clinical support

It has emerged in the current study that students were not being adequately supervised by registered nurses in their clinical practice. Participants emphasized that if student nurses were supervised by registered nurses in the clinical environment, it would lead to exponential CTS development. Nursing is a skills based profession and nursing skill acquisition and competence is developed in the clinical practice. This view is firmly supported by previous authors who concur that clinical supervision is used as a formal process of professional support for nursing students (Franklin 2013: 34; Anderson, Moxham, and Broadbent, 2018). Furthermore, it is noted that for the provision of patient care to be enhanced, effective clinical supervision of student nurses will develop their professional competence and confidence. (Muthathi, Thurling and Armstrong 2017: 2).

Anderson, Moxham, and Broadbent, (2018) found that registered nurses were mostly ignorant that teaching and support of student nurses is a standard requirement, which could be the reason for why nurses felt unsupported in the clinical practice. However, in this context the lack of support may be attributed to a shortage of staff. Of great concern in this study was that students are left to complete nursing tasks independently. Data revealed that the students then subsequently followed the trends of the clinical environment they practiced in, which exposed a deviation from principles and skills taught at college, such as aseptic techniques. Needless to say, this practice poses a huge threat to the safety of the patient and the nurse. The researcher is alerted to the provision of safe and competent nursing care being seriously compromised not only by the student nurses but by trained nurse professionals as well. This experience is consistent with a study conducted by van Graan, Williams and Koen (2016) who cite several authors, who agree that the human resource crisis in healthcare is most evident in the clinical setting. This is clearly seen in a shortage of personnel, increase in workload and student nurses working out of their scope of practice. Participants concurred that the shortage of equipment and supplies in addition to the staff depletion further hampered the students' learning process.

Findings in the current study concur with previous research that the healthcare environment is indeed dynamic and complex (de Swardt 2019; van Graan, Williams and Koen 2016; Potgieter 2012). Of concern is that the fundamental component of CT is not being developed in student nurses, this being a crucial requirement by nurses to

deal competently with complex change, increased demands and greater accountability in clinical practice, (Pucer 2014).

5.2.2.6 Language barrier

One of the key competencies in the second circle of the 4-Circle-CT Model is the aspect of communication. This includes the ability to communicate effectively in writing and verbally. In order for the student to be competent in this skill, AlfaroLeFevre (2016) states that there must be an embedded knowledge of “nursing and medical terminology, related anatomy and physiology, ethical and legal principles, risk management and infection control” related to the clinical setting. This permits the student nurse to obtain information that is relevant to the patient and for therapeutic communication between self, patient, family and key stakeholders in decision making. This ability is fundamental to produce favorable nursing outcomes in clinical nursing practice. The theoretical framework is very clear that CT depends on the quality of communication which must answer the following questions: is it clear? Is it complete? Is it mutually understood? (Alfaro-LeFevre 2016). It is to this end that the critical factor of language barrier which emerged in the current study will be discussed.

In the interview with the nurse educators it was communicated that the issue of language barrier was a definite obstacle to learning encountered by the students. The current study reveals that for the majority of respondents (95.8%) English was not their first language. This complicated communication between educators and students, as the medium of instruction, the prescribed text books, and written and oral examinations are conducted in the English language. In addition to this, communication and written patient records in the clinical environment are in English.

Nurse educators recognized that the critical thinker should be an effective communicator and must have the ability to apply knowledge in the various clinical contexts. This corroborates the intellectual and cognitive abilities of the CT model. Communication at this level will remain a challenge for students if language is a barrier to learning and practice. Alfaro-LeFevre (2016) states that an effective communicator is one who “listens well (shows deep understanding of others’ thoughts, feelings and circumstances) and speaks and writes with clarity (gets key points across to others)”. The language barrier challenge subsequently impacts on multiple CT dispositions that are essential in clinical practice. These include the skill of reflection, perception,

ingenuity and the application of reasoning and judgement all of which is embedded in specific knowledge, skills and experience (Alfaro-LeFevre 2016). This includes advocacy for patients and the fostering of positive interpersonal relationships that promote teamwork. This ability is essential in the context of a complex and dynamic healthcare environment. For CTS to be developed in nursing students, communication in a language that is clearly understood by themselves is crucial.

Nurse educators, who were interviewed, mentioned that the students failed to complete their written journals which was a compulsory requirement. It is possible that the poor command of the English language could be one of the reasons for incomplete written work. Research confirms that the use of journal writing may improve CTS development however, the challenge of writing in English has been a serious barrier to this skill as confirmed by Mahlanze and Sibiya (2017). This finding echoes previous researchers who allude to students who face considerable challenges in English language education intuitions due to English being their second language (Pitt *et al.* 2015; Mahlanze and Sibiya 2017).

The theoretical framework underpinning this study validates that a critical thinker will identify their learning needs and find ways to overcome limitations (Alfaro-LeFevre 2016). It would be reasonable to assume that the complexity and the level of English of the 109-item questionnaire may have caused a degree of confusion for the students. This was evident in the majority of the respondents who ticked ‘always’ in the Likert scale of 1 to 4. It may be argued whether these responses were indeed an authentic indication of the students’ critical thinking abilities.

5.2.3 Interpersonal abilities and self-management (IA)

The third dimension in the 4-Circle-CT Model has to do with interpersonal abilities and self-management (IA). This circle comprises 20 elements which analyze the interpersonal abilities of the nurse. Interpersonal skills are integral to establish links with various healthcare professionals such as therapists, nurses, doctors and counsellors and the clinical environment. Nurses interact daily within the multidisciplinary team and are required to collaborate effectively for the provision of optimum and quality patient care. A recent study shows that liaison with other healthcare professionals and appropriate referral of patients is a skill that student nurses have to learn (Price 2019).

5.2.3.1 Self-management

Alfaro-LeFevre (2016) maintains that if the management of one's emotions and effective interpersonal skills are absent then it is not likely that one will have the 'brain power' needed to think critically. The current study found that over fifty percent of the respondents indicated that they 'never/almost never' or 'occasionally' showed their feelings to others. This denotes that a substantial number of students are not comfortable with showing their feelings to others. Alfaro-LeFevre (2016) states that it is important for nurses to be in touch with their feelings and to "show their true self", as genuine and authentic behaviors indicate stated values. This is supported by Barkhordari and Rostambeygi (2013) who concur that students should not only be fully aware of their own feelings and that of their patients but to understand and regulate their own emotions. More importantly, the lack of management of their emotions denotes that students may have difficulty in being reflective and self-corrective. It could be assumed that subsequently the development of attributes such as those of being analytical, insightful, logical and intuitive are some of the other crucial traits that may be retarded.

Hasanpour *et al*. (2017) allude to the relationship between emotional intelligence and critical thinking and suggest that its success can play an important role in the student nurses ability to think. The author of the theoretical framework suggests that a starting point would be to embark on a journey of self-discovery. This is a strategy to make the most of one's human potential and to cultivate the trait of self-awareness and being true to oneself. It stands to reason that the advancement of personal maturity may result in the development of CTS. This was discovered in the current study, which revealed that in all four dimensions of the 4-Circle-CT Model, older students scored the highest.

Furthermore, self-awareness is integral to self-confidence which in turn is essential for effective communication (Alfaro-LeFevre 2016). It is suggested that the reason the students in the current study may have difficulty in showing their emotions to others could be attributed to variables such as ethnicity, age and lack of experience which could subsequently lead to a lack of confidence. The theoretical framework makes reference to how culture and diverse perceptions personality and learning styles affect the ability to think. This is supported by a recent study which revealed that there was

a strong link between factors such as age, work shift schedule and educational level of nurses and the acquisition of CTS (Zuriguel-Pérez *et al.* 2018).

The evident lack of these basic personal characteristics directly impact on the students' ability to exercise critical thinking in order to provide high quality patient care demanded by the complex and stressful work environment. Moreover, it has been established that in order to develop trust with patients, nurses must have effective interpersonal skills (Price 2019).

5.2.3.2 Time management

The nurse educators in the current study expressed that if CT is to be developed in the student then the nurse educator must have sufficient time to prepare content that would stimulate the student to think critically. Makhene (2019) agrees that Socratic questioning as a didactic strategy that can be compelling in the stimulation of critical thinking abilities in the student nurse. However, participants stated that teaching for CT development in the classroom was not possible due to time constraints, forcing them to resort to the conventional lecture method of instruction. Nurse educators agreed that the lack of time needed to engage the students effectively by being student-centered in their method of instruction, is a barrier to the development of CT.

Furthermore, nurse educators in the current study emphasized that the commodity of time is essential to prepare questions and facilitate reasoning skills among the students. However, concerns were expressed that the classroom and the present clinical settings are not the ideal environments to develop CTS. This finding is consistent with previous research which suggests that nurse educators may experience numerous difficulties in the classroom (Younas *et al.* 2019). Management issues conflict with autonomous decision making and the opportunity for professional development was scarce. Inadequate resources are common challenges, subsequently leading to an increased workload as educators struggle to teach students effectively due to inadequate student-educator ratios (Younas *et al.* 2019).

5.2.3.3 Technical abilities (TA)

The fourth dimension in the 4-Circle-CT Model has to do with technical abilities. This circle comprises of 6 elements which refers to the cognition of the procedures and the practice of technical skills unique to the nursing profession. Alfaro-LeFevre (2016)

maintains that if the nurse does not have the related technical skills there will be less “brain power” for critical thinking. It is also clear from recent research that the purpose of clinical education is for students to develop their self-confidence, enhance’ CTS development and exercise sound decision-making skills (Arkan Ordin and Yılmaz. 2018).

5.2.3.4 Staff shortage

The goal of clinical placement for nursing students is to ultimately become safe practitioners, therefore it is crucial that trained nurse practitioners are available to support them in their learning (Anderson, Moxham, and Broadbent, 2018). The findings in this study confirm that the proverbial chronic shortage of staff in health care environments result in the students being diverted from their nursing duties to function as porters and runners. These tasks take them out of the nursing environment and do not contribute to their nursing experience. Hence the student is denied the opportunity to gain the necessary technical skills to render them competent. Literature indicates that knowledge acquired in the classroom must be translated to the clinical setting as it is expected for students to apply theoretical knowledge to clinical practice (Potgieter 2012). However, the lack of personnel support denies the students the opportunity to practice their theory in a practical and supported manner. Research confirms that the responsibility of the clinical training of student nurses belongs not only to the nurse practitioners but also to the nurse educators, who must be available to accompany students and guide them in the clinical placement (Price 2019; de Swardt 2019). However, the lack of human resources in nursing intuitions further impact on the non-attainment of this standard, to the further disadvantage of the student nurse.

5.3 Limitations of the study

Prior to the conclusion, the researcher will focus on the limitations of the study in order to put the remarks into clearer perspective.

5.3.1 Sample selection/size/ profile

The findings in this study cannot be generalized as the bridging course students and the nurse educators who participated in this study are not a fair representative of the nursing profession in the South African context and globally. The sample selection with

regards to students were limited to bridging course students. The sample characteristics in respect of race was again not a fair representation of all race groups in South Africa. Predominantly black students made up the sample. Furthermore, English was not the first language of the respondents in this study. These results may have been very different if the study was carried out at a university or a public institution where not only bridging course students were selected but students in a four year undergraduate programme could have been included. A larger sample of nurse educators could have included post-graduate level educators as well.

5.3.2 Scarcity of existing research

Research in the area of measuring the CTS of nurses in the clinical setting with a tool specifically designed for nurses was not found in literature. It was to the advantage of the researcher that the tool used in this study was a newly- developed tool specifically designed for nurses to determine CT in the clinical setting, by an author in Spain namely Zuriguel-Pérez *et al.* (2017). Literature indicates that this tool has not as yet been used for its purpose in other countries, more specifically in the South African context.

5.3.3 Unit of analysis

This was a case study conducted at a selected NEI, which was a private institution, offering a bridging course programme leading to the registration of an enrolled nurse as a registered nurse. The findings of the current study cannot be generalised as it was coordinated as a case study and was contextual in nature.

5.4 Recommendations

5.4.1 Clinical practice

- The unexpected view relating to students' poor attitudinal disposition and apathy towards their learning that has emerged from this study requires further research. There is a scarcity of research on this dimension.

- Given that personal characteristics functions as a trigger factor in CT ability, it is recommended that further studies be done to explore the demographic determinants of students such as selection criteria, age, language, diverse learning needs, different life experiences and technological skill ability.
- Further research is recommended to explore the correlation between the clinical experience of nurses and the acquisition of CTS in the South African context.

5.4.2 Nursing education

- Further studies to ascertain whether nurse educators are adequately equipped to teach for CTS development.
- The addition of English comprehension modules is to be considered for offering to students who are challenged with the English language.
- Alternative proposals in educational material design is suggested in order to maximise learning for millennial students.
- It is strongly recommended that CTS development be measured at appropriate stages of nurse training for monitoring and evaluation of the efficacy of current pedagogical practices and the success of clinical practice

5.4.3 Research

- It is recommended that further research be conducted on CTS measurement in multiple private and public NEIs and that the clinical settings vary in respect of site selection to ascertain a more comprehensive outcome. This is the first study of this nature with this specific instrument to measure CTS that has been conducted in South Africa and the findings may therefore serve as baseline data for further research in this area.
- Further research is recommended to establish the reason for the disparity between students who study at public NEIs and a private NEIs.

5.5 Conclusions regarding the objectives of the study

The purpose of this study was to measure the CTS of student nurses in the clinical setting and to describe the pedagogical practices of nurse educators at a selected private nursing education institution in Pietermaritzburg, KwaZulu-Natal.

5.5.1 Objective 1: To measure the critical thinking skills of student nurses in clinical practice

There appeared to be a positive correlation in all four dimensions of the 4-Circle CT Model with regards to the following variables; the age of the student, the level of training and the institution at which nurses did their basic training.

The findings indicate that CTS are evident in students who are older in age namely the 41-50 age group. This could be attributed to the possibility that they have had a longer period of clinical experience in the clinical setting. The bridging course is offered over two years and findings revealed that the second year students scored higher in all four dimensions. This shows a link between students who were older and had longer experience in the clinical setting and the ability to think critically. The third variable which ascertains if the student did their basic training at a public or private NEI revealed that those who had been to a public NEI scored higher.

The first dimension of the 4-Circle CT Model of personal characteristics which function as a trigger factor in CT ability was found to be higher in older students and students in their final year of study.

Regarding the second dimension in the 4-Circle-CT Model which has to do with intellectual and cognitive abilities, findings point to students improving on the dimension of interpersonal skills and self-management abilities as they get older.

Regarding the third dimension of the 4-Circle-CT Model, findings indicate that students improve on the dimension of interpersonal skills and self-management abilities as they matured in age. This was true for senior students in the second year of study and those who received their basic training at a public education institute.

Regarding the fourth dimension of the 4-Circle-CT Model comprising of technical abilities (TA), age was again a significant variable. The older students, more specifically the 41-50 year olds, scored higher than the younger students. This finding

was repeated in the year of study where the senior second year students scored higher than the first years in the dimension of technical abilities.

5.5.2 Objective 2: To determine if existing instructional practices foster CT in student nurses

The current study found the lecture format to be the predominant method of instruction. The findings of this study echo those of previous researchers who have confirmed that the lecture method is ineffective in developing CTS in student nurses. It was also found that in the current study students in the 21-30 year age group made up the majority (60, 8%) of the cohort. It is a concern to the researcher that millennial students who were born in an age of technological advancement are being educated by a generation of baby boomers who still cling to the lecture method of instruction. It may be reasonable to conclude that the effects of intergenerational diversity on current pedagogical practice in nursing education may present a real challenge to nurse educators. The findings in this study corroborates previous literature (Jeffreys 2014) where it was shown that there are serious dynamics that contribute to the poor development of CT abilities such as age, language barriers, time constraints, the clinical environment and poor attitudinal dispositions in students.

5.5.3 Objective 3: To describe current instructional practices of nurse educators at the selected nursing education institution

The predominant method of instruction was the lecture method. While the nurse educators admitted that they were fully aware of the disadvantages of the lecture method, they resorted to this pedagogical practice due to time constraints required to prepare and deliver course content. The results of this study discovered that several instructional approaches were desired and attempted in varying degrees to educate the nursing students in the classroom. These included group projects, Socratic questioning, scenario-based learning, journaling and case studies. However, the success rate was poor in the delivery of alternative instructional practices due to time constraints. Didactic teaching methods do not stimulate CT in students and therefore will not prepare student nurses to be critical thinkers in practice. Findings reflect the findings of other researchers that there are several other instructional practices that

will enhance CT development (Daniels *et al.* 2015; Subhan 2014; Martyn *et al.* 2014; Xu 2016)

5.5.4 Objective 4: To explore factors that facilitate the development of CTS and to determine possible barriers to its development in student nurses.

The study revealed that there were more barriers to the development of CT than there were factors to facilitate this skill in the classroom setting and the clinical setting. In the classroom these barrier factors included ineffective instructional methods, time constraints, age of the students, language barrier, and poor selection criteria. The clinical setting presented further obstacles such as staff shortage, lack of clinical support, lack of learning opportunities and lack of equipment and supplies. It is concluded by the researcher that the many obstacles that student nurses and nurse educators face, are barriers to the development of CT development which is a vital competency for safe patient outcomes.

5.5.5 Objective 5: To establish nurse educators' views on instructional practices which develop and those that inhibit CTS in student nurses

Students' poor attitudinal dispositions and low levels of motivation was an unexpected finding that has emerged from this study. The nurse educators believed that it was this personal characteristic of student nurses that was the biggest factor that inhibited the development of CTS.

5.6 Conclusion of the study

This study adopted a descriptive, qualitative case study design using a multi-method approach to collection of data within a post positivist paradigm. The aim was to determine CT in nursing pedagogics and to assess student nurses' CT in the clinical setting. Qualitative and quantitative evidence in this study reveals that CTS were not being developed, initiated or supported in both the classroom and in the clinical environment. The already complex and dynamic healthcare environment is unfolding to be one that is replete with problems that are innumerable, as they are diverse. CTS development is being severely compromised due to these issues. Yet, now more than ever before, there is increased demand for nurses who possess high-level CTS as a

key competency so that they are able to make sound clinical decisions, solve complex clinical problems, and provide quality patient care. The relationship between socio-demographic factors such as age, language barriers, selection criteria, low motivation and negative attitudinal dispositions in students appear to be major obstacles and inhibiting factors in CT development.

Concerted efforts must be made to transform the classroom environment with creative and innovative teaching methodologies. Pedagogic practices must accommodate the millennial cohort who make up the majority of the nursing students. English comprehension as a compulsory subject in the beginning of the nurse training must be added to nursing curriculums. Nurse educators lack adequate resources and must be equipped with knowledge, tools and skills for so as to be able to educate for development of CT.

The clinical setting presented further obstacles such as staff shortage, lack of clinical support, poor role modelling, lack of learning opportunities and lack of equipment and supplies. This has further widened theory-to-practice gap which is a major concern in providing safe patient outcomes.

The outcomes of this study are a clarion call for all stakeholders, the nursing faculty, nurse leaders in the clinical environment, professional bodies and legislatures to come together and redesign the nursing curriculum and address the range of issues that impact the nursing profession.

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APPENDICES

Appendix A: Letter of permission Michaelmas College

126 Langalibalele Street
Pietermaritzburg 3201
P.O. Box 3633
Pietermaritzburg 3200

Let there be Light
MICHAELMAS COLLEGE
(PTY) LTD
M2006/003610/07

Tel: 033-345 8037
033-345 5793
Fax: 033-345 7505
E-mail: admin.pmb@michaelmas.co.za

25 May 2017

Mrs N. Bridgelall

Student: Durban University of Technology DUT

Re: Request for permission to conduct research studies on bridging course student nurses at Michaelmas College

This letter serves to confirm that your request to conduct interviews on BRIDGING COURSE STUDENTS (R683) Bridging Course for Enrolled Nurses leading to Registration as General Nurse at has been approved.

Management of Michaelmas College wish you everything of the best as you collect data for your research.

Kindly liase with the Principal of the College should there be any further assistance with regards to the availability of students and venue for your interviews.

Thank you

Yours Faithfully

S. Padayachy (Principal)

Michaelmas College (PMB)

Tel: 033: 3458037

Email: LucyP@michaelmas.co.za

Registration Number: 2010/FE07/092

Appendix B: Letter of information and consent – student nurses

LETTER OF INFORMATION

Title of the Research Study: A description of student nurses critical thinking and pedagogical practices in a selected private college of nursing in Pietermaritzburg,Kwa-Zulu Natal – a case study

Principal Investigator/s/researcher:
Nisha Bridgelall (Nurse Educator).

Co-Investigator/s/supervisor/s:
Supervisor: Dr Penelope Margaret Orton. PhD: Nursing. Senior Lecturer. DUT. Contact details:
Co-Supervisor: Ms Marilynne Coopasami. Lecturer. DUT.

Brief Introduction and Purpose of the Study:

Outline of the Procedures: (Responsibilities of the participant, consultation/interview/survey details, venue details, inclusion/exclusion criteria, explanation of tools and measurement outcomes, any follow-ups, any placebo or no treatment, how much time required of participant, what is expected of participants, randomization/ group allocation)

Thank you for participating in this study. • You have been invited to participate as you are a specialist in nursing education and your expert and accurate input will be of great value to this study. • You are requested to kindly complete a demographic questionnaire thereafter which the researcher (Nisha Bridgelall) will engage you in a focus group discussion which will take approximately 60-90 minutes. • Please complete the questionnaire independent of your colleagues. • The questionnaire has mostly closed ended questions which require you to mark an "X" in the correct box. • There is no right or wrong answer. • Each questionnaire will have a unique number with the envelope having a corresponding number. • Each campus will be encoded;

therefore you identity will be protected. • The questionnaires will be delivered to your campus and collected one month from date of delivery. • You may complete the questionnaire at your place of work at your convenience.

• On completion of the study and once all the relevant permission has been obtained, you will be informed of the findings of the study and recommendations.

Risks or Discomforts to the Participant: (Description of foreseeable risks or discomforts to for participants if applicable e.g. Transient muscle pain, VBAI, post-needle soreness, other adverse reactions, etc.)

Benefits: (To the participant and to the researcher/s
e.g. publications)

Reason/s why the Participant May Be Withdrawn from the Study: (Noncompliance, illness, adverse reactions, etc. Need to state that there will be no adverse consequences for the participant should they choose to withdraw)

Remuneration: (Will the participant receive any monetary or other types of remuneration?)

Costs of the Study: (Will the participant be expected to cover any costs towards the study?)

Confidentiality: (Description of the extent to which confidentiality will be maintained and how will this be maintained)

Research-related Injury: (What will happen should there be a research-related injury or adverse reaction? Will there be any compensation?)

Persons to Contact in the Event of Any Problems or Queries:

(Supervisor and details) Please contact the researcher (tel no.), my supervisor (tel no.) or the Institutional Research Ethics Administrator on 031 373 2900. Complaints can be reported to the Director: Research and Postgraduate Support, Prof S Moyo on 031 373 2577 or moyos@dut.ac.za

• Should there be any enquiry please contact the researcher: Mrs. Nisha Bridgelall – 0832317014. e-mail: nishabridgelall@telkomsa.net • Should you still not be satisfied please contact my supervisor: Dr. Dr P.M. Orton. Telephone: +27 31 373 2537. e-

mail: pennyo@dut.ac.za • Should you require any further information please contact the Institutional Research Ethics administrator: 031 373 2900. • Should you have any complaints, kindly contact the IREC administrator: Ms. L. Deonarain – 031 373 290 e-mail: lavishad@dut.ac.za.

General
:

Potential participants must be assured that participation is voluntary and the approximate number of participants to be included should be disclosed. A copy of the information letter should be issued to participants. The information letter and consent form must be translated and provided in the primary spoken language of the research population e.g. isiZulu.

CONSENT

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, Nisha Bridgelall, about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: _REC 104/17
- I have also received, read and understood the above written information (Participant Letter of Information) regarding the study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

_____	_____	_____	_____
Full Name of Participant	**Date**	**Time**	**Signature / Right Thumbprint**

I, (name of researcher) herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

Full Name of Researcher **Date** **Signature** _____

Full Name of Witness (If applicable) **Date** **Signature** _____

Full Name of Legal Guardian (If applicable) **Date** **Signature**

_____ _____ _____

Please note the following:

Research details must be provided in a clear, simple and culturally appropriate manner and prospective participants should be helped to arrive at an informed decision by use of appropriate language (grade 10 level
- use Flesch Reading Ease Scores on Microsoft Word), selecting of a non-threatening environment for interaction and the availability of peer counselling (Department of Health, 2004)

If the potential participant is unable to read/illiterate, then a right thumb print is required and an impartial witness, who is literate and knows the participant e.g. parent, sibling, friend, pastor, etc. should verify in writing, duly signed that informed verbal consent was obtained (Department of Health, 2004).

If anyone makes a mistake completing this document e.g. a wrong date or spelling mistake, a new document has to be completed. The incomplete original document has to be kept in the participant's file and not thrown away, and copies thereof must be issued to the participant.

References:

Department of Health: 2004. *Ethics in Health Research: Principles, Structures and Processes*
http://www.doh.gov.za/docs/factsheets/guidelines/ethnics/

Department of Health. 2006. *South African Good Clinical Practice Guidelines*. 2nd Ed. Available at:
http://www.nhrec.org.za/?page_id=14

Appendix C: Demographic data of student nurses

Demographic Data for Student Nurses

Dear students thank you for completing this form. On completion the researcher will collect the form and hand out the questionnaire to fill out.

Please mark with an x in the appropriate spaces provided

SECTION A

DEMOGRAPHIC DETAILS

1. Gender

Male		Female	

2. Age

21 – 30 years ☐

31 – 40 years ☐

41 – 50 years ☐ 51 – 60 years ☐

3. Ethnicity

African ☐ White ☐ Coloured ☐ Indian ☐

Other [Specify]

4. Level of training

1st year ☐

2nd year ☐

5. State at which Nursing Education Institution you completed your enrolled nurse training at?

Private ☐

Public ☐

6. When was the above qualification obtained?

Mark the appropriate box with an X

< 5 years ago	
6 – 10 years ago	
11 – 15 years ago	
16 – 20 years ago	
>20 years ago	

Thank you for completing this demographic questionnaire.

Appendix D: Demographic questionnaire for nurse educators

Demographic Questionnaire for Nurse Educators

A Description of Student Nurses Critical Thinking and Pedagogical Practices in a Private Nursing College in KZN – A Case Study

PLEASE MARK WITH AN X IN THE APPROPRIATE SPACES PROVIDED

SECTION A

DEMOGRAPHIC DETAILS

3. Gender

Male		Female	

4. Age

21 – 30 years ☐

31 – 40 years ☐

41 – 50 years ☐ 51 – 60 years ☐

7. Ethnicity

African ☐ White ☐ Coloured ☐ Indian ☐

Other [Specify]

8. Highest educational qualification.

Doctoral degree in nursing ☐

Masters degree in nursing ☐

Bachelor's degree in nursing ☐

Diploma in nursing ☐

Other: Please specify ☐

9. State at which Nursing Education Institution you obtained your qualification in nursing education

University	**Mark with an X**
University of Kwazulu Natal	
University of Western Cape	
University of South Africa	
University of Zululand	
University of Pretoria	
University of Potchefstroom	
Specify other:	

10. When was the above qualification obtained?

Mark the appropriate box with an X

< 5 years ago	
6 – 10 years ago	
11 – 15 years ago	
16 – 20 years ago	
>20 years ago	

11. Please specify your position

Principal ☐

Deputy Principal ☐

Senior Lecturer ☐

Clinical Facilitator ☐

Other: specify

SECTION B

TEACHING EXPERIENCE

12. How many years are you teaching?

1 – 5 years ☐

6 – 10 years ☐

11 – 15 years ☐

16 – 20 years ☐

21 – 30 years ☐

31 – 35 years ☐

13. Which programmes were you and are involved in teaching?

R2175

R2176 ☐

R683 ☐

R425 ☐

Other: Please specify

NB: If you are not involved in teaching a programme please write not applicable (N/A) in the box provided.

☐

Thank you for completing this demographic questionnaire.

We will now proceed to the focus group discussion on pedagogical practices of nurse educators and critical thinking in student nurses.

Appendix E: Letter of information and consent – nurse educators

LETTER OF INFORMATION AND CONSENT

Dear Nurse Educator

Warm greetings to you. You are invited to kindly participate in my research study. The details are enclosed below.

Title of the Research Study: A description of student nurses critical thinking and pedagogical practices in a selected private nursing education institution in Pietermaritzburg, Kwa-Zulu Natal – a case study.

Principal Investigator/s/researcher: Nisha Bridgelall (Nurse Educator).

Co-Investigator/s/supervisor/s: Dr Penelope Margaret Orton. PhD: Nursing. Senior Lecturer. DUT.

Contact details: 031 373 2537. email: pennyo@dut.ac.za

Co-Supervisor: Ms Marilynne Coopasami. Lecturer. DUT.

Contact details: 033 845 8800 email: marilynnc@dut.ac.za

Brief Introduction and Purpose of the Study: The clinical setting in health care is dynamic and complex, highlighting critical thinking as a significant competence in nursing education and in professional practice. Reform in South African healthcare are characterized by the ideals that the country needs to produce independent, critical thinking nurses. Furthermore, the component of critical thinking ability appears to have a positive correlation

with theory-practice integration. Therefore, nurse educators are required to integrate critical thinking into their teaching strategies, as it is widely recognized as an important part of student nurses becoming analytical qualified practitioners. Finding methods for teaching the process of critical thinking to nursing students have been a challenge for nurse educators that has spanned many decades. The purpose of this study is to measure critical thinking abilities of student nurses and to describe the current instructional strategies of nurse educators.

Outline of the Procedures: All six of the nurse educators involved in the education of bridging course students are invited to participate in this focus group discussion. You are a specialist in nursing education and your professional and accurate input will be of great value to this study. You are advised to read the letter of information (Annexure E). Thereafter, kindly complete the consent form that follows the letter of information, to indicate that you have agreed to participate in the discussion of your own free will. You are kindly requested to complete a demographic questionnaire as well (Annexure F). The researcher will then engage you in a discussion regarding current teaching practices. The discussion will take approximately 60-90 minutes. The interview will include a few open - ended questions to allow you to freely express your opinions, experiences, perceptions and recommendations regarding instructional strategies of nurse educators. The discussion will be recorded with your permission. If you do not wish to be recorded your responses will be captured on paper.

On completion of the study you will be informed of the findings of the study and recommendations.

Written permission has been granted from the Board of Directors of Michaelmas College to conduct the research study at their Pietermaritzburg facility. This research study has been reviewed by the Faculty of Health Sciences Research and Higher Degrees Committee, and has received ethical clearance from the Institutional Research Ethics Committee at the Durban University of Technology (DUT).

Risks or Discomforts to the Participant: There will be no harm, discomfort or victimization to you at any given time.

Benefits: The findings of this study will be of advantage to the nursing profession especially with regards to current teaching methods and its impact on student nurses' critical thinking in the clinical setting. This will ultimately be of value to you as a nurse educator. The outcome of this study will further serve to establish the initial understanding of fundamental concepts embedded in critical thinking in the student nurse and may highlight the gaps that could lead to a process of reviewing the curriculum content for all nursing programs accordingly. This is the first study of this nature to be conducted at a private nursing education institution. The findings may therefore serve as baseline data for further research in this area and will serve as a positive contribution to private NEI's in KZN and possibly South Africa as a whole.

Reason/s why the Participant May Be Withdrawn from the Study: The researcher will ensure that should you wish to decline to participate in the study and withdraw from you will be treated in a non-prejudicial manner and will be afforded courtesy and respect.

Remuneration: There is no financial reward for your participation in this interview

Costs of the Study: All costs of the study will be incurred by the researcher. There are no costs that you will have to endure.

Confidentiality: All information collected will be strictly private and confidential and will only be used for research purposes. A different name eg, respondent 1, will be used for the information given so that your identity will remain confidential. A password protected file to safeguard the information for 5 years will be used and thereafter deleted. Any hard copies will also be stored in a safe place for 5 years and then shredded according to the DUT policy.

Research-related Injury. Injury or adverse events are not anticipated. This is a nonexperimental study; so there will be no physical harm to you.

Persons to Contact in the Event of Any Problems or Queries:

Please contact the researcher: Nisha Bridgelall - 083 231 7014 email: nishabridgelall@telkomsa.net; my supervisor Dr P.M Orton. 031 373 2537. email: pennyo@dut.ac.za, my co-supervisor: Ms Marilynne Coopasami. 033 845 8800. email: marilynnc@dut.ac.za, or the Institutional Research Ethics Administrator on 031 373 2375. Complaints can be reported to the Director: Research and Postgraduate Support, Prof C. Napier on 031 373 2577 or carinn@dut.ac.za

CONSENT

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, Nisha Bridgelall, about the nature, conduct, benefits and risks of this study – Research Ethics Clearance Number: REC 104/17

- I have also received, read and understood the above written information (Participant Letter of
  Information) regarding the study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may
  relate to my participation will be made available to me.

_____	_____	_____	_____
Full Name of Participant	**Date**	**Time**	**Signature / Right Thumbprint**

I, _____ (name of researcher) herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

Full Name of Researcher **Date** **Signature**

Full Name of Witness (If applicable) **Date** **Signature**

Full Name of Legal Guardian (If applicable) **Date** **Signature**

Appendix F: Questionnaire for nurse educators

Questionnaire for nurse educators

Focus group discussion

Semi- Structured Interview Guidelines

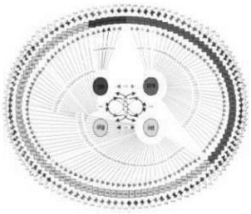
A brief script about the purpose of the study will be read at the start of the focus group discussion. The signed consent form would be reviewed prior to commencing the interview. The following questions will be used to guide each interview.

Questions:

1. Tell me how you would you define critical thinking from a nurse educator perspective?
2. What are your interpretations on fostering and facilitating critical thinking skills in the classroom setting?
3. Are there barriers that prevent CT skill development in nursing education?
4. What are your views about the teaching strategies that are used in the classroom presently?
5. How do these strategies enhance or inhibit critical thinking skills of students?

At the conclusion of the interviews, participants will be thanked for their time and assured that all responses will be kept confidential.

Appendix G: Nursing Critical Thinking in Practice Questionnaire



N-CT-4P International Project

Nursing Critical Thinking in Practice Questionnaire N-CT-4 Practice

General description

Full Name of questionnaire	Nursing Critical Thinking in Practice Questionnaire (N-CT-4 Practice).
Version_any	Firts_2016.
Author	Esperanza Zuriguel-Pérez
Type of instrument	Self-administered questionnaire.
Purpose	To evaluate critical thinking skills in nursing in the clinical setting.
Description	The instrument was designed based on the theoretical model 4- Circle Critical Thinking (CT) Model by Alfaro-LeFevre (2016). That explore the four components of critical thinking: a) personal characteristics, b) intellectual or cognitive skills, c) interpersonal and self-management skills, and d) technical skills.
Intended Population	Nurses in the clinical setting.
Number of items	109, distributed in the four dimensions that configure the 4-Circle CT Model: Personal (39 items); Intellectual or cognitive (44 items); Interpersonal and self-management (20 items) and Technical (6 items).
Language versions available	Spanish.
Associated publications	Zuriguel-Pérez, E., Lluch-Canut, M. T., Falcó-Pegueroles, A., Puig-Llobet, M., Moreno-Arroyo, C., & Roldán-Merino, J. (2015). Critical thinking in nursing: Scoping review of the literature. *International Journal of Nursing Practice,* 21(6):820-830. doi.org/10.1111/ijn.12347. Zuriguel-Pérez, E., Falcó-Pegueroles, Roldán-Merino, J. Agustino-Rodríguez, S. Gómez-Martín, C., & Lluch-Canut, M. T. (2017). Development and psychometric properties of the Nursing Critical Thinking in Clinical Practice Questionnaire. *Worldviews Evidence-Based Nursing,* DOI: 10.1111/wvn.12220. Zuriguel-Pérez E. Evaluation of critical thinking in nursing: a construction based on circular Alfaro-LeFevre model questionnaire. Doctoral thesis. Web site. http://www.tdx.cat/handle/10803/394049.

Quality criteria	Cronbach's alpha total is 0.96 and for all four dimensions it ranges from 0.94 to 0.78. It shows a high test-retest reliability for a 15 day interval (ICC ≥ 0.75). The content validity index is 0.85. The four dimensions are correlated.
Application rules	The person responds to each item according to a 4-point Likert response format, never or almost never (1) to always or almost always (4), to respond to the frequency with which the person presents a certain skill ff critical thinking in the clinical setting.
Scoring system	All items are positive, the total score is the sum of the values obtained. You can also get scores for each dimension. The range of total scores ranges from 109 - 436. According to the original research ($\overline{X}$ = 362 and SD = 33.4 for n = 339) three levels of critical thinking have been established: Low level for scores (<329), moderate level (between 329 and 395) and high level (> 395).
Completion time	15-20 minutes.
Request questionnaire	The permission to use must be requested from its author: Esperanza Zuriguel-Pérez, PhD, MS, RN. Department of Nursing Knowledge Manegement Vall d'Hebron Hospital Passeig de la Vall d'Hebron, 119-129 08035 Barcelona, Spain. e-mail: ezurigue@vhebron.net

Nursing Critical Thinking in Clinical Practice Questionnaire (N-CT-4 Practice)

Translated version of de spanish original version but no validated in English.

How often in your nursing activity do you behave as described in each of the following statements?

You should check ✓]

	Personal dimension	Never or almost never	Occasionally	Often	Always or almost always
1	I recognize my own emotions.				
2	I know my strengths and weaknesses.				
3	I show my feelings to others.				
4	I am faithful to my principles and values.				
5	I know how to put myself in the place of others to see how they feel.				
6	It is easy for me to understand how others feel.				
7	I look for alternative responses when I am faced with one that isn't satisfactory.				
8	I am able to identify the time and place to be constructively critical.				
9	When I have information I try to interpret it before expressing a definitive conclusion.				
10	Before acting I reflect upon the advantages and disadvantages of my decision.				
11	I think before I act.				
12	I act in a reasoned, step-by-step manner.				
13	I am aware of when I am acting in an impulsive manner.				
14	I believe in myself and in others and act accordingly.				
15	I see problems as challenges to be overcome, and not as threats.				
16	I believe that I act in a firm manner.				
17	My behaviour is firm.				
18	I initiate and complete tasks on my own.				
19	I take responsibility for my own actions.				
20	I consider myself to be meticulous in my actions.				
21	I consider myself to be prudent in my actions.				
22	I accept that there is more than one way to approach life.				
23	I make decisions in an objective manner.				
24	I accept cultural differences in people's responses to situations.				
25	I look for real solutions to problems.				

26	I look for solutions appropriate to each situation.				
27	I consider the consequences before taking action.				
28	I create chances for improvement and offer innovations.				
29	I act when I have the chance to do so.				
30	I remain loyal to my values in the face of opposition from others.				
31	The greater the chance of failure in an undertaking, the likelier I am to go ahead.				
32	I know how to be patient in achieving my goals.				
33	I see myself as persistent in trying to reach my goals.				
34	I don't impose my own thinking on others, and I see myself as open to change.				
35	I see myself as having a healthy lifestyle.				
36	I encourage others to follow a healthy lifestyle.				
37	I look for self-improvement in my way of thinking.				
38	I promote patient health.				
39	I promote action in the organization designed to improve safety and quality.				
Intellectual and cognitive dimension		**Never or almost never**	**Occasionally**	**Often**	**Always or almost always**
40	I have the scientific knowledge required to carry out my professional practice.				
41	I have the theoretical basis in nursing methodology needed for my professional practice.				
42	I have the knowledge needed to deal with the psychosocial aspects of the patients.				
43	I apply knowledge derived from scientific evidence in carrying out care.				
44	I am able to communicate effectively.				
45	I fill out the nursing records in a complete, rigorous manner.				
46	I believe that the people that I look after are equal regardless of social or cultural differences.				
47	I provide safe, competent, and compassionate care.				
48	I carry out professional practice based on the principle of respect for the rights of the patient.				
49	I respect the privacy and confidentiality of the patient.				
50	I am able to commit myself to realizing the values of the profession.				
51	I take the actions needed to prevent risk to patients.				
52	I try to guarantee the safety of the workplace.				
53	I choose among different alternatives, examining the consequences of each.				
54	I use strategies designed to encourage the participation of patients and their families or carers in the decision-making regarding patient health.				

55	I carry out systematic, careful assessment in order to collect the information needed to identify health problems.				
56	I obtain the data that are key to determining the factors that may play a role in the care of patients.				
57	I observe which patient signs or symptoms are within normal limits, and which ones are not.				
58	I decide when data outside the normal limits may be signs or symptoms of specific problems.				
59	I identify what information may be relevant to understanding a specific health problem.				
60	I compare what the patient says (subjective data) with what I observe (objective data).				
61	I am able to recognize contradictions between the subjective and objective data.				
62	I analyse the data and identify possible omissions.				
63	When the information available is incomplete I look for whatever else is needed in order to better understand the clinical situation.				
64	On the basis of the data collected I identify the current and potential problems of the patient.				
65	I determine the causes and factors underlying the problems.				
66	I identify the results that I expect to observe in the patient following the care process.				
67	I prioritize the actions to be taken on the basis of each patient's situation.				
68	I consider the patient and the family or carer to be central figures when making decisions about the management of patient health.				
69	I decide upon the interventions appropriate for achieving the expected results.				
70	I treat interventions and nursing actions one by one in order to prevent or control problems.				
71	I am able to recognize when changes that are relevant to patient health occur.				
72	I am able to interpret the signs and symptoms that may be indicative of complications in a patient's state.				
73	I am able to foresee the appearance of complications in the patient, and to apply appropriate preventive measures.				
74	I modify the care plan or therapy plan in accordance with the patient's state.				
75	I carry out actions designed to foster the health of patients and their families or carers.				
76	I try to educate patients regarding the prevention of complications in their health.				
77	I am able to distinguish between situations that represent ethical conflicts and those that do not.				
78	I use the documented information resources in a critical manner.				
79	I use the documented information resources to support my clinical practice.				

80	I understand which of my abilities will be useful in achieving what I set out to do.				
81	When I have assimilated newly learned material I try to analyse how I came to learn it.				
82	When I need to learn something I know what actions I have to take in order to do so.				
83	I share the mission, vision, and values of my organization.				
Interpersonal and self-management dimension		**Never or almost never**	**Occasionally**	**Often**	**Always or almost always**
84	I adapt information to the needs and capacities of the patient.				
85	I offer emotional support to the patient and family/carer.				
86	I defend the rights of the patient and family/carer.				
87	I use strategies designed to enhance the empowerment (increasing capacities and involvement) of the patient and family/carer in the care process.				
88	I apply strategies to resolve conflicts arising from relations between the patient and family/carer, when necessary.				
89	I defend the rights of the professional team.				
90	I use strategies designed to enhance the empowerment of the members of the professional team.				
91	I use strategies designed to resolve conflicts arising from professional relations.				
92	I adapt to organizational changes in my workplace.				
93	I try to assist in the adaptation of others in the work team to organizational changes in the workplace.				
94	I share my experiences with the nursing team in order to achieve common goals.				
95	I share my experiences with other professionals in order to achieve common goals.				
96	I am able to optimally manage my time.				
97	I use strategies (establishing priorities, organizing time, organizing the workplace) in order to better manage time.				
98	I use critical thinking in order to propose new solutions to problems that have been identified.				
99	I delegate tasks in line with the knowledge, abilities, and skills of the people who will carry them out.				
100	I carry out follow-up of the delegated tasks.				
101	I try to have a positive influence on other members of the professional team so that they can achieve the goals that have been set.				
102	I am able to manage a professional group to achieve stated goals.				
103	I am able to help contribute to a healthy working environment.				
Technical dimension		**Never or almost never**	**Occasionally**	**Often**	**Always or almost always**

104	In the event of clinical uncertainty I know how to obtain reliable information from the scientific databases.				
105	I possess skills in the use of information and communication technologies needed to produce optimal professional results.				
106	I am able to carry out needed techniques and procedures, relevant to the complexity of each case.				
107	I match the procedure to be done with the appropriate context for carrying it out.				
108	I administer medication in a safe manner (dose, preparation, and handling of instruments to administer the medication).				
109	I carry out the care associated with administering medication (assessing the therapeutic response, previous and subsequent monitoring) in the correct manner.				

Appendix H: Permission letter from Dr Zuriguel-Perez

Good evening Dr Zuriguel-Perez

My name is Nisha Bridgelall. I am a Masters student being supervised by Dr P Orton who contacted you with regards to the N-CT-4 Practice Questionnaire that you have developed.

Thank you so much for permitting me to use the tool for my study. I eagerly await the questionnaire and scoring tool.

Kind Regards

Nisha Bridgelall

From: Esperanza Zuriguel Perez [mailto:ezuriguel@vhebron.net]
Sent: Monday, April 10, 2017 1:57 PM
To: Penelope Margaret Orton
Cc: Nisha Bridgelall; Marilynne Coopasami
Subject: RE: N-CT-4 Practice Questionnaire

Dear Dr.Orton

Thank you very for your interest in this questionnaire. I will prepare the documentation and i send soon.

Any questions at all, send them

I would be honored to help you ¡¡

Best regards,

Esperanza Zuriguel Pérez

Infermera de Suport de Cures

Gestió del Coneixement i Avaluació

Hospital Universitari Vall d'Hebron

Passeig de la Vall d'Hebron, 119-129 - 08035 Barcelona

Mòbil 675789165 Ext. 3764 ezurigue@vhebron.net

De: Penelope Margaret Orton [mailto:pennyo@dut.ac.za]

Enviado el: miércoles, 05 de abril de 2017 14:58

Para: ezurigue@vhebron.net

CC: Nisha Bridgelall; Marilynne Coopasami

Asunto: N-CT-4 Practice Questionnaire

Dear Ms Zuriguel-Perez

Greetings from South Africa. I am supervising a Masters of Health Sciences (Nursing) student who is wanting to assess the critical thinking in a sample of undergraduate nursing students at a private nursing college in Durban South Africa. We have been having a lot of trouble accessing a tool because of the enormous costs involved. I have just read your article Development and Psychometric Properties of the Nursing Critical

Thinking in Clinical Practice Questionnaire and was very excited with your results. I would be most appreciative if you could share your instrument with us.

We are willing to share the data set with you following the completion of her study for degree purposes.

Thank you for considering our request.

Very best wishes

Penny Orton

Supervisor to Ms Nisha Bridgelall

DR PENNY ORTON
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Senior Lecturer
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Faculty of Health Sciences
Durban University of Technology
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Appendix I: Statistical certificate

Gill Hendry B.Sc. (Hons), M.Sc. (Wits), PhD (UKZN)
Mathematical and Statistical Services

Cell: 083 300 9896
email : hendryfam@telkomsa.net

18 May 2020

Re: Assistance with statistical analysis of the study data

Please be advised that I have assisted Mrs N Bridgelall (Student number 21646794), who is currectly studying for a Masters in Health Science: Nursing at DUT, with the analysis of the data for her study.

Yours sincerely

Dr Gill Hendry
Private Consulting Statistician

Appendix J: Editing certificate

DR RICHARD STEELE
BA, HDE, MTech(Hom)
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031-201-6508/082-928-6208

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EDITING CERTIFICATE

Re: **Nisha Bridgelall**
Master's dissertation: **A description of pedagogical practices and student nurses' critical thinking at a private nursing college in Pietermaritzburg, KwaZulu-Natal – a case study**

I confirm that I have edited this dissertation and the references for clarity, language and layout. I returned the document to the author with track changes so correct implementation of the changes and clarifications requested in the text and references is the responsibility of the author. I am a freelance editor specialising in proofreading and editing academic documents. My original tertiary degree which I obtained at the University of Cape Town was a B.A. with English as a major and I went on to complete an H.D.E. (P.G.) Sec. with English as my teaching subject. I obtained a distinction for my M.Tech. dissertation in the Department of Homoeopathy at Technikon Natal in 1999 (now the Durban University of Technology). I was a part-time lecturer in the Department of Homoeopathy at the Durban University of Technology for 13 years.

Dr Richard Steele
2020-05-26
per email