KAMUZU COLLEGE OF NURSING

ASSESSING THE PROMOTION OF CLINICAL REASONING IN CLASSROOM TEACHING AMONG STUDENT NURSES: A CASE OF ST. JOSEPH'S COLLEGE OF NURSING

MSc. (Nursing and Midwifery Education) Thesis

By

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Submitted in partial fulfillment of the requirements for the Degree Master of Science (Nursing Midwifery Education)

Date: December 2015

DECLARATION

I Mtinkheni, Wezi Bonyonga, hereby declare that this thesis is my own original work and has not been presented for any other awards at the University of Malawi or other university.

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Full Name

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Signature

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Date

DEDICATION

I dedicate this work to my loving husband Timothy and my children, my mother, brothers and sisters whose prayers, love and encouragement have been the basis of my effort. To my late father Mr. William. K. Banda whose memories I cherish.

ACKNOWLEDGEMENT

First and foremost I thank God for the gift of life, his love and wisdom that enabled me to complete this study.

I would like to express my heartfelt gratitude to the following people who supported and encouraged me throughout the period of conducting this study;

- Dr. Evelyn Chilemba my first supervisor for the untiring assistance, encouragement and guidance provided to me throughout the thesis process
- Mr. Joseph Mfuni my second supervisor for guidance and support. Dr. Alfred Maluwa, Research Director for the advices
- The principal of St. Joseph's College of Nursing for giving me permission to conduct my study at the college and the nurse educators and student nurses who participated in my study for sparing their time. Without you this study would not have been conducted
- My husband Timothy, my children and all my family members for the love, prayers, support and encouragement during the entire period of my study
- The Librarian and all the library staff of Kamuzu College of Nursing for providing the support I needed during the time of searching for information
- All my friends and colleagues for their support and encouragement

May the Good Lord bless you all.

ABSTRACT

The assessment of how clinical reasoning is promoted among student nursing and midwifery technicians followed the anecdotal reports from the public on the poor quality of client care provided by the nurses in the health facilities. These observations by the stakeholders pointed to the teaching and learning processes involved in the preparation of the nursing midwifery technicians. If the level of performance of the nursing midwifery technician is in question then the teaching and learning processes involved needs to be assessed because the educational level at which a student nurse is prepared makes the difference on how the nurse performs her duties in practice.

This led to a concurrent exploratory mixed method study with the purpose of determining how clinical reasoning was promoted in classroom teaching among the student nurses. The population consisted nurse educators (n=18) and student nurses (n= 90). Quantitative data was collected from the educators and student nurses using questionnaires to determine the teaching styles of the educators, learning preferences and clinical reasoning levels of the student nurses. Qualitative data determined the educators and student nurses perceptions on the teaching and learning experiences from eight educators and three students' focus groups. Quantitative data were analyzed using the statistical package SPSS Version 20.0 and descriptive statistics were run for frequencies, means and standard deviations. Content analysis was used for qualitative data.

The results indicated that there was lack of diversity in the use of teaching styles among the nurse educators. The Expert Teaching Style was the most preferred (mean= 4.06 and SD=.981); the less preferred (mean= 3.55 and SD=1.24) was the Facilitator Teaching Style. The dominant teaching method was the lecture method; student nurses preferred lecture method but felt that interactive teaching methods were important in their learning processes and development of clinical reasoning abilities. Students also lacked diversity in their learning preferences as they (54.7%) preferred to learn together in a classroom environment. The learner centered learning environment where individual thinking, expression of own opinions and learning from peers was the least preferred (6.67%) by the learners. These results are in agreement with the learner dependence from the qualitative results. Therefore based on these results there is need for improvement of the teaching/learning processes in order to improve quality of nursing care provided in the health facilities in Malawi.

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LIST OF ABBREVIATIONS

BSN	-	Bachelor of Science in Nursing
CHAM	-	Christian Health Association of Malawi
CR	-	Clinical Reasoning
ILP	-	Inventory of Learning Preference
NMCM	-	Nurses and Midwives Council of Malawi
NMT	-	Nursing Midwifery Technician
RNM	-	Registered Nurse Midwife
SACRR	-	Self Assessment of Clinical Reflection and Reasoning
WHO	-	World Health Organisation

DEFINITION OF KEY TERMS

Student nurse

A student nurse is a person or a learner who is undergoing training to be a nurse at a college or nursing school. In this study a student nurse is a learner or a pupil nursing midwifery technician who is undergoing a three year certificate training in the Nursing and Midwifery Technician program at St. Joseph's college of nursing.

Nurse educator

A nurse who currently has become a faculty member at a college of nursing serving an essential role as a teacher, trainer, mentor, and role model for nursing students. In this study a nurse educator is the faculty member at St. Joseph's college of nursing serving an essential role as a teacher, trainer, mentor, and role model for nursing students.

Teaching style

According to Grasha (1994) a teaching style is described as a particular pattern of needs, beliefs and behaviours that teachers display in the classroom. Grasha also states that style affects how teachers present information, interact with students, manage classroom tasks, supervise course work, socialize students to the field and mentor students. In this study teaching style refer to the five teaching style of Grasha Teaching Style Model (1994) which are: Expert, Formal Authority, Personal Model, Facilitator and Delegator Teaching Styles.

Traditional teaching strategies

These are teaching strategies that that are teacher centered. The lessons are usually taught by the teacher with little student engagement in the learning. Thus, flow of information is in one direction from the educator to student. These strategies encourage mostly surface learning and do not lead the learner to the acquisition of higher order thinking skills. Traditional teaching strategies are often characterised as predominantly lecture and teacher led class discussions.

Active learning teaching strategies

These are any teaching strategies or approaches that educators can create or use in a new way to actively involve the students in order to produce quantifiable gain for student's outcomes or the student experience: teaching strategies that make students active learners.

Clinical reasoning

CR can be described in short as the thinking and decision-making or clinical judgment of a health care provider including nurses, in clinical practice. This includes generating alternatives, weighing them against the available evidence and choosing the best alternative including the ability of the clinical practitioner to reason as a clinical situation changes, taking into account the context and concerns of the patient and family (Benner et al., 2010; Tanner, 2006).

CHAPTER ONE

Introduction and background

Introduction

Clinical reasoning has become a critical educational outcome in nursing education universally because of the trends and issues of competence and safety as desired educational outcomes in the 21st century (Tanner 2006). Cabrera, Colbeck and Terenzini (2001) established that in the United States of America, stakeholders seek evidence on attainment of educational goals in higher educational institutions as the viability of resources and reputation of institution on quality and predictors of college student learning has been questioned since the 1990s.To this end stakeholders have queried the quality of nursing care provided by nursing technician graduates from St. Joseph Nursing College in terms of clinical performance. Clinical reasoning is the process by which nurses make judgments and deliberate the process of generating alternatives weighing them against evidence in practice and this can be taught in a classroom. Do the teaching processes at St. Joseph College incorporate the instilling of this essential skill among learners? Sound reasoning is essential in preserving the standards of the profession and promoting quality patient outcomes (Bradshaw & Lowenstein, 2013).

Nursing education should therefore, aim at producing safe and competent graduates who are able to think, reflect and reason like health professionals in practice. Educators need to be mindful that learners in their teaching are able to develop actions guided by clinical reasoning and an evidence-based practice so that the graduates are ready to address the healthcare needs of their societies (De Domenico, Ohl, Matheus ,

Moreira, Ferreira, Gutiérrez and Piconez, 2008: Tucker & Bradshaw 2013). Furthermore, patient safety should be their utmost concern when delivering and evaluating quality care and nursing education outcomes. Nursing education in Malawi shares the same objective as the Nurses and Midwives Council of Malawi (NMCN) stipulates that nursing education must ensure that specific knowledge, skills including clinical reasoning skills and appropriate attitudes are taught in order for the nurse to achieve the required clinical skills for the practice (NMCM, 1995). This can be achieved through classroom teaching and learning approaches that nurse educators and students employ during the teaching and learning process. Therefore to address this problem and the perceived concerns from the stakeholders about the low levels of clinical performance of the nurses, an assessment of the process of promoting clinical reasoning among the student NMTs needed to be done.

Background

Clinical reasoning is a cognitive skill and a fundamental component in the provision of quality nursing care (Tanner, 2006). To this vein clinical reasoning has to be fostered early in nursing education to ensure that students acquire the skill and ability to use it effectively upon entering practice setting (Rusch, 2013) . If the quality of clinical performance is in question at St. Joseph College of Nursing the classroom teaching processes could be faulty in fostering such fundamental skills. Nurse educators need to understand that classroom teaching and learning should enable the student nurses to develop these cognitive skills so that they provide quality nursing care during practice (Koharchik, Caput, Robb & Culleiton (2015). . However, student NMTs practicing in the health facilities throughout Malawi are reported and observed to fail in decision

making, in planning and provision of the required client care despite collecting client's information from which they can identify the client's problems. Students also are not able to make nursing diagnosis and provide focused care as an indication of poor clinical reasoning skills (Simmons, 2010). When student nurses fail to perform interventions as required in the practice setting it is an indication that clinical reasoning skills and abilities were not stimulated to develop the capacities for making decisions during the learning processes. This then reflects the problem with the teaching and learning process these students undergo (Aiken, Clarke, Sloane, Lake & Cheney, (2008). Health care system is evolving and becoming complex with numerous patient problems as well as technology. The health care system requires that nurses who practice in the health care facilities must adapt to this dynamic, fast- paced environment that require reasoning skills for intense and challenging situations. The failure to ensure adequate thought and clinical reasoning can have a negative impact on a patient's condition (Aitken, 2003). Nurses who possess effective clinical reasoning skills are able to collect data, solve problems, make decisions, provide quality care and are more productive in the workplace (Kautz, Kuiper, Pesut, Knight-Brown & Daneker, 2005).

Nursing education plays an integral role in the process of promoting clinical reasoning among student nurses for their future clinical practice. CR skill development can be enhanced through the use of pedagogical approaches in preparing health professionals who can influence outcomes in a complex and ever changing health care environment. Thus any interactive processes in nursing education should aim at learner development of clinical reasoning as an outcome of their education. The use of innovative teaching approaches that promote deep learning is fundamental to students'

learning and development of CR skills. Many of the teaching and learning approaches in nursing education, while they seem to be effective at enhancing students' thinking and reasoning abilities in structured learning situations, may not prepare them to manage the uncertainties that actually exist in practice ; hence students' failure to use the knowledge in practice (Forneris & Peden-Mc Alpine, 2006). Most of the times nurse educators in nursing educational institutions including those in Malawi use traditional teaching strategies with lecture being the primary format for instruction. Typically, these traditional teaching strategies have not led to the acquisition of higher order thinking skills among learners (Knight & Wood, 2005).

Schon, 1987 seminal work contended that thinking and reasoning in practice provides a unique complexity as the problems of real-world practice do not present themselves to practitioners as well-formed structures (Forneris & Peden-Mc Alpine, 2006). The challenges for nurse educators in nursing education therefore is to continue to learn and implement teaching strategies that prepare student nurses to think and reason in practice setting; thus necessitating the nurse educators' use of a variety of innovative teaching and deep learning strategies that actively involve students, stimulate their thinking and promote decision making (Ajjawi, 2007: Bradshaw & Lowenstein, 2013: Dasari, 2006).

Student nurses' learning preferences also contribute to their process of learning and development of clinical reasoning skills (Vincent & Ross, 2001). Each individual has his/her unique way of learning. Students' learning preferences can promote learning

and enhance development of clinical reasoning skills. Nurse educators in the training institutions should learn to recognize and understand students learning preferences during their classroom teaching. This could help them to realize the importance of providing a variety of learning experiences as well modification of teaching approaches in order to address the different students' learning styles. Montegomery and Groat (1998) stated that modification of teaching approaches is advantageous and important in students' learning for it helps students to gradually expand their learning style preferences therefore enhancing the development of thinking and reasoning skills.

The complexity of clinical reasoning rather makes it difficult to teach and learn; and students' comprehension of this skill can also be hard, because it is difficult to make the clinical reasoning visible (Delany & Golding, 2014). Higuchi and Donald (2002) found that students find it easy to learn procedural skills because they can observe, practice and internalize the skills unlike clinical reasoning. Clinical reasoning is a learnt skill and attaining competence in clinical reasoning skills is also dependent on clinical experience, something students may not have or may have difficulties getting during their training (Higuchi &Donald, 2002). The real clinical context is regarded as the ideal situation in which students have the opportunities to develop and apply clinical reasoning skills when they undertake clinical practice because it offers a good teaching environment for students (Audétat & Laurin, 2010) especially when nurse educators provide the opportunity for students to learn. To a certain extent students' learning in the clinical setting may be limited because of limited clinical placements, increased numbers of students, shortage of experienced faculty as well as little time to observe students and

foster the development of clinical reasoning. While there are limitations to clinical placements and therefore, less time to build reasoning skills, nurse educators should employ classroom teaching strategies that can provide students with time to learn and apply knowledge (Mc Nelis & Ironside, 2009). Nurse educators must assist student nurses to learn and understand CR processes and steps during classroom teaching (Kamin, O'Sullivan, Deterding & Younger, 2003). Ericsson, Whyte and Ward (2007) explains that learning to reason requires students' determination and being actively engaged in practice for continued learning and reflection on the activities that are designed to improve students' performance.

If NMTs performance is in question then the development of CR that may result from the education processes is in question. Educational processes in the nursing programmes follow a curriculum design for that particular programme. Nursing curricula for nursing programmes contributes to the preparation tomorrow's nurses (Allen, 2013). The curriculum design could influence the teaching approaches and learning activities that are employed by the nurse educators and student nurses because the curriculum design prescribes the teaching approaches and learning activities for its implementation. According to the NMT curriculum document, the teaching strategies that are utilized are mostly influenced by the traditional teaching approaches and the lecture method is the most dominant method stipulated in the curriculum. This indicates that it is a teacher-centered curriculum that views students as passive learners; this might influence the way students learn to develop CR skills. Students' learning and good performance in practice depends on the quality of education provided to them. Quality education can be achieved

by good implementation of the program's curriculum. Thus the processes of teaching and learning in this programme should be expected to enable the student NMT to develop CR skills.

Teaching and learning processes in nursing education should aim at producing nurses who are adequately prepared to work in complex and challenging clinical environments regardless of the level at which they are prepared; that is Registered Nurse Midwife (RN/M) or Nursing Midwifery Technician level. Both levels of nurses are vital in building a strong national nursing force. This can only be achieved if teaching and learning processes that promote development of CR skills are evident in the educational process. Therefore there is need to determine if the teaching and learning approaches that are being utilised in nursing education promote the development clinical reasoning skills among student NMTs.

Internationally studies (Banning, 2008; Delany& Golding, 2014; Dreifuerst, 2010; Kautz, Kuiper, Pesut, Knight-Brown &Daneker, 2005; Kuiper ,Pesut & Kautz, 2009) have been conducted on how nurse educators can promote CR skills among nursing students in classroom as well as clinical teaching, however no literature has been identified that has assessed how CR skill is promoted among student nurses in Malawi. This study therefore intended to determine if classroom teaching and learning approaches help to promote development of CR among student NMTs at St. Joseph's college of nursing.

Problem Statement

Clinical reasoning in the nursing profession is an absolute requirement if graduate NMTs are to contribute to positive client outcomes in the delivery of nursing care in the health facilities in Malawi. Anecdotal reports from the public on failure of nurses to provide quality nursing care in the public health care facilities in Malawi give an indication of the way student nurses are prepared during the training. Furthermore, the reports state that student nurses' fail to make clinical decisions about client care in practice; they wait for the clinician or doctor to decide on what should be done for the patient. How is the teaching facilitated among these learners? Clinical reasoning is a fundamental skill to incorporate in nurse training and if nurses cannot make decisions regarding clients care then an exploration of the educational process in terms of nurses' acquisition of clinical reasoning skills is required; to look into teaching and learning approaches that are used during the training of the nurses. When nurses' performance in clinical practice is being queried by the consumers then the educational processes which these nurses undergo has to be examined in terms of the promotion of clinical reasoning skills. It is assumed that if students are exposed to traditional teaching approaches, of which most students in the nursing educational institutions are, these approaches do not actually facilitate students' development of clinical reasoning and decision making skills because the students do not adopt a deeper approach to learning. It is imperative then to examine if the teaching at St. Joseph's College of Nursing promote the development of CR.

Studies on how clinical reasoning is promoted among student nurses in the nursing educational institutions in Malawi have not been done therefore it is essential that the educational preparation of these student nurses be examined and explored in terms of teaching and learning approaches and how the student nurses perceive their preparedness for clinical reasoning in practice. Hence the question, how is clinical reasoning promoted among student nurses in the NMT program at St. Joseph's College of Nursing? This question supports the need to explore how nurse educators teach clinical reasoning skills to nursing midwifery technician students and if they perceive clinical reasoning to be essential in their teaching.

Significance of the study

There is evidence that a better-educated nurse workforce in health care facilities is associated with good quality care and lower patient mortality (Aiken, Clarke, Sloane, Lake & Cheney, 2008). Many studies have been conducted on how clinical reasoning is promoted and evaluated among students as well as practicing nurses in the western countries such as United States of America, Sweden, Australia and United Kingdom; and mostly among baccalaureate students and practicing nurses. This highlights the need to explore how nursing education in Malawi promotes clinical reasoning among NMTs, a lower level than the baccalaureate nurse. It is hoped that the findings from this study will add to the evidence base that will be used in the teaching of student nurses in the colleges that train nursing midwifery technicians. This will contribute towards the improvement in the preparation of student nurses for practice and their ability to function as NMTs. In addition the findings may provide evidence for curriculum review to incorporate teaching and learning approaches that enhance students learning and development of clinical

reasoning. Furthermore the results may generate new information in teaching of clinical reasoning which may provide useful guide for further studies.

Purpose of the study

The purpose of this study is to determine how clinical reasoning as a skill and ability is promoted among students in nursing and midwifery technicians programme at St. Joseph's College of Nursing.

Main objective

To examine how nurse educators promote clinical reasoning among student NMTs at St. Joseph's college of nursing.

Specific Objectives

- To determine the teaching styles employed by nurse educators in promoting clinical reasoning
- To assess the teaching strategies that are used in the promotion of CR among NMTs
- To describe students' learning approaches using Moore and Fitch Inventory of Learning Preferences (ILP) in promoting CR skills
- To determine the levels of clinical reasoning among student NMTs using Self-Assessment of Clinical Reflection and Reasoning (SACRR) questionnaire
- To explore the nurse educators' perceptions of their teaching in relation to the NMTs' development of CR skills.
- To explore student nurses perceptions of the teaching processes in relation to the development of clinical reasoning

Chapter summary

In this chapter, the introduction and background of the study was provided. The problem and research questions, significance of the study, purpose and objectives of the study were also stated. The chapter also provided the operational definitions of the study concepts. The next chapter presents the relevant literature that was reviewed concerning promotion of clinical reasoning.

CHAPTER TWO

Literature review

Introduction

This chapter discusses a review of international and national literature regarding promotion of clinical reasoning in classroom settings. The literature was reviewed in order to determine and understand aspects in relation to the process for nursing midwifery education. Discussions in this chapter includes the concept of clinical reasoning, clinical reasoning as a process in nursing education, the teaching and learning processes involved in promoting the development of clinical reasoning.

Search strategy

The search strategy guided the search during the literature review, where a search strategy was conducted through electronic data bases such as HINARI, Ebscohost, and Google Scholar. The search words used were "clinical reasoning, clinical reasoning and nursing education, fostering clinical reasoning, teaching clinical reasoning, clinical reasoning a nursing educational outcome and clinical reasoning skills. In total more than two thousand articles were retrieved and only one hundred and twenty were considered relevant to the review. Additional information on the research phenomenon from printed material such as books and printed journals were also accessed through the ancestry approach. Ancestry approach is a strategy used to find studies using the bibliography and reference sections of the relevant studies which have already been retrieved to track other pertinent literature sources (Polit & Beck, 2010). The review included publications from 2003 to 2014. However some articles from 1996 to 2002 publications were included where they were seen as relevant and important to the study.

The contents of this chapter are organised from what was revealed about the educational processes that influence the development of clinical reasoning among student nurses guided by the conceptual frame work (Figure 1).

Conceptual framework

The conceptual framework of this study has been designed by the researcher basing on the aim of the study. The process of this research has been guided by this framework. The framework illustrates the aspects from what was revealed about the educational processes that influence the development of clinical reasoning among student nurses. Promotion of clinical reasoning in classroom teaching requires the involvement of both the nurse educator and the learner through effective teaching and learning that focus on students' development of clinical reasoning as well as decision making skills that the nursing students need in order to attain the expected outcome of provision of quality client care.

Effective classroom teaching therefore occurs when educators utilize teaching styles that promote active learning and deep approach learning among students through the use of different teaching strategies. Active learning and deep approach to learning stimulates students thinking and reasoning abilities as the students are actively involved in the learning process. Furthermore students' learning and development of clinical reasoning abilities can also be influenced by the students' preferred way of learning.

The teaching styles/methods referred to in this study are the five teaching styles of the Grasha Teaching Style Model. These teaching styles have been described by Grasha (1994) as a particular pattern of needs, beliefs and behaviours that teachers display in the classroom. Teaching styles are important in teaching because they have an effect how

teachers present information, interact with students, manage classroom tasks, supervise course work, socialize students to the field and mentor students (Grasha,1996) thereby having an effect on students, their ability to learn and develop the required skills. These teaching styles can create either a teacher centered or student centered learning environment.

Students' learning environment preferences are individual's preference about how to learn. As such students differ in the strategies they use during the process of learning and these differences identify their preferred learning environment that can either be a learner -centered or teacher -centered learning environment. A learning environment can have an effect on the way students acquire knowledge and skills as most students would learn and enjoy a lesson presented in their preferred learning environment.

Effective teaching enhances active and deep learning among students and development of thinking and reasoning abilities. To this end effective teaching occurs when educators know and adapt to different teaching strategies and learning preferences in their classroom activities. This conceptual framework was thought to be appropriate to assist in understanding of the promotion of clinical reasoning in classroom teaching among the student nurses. Additionally, the features in the framework would assist the researcher to analyse those features that existed in the educational processes at St. Joseph's college of nursing as regards to promotion of clinical reasoning.

Figure 1 illustrates the conceptual framework.

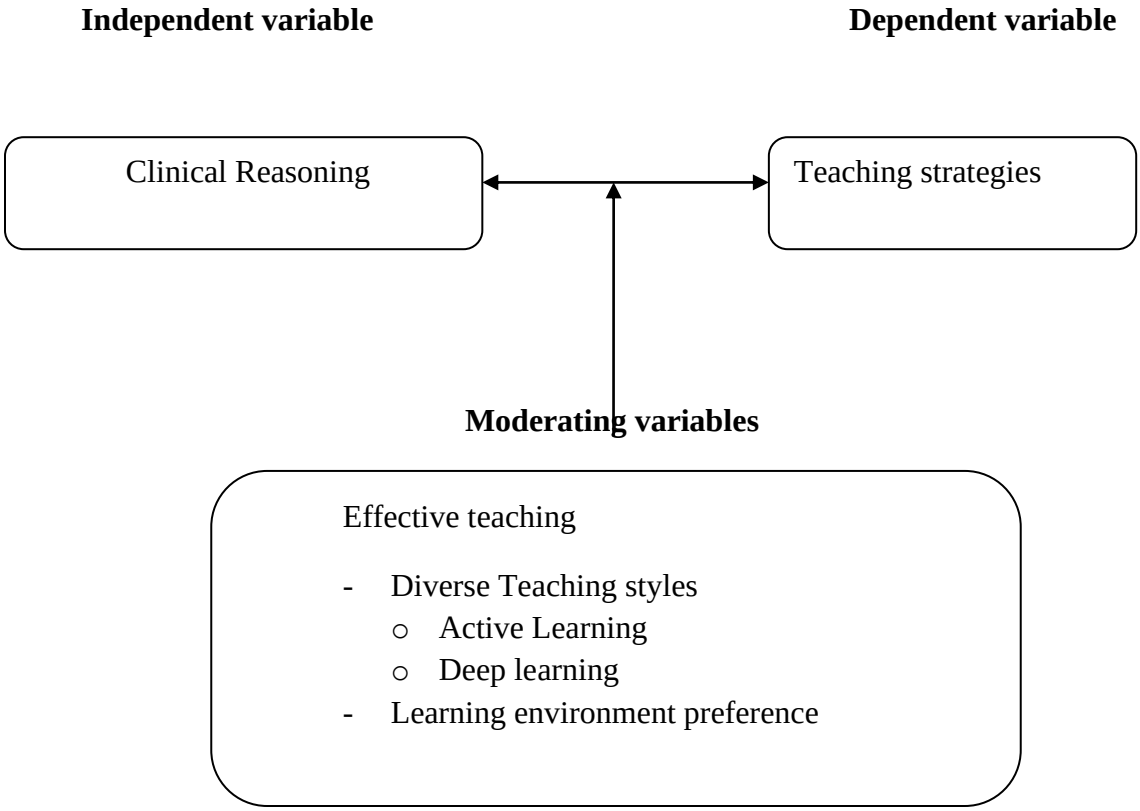


Figure 2.1 Conceptualized framework

Clinical reasoning

Clinical reasoning concept was introduced into nursing literature in the 1980s (Simmons, 2010), following the decision that nurse practitioners should make autonomous decisions towards patient care not simply carrying out medical orders. This is because in health care settings nurses are the largest of the health care professional groups and it is the nurses who spend most direct time with patients conducting most of the bedside monitoring (Benner, Stuphen, Leonard and Day, 2009) hence their prompt decision making in critical situations is very crucial in saving patients' lives. Clinical reasoning skills and abilities are the essential components of competent nursing practice in human caring. Clinical reasoning process therefore, comprises both cognition and

metacognition skills that can be taught (Banning, 2008). Cognition has been defined as thinking and Metacognition is the knowledge and control learners have over their own thinking and learning activities or simply thinking about thinking (Cross & Paris, 1988). Metacognition is what enables a student who has been taught a particular strategy in a particular problem context to retrieve and deploy that strategy in a similar but new context (Kuhn and Dean,2004). Cognitive and metacognitive abilities enable the student nurses to think critically and reflect on their thinking. The students have the ability to interpret, analyse, evaluate and draw a conclusion from the knowledge gained during the learning process. The students are also able to monitor their own thoughts and make decisions. Students who possess CR skills have the capability to think through the information gathered about a client and make proper decisions about client care during clinical practice (Banning, 2008; Levett- Jones et al., 2010).

Nurse educators need to be mindful in their teaching that development of clinical reasoning skills enhances the student nurse's ability to build on previously acquired knowledge and as such past experience in any learning endeavors are to be considered important in order for the learners to make accurate decisions about nursing actions and address new or unfamiliar situations.

Nurse educators need to be knowledgeable of the clinical reasoning process in order to help learners develop the skill. Clinical reasoning process as explained by Levette Jones et al (2010), involves several steps that a student nurse has to follow which are; collecting information or identification of cues; processing the information in which the student needs to review current information , recall previous knowledge and also look for new information; identify problems- synthesize facts and inferences to make a

definitive diagnosis of the patient's problem; establish goals; take action; evaluate the outcomes and reflect on the process and learn from it. Nurse educators therefore are required to assist the learners through all these steps during teaching using teaching strategies that can ably help learners develop these skills.

The NMTs probably were not accorded opportunities in their learning to develop clinical reasoning abilities that could have empowered them to reason through issues in practice as observed by the stakeholders. Literature (Banning, 2008; Kautz, et.al. 2005; Levette-Jones, Hoffman, Dempsey, Jeong, Noble, Norton, Roche & Hickey, 2010) assert that nurses with effective clinical reasoning skills are capable of providing quality care because they are less dependent, able to apply skills in a more complex situation and bring a positive impact on patient outcomes in caring; and conversely, those with poor clinical reasoning skills in practice often fail to detect impending patient deterioration, thus compromising patient safety. In this case the stakeholders' observation would be in terms of clinical reasoning and decision making. In nursing profession the concept of clinical reasoning has been described by different authors such as Tanner, (2006); Levette-Jones, (2010); Kuiper, Pesut and Kautz, (2009), this is to indicate that it is an important concept for fostering caring practices. Therefore, nurse educators when teaching in classroom settings they need to help learners understand the subject content and ensure that these learners comprehend the significance of patient's data. When the teaching promotes clinical reasoning, learners are able to identify and diagnose the actual or potential patient problems, make clinical decisions, assist in problem resolution, and achieve positive patient outcomes (Carr, 2004; Higgs & Jones, 2008; Forsberg, Georg, Ziegert & Fors, 2011; Kautz et al. 2005; Khanyile & Mfidi, 2005; Simmons, 2010).

Therefore, CR is a forward chaining process very essential to the teaching role of an educator that should help learners' move sequentially through a series of logical inferences that should enable them to arrive at a final decision in practice settings (Simmons, 2010).

Clinical reasoning process in nursing education

Clinical reasoning process comprises deep learning and improvement of decision making skills and abilities among nursing students that can be taught in classroom setting. According to Bradshaw and Lowenstein (2013) educators can ably cultivate clinical reasoning and decision making abilities in the student nurses, if they possess a comprehensive command of the subject and are also able to facilitate thinking by the students rather than merely presenting the information. This therefore requires the teaching and learning processes that involve both the nurse educator and the student nurse. Teaching that utilizes student active learning teaching strategies and teaching style that incorporates the Socratic type of questioning is ideal for developing clinical reasoning in the student as it empowers the students and stimulate their thinking. Thinking, reasoning and decision making seem to be a challenge in the NMTs because the teacher- centered strategies dominate in the teaching and learning processes in the programme hence thinking ability is not facilitated in the learners. Ironside (2003) contends that student empowerment is very important in teaching because it promotes nursing students' engagement in learning and learners have control of their own thinking. If the teaching and learning processes in the NMT programme facilitates nursing students' engagement in the learning process it would result into the learners' development of critical thinking, reasoning, decision making and problem solving skills as professional outcomes. The teaching that enables the learners to develop clinical

reasoning and decision making skills, results from good teaching. However, good teaching in nursing education according to Biggs and Tang, (2007) is that which encourages student nurses to adopt a deep learning approach through the use of innovative and active learning teaching strategies; and discourages the use of surface learning approach that is promoted when educators adopt teacher-centered strategies. Zuzovsky (2003) also adds that through good teaching, the learner should acquire some reasonable and acceptable level of proficiency from what the teacher is engaged in teaching. It is therefore important to note that student nursing midwifery technicians' development of thinking, clinical reasoning, decision making, as well as problem solving skills demands the teaching and learning processes that are innovative and engage learners in the process. What is important in the process of teaching the student NMTs is the fact that educators should understand the process of clinical reasoning so that the teaching and learning activities that are carried out produce the intended outcome.

International and national perspectives on promotion of clinical reasoning in classroom teaching

The importance of teaching clinical reasoning has in nursing education been emphasized internationally and nationally. As such clinical reasoning becomes a core skill and a competence that nurses need to develop during their training. It is important to note that nurses who possess the clinical reasoning skill are independent and confident practitioners and are capable of providing quality care because able to apply skills in a more complex situation and bring a positive impact on patient outcomes in caring (Kautz, et al. 2005). It is therefore very important that nurse educators know how they can help student nurses develop the skill during their training.

Realizing the importance of clinical reasoning in health care provision, studies have been conducted internationally on how this skill can be fostered in health professionals including nurses. Researchers in Asia, Europe and United States of America have made and are still making important contributions towards this phenomenon. To this effect literature (Comer, 2005; Doran & Mulhall, 2007; Kalmakis, Cunningham, Lamoureux, & Ahmed 2010; Russell, Comello & Lee Wright, 2007; Taylor & Wros, 2007) explains that educators' use of some teaching strategies that actively involve learners in the teaching and learning processes such as Problem Based Learning, Case studies, Role plays Concept map and Simulation, can effectively promote student nurses development of clinical reasoning and thinking skills. But researchers have found that most nurse educators in nursing schools predominantly use traditional teaching strategies in their teaching endeavors. This suggests that the learning environment in most the nursing schools provides a minimal opportunity for the nursing students to develop into independent learners who are able to think critically, reason and make appropriate decisions towards patient care. An exploration of the teaching and learning processes in the NMT education could assist in identifying pedagogical strategies that are most effective in helping the student nurses develop clinical reasoning ability, hence the importance of assessing how clinical reasoning is promoted in classroom teaching among student nurses in order to improve the student NMTs' learning outcome. Therefore, the researcher in this study followed the classroom teaching and learning processes to assess how clinical reasoning is promoted at St. Joseph's college of nursing.

It is of concern to find that the literature review has shown that promotion of clinical reasoning in nursing education in Malawi has been sparsely tackled. Meaning

that, it has not been given much attention despite clinical reasoning being a core competence required in nursing practice and needs to be fostered in all the nurses for quality client care. It was therefore essential to conduct this study. What is important to understand is that teaching clinical reasoning requires effective teaching in which there is participation of both the educator and the learner. In order to achieve the intended learning outcome, the teaching and learning processes should create an environment that will promote deep learning and stimulate nursing students' thinking and reasoning abilities. Various teaching and learning processes have been discussed by researchers that can facilitate deep learning and enhance students' thinking; reasoning and decision making and these processes include educators' teaching styles, students' learning preferences/ styles and student active learning teaching methods.

Effective teaching

Salsali, (2005) explains that teaching is a complex and demanding activity that involves the educators' mastery of content , techniques of organisation and command of teaching skills; and effective teaching though explicit standards of what it constitutes in health professions education including nursing is not currently very explicit, can be rated against the clinical competency among the students; one of the criteria of effective learning in nursing education (Hakimzadeh, Ghodrati, Karamdost, Ghodrati & Mirmosavi , 2013; Gurney, 2007; Stein, Fugisak & Davis,2011), that is if nursing education enables the student nurse to acquire the necessary knowledge, skills and appropriate attitudes associated with nursing practice and is able to perform as required. In nursing education if the teaching and learning process is ineffective, student learning is compromised and the society may not be provided with quality professionals who can provide quality client care as it is being lamented by the stake holders currently. Therefore, the ultimate goal of

nursing education is to promote teaching and learning that facilitate transformation of an individual student into a competent practitioner (Edelen & Bell, 2011). It is for reason that nurse educators should deploy the teaching that would effectively meet the educational goals.

Effective teaching facilitates students' adoption of deep learning which has an effect on students' acquisition of knowledge and development of thinking and reasoning skills. To this end Grasha (2002) made educators to become aware of different teaching and learning styles/preferences to help the educators understand the diversity of the teaching and learning processes in order to promote scientific acquisition of knowledge among students. It is therefore very important for nurse educators to understand the teaching styles/methods and learning preferences that that promote students' understanding of the subject material, thinking and reasoning as this is very crucial in developing a competent nurse practitioner. Student nurses can only achieve important educational and professional outcomes such as critical thinking, reasoning skills, safety and competence when they adopt deep learning. Deep learning emanates from use of teaching styles/methods that actively involve learners in the teaching and learning processes. This is a very important issue that needs to be considered when planning and designing teaching and learning activities in the NMT training programmes in order to achieve effective teaching. Thus educators in nursing education programmes such as the NMT have the responsibility to ensure that every learning experience in nursing education must transform the learners into care providers who are able to think, reason clinically and make appropriate decisions as they discharge their duties.

It is possible that successful educational achievements for individual nursing students' such as clinical competence including development of clinical reasoning abilities could be accomplished by using the appropriate teaching styles that meet students' preferences; as these have an influence on student learning (Dinçol, Temel, Oskay, Erdogan & Yilmaz, 2011). Learners should also learn to adapt to a range of learning styles as this is important for their advancement in the learning processes and transformation. Learner transformation can only occur when the teaching and learning processes allow the learner to be an active participant in the process. Dasari (2006) & Grasha (2002) suggests that the educators teaching styles should match with the students learning styles/preferences in order to foster high quality teaching and promote learning. Other people pointed out that educators in higher learning institutions including nursing education institutions fail to recognize the different learning styles and preferences of their students resulting in teaching and learning activities that do not match with the learners needs (Dinçol, et al., 2011& Sternberg, 1997). Teaching styles should be considered as the leading factors in shaping and assuring the success of a highly complex teaching and learning process in nursing education (Artvinli, 2010). Although some studies (Dinçol, et al. 2011; Uzuntiryaki (2007) have indicated that matching teaching styles and learning styles has no effect on students' learning and achievements; other researchers (Rinaldi & Gurung, 2008; Dasari 2006 ; Letele, Alexander & Swanepoel, 2013) suggest that matching between teaching and learning styles can influence success among learners. Diversity in teaching styles would help to match students' learning

styles/ preferences and this can effectively improve individual student learning and help in the development of clinical reasoning thus, achieving the intended outcome.

Deep learning and clinical reasoning

Students' approach to learning has an influence on the development of CR and deep approach to learning is deemed to have a positive impact on the development of clinical reasoning (Anderson, 2006). Deep learning involves the critical analysis of new ideas, linking them to already known concepts, and principles so that this understanding can be used for problem solving in new, unfamiliar contexts (Biggs and Tang, 2007). A empirical evidence has shown that students who adopted deep approaches to learning had long term information retention, actively sought integration of information and had higher qualitative learning outcomes (Biggs and tang, 2007; Dunca & McKeachie,2005; Tynjälä, Salminen, Sutela, Nuutinen, & Pitkänen, 2005; Vermunt, & Vermetten, 2004). Deep approach to learning was postively associated with high academic performance and surface approach was related to poor performance. On the contrary, other researchers typically found that in other courses and also depending on the nature of the assessment methods such as multiple choice exams and methods of presenting the course materials especially when lecture method was used, the only way students can succeed was to use surface approach (Vanderstoep, Pintrich, & Fagerlin, 1996; Wolters, & Pintrich, 1998; Zusho, Pintrinch, & Coppola, 2003). Watkins (2001) argued that the assessment system used by the educators determined if the students benefited from the deep approach to learning because students approach to learning is moderated by the nature of assessment, whether the assessments emphasized on reproduction or understanding of knowledge.

Deep learning emanates from student- centered approach to learning and it appears to be an important learning method in nursing education (Chilemba & Bruce,

2014). Furthermore a deep approach to learning in higher education such as nursing education has an influence on students' achievement of meaningful learning and development of clinical reasoning (Cui, Li & Song, 2014). Student nurses that adopt deep -learning approaches understand the nature of learning and are able to master the core academic content. According to Anderson (2006) in a study that was done to explore factors that affected development of the undergraduate medical students' clinical reasoning ability, student approaches to learning was found to be one of the factors that had an impact on medical students' development of clinical reasoning abilities. Students who adopted deep approach to learning developed CR ability as was evidenced by their higher scores in Clinical Reasoning Problems (CRPs) test than the students those who adopted surface approach to learning. This concurs with findings from a study conducted by Tetik (2006) in which the researcher investigated the relationship between learning approaches and development of CR ability. The Revised Two- factor Study Process questionnaire (R-SPQ-2F) was used to evaluate participants' learning approach and Diagnostic Thinking Inventory (DTI) to measure the participant's diagnostic thinking ability. The study revealed that there is correlation between ongoing learning approaches and the development of CR ability and the correlation is positive if the approach is deep and is negative if there is surface approach to learning. This is evidence that deep learning approach promotes development of clinical reasoning among students. Therefore, nurse educators are required to provide a teaching environment that facilitates deep approach to learning among the students.

Deep learning allows the student nurses to critically analyse new ideas and link these ideas to already existing or known concepts and principles (Chilemba & Bruce,

2013; Subasinghe & Wanniachchi, 2003); this leads to their understanding and long-term retention of concepts which they can use later to solve problems in different clinical situations during practice. Teaching that promote deep learning enhances students' development of awareness through critical thinking, reasoning, decision making and problem solving skills. These abilities emerge because of the analytical and critical capabilities that develop from the learning background.

Deep-learning in nursing education delivers the skills and knowledge student nurses will need to succeed in the world that is continuously changing in its health care service provision. The deep learning approach results from self directed learning, a characteristic that is very important to nursing students' learning and development of thinking and reasoning skills (Chilemba & Bruce, 2013). Self-directed learners will always demonstrate a greater awareness of their responsibility in making learning meaningful and they take the initiative to monitor themselves and what occurs in a learning situation. The individual student nurses have the ability to select, manage and assesses their own learning activities. Self- directed learning enable learners to be mindful of their academic strengths and weaknesses, have different strategies they can appropriately apply to tackle challenges of academic tasks (Zimmerman, 2002). This is a demonstration of the learners' intellectual abilities.

Biggs, Kember and Leung (2001) have shown that an approach to learning can change as the approach is impacted by the teaching environment in which the student learns. This has also been supported by Sternberg (1997) who reported that a teaching environment in which the students are, can affect their approach to learning. This elucidates that change in the nurse educators' teaching approach can help student nurses

change their approach to learning and depending on the teaching approach a student can adopt either deep or surface approach to learning. There is some evidence that nursing students taught in teacher- centered teaching environment adopt surface learning whilst students taught in learner -centered teaching environment are more likely to adopt deep approach to learning (van der Vleuten & Newble,1995; Vu, van der Vleuten & Lacombe,1998). Amira and Jelas (2010) also state that high quality learning is an outcome of high quality teaching that emanates from the teacher's realization of learners' learning preferences and adjusting their teaching to meet the learners' needs. To this effect, educators' teaching styles and approaches have an effect on the depth of learning each individual student nurse may attain from the teaching and learning processes.

If deep approach to learning is deemed to impact positively on the development of CR ability then investigating the teaching environment at St. Joseph's college of nursing may provide an impetus to create an environment that fosters deep approach to learning that may not be available. This may then promote more effective learning and development of CR resulting in more expert clinical reasoners and ultimately more clinically competent Nursing Midwifery Technicians.

Teaching style and clinical reasoning

A teaching style is what defines the teacher, guides and directs the teacher's instructional processes. Every teacher's teaching style represents their personal qualities and behaviours that appear in how they conduct their classes (Dinçol, et al. 2011; Filonova, 2008). According to Grasha (1996) educators' teaching styles have an influence on how the educators present information to the students and interact with them, how they supervise the students' course work in the teaching and learning process. In a study by Kuchinkas, (1979) it was pointed out that educators' teaching style is one

of the most important factors that can influence a learning environment there by affecting how the students manage classroom tasks and this can also affect students' achievements. Nurse educators teaching - styles are the leading factors that shape and assure the success of a highly complex teaching-learning process in nursing education (Filonovo, 2008).Literature has shown that studies have been conducted on the importance of teaching styles and learning preferences and how their matching or mismatching relate to student performance (Dinçol et al., 2011; Gilakjan, 2012; Wilson, 2011; Clark & Latshaw, 2012; Hanzelka, 2013). Educators' adjustments of teaching styles to accommodate student's learning preferences are very fundamental in the teaching and learning situation in order to enhance student learning.

In a study by Kamuche (2005) that determined whether or not congruency of learning and teaching styles improve students' performance in Basic Statistics class; it was found that there was extremely high correlation between students whose learning preferences are similar to the instructor's teaching style in the class . The high correlation between students whose learning styles were similar to the instructor's teaching style and test performance clearly suggests that learning and teaching styles are quite relevant to student performance in Basic Statistics education. This clearly explains that students learned better when instruction was geared toward their learning style.

Kamuche, (2005) asserts that when there are differences between learning preferences of the students in class and teaching styles of the educator there is misunderstanding, tension and hostility in class as well as conflict leading to poor acquisition of knowledge. Hence the need for educators to adopt teaching styles that meet

the leaner's needs in the design of any classroom teaching. Additionally, if educators' teaching incorporates a variety of learning styles, learners can develop expertise needed to handle different deep learning requirements (Brown, 2003). It also important to note that students may also develop the ability to adapt and respond effectively to the teaching styles that do not match with their learning styles in order to acquire knowledge and develop the required competencies (Aina-Popoola and Hendricks, 2004). Furthermore, others have argued that teachers who have a greater understanding of their students' learning styles can increase their effectiveness in both instruction and assessment (Honigsfeld & Schiering, 2004; Sternberg, 2008).

Teaching styles have been described by Grasha (2002) as the continuous and consistent behaviors of teachers in their interactions with students during any teaching and learning process. To this end, Grasha outlined five teaching styles that represent educators' behaviours and further combined these styles in different groupings to form four teaching styles what he called as clusters. Each of the teaching style generates unique conditions among learners in the classroom (Stanford 2014). For the purpose of this study the Grasha (1996) teaching style inventory was used to find out the nurse educators' teaching styles in the NMT program. The five teaching styles identified by Grasha are:

Expert teaching style

The expert teaching style is signified with the teacher's possession of knowledge and expertise that students need in any learning situation. Teachers exhibiting the expert teaching style strives to maintain status among students by displaying detailed knowledge

and challenges the students to reach their potential (Grasha, 1996). During teaching, the teacher provides an overview of issues involved with a problem and outlines ways of handling the problem. With this teaching style students may acquire vast amount of knowledge because the teacher provides detailed information on the subject matter but their knowledge is superficial and students lack deep understanding. Dominance of this teaching style in all the teaching and learning activities may affect students' adoption of deep learning. Researchers have indicated that students learning in this type of learning environment do not have the opportunity to think through the information provided by their teacher because the teacher provides already processed information (Brown, 2003; Dembo & Howard, 2007; Grasha, 2001). Therefore, this type of learning environment provides very little opportunity for the student nurses to develop thinking and reasoning abilities. The strategies used in expert teaching style to enhance the transmission of knowledge are lecture with power point presentations, discussions, and teacher centered questioning. These strategies enhance transmission of knowledge by ensuring that students are well prepared. With the teacher's bold display of knowledge, students become intimidated and this negatively impact their participation and learning.

Formal authority teaching style

The teacher exhibiting formal authority teaching style seeks to establish status among students because of the amount of the authority and knowledge they possess on the subject matter. The teacher dictates how students should approach a learning situation and enforces strict rules of conduct. He/she maintains high learning expectations and provides definitive feedback to the students. Teachers exhibiting this teaching style believe in correct, acceptable and standard ways of doing things. The learners focus on

correct, acceptable and standard teaching methods with clear focus on expectations and acceptable methods. If this style is mostly used in teaching a course, it would promote attainment of knowledge through deep learning because the style provides a learner-centered focus. Thus, if the style facilitates deep learning that is characterized by thinking and reasoning students will then be encouraged to use deep learning.

Personal model teaching style

The teacher displaying personal model teaching style believes in teaching students by personal example on the subject content and establishes a prototype for how to think and behave. The teacher perceives self as a worthy role model to follow and may want to 'clone' the students in own image. The teacher oversees, guides, and directs the students by showing them how to do things (Grasha, 1996) and gives formative feedback that helps the learner enhance skills. The students are encouraged to observe and then to emulate the teacher's approach. This teaching style could be ideal in teaching for deep learning because it can enhance students' thinking and reasoning abilities. The teachers in this style may believe their approach is the best way and some students may feel inadequate if they don't live up to the expectations and standard set forth by the teacher. Role play, demonstration and coaching/guiding are the most common teaching methods used in this style.

Facilitator teaching style

The teacher exemplifying this teaching style puts emphasis on personal nature of teacher- student interactions. The teacher guides by asking questions designed to facilitate creative and critical thinking and directs student learning by exploring options,

suggesting alternatives and encouraging students to develop criteria to make informed choices. The overall goal in facilitative teaching is to develop in students the capacity for independent action, reasoning, initiative and responsibility. Facilitative teaching promotes empowerment as the students engage with the subject matter in a learning situation. Facilitator teaching style is learner-centered and could result in deep learning depending on the learning preference adopted by the students. Nursing education advocates for teaching methods that keep students focused on the patient's experience and providing opportunities for teachers to teach students to reflect on practice. Facilitative teaching helps nursing students to engage with what they are learning to personal and meaningful understanding (Harden & Crosby, 2000). This teaching style commonly use methods such as projects, small group discussions case based discussions, where student become self directed and the teacher works with them in a consultative manner and tries to provide support and encouragement as much as possible; and require minimal support from the teacher.

Delegator teaching style

A teacher who exhibits the delegator teaching style strives to promote independent student learning through planned studies. The teacher encourages autonomy in the students' learning process by letting them work independently on projects or as part of autonomous teams. The teacher helps learners to explore options for what to do and acts as their resource person not as a knowledge source. The goal of delegator teaching style is to involve the learners actively in their own learning process with minimal guidance from the teacher. Thus having students function autonomously. Delegator teaching style help students' development of a knowledge base, creative

thinking and reasoning skills that result from the improved capacity associated with their learning preferences; students also see themselves as independent and in charge of their leaning. Delegators help learners to develop into mature and confident professionals. However, it may not work if the educator misreads the students' readiness to work independently and in such a situation, students may become uncomfortable with this autonomy as they may anxious and feel lost without direction. Teachers exhibiting this teaching style usually use teaching methods such as small group discussion, debates and projects.

In teaching and learning there is no one better teaching style because each style has its own unique advantages and disadvantages. Educators may have a dominant, preferred teaching style, but they mix in some elements of other teaching styles in their teaching activities. According to Grasha (1996), almost every educator possesses a blend of each of the five teaching styles to varying degrees and that each of them also possess some expert quality. Therefore, if teachers adopt the use of a variety of teaching styles and methods in their teaching, students will be exposed to both familiar and unfamiliar ways of learning which provide both comfort and tension during the teaching and learning process (Vaughn & Baker, 2001); and eventually giving students multiple ways to excel.

Since most educators employ parts of a variety of teaching styles, Grasha (1996) clustered the teaching styles in four groups known as clusters of teaching style. According to Grasha (1996), each cluster of the teaching style helps to create the mood of the class. Clusters 1 and 2 contain educators that are oriented to a more teacher-centered

approach and cluster 3 and 4 contains educators who tend to be more students-centered (Lucas, 2005). The clusters have been characterised as follows:

Cluster 1: expert/formal authority teaching styles

This cluster is best applicable when teaching large classes with new students, when there is time pressure to cover large amount of content and also when educators are preparing their students for standard examinations in their courses. There is no relationship between the educator and the students. It is a teacher centered approach and the educator becomes the in-charge of the classroom activities and the provider of all information to the relatively passive students.

Cluster 2: Personal Model/Expert/Formal Authority Teaching Styles

This is a teacher centered approach that encourages students to observe process as well as content. It is a cluster utilised by educators who prefer modeling and demonstrations in their teaching. Students need to develop into independent learners so that they can take the responsibility in their learning and be able to apply the information learnt. In order to achieve this there has to be a good teacher student relationship.

Cluster 3: Facilitator/Personal Model/Expert Teaching Styles

In this cluster educators are required to design activities or problem solving situations that will allow students to practice the process of applying course content. Educators have to adopt a student-centered method of classroom teaching and must supervise students' assignments and all other learning activities. For effective learning students should accept to take responsibility.

Cluster 4: delegator/facilitator/expert teaching styles

In this cluster much of the learning burden is placed on the students. Educators planning to employ this mode of teaching should be able to design activities that will require student's initiative. Additionally, there has to be a working relationship between the teachers and learners and provision of a learning environment where students have the opportunities to openly express how they feel about the given tasks. To enhance deep learning and development of thinking abilities, student active learning strategies of teaching are used.

The Grasha's teaching style clusters described above provide either a teacher centered learning environment in which students are just passive recipients of information with students adopting a surface approach to learning or a learner centered learning environment where students are actively involved and adopt deep approach to learning and achieving high in their learning. Some researchers such as Stanford (2014) found that students in classroom led by educators using facilitator and delegator teaching styles had higher scores than students led by educators using expert, formal authority and personal model teaching styles. Stanford's aimed at determining if there was significant difference in students achievements in classrooms led by teachers with different dominant teaching styles (Grasha,1996) in Central Arkansas. This indicates that students perform at a higher academic level when they are personally involved in guiding their own learning and are allowed to explore content which is more likely to occur in classroom of educators using facilitator and delegator teaching styles.

Some researchers have reported that students' learning and achievement usually improve when the learning preferences and teaching styles match (Amir and Jelas, 2010; Ghada, Rima & Nahla Nola, 2011; Lovelace, 2005; Mahlios, 2001;Naimie, Siraj, Ahmed Abuzaid & Shagholi, 2010). On the other hand, Jensen (1987) assessed the effects of matching instructor and student learning style to enhance learning and found no difference between college students who were taught according to their learning preference and those in a control group. Similarly, another study by Garton, Spain, Lamberson, and Spiers (1999) also found that there was no practical relationship between students' learning styles and teaching style. These results suggest that using a preferred teaching style results in no specific gains. To this end educators should have knowledge and understanding of their students preferred learning styles and develop teaching strategies, method s, and sequences that are likely to make learning more active and engaging for students in order to promote learning and facilitate development of thinking and reasoning abilities (Huxland & Land ,2000; Rinaldi & Gurung 2008) . Furthermore when nurse educators utilize a variety of teaching styles in classroom teaching there is a potential of not only improving learning but also empowerment of nursing students and stimulating their effort to achieve the professional development goal (Damodharan & Rengarajan, 2008). Learner empowerment may be a challenge in the student NMT because of the minimal use learner-centered teaching styles by nurse educators in the nursing colleges. This is evidenced by the study conducted by Chilemba & Bruce (2014) that looked at the teaching styles employed by Malawian nurse educators in the four year Bachelor of Science in Nursing (BSN) Programme according to Grasha's (1996)five teaching styles; the findings revealed dominance of teacher- centered teaching styles in

the teaching activities of the nurse educators. The contributing factor could be that educators are not knowledgeable of their learners learning preferences. It is therefore, very important that educators have the knowledge of their students learning styles and preferences in order to make learning more active and engaging for the nursing students (Naimie et al. 2010). Students learn in depth when they are stretched beyond their comfort zone. It is very important that nurse educators involved in teaching NMTs should adopt use of the teaching style clusters in order to promote deep learning and development of thinking, reasoning and decision making skills among the students.

Nursing education therefore, requires teaching that reinforce deep approach to learning through the use of different teaching styles than actively involve students in order to promote nursing students' development of clinical reasoning and decision making skills and abilities. Utilisation of a variety of teaching styles accommodates the different learning preferences exhibited by the student nurses and also enhances students' knowledge acquisition.

Learning environment preference and clinical reasoning

In order to ensure the effectiveness of any teaching and learning process it is important for educators to know and understand the characteristics, the abilities and the experiences of individual students before learning takes place; this is because learners have different ways of gaining, processing and storing information (Dasari, 2006; Uzunturyaki, 2007; Yilmaz-Soylu & Akkoyunlu, 2009). In relation to these factors students may be influenced to choose either a teacher – centered or learner - centered learning environment in order to suit their style of learning (Dasari, 2006). In a teacher centered learning environment the educator provides all what the students are expected to

know in a course and the students are passive recipients of the information while in the learner centered learning environment students are active participant in the teaching and learning process (Biggs & Tang, 2007).

To understand and analyse the learning process of the student Nursing Midwifery Technicians the Moore and Fitch (1989) learning environment preference questionnaire was used to generate data. Moore, Harrington, Mennin, Kaufman and Skipper (1989) stipulates the specific aspects of the classroom learning environments that individuals may prefer in a learning situation. That is from the teacher centered environment to a learner- centered learning environment explained by different authors, Moore et al. (1989) classified these learning environments into four categories each of which has its own characteristics. Of the four categories of the learning environment category one and two are teacher centered and three and four is learner centered. These are:

Category one

This is a more teacher centered learning environment and learners who prefer this type of learning environment solely depend on the educator to provide them with the required information. In this leaning environment students want educators that provide the right answers to problems and also clear direction and guidance on the learning tasks. This type of learning environment requires students to reproduce information in tests. Student in this learning environment are comfortable with as little ambiguity as possible in all aspects of a course; lack collaborative characteristics and like the teacher- centered teaching methods. Students in this category are not self directed learners and cannot resolve uncertainties in a learning environment.

Category two

This is a teacher centered learning environment with some incorporation of learner active learning activities. Students who prefer this type of learning environment prefers learning in which lecture and other learning methods such as class discussion but would expect their lecturer to provide them with the right answers. Learners want to learn and know the relevance of the course material they are learning. The lecturer should also be able to provide the learners with relevant experiences and reward them with good grades for their good performance. They like teachers who can analyse and synthesize information well. Lecture and class discussion teaching approaches are used and often class discussion is teacher guided. This leaning environment may not facilitate thinking and reasoning as students adopt surface approach to learning; they expect their lecturer to provide them with the right answers to the learning tasks.

Category three

This is a learning environment which provides individual thinking, individual control over course content, express own opinions and learn from peers. Students who prefer learning in this type of learning environment enjoy working by themselves but will listen to ideas of other students in the classroom. They have a preference for student-centered learning activities such assignments that give them a chance to think independently. This type of learning environment help learners to develop the capabilities of thinking through and getting engaged with the course content and the learning assignments enhance thinking, reasoning and creative skills. D'Souza, Isaac, Venkatesaperumal, Nairy and Amirtharaj (2014) reported that student nurses that are

engaged with the course content are able to transfer their skills to new situations such as clinical practice and also earn better grades. Educators involved in the teaching of the student nurses need to provide them with purposeful academic activities that can engage students and in turn will lead them to approach learning deeply and develop the desired skills which is clinical reasoning.

Category four

This is a learning environment that promotes personal motivation, provides an atmosphere for independent reflective and integrated learning. It is a learning environment where students share experiences with their peers and also contribute to teaching in class. The students and their lecture interact equally instead of listening exclusively to their teacher. Use of group work, group projects including case studies is encouraged and students learn to collaborate and communicate with each other. If this type of learning environment is provided to the learners it would promote deep learning in students and help them develop thinking and reasoning abilities.

It is important for nurse educators to note and understand that the learning environment they create in the process of teaching the students has an influence on how and what students learn (Biggs & Tang,2007). Students may have different preferences for a learning environment and the difference may come about because of their life and educational experiences. Research studies in the area of student learning have indicated that one way of effectively promoting clinical reasoning among student nurses is by shifting the focus of educational encounter form teacher centered learning environment to a learner centered leaning environment (Gandhi, Mythil, & Thirumoorthy,2015; Haak,

Hille Ris Lambers, Pitre & Freeman, 2011; Heinerichs, Vela & Drouin, 2013). Clinical reasoning and decision making require knowledge gain and understanding that emanates from deep-learning approach that is facilitated by the educators' provision of a learning environment that promotes learner involvement (Dasari (2006) that is a learner centered learning environment. The teacher-centered environment that places all the emphasis on the teacher and not the student is still dominating nursing education today (Biggs & Tang, 2007). This is in line with study findings reported by Girot on learning environment in nursing programmes. He found that teacher- centered learning and teaching strategies are common among nursing faculty because they want to cover the volume of the content in the nursing courses. This type of learning environment does not promote development of the higher order thinking such as critical thinking and reasoning and the student nurses we are educating lack the ability to provide the required quality client care in the hospitals because they lack these abilities.

Literature (Beaten, Struven, & Dochy, 2010; Biggs &Tang, 2007; Brown, 2003; Hammerman, 2008), explains that a learner-centered learning environment, is learning or teaching environment that puts the learner at the centre. This type of learning environment motivates students, enhances their thinking and reasoning capabilities and increases their academic achievement. This is in agreement with the findings by Sayre (2013). The author conducted a study with the intent to explore the effectiveness of integrating student-centered teaching and learning methods in social studies classrooms in Central Florida as a means of enhancing students learning and promoting critical thinking skills. Based on analyzing students' post-test scores compared to their pre-test scores, the study results revealed that student-centered teaching improved learning and

produced a higher average score increase, though all methods had students who scored higher, and students whose scores remained constant. The study participants were divided into three groups: first group was taught using student-centered methods, the second one was taught using teacher-centered methods, and the third group was the control group and was not directly taught by anyone. All the students were given the same pre-test and post-tests.

In light of the evidence on the effectiveness learner centered learning approaches, similar findings to the above were also reported by Handelsman Ebert-May, Beichner, Bruns, Chang, & DeHaan, (2004). They found that there is great evidence that supplementing or replacing teacher - centered teaching strategies such as lectures with active learning strategies and engaging students in the learning process, improves learning, knowledge retention and academic performance.

Other researchers found that educators may want to create a learner- centered learning environment but because of some challenges they may prefer to maintain the teacher centered learning environment. Schumacher and Kennedy (2008) found that there are factors that contributed to the educators not using the learner centered approaches. Their study revealed several pros and cons of student-centered teaching such as (a) this type of teaching involved a lot of preparation work therefore keeping the teacher busy all the time (b) the teachers had to work out on how to divide time between lecture and group work or other active learning classroom activities and that student-centered learning takes a lot of classroom time but teachers have to cover all the planned content. With these experiences most of the educators maintain the teacher centered learning environment. But when student-centered instruction is implemented implement most

teachers will find they have embarked on a journey which has life changing implications for both the teacher and the student but mainly for the students.

To manage patients' complex needs, nursing students must develop their abilities to acquire and process information. Rather than learning an increasing amount of nursing content, students need to learn how to make appropriate patient care decisions based on assessment and planning, credible evidence, critical thinking, and clinical reasoning (Ironside, 2004; Tanner, 2004). Therefore to bridge the gap between what can be learned with the traditional teacher centered pedagogies and the abilities the student nurses should acquire, new pedagogies that create learner centered learning environment have to be developed. Learner -centered teaching approaches create a learning environment that promote learner involvement thereby enhancing student nurses use of diverse learning styles (Benner et al, 2009 ; Biggs & Tang, 2007)..

In order to ensure the effectiveness of any teaching and learning process it is therefore important for educators to know and understand the characteristics, the abilities and the experiences of individual students before learning takes place; this is because learners have different ways of gaining, processing and storing information (Aina-Popoola & Hendricks, 2014; Dasari, 2006; Uzunturyaki, 2007; Yilmaz-Soylu & Akkoyunlu, 2009). In relation to these factors students may be influenced to choose either a teacher - centered or student - centered learning environment in order to suit their style of learning. Amir & Jelas (2010) are of the view that students become independent and attentive in a learning environment where the educator conducts a learning session in an organised manner with blended tasks that stimulate thinking and reasoning. If educators are to help nursing students to effectively learn and develop clinical reasoning

abilities, the teaching should match the learning environment preferred by the learners (Clark & Latshaw, 2012; Duncan, 2012; Montegomery & Groat, 1998).

The stakeholders' concerns and observations mandates a learning environment that promotes deep learning approaches to learning among the student NMTs with the purpose of developing abilities to reason and make appropriate decisions on client care. Therefore there is need for educators to ensure that the teaching and learning processes that the nursing students go through, enable them to make connections between the knowledge acquired to clinical practice. Correctly deployed educational processes in nursing education will therefore, improve nursing student's academic performance and clinical competences.

Active learning teaching strategies and clinical reasoning

Active learning means becoming involved in learning. Chickering and Gamson (1987) argued that students' active learning is encouraged by educators in the classroom through use of thought-provoking learning activities and interactive group exercise. Most of the time nurse educators use lecture as a method of teaching. Lectures are useful, but nurse educators should incorporate additional activities to enhance learning and prepare students nurses at St. Joseph's college of nursing for clinical practice. According to Hightower (2014) the term active learning covers a wider variety of learning strategies that aim at encouraging active students' participation in learning. In a study on student learning, Tyler (2010) stated that learning takes place through the active behaviour of the learner. It is what the student does that he learns not what the teacher does. Active learning involves the student in doing activities and in reflective thinking about those activities.

Literature has revealed that pedagogical strategies that incorporate active learning should be the primary means of teaching in today's nursing classroom. Active learning strategies help student s move away from spoon- fed facts and figures to development of concepts, understanding principles and applying knowledge in clinical practice. Teacher - centered teaching approaches such are the common teaching methods used by nurse educators (Clark, Nguyen, Bray & Levine, 2008; Hightower, 2014; Nabors, 2012; Sprawls, 2002; Vu, van der Vleuten & Lacombe,1998). However, when used solely, teacher – centered methods do not engage the student as an active participant in the learning process (Anderson, 2006). Nurses are expected to be able to think, reason clinically, make decisions and solve problems in clinical practice; and passive teaching methods such as lecture will not foster these abilities (Clark et al. 2008). According to Amerson (2006) incorporating interactive activities throughout the lecture can revitalize the learning environment, engage the students as active participants, and meet the needs of a variety of learning preferences.

A study by Knight and Wood (2005) found that substituting more engaging student -centered activities for lecturing in about 30-40% of class time in a large upper developmental biology course resulted in an improvement in performance by 33% as measured by pre and post- test. The results showed that there was a higher learning gain and better conceptual understanding in the more interactive course than traditionally taught, lecture course. The study was carried out to determine whether student learning gains in a traditionally taught (lecture course) in developmental biology could be increased by changing to a more interactive classroom format. Students learning in an

interactive environment developed better skills for solving problems than the students taught only through lectures.

Another study by Hoke and Robbins (2005) which assessed the impact of the use of active learning techniques (case studies, small group learning, role playing) on a sample of twenty- three (n=23) student nurses during teaching on both didactic and clinical course grades in an associate level Registered Nursing medical-surgical course; found that students taught using active learning strategies had an average clinical grade of 87.03% compared to 84.19% in the previous year. Students benefited more and understood the content better with incorporation of active learning strategies. This helped the students to perform better during their clinical practice. Educators that have used the active learning approaches generally find that students learn more and that courses are more enjoyable (Limbach and Waugh, 2010). Active learning can improve productivity and guarantees students' better understanding of the content.

According to literature, different teaching strategies such as, case studies, concept mapping, group discussions/assignments, problem based, role playing and simulation just to mention a few have been used to facilitate active learning and promote development of thinking and reasoning abilities among student nurses in nursing education as well as in other health professions' education (Candela, Dalley & Benzel-Lindley, 2006; Delpier, 2006: Krajcik & Blumenfeld, 2006; Miertová & Lepiešová, 2013; Khurshid & Ansari, 2012; Nabors,2012).

Neistadt, Wight & Mulligan (1998) examined effectiveness of case studies in facilitating development of CR in Occupational Therapy students. It was found that students were able to use the information to think and come up with the intervention

plans and also understood the clinical reasoning process. The students reported preferring use of case studied over the lecture method of teaching.

In another study by Sandstrom (2006) it was also found that students' clinical reasoning and decision making abilities increased as a result of analyzing client situations through case studies. Sandstrom used case studies to teach students about the complexities of chronic illnesses. Three case studies were developed to teach students about the complexities of living with chronic illnesses, specifically diabetes mellitus. The case studies were presented and built from simple to complex. The case studies were authentic, realistically complex, and sequenced to support students' needs at different stages of their learning. Opportunities were available in the clinical area to assess the progression of learning.

Case studies are effective teaching tools because they provide the students with a holistic picture of a client and how the client can be managed. Nurse educators at St. Joseph College of nursing may find this mode of teaching useful in teaching student nurses medical- surgical nursing. The strategy facilitates students' development of clinical judgment without risk to the patient. Delpier (2006) recommends educators use of case studies to teach nursing students how to think like nurses. Case studies simulate students' actual clinical experience with realistic details and events. Scholars such as Dasari (2006) and Neistadt (1998) have recognized the contribution of the case study method approach to deep -learning among the many teaching methods educators employ to promote clinical reasoning process among student nurses.

Simulation another active learning strategy has also been used by educators to promote students' thinking, reasoning and problem solving abilities among students.

Seybert, Kobulinsky & McKaveney (2008) in their study used human patient simulated (HPS) case scenario that required reasoning and problem solving abilities to evaluate its impact on students mastery of course objectives. A pre and post simulation examinations and satisfaction survey instrument were administered. On problem solving skills it was found that majority of the students' groups received a final case grade of >95%. The students indicated high level of satisfaction with the use of human patient simulation in the course. Human patient simulation provided a unique opportunity for the students to apply what they learned and allowed them to practice reasoning and problem solving skills. In another study by Bambini, Washburn and Perkins (2009) similar finding s were reported. The study revealed that with the use of simulation, there was improved clinical reasoning ability and an increase in the students' level of confidence.

Inorder to improve and expand teaching methods that promote active learning, nurse educators in some countries like Israel used concept mapping in teaching nursing courses both in theoretical and clinical settings. Literature has shown that concept mapping promotes meaningful learning because the learner is encouraged to attach new ideas with the establishment of links between the old and new material thereby promoting thinking skills and reasoning abilities as well as problem solving processes (All & Havens1997; Harpaz, Balik, & Ehrenfeld, 2004; Russell, Comello & Lee Wright, 2007; Taylor & Wros, 2007). Using concept mapping assignments or activities educators can easily evaluate nursing students' thinking and reasoning abilities because it is a visual representation of their thinking.

A study by Harpaz, Balik, & Ehrenfeld, (2004) in which concept mapping was highlighted as a method of for advanced learning in nursing education. At the end of first

semester students and instructors were given a survey questionnaire that assessed the efficiency of teaching/learning when using concept mapping method and compared concept mapping and traditional teaching methods. Students reported that concept mapping (a) encouraged them to think independently (b) increased their orientation in knowledge and in finding connections between different areas (c) gave them more confidence in implementing their knowledge in clinical work. The educators reported that the strategy helped them organise theoretical material in an integrative way,(b) changed the student from a passive to an active learner (c) helped to evaluate students' knowledge (d) improved evaluation of the student's safety in the clinical area. Both, the instructors and student nurses showed satisfaction from the use of concept maps in the educational process. Teaching with the aid of concept maps has been incorporated as an innovative and viable teaching method in nursing education.

When educators introduce concept mapping in their teaching tasks they promote meaningful learning (Clayton, 2006). Students are able to visualize the connections between the ideas they already have, connect new ideas to the knowledge that they already have and organise ideas in a logical structure (Senita, 2008).

Problem-Based Learning (PBL) is another active learning strategy that has been proposed as an avenue to enhance professional skills and complex-reasoning abilities necessary for health professionals to not only enter the current workforce, but also to become innovative leaders of future practice (Facione & Facione, 2008; Varkey, Home, & Bennet, 2008). According to Russell, Comello and Lee-Wright (2007), PBL is an active learning strategy that can make student nurses at St. Joseph's College of nursing

become active learners and take a greater responsibility of their own learning and become more involved in the educational process.

A study conducted by Tiwari, Lai, so and Yuen (2006) where students were randomly assigned to lecture – based versus a PBL nursing therapeutics course over one academic year examined self- perceptions of participants' thinking and reasoning abilities. Each group had 10 students facilitated by an educator and for the PBL, each group had 3 to 6hours of PBL tutorials each week for 28weeks over 2 semesters. Thinking and clinical reasoning were measured by means of an inventory that was administered four times (prior to the first semester, at end of second semester and follow ups after one and two years). The groups did not differ in their self reported thinking and reasoning abilities prior to the first semester but PBL participants showed.

Papastrat and Wallace (2003) also validated the effectiveness of PBL as a nursing educational strategy .The authors developed a PBL scenario to teach medication ministration to a class of 35 first-semester baccalaureate nursing students before they began their clinicalexperience. Their main focus was on identification and prevention of medication errors .The scenario depicted a medication error that involved an older adult patient. The patient experienced a significant change in condition that necessitated admission to the intensive care unit. Students examined the information given, made inferences from the iformation, and developed a plan of action to address the problem. Students and faculty then collected data regarding preventable adverse drug events during the following 10-week clinical experience. Student evaluations of using PBL as an active learning strategy incorporated in their

lesson were very positive. Students identified stimulation of thinking, real-world context, collaboration, and learning from others as strengths of the strategy. Some of the weaknesses identified were group size, dislike of group work, time demands, and unequal share of workload within groups. When asked to vote on having a PBL assignment or an individually graded paper in a subsequent nursing course, the majority of students favored the PBL assignment.

Use of PBL in nursing education encourages students' greater understanding of the subject material and facilitates critical thinking and clinical reasoning (Nabors, 2012). Despite studies finding that PBL is equally effective as lecture method in promoting learning in students who were taught diabetes (Beers, 2005), other studies (Papastrat & Wallace, 2003; Pawson, Fournier, Haight, Muniz, Trafford & Vajoczki, 2006) proved that the strategy stimulated students' thinking, enhanced their reasoning and decision making abilities in a real-world context. This is what is required in nursing education.

Taken together, the findings of these studies provide considerable support for active learning methods, particularly for enhancing students' active participation in the learning and facilitating their development of higher order thinking such as critical thinking and reasoning.

This therefore, calls for St Joseph's college of nursing nurse educators' continued examination of the best ways of teaching and empowering students for learning. When educators use active learning strategies in their teaching tasks within professional training of the nursing midwifery technicians, students are actively involved in the learning activities as such their thinking ability is enhanced (Miertová & Lepiešová, 2013).

UNESCO report of The International Commission on Education for the Twenty-First Century (1996), states that every hidden talent in a student must not be left untapped. In support of this Candela, Dalley and Benzel-Lindley (2006) state that nursing education should not just make a student nurse literate but should also promote his or her rational thinking, knowledgeability and competence. With active learning strategies, nursing students' thinking, reasoning and creativity can develop among the learners. According to Damodharan & Rengarajan (2008) use of active learning strategies can therefore benefit both student nurse and the educator at St. Joseph's college of nursing in achieving better educational outcomes.

A learning environment can change if nurse educators adopt the principles of clinical reasoning and as explained previously there are different active learning strategies that educators can use in their teaching and learning processes to change a leaning environment to that which can provoke active learning in nursing students. This definitely requires the nurse educators extra effort. It is therefore an obligation for the nurse educators at St. Joseph's college of nursing to identify teaching strategies that can actively involve the students and ably foster clinical reasoning and decision making skills and abilities in them (Higgs & Jones, 2000) to enable them provide quality care to clients. It is of great importance therefore, for the nurse educators to understand that good teaching promotes learner participation (Biggs & Tang, 2007) and can produce good quality competent practitioners who are able to think critically, reason and make decision towards patient care.

Conclusion

In conclusion, the promotion of clinical reasoning in classroom teaching in relation to relevant existing literature has been discussed where the international and national perspectives were explored. The discussion focused on Clinical Reasoning, effective teaching including teaching styles, active learning, deep learning and learning environment preference. The literature has helped in recognizing the teaching and learning processes in the case study college and enabled the researcher to see how it affects students' development of clinical reasoning. The discussion has revealed that nursing education puts much emphasis on students' development of clinical reasoning and decision making skills and abilities through the learning that actively involve the learner. Deep learning is very important in students' development of thinking, clinical reasoning and decision making skills and is influenced by the educators' teaching styles and strategies as well as students' preferences of learning environment. The next chapter discusses the research design and methods that were used.

CHAPTER THREE

Methodology

Introduction

This chapter describes the research design and the methods that were used to achieve the objectives of the study. The discussions are on research setting, study population, data collection and strategies of data management and data analysis utilized in the study with an aim of developing evidence (Polit and Beck, 2008). The chapter also discusses ethical considerations and issues of validity and reliability, and trustworthiness which were observed throughout this study.

Research design

Research design is the framework that has been created to seek answers to research questions (Creswell, 2012). This study employed a combination of quantitative and qualitative approaches in a concurrent mixed methods design to examine how nurse educators promote clinical reasoning among student NMTs at St. Joseph's college of nursing. Concurrent mixed methods design was achieved by employing the combination of quantitative and qualitative research methods simultaneously with some interaction between the components to understand the research problem (Creswell, 2014: Gerrish &

Lacey, 2010). By employing the mixed methods approach the researcher intended to collect rich information about the teaching and learning processes that promote students' development of clinical reasoning abilities. Additionally, LoBiondo-Wood & Haber (2006) assert that combining methods in a research study adds depth and breadth to study results, specifically to understand how the promotion of clinical reasoning among student NMTs is taught it requires the views of both the educator and the student. Hence the use of mixed methods was aimed at yielding results that may well be statistically analyzed as well as obtaining actual words or information of the educators and student nurses that would provide adequate and detailed information about promotion of CR skill development as a means of complementing quantitative data.

A quantitative design is a formal, objective systematic process for describing test relationships and for examining cause and effect relationships (Boswell & Cannon, 2011; Burns & Grove, 2007) while a qualitative design is a systematic subjective approach used to describe life experiences and give them meaning. The rationale for using this design in this study is that none of the approaches would have been sufficient to address the issue under study. Furthermore, when used in combination, quantitative and qualitative methods complement each other for a more complete analysis of the problem that is under investigation (Creswell, 2008). In addition, the mixed method design will also allow the researcher to uncover perceptions that might otherwise be missed (Boswell & Cannon, 2011) thereby obtaining comprehensive and detailed data on how CR promoted among student NMTs.

The quantitative method used three sets of questionnaires in answering the following questions;

1. How is clinical reasoning promoted in the teaching processes of the NMTs?
2. How do Nursing Midwifery Technician students approach classroom learning?
3. What are the levels of clinical reasoning among the NMTs?

While the qualitative method used three sets of interview schedules in answering the following research questions;

1. What are the strategies that promote CR in the teaching processes of NMTs?
2. What are the educators' perceptions on the NMTs acquisition of CR skills?
3. What are students' perceptions on CR skills development?

Study Setting

The research was conducted at St. Joseph's College of Nursing an institution under Christian Health Association in Malawi (CHAM). St. Joseph's College of Nursing is at Nguludi Mission, Chiradzulu district in the southern region of Malawi. It is one of the colleges that train Nursing Midwifery Technicians (NMT) at college diploma level. The setting was chosen due to the high numbers of students it has been enrolling per year, in the past three years. During the study period the institution had a total of 325 students. This meant that the institution sends large numbers of its students into the various public

health care facilities to practice hence their practice can have an effect on quality of client care.

Study population

Study population according to Polit & Beck (2012), encompasses the overall aggregate of cases that meet a designated set of criteria. Study population included all the cases that met the designated set of criteria (Polit & Beck, 2012). This study had two target population sets. The first population set comprised nurse educators (n=22) from St. Joseph's college of nursing who were invited to participate in the study. The second population set comprised all student NMTs in third year class (n=98). All third year student NMTs were invited to participate in the study. The third year students were chosen because they were the most senior class who after going through the educational processes for three years are expected to have acquired the necessary knowledge and developed the required skills and competences.

Sampling and Sample size

Sampling was the procedure that was used to select a proportion of the participants from the population available so that the findings from the sample could be used to make conclusions about the population.

Quantitative

All nurse educators (n=22) with two or more years of teaching experience were invited to participate in the study by completing the Grasha Teaching Style questionnaire. All final year students (n=98) were invited to participate in the study by completing the, Learning Preferences questionnaire and Self Assessment of Clinical Reasoning questionnaire**.**

Qualitative

Purposive sampling technique, a non-probability sampling process (Boswell & Cannon, 2011) was deployed to select participants for qualitative data collection. In purposive sampling the ultimate goal is to select participants for a study who are believed to have rich information that the researcher is looking for (Sandelowski, 2000). That is the researcher selects participants based on predetermined criteria about the extent to which the selected participants could contribute to the study.

The number of interviews and focus group discussions conducted was determined according to the principle of data saturation therefore sample size was reached when saturation was achieved. The nurse educators sample size was eight (n=8). The college principal assisted in identifying the required participants from the already existing sample. The sample size for student NMTs for the focus group discussion was three groups of five (5) participants in each group; making a total of fifteen (n=15) participants. A number of five participants were preferred because it was large enough to provide a variety of perspectives and small enough not to become disorderly (Holloway & Wheeler, 2008). Only those who were willing, able to express themselves and explain issues pertaining to the phenomenon being studied participated in the research.

Inclusion criteria

The inclusion criteria for the nurse educators required them to be employed as tutors at the institution during the time of the study and have taught for two years or more; and willing to share information on their experience as regards to promoting clinical reasoning among their students. For the student nurses to be included in the study

they needed to be in the final year class (third year) at the institution at the time of study, able to articulate their experience in English and be willing to participate in the study.

Exclusion criteria

Nurse educators in the top managerial positions at the institution; and those that have less than two years teaching experience were excluded from the study. Students who were in the first and second year classes were not invited and those not willing to participate were not invited.

Pilot study

A pilot study to test and refine the data collection instruments (Burns & Grove, 2007), was conducted in February, 2015 at Holy Family College of Nursing with five nurse educators and 10 third year student NMTs. The pilot study was conducted firstly to assess whether the participants understood the questions in the questionnaires and the interview guide; and secondly if the participants would be able to answer the questions within the estimated time.

During the pilot study, participants were able to understand the language in the questionnaires and interview guides. The pilot study also provided the researcher with an experience in interviewing and using the recorder. The researcher also made some changes in the sequencing of some questions in the interview guides before the implementation of the study to better achieve the research objectives.

Data collection

Data collection describes the precise and systematic gathering of information that was deployed to explore the nurse educators and student nurses perspectives of the promotion of clinical reasoning skill development (Burns & Grove, 2007). The gathering

of the information was meant to yield detailed and specific information about the promotion of clinical reasoning development that could be analysed. Quantitative and qualitative data was collected concurrently.

Data collection instruments

Quantitative data collection instruments.

This study used three structured questionnaires to collect quantitative data. A questionnaire is a printed self –report form that is designed to obtain information from participants through written responses (Burns & Grove, 2011). The questionnaires were administered to the two groups of participants, the nurse educators and student nurses. Nurse educators responded to the Grasha, (1996) Teaching Style Inventory; the student nurses responded to Moore and Fitch Inventory of Learning Preferences and Roth's Self Assessment of Clinical Reasoning questionnaires. As the instruments were adapted permission to use these data collection instruments was sought from the authors to use their instruments in this study.

Grasha Teaching Styles Inventory (TSI) for educators

The Grasha (1996) teaching styles inventory: version 3 (Appendix 2) was utilized in order to determine the nurse educators teaching approaches employed in the teaching of the student NMTs. The Grasha Teaching Styles questionnaire has 40 items which assess the attitudes and behaviours of the teachers and is associated with the following five different selected styles; Expert, Formal Authority, Personal Model, Facilitator and Delegator. These teaching styles are the dominant qualities that are present in any classroom setting. A total of eight (8) out of the 40 items are related to the attitudes and behaviour of each teaching style. The Grasha teaching styles questionnaire is a validated tool that has a 5 point rating scale of 1 to 5 to rate the items. The options of the rating

scale are: 1=strongly disagree; 2= moderately agree; 3= undecided; 4= moderately agree and 5= strongly agree. The Grasha teaching styles scores are in the range of low, moderate, and high based on the test norms. Table 3.1 displays the Grasha's TSI score norms level of strength in each of the five categories.

Table1. Grasha Teaching Style scores

Teaching style	Low score	Moderate score	High score
Expert	1.0 – 3.	3.3 – 4.8	4.9 – 7.0
Formal Authority	1.0 – 4.0	4.1 – 5.4	5.5 – 7.0
Personal Model	1.0 – 4.3	4.4 – 5.7	5.8 – 7.0
Facilitator	1.0 – 3.7	3.8 – 5.3	5.4 – 7.0
Delegator	1.0 – 2.6	2.7 – 4.2	4.3 – 7.0

The participants' profiles for all of the five teaching styles were scored and rated. According to Grasha (1996), all teachers possess the five teaching styles but in varying degrees. A higher rating on each style was regarded as an important part of the teaching style that the nurse educators preferred during classroom teaching of the student NMTs.

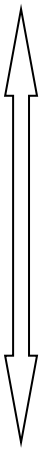
Moore and Fitch Inventory of Learning Preferences (ILP)

To determine student NMTs learning preferences, the Moore and Fitch ILP (Appendix 5) instrument was used. The Moore and Fitch inventory of learning preferences is a validated tool that was developed by Moore, Harrington, Mennin, Kaufman and Skipper, (1989) in an effort to identify students' learning preferences. The Moore and Fitch questionnaire consists of 34 items covering students' learning preferences. In this instrument students were requested to select only 10 items out of the

34 that best reflect their ideal learning environment. The thirty four items are divided into four categories. Items in category one and two reflect preference for teacher centered learning and items in categories three and four suggest student's preference for student centered independent learning. Table 3.2 below illustrates the four categories and items each category.

Table 2 ILP item numbers and their corresponding categories

More towards teacher centered



Category	Description	Item number
1	Preference for a learning environment in which students are given the right answers, reproduce information in tests, teachers provide clear direction and guidance	2, 4, 8, 13, 16,19, 28 & 33
2	Preference for a learning environment in which preference for class discussion is given, different learning methods including relevance of course material, reward with good grades, provides relevant experience	1, 5, 7, 10, 14, 21,25, 29 & 32
3	Preference for learning environment which provides individual thinking, individual control over course content, express own opinions and learn from peers	3, 6, 9, 12, 18, 23, 26 & 30
4	Preference for learning environment which promotes personal motivation, provides an atmosphere for independent reflective and integrated learning	11, 15, 17, 20, 22, 24, 27, 31 &34

More towards student centered Adapted from Wun, Chan & Dickson, (1999)

Self Assessment of Clinical Reflection and Reasoning (SACRR) questionnaire

Self assessment of Clinical Reflection and Reasoning questionnaire (Appendix 6) is a validated tool which was developed by Roth (1989. The instrument consists of 26 item statements that represent behaviours or actions of CR. The twenty six items are divided into four groups that conceptualize clinical reasoning with specific number of items as illustrated in Table 3.3.

Table 3 SACRR Concepts items

Concepts	**Item numbers**	**Total items**
Knowledge/Theory application	7,8,9,10,26	Five
Decision making based on experience and evidence	1,2,3,4,5,11,18,20,24 &25	Ten
Dealing with uncertainty	6.13.14.15.16.19 &22	Seven
Self- Reflection and Reasoning	12,17,21 &23	Four

The total scores for each group of items are calculated based on the number of items in the particular group. The questionnaire has a 5-point Likert scale that is used to rate the items. The alternatives of the rating scale are: 1= strongly disagree, 2= disagree, 3= undecided, 4= agree and 5= strongly agree.

Qualitative data instrument

The qualitative data was collected using interview guides that have semi – structured open ended questions (Appendix 3&7). The researcher used a list of questions in conducting the interviews. The open ended questions were formulated in order to collect more information from the participants.

Data collection procedure

Data collection as described by Burns and Groove (2011) is the precise and systematic gathering of information relevant to the research purpose. Quantitative and qualitative data were collected simultaneously Prior to administering the questionnaires and conducting the in depth interviews, participants were contacted and adequate information was provided about the study (Appendix 1a & 4a). This was done in order develop a relationship between the researcher and the participants as well as to get consent from the participants. All the participants signed a consent form (Appendices 1b& 4b) upon accepting to participate in the study. Obtaining permission from the participants before starting to collect data is not only a part of the informed consent process but it is also an ethical practice (Creswell, 2008). Data was collected for a period of six weeks (from mid- March to end April, 2015) as data collection from the students depended on their availability at the college.

Nurse educators

The Grasha Teaching Styles inventory (Appendix 5) was distributed to twenty two (22) nurse educators from St. Joseph's college of nursing. Accepting to take and completing the questionnaire was considered as participant's willingness and consent to

take part in the study. Participant was informed that the questionnaires were to be collected by the researcher two weeks after distribution. Eighteen (n=18) were returned amounting a response rate of 81.8%.

Student nurses

The Moore and Fitch Learning Preferences (Appendix 5) and Roth's Self Assessment of Clinical Reasoning (Appendix 6) were distributed to ninety eight (98) third year student NMTs from the institution that were at this particular time in different clinical sites for practice. Completion of the two questionnaires was considered as participant's willingness and consent to participate in the study. The researcher collected the questionnaires from one representative chosen by the participants two weeks after distribution. Ninety (n=90) students responded to the questionnaires amounting to a response rate of 91.8%.

Qualitative data collection

Qualitative data was collected using the semi- structured open ended questions which were formulated by the researcher. Two sets of interview guide questions were formulated for the nurse educators' interviews and focus group discussions with students NMTs Interviews were done soon after the administration of Grasha Teaching Styles questionnaire for tutors and Moore and Fitch Inventory of Learning Preferences and Roth's Self Assessment of Clinical Reasoning questionnaires for the NMTs. The researcher used semi-structured open ended questions; and as stated by Holloway and Wheeler, (2008) semi-structured questions allow the participants to present their experiences in their own expressions and style.

Interview with educators/tutors

Nurse educators/tutors participated in for face-to-face individual in-depth interviews using the semi- structured interview guide questions (Appendix3). Semi-structured questions are relevant in getting a broad insight into a subject and they also allow the study participants to present their experiences not only in their own expression but also in their own style (Neergard**,** Olesen, Andersen & Sondergard**,** 2009**).** Face to face in-depth interviews also provide the opportunity for the researcher to ask probing questions where necessary and evaluate the validity of the answers by observing the non-verbal cues of the participants (Gerrish & Lacey, 2010). The in depth interviews took 45minutes to 1hour per interview session. A sample of eight (n=8) for the nurse educators was reached with the saturation of data. Data saturation was reached when the participants repeatedly gave the same responses in the same questions.

Focus group discussions with student nurses

Student nurses participated in the focus group discussion. Focus group discussion has been described by Onwuegbuzie, Dickson, Leech and Zoran (2009) as engaging a small number of people in an informal group discussion (or discussions) focused around a specific topic or set of issues. Focus group discussions are considered as an important technique in qualitative research because they can be extremely effective in generating meaningful information about participant attitudes towards a variety of different topics (Holloway & Wheeler, 2008). The researcher chose this method to collect data from student nurse because it creates a less threatening environment to research participants, taking into consideration that students were to give their views on the educational

processes at the institution to a tutor. Therefore the non threatening environment was very helpful for the participant to freely discuss their perceptions, ideas and thoughts (Onwuegbuzie, et al., 2009). Each of the focus groups was engaged in one session of discussion and the discussions were guided with questions that were prepared by the researcher (Appendix 7). Ground rules were made before each group discussion so that all group members knew how to proceed and also to create an open and non threatening group climate (Holloway & Wheeler, 2008). The Focus group discussions produced data through social interaction and the interaction stimulated the thoughts of the participants, reminding them of their own feelings. Through the interactions the participants were able to remember thoughts and also had the opportunity to ask questions. The group interactions gave the participants courage to mention even the issues they felt were sensitive.

The focus group discussion was used in addition to the Inventory of Learning Preferences and Self Assessment of Clinical Reasoning questionnaires. The group interaction in focus group enabled the participants to explore and clarify their experiences and insights to the teaching and learning process of CR (Gerrish & Lacey, 2010). Probing questions were also used whenever the researcher was not clear of the students' responses. Each Focus group discussion lasted about 1 and half hours per session. A total of three focus group discussion session was conducted with five (5) participants in each group.

Appointments were made with participants on the date and time that was convenient to them. All interviews were conducted in a private room which was organized prior to interviews. The rationale was to maintain confidentiality of the data collected. The responses from in-depth interviews and focus group discussions were tape recorded. Notes were also written in hard cover note books despite audio taping to avoid missing information in case failure of the recorder occurs unexpectedly.

Data management

Quantitative Data

Data management was done to ensure that the quality of data collected is adequate and that the data is turned into useful information. Before collecting the quantitative data, variable names were created for all the three sets of questionnaires with codes for each category. A database was created using SPSS version 16.0 for each of the three questionnaires to enhance data management. The database included a column for identification number for each participant, label of the question, values of responses and a scale for each response. Identification number is very important for it is a way of preventing duplication of cases. All the three questionnaires were checked to establish their completeness. Descriptive statistics and frequencies for the surveys were calculated to summarise the educators' and learners' responses to each item in the questionnaires and will be reported in graphs and tables.

Qualitative Data

All the recorded interviews were transcribed verbatim and were typed every day by the researcher after data collection in preparation for data analysis. During the interviews and focus group discussions the researcher also wrote some information she felt was important to help in data storage. The researcher saved all the transcripts as electronic data in Microsoft word format in the researcher's personal computer for further analysis, a pin code known to the researcher alone was used to prevent access to the information by other people. Transcription facilitated the recognition of patterns in the data and identification of themes. From the data meanings and important consistencies were identified in the clinical reasoning concept among the all the participants transcripts which were then arranged into themes.

Data analysis

Quantitative data

In quantitative research data is analyzed statistically in order to make sense of quantitative information (Polit and Beck, 2008). In this study a database was created using SPSS version 20.0 for each of the three questionnaires to enhance management of quantitative data. The database included a column for identification number for each participant, label of the question, values of responses and a scale for each response. All the three questionnaires were checked to establish their completeness. Descriptive statistics for the surveys were computed and summarized in the text and reported in graphs and tables.

The Grasha Teaching Style Inventory data

Quantification of teaching styles was done by adding together the eight items that belonged to each style. This was done in order to identify the most favored teaching style among the nurse educators. After quantifying the teaching styles inventory scores were then entered on the SPSS (version 20.0) programme, codes of Experts, Formal Authority, Personal Model, Facilitator and Delegator were used. Descriptive statistics were computed and frequency tables created, means and standard deviations were also obtained for each teaching style.

The Inventory of Learning Preferences data

From the 34 items each student chose only 10 items that represented the student's ideal learning environment. The 34 items were entered in the MS Excel programme to quantify the four categories of 1 to 4 (more teacher centered to student centered independent learning) of students' learning environment preferences. The frequency of each item selected by the students was recorded and calculated as percent scores. The (ILP) data from the coded questionnaires was entered in SPSS software for Windows (version 20.0) using specific item codes CT/01 to CT/04. Descriptive statistics were computed and frequency tables created for each category.

Self -Assessment of Clinical reflection and Reasoning (SACRR) data

Scores from SACRR questionnaire were quantified using the Microsoft Excel programme according to clinical reflection and reasoning proposed concepts of knowledge/theory application, decision making based on experience and evidence,

dealing with uncertainty and Self –reflection and Reasoning. The totals were then entered in SPSS version 20.0 where descriptive statistics were done, means and standard deviations for each category were obtained.

Qualitative Data analysis

Content analysis approach was used to analyse the data. Content analysis is described as a research method for the interpretation of the text data through a systematic classification process of coding and identifying themes and patterns with the purpose of providing practical guide to action(Elo & Kynga, 2007; Hsieh & Shannon, 2005). Ryan & Bernard (2003) techniques were followed to identify the themes in this study. Themes are the fundamental concepts from the data that are to be described (Ryan & Bernard, 2003). This promotes awareness of emerging themes. The individual interviews and focus group discussions were transcribed verbatim from the recorder and the transcription was done on each day by the researcher. The process of transcription provided an opportunity for the researcher to become immersed in the data **(**Gale, Heath, Cameron, Rashid & Redwood, 2013). The researcher read and reread the transcripts of the educators over a time whilst listening to the audios. Texts were examined line by line and descriptions that were relevant to the topic under study were underlined. Repeated words and expressions were noted and marked with different colours. Important expressions with similar meanings were grouped together (LoBiondo-Wood & Haber, 2010). The researcher then tallied the identified expressions on a tally sheet she created. This helped the researcher to come up with categories that led to identification of themes presented in this study.

Focus group transcripts were also anlaysed by going through the transcripts and identification of sections that were relevant to the research question was done. Based on the initial reading, major categories of topics and issues were developed and phrases and sentences in the transcript related to each topic were identified (Stewart, 2006). Colour-codes were used to mark the different topics within the text. The researcher went through the transcripts in order to gain greater insight into the content of the group discussions. After the coding process, the coded material was sorted to place all material relevant to a particular topic together. This process yielded materials that provided the basis for developing the report. The process of analyzing this data incorporated the Scissor-and-sort technique described by Steward (2006) an approach that is useful in analyzing focus group data by a single analyst.

Participants' responses have been incorporated within the analysis as supporting material as direct quotes in participants' own words and no grammatical improvements were done on the narratives in order to reflect participants' own words. To facilitate confidentiality, each participant for the interviews and focus group was assigned a numerical code as from NE/01 to 08 for educators; and FG/1FG/2and FG/3 for the focus groups.

Reliability and Validity

Reliability of the data collection instruments

The research instruments are considered reliable if the results of the study can be reproduced under a similar methodology; that is if the instruments were to be used on a similar group of respondents and in a similar context, similar results would be obtained (Ayodele, 2012: Golafshani, 2003). Burns & grove (2011) emphasize that reliable instruments enhance the power of a study to detect significant differences or relationships actually occurring under study, hence the importance of pretesting the instruments to test their reliability before they are used.

The Grasha Teaching Styles Inventory questionnaire is an instrument that has been adopted from Anthony Grasha. The instrument has a test, retest reliability that was obtained through pilot testing of the survey instrument by Grasha. Grasha compared the results of the pilot testing with the actual survey results; these were correlated and expressed by the Pearson r Coefficient of 0.80. According to Burns and Grove, (2011) it is indicated that a reliable coefficient of 0.80 is considered the lowest acceptable value as the instrument has 20% random error.

The Self assessment of Clinical Reasoning has been adopted from Dasari (2006). The questionnaire was first administered as a reliability study to 30 first semester students enrolled in a bachelor of science of occupational therapy programme at a Midwestern university. The summated scores of the self assessment of clinical reasoning were analyzed using SPSS. Internal consistency as measured by Cronbach's alpha further evaluated test validity and Test-retest reliability was examined by using a Spearmann

rank correlation. Results of the analysis revealed that Cronbach's alpha was 0.87 for the pre-test and 0.92 for the post-test, which suggested that the instrument had high internal consistency and that it was indeed measuring a unified concept (Dasari, 2006). A pilot study was also conducted to test the instrument and check if the participants will be able to understand the items in the questionnaire without any problems.

Moore and Fitch Learning Preferences instrument a reliability that was calculated using Crobach's (1951) coefficient alpha for all the five domains. This is the single most important measure for internal consistency for an instrument. The alpha reliability coefficients ranged from .63 to .84. The result is encouraging since the position items are supposed to be linked more closely than the domain items. The instrument was also pretested to check if the participants will be able to understand the items in the questionnaire and respond without any problems.

Validity of the data collection instruments

As a process, validation involves collecting and analyzing data to assess the accuracy of an instrument. The quantitative data collection questionnaires for this study all are adopted instruments that have been pretested and have evidence of construct validity. Construct validity examines the degree to which an intervention can be a good representation of any construct theorized as having potential cause to beneficial outcomes (Polit & Beck, 2004). All the quantitative data collection instruments were pilot tested to evaluate their validity in the context of promoting clinical reasoning.

Trustworthiness of the study

To ensure trustworthiness of this study the researcher adopted the framework of Lincoln and Guba as cited in Polit & Beck (2008). Lincoln and Guba (1985) suggested criteria for developing trustworthiness of a qualitative enquiry which encompasses different dimensions including credibility, transferability, confirmability, and dependability. To ensure credibility, dependability, confirmability and transferability the following procedures were followed;

Credibility

To ensure credibility, researcher had to ensure that a true picture of the phenomenon under scrutiny is presented (Shenton, 2004). The researcher engaged participants as per inclusion criteria during data collection and those who opted to withdraw from the study; they were allowed to do so without being asked to give an explanation to the researcher for their decision. This is because unwilling participants would find it difficult to express themselves fully and this could have compromised the richness of the data. The willing participants were encouraged to be frank in giving information. In addition, the researcher used probes during the in-depth interview in order to encourage participants to give detailed information regarding the process of promoting clinical reasoning among students. Probes were also used to elicit detailed data to uncover phenomenon; i.e. the researcher returned to matters previously raised by the participant and extract related data through a rephrased question and falsehood could be detected if in both cases contradictions emerged and the suspected data was discarded. To enhance participant's understanding of the research question, the researcher clearly elaborated each question before the participant gave a response.

Transcription was done by the researcher alone so that there was consistency in capturing of information. Furthermore, reliability of the findings was achieved by doing thorough checks of the transcripts to rule out any obvious mistakes and constantly making sure that the code definitions are maintained. Data was tested for accuracy through member checking. The transcribed script was taken back to the participants to verify that the information contained in the script match what they actually intended before the analysis. Validity was achieved by use of more than one data collection method. In this case, observations on nonverbal communication such as facial expression were made during the interviews.

Dependability

In order to address the dependability issue more directly (Shenton, 2004) all the processes in the study have to be reported in detail so as to enable future researchers to repeat the study and if possible gain the same results. In this study, a detailed step by step process of all that has been done in the process of carrying out the study that is research methods, data collection methods and analysis have been included in the report in order to indicate that the findings are consistent and can be repeated.

Confirmability

In order to achieve confirmability steps have to be taken to ensure as far as possible that the findings of the study are the result of the experiences and ideas of the participants, rather than the characteristics and preferences of the researcher (Shenton, 2004). The methodology and all the data analysis procedures will be described in detail to prove to the reader that there is no bias on the researcher's part. In this study, to a achieve confirmability, the researcher will ensure that all the words as spoken by the

participants and researcher during the in depth interview are all recorded in order to differentiate participant's views from that of the interviewer's views. In addition, the researcher who was the interviewer listened actively and facilitated the dialogue during in-depth interview and focus group discussions. This was to allow participants to give detailed information regarding the process of promoting CR among nursing midwifery technician students. The raw data will be kept by the researcher.

Transferability

In order to ensure transferability of the study, the researcher has provided information describing the study background of the study, the study objectives, setting the methodology and a clear and detailed report of the findings in order to allow other individuals to assess the extent to which the findings are transferable to their own situation. The study findings will provide some useful insights as regards to promotion of clinical reasoning among student NMTs. According to Shenton (2004) transferability is the applicability of the findings of one study to other situations. The readers of the study report may find the study results meaningful and applicable in their contexts as regard to promotion of clinical reasoning skills among student nurses.

Ethical Consideration

Ethical review is very important in ascertaining the safety of research participants and to protect their rights. To this end the proposal for the study was submitted to College of Medicine Research and Ethics Committee (COMREC) for approval before conducting this study. Permission to conduct research at St. Joseph's college of nursing

was sought in advance and the permission was granted by the college principal (Appendices 8 & 9).

In order to observe the general ethical principles of research as stipulated by the Helsinki Declaration, informed consent was sought from prospective participants (see Appendices 1b& 4b). Participants were given adequate information about the research to enable them make an informed choice to participate or not to participate in the study. This is important in order to respect participants' autonomy. The prospective participants were therefore informed about the purpose of the study, type of data that was to be collected and contact information which was provided in an information sheet (Appendix1a & 4a). Respect for human dignity as one of the primary ethical principles demands that prospective participants of the study should have the right to participate in a study voluntarily without being coerced (Polit & Beck, 2008). Consent was obtained from all the participants both verbal and written. The participants were also informed on the right to withdraw from participation in the study at any point.

To maintain privacy and confidentiality throughout the study period all the collected information this include the questionnaires, the recorded information and notes taken during the interview and transcriptions, were kept confidential through the use of codes and speaker identifiers in place of the participants' names. This was done to ensure anonymity. All the recorded information and notes were kept in a locked drawer and the researcher kept the keys.

A researcher is obliged to avoid, prevent or minimize harm to the participants during any research process. At no time should a participant be subjected to unnecessary

risk for harm or discomfort (Polit & Beck, 2008). This study had no anticipated risks. However the participants were informed that during data collection process they were free to withdraw from the interview if they felt uncomfortable. The prospective participants were also informed that there was no penalty as regards their withdrawal, refusal to participate or to answer specific questions. While there was no direct benefit to the participant, the study results may produce information which may be utilized in nursing education to improve the quality of the nursing midwifery technician hence improve quality of nursing care in Malawi.

Conclusion

This chapter discussed the research design that guided the conduct of this research study. A concurrent mixed methods design was appropriate to guide in answering the research questions with specific focus on the teaching and learning processes involved in promoting clinical reasoning. The methods used were questionnaires and interviews. Furthermore the ethical issues that were considered for the study have been outlined. In the next chapter results shall be presented.

CHAPTER FOUR

Results

Introduction

This chapter presents the results of the study that was deployed to examine the promotion of clinical reasoning in teaching in relation the objectives displayed in chapter one (page 7). The results are presented in two sections; the first section presents quantitative results that include demographic information, teaching styles, learning preferences and clinical reasoning; and qualitative results are presented in the next section.

Quantitative results

Demographic characteristics of the participants

The total number of participants in the study was n=120 (nurse educators n=22; student NMTs n=98). Out of the 22 questionnaires distributed to the educators, 18 were returned with all the items in the questionnaire completed giving a response rate of 81.8%. Of the 98 questionnaires distributed to the student nurses, 90 completed questionnaires were returned giving a response rate of 91.8%.

The demographic characteristics results are reported on the following variables; Educators' age range, gender, years of teaching experience and qualification; and for the student nurses the variables are age range and gender.

Educators

Gender of the participants

The results indicate that the majority of the participants were female 83.3% (n=15) and 16.7% (n=3) are male as illustrated in Figure 2.

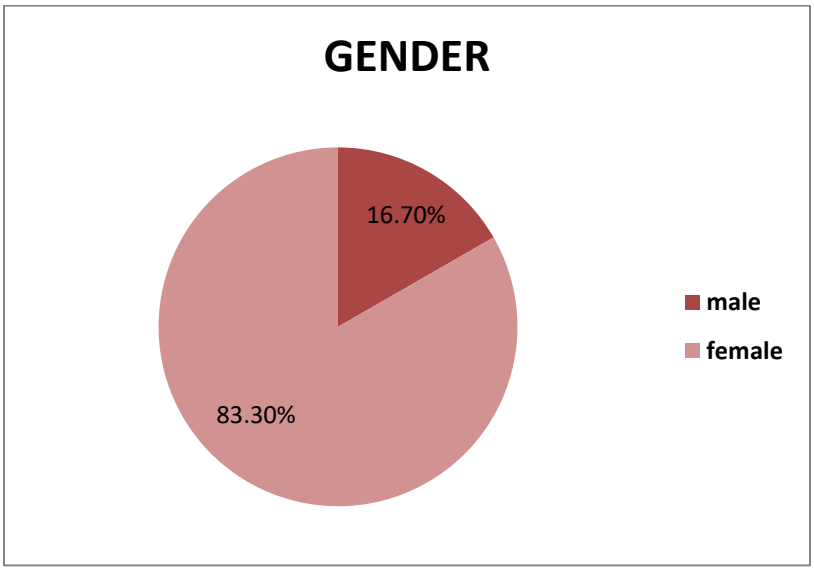


Figure 2: Illustrates the gender of the participants

Age of the participants

The participants' age groups are in three categories; from 30- 40yearrs, 41-50years, 51years and older. As illustrated in Figure 3, the findings indicate that 27.8% (n=5) of the participants were within the age group of 30-40; 50% (n=9) were in the age group of 41-50 and 22.2 % (n=4) were within the 51years and older. The mean age was 43.94years.

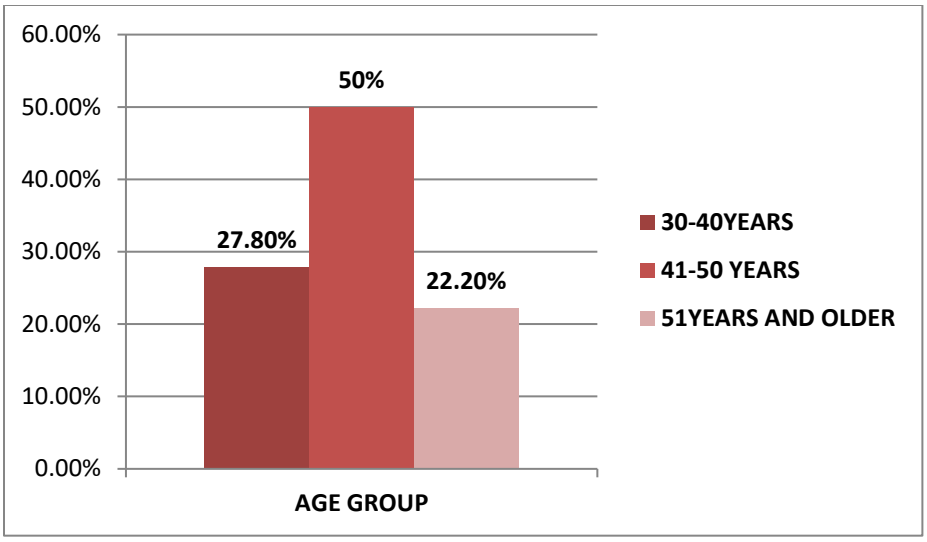


Figure 3: Illustrates participants' age groups

Participants' years of teaching experience

The results indicate that the participants had taught for different numbers of years as illustrated in figure 4 and years of teaching experience were arranged in three categories; from 2-4years, 5-7 years and 8- 10. Out of the 18 participants, 33.3% (n=6) were within the teaching experience of 2- 4years; 22.2% (n=4) were within 5-7 years and 44.4% (8) were in the range of 8- 10years. The years of teaching experience mean was 6.33years.

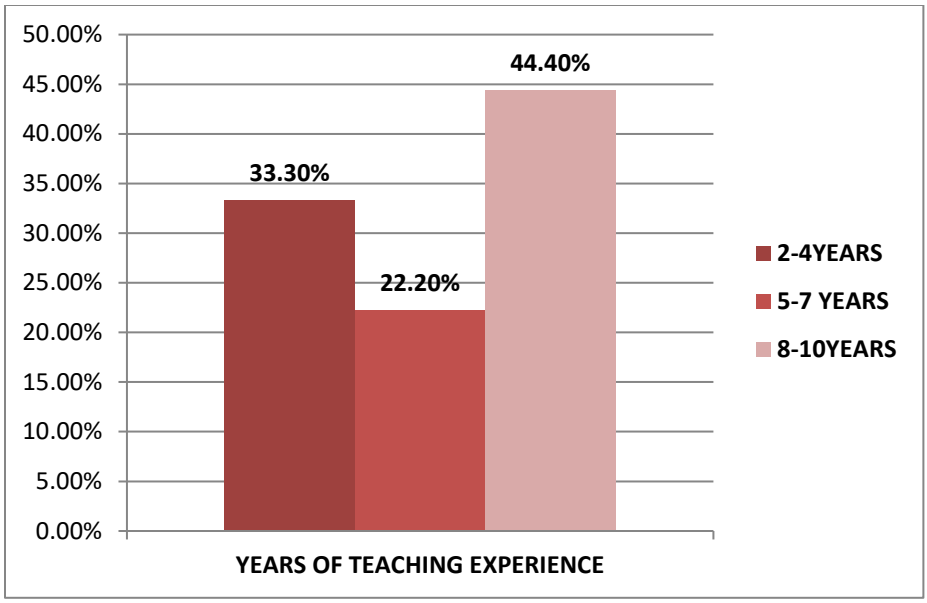


Figure 4.illustrates participants' years of teaching experience

Qualifications

All the participants were registered nurse midwives with university diploma or Bachelor of Science degree. The participants also had different added qualifications in addition to the general nursing and midwifery qualification. The results indicate that; out of the 18 participants, 16.7 % (n=3)were educators with Generic Bsc in General Nursing and University certificate in midwifery(BSc Nsg Generic); 16.7% (n=3) BSc Community Health Nursing post basic (BScCHN) plus other; 5.5% (n=1) BSc Management post basic (BSc Mgmt) plus other; 5.5% (n=1) BSc Midwifery post basic plus other and 55.5% (n=10) BSc Nursing education post basic (BScNED) plus other as illustrated in Figure 5.

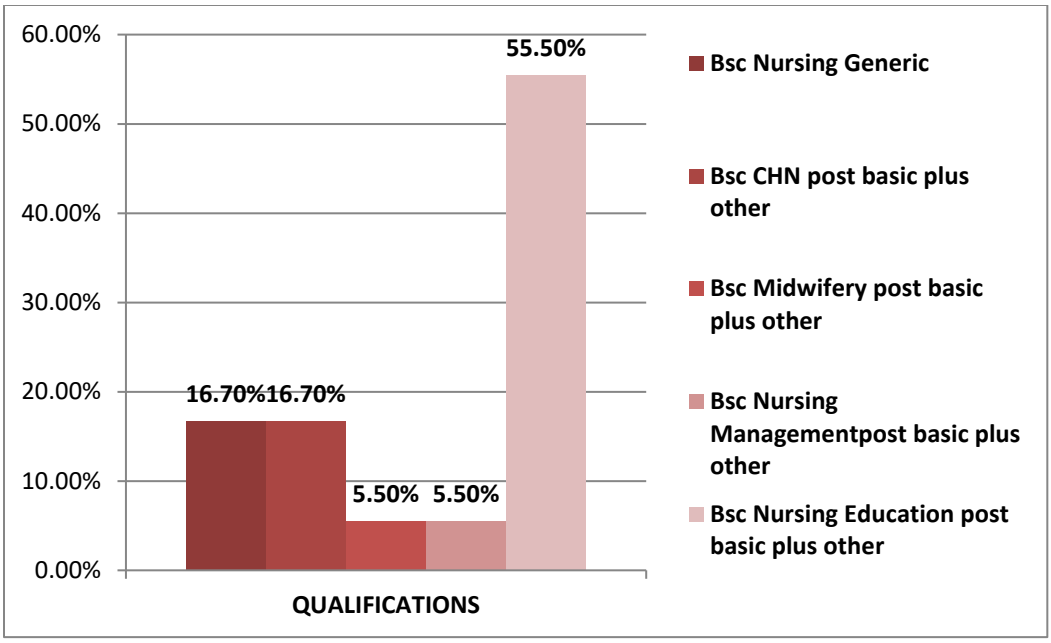


Figure 5 illustrates participants' qualifications

Summary

In summary, the results indicate that most of the participants at the institution were females within the age group of 41 -50 years, are nurse educators with nursing education qualification and have taught for more than 6years.

Students

Gender of the participants

In terms of gender the results indicate that majority of the participants were female 68.9% (n=62) and 31.1% (n=28) were male as illustrated in Figure 6.

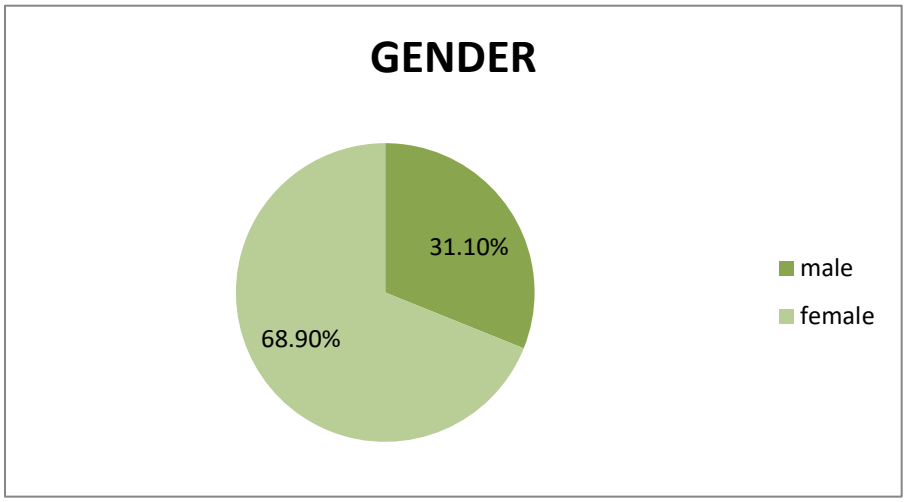


Figure 6: Illustrate gender of the participants

Age of the participants

The results showed that the 12.2% (n=11) of the ninety (90) participants were within the age range of 18- 21 years; 60% (n=54) in the age range of 22 – 25 years; 18.9%(n=17) were in the range of 26-28 years; 3.3% (n=3) were in the range of 29- 31; 3.3% (n=3) were in the range of 32- 35 years and 2.2 % (n=2) were of the age of 36years and older and the mean age was 24.54 years as illustrated in Figure 7.

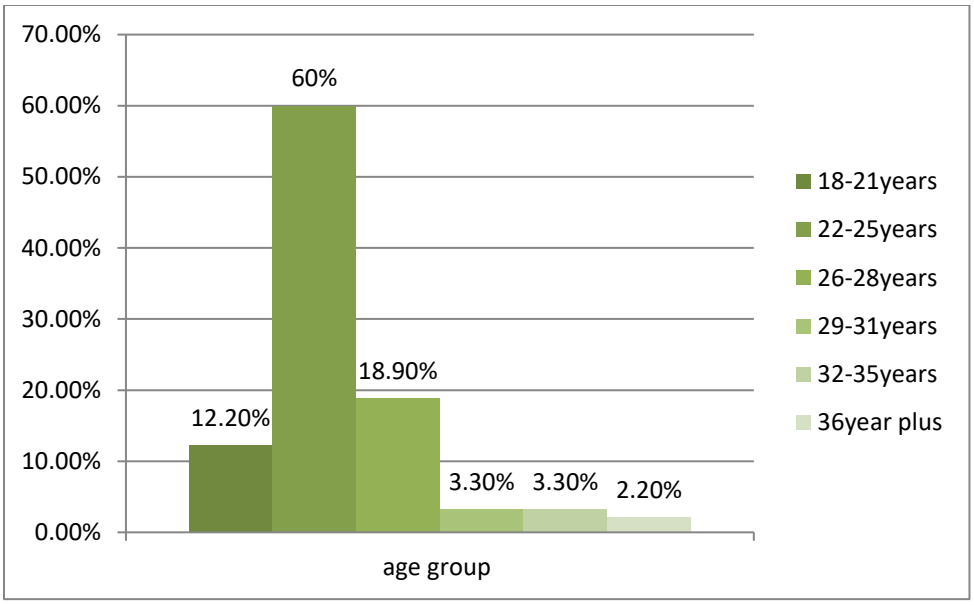


Figure 7: Illustrates participants' age groups

In summary the results have shown that the majority of the participants are female and most of the students are within the age range of 22 – 25 years.

Teaching styles among participants
Grasha Teaching Styles data

Nurse educators responded to the Grasha Teaching Styles inventory which has five styles of teaching. The teaching styles inventory characterizes the educators' attitudes and behaviours in approaching teaching that can influence students' preference for a particular learning environment. Twenty two (n=22) were invited to participate in this study and eighteen (n=18) responded, that reflects a response rate of 81.8%.

The Expert Teaching Style

In this teaching style the teacher possesses knowledge and expertise that students need in any learning situation. The expert teaching style strives to maintain status among students by displaying detailed knowledge. The teacher as an expert challenges students to enhance their competence and concentrates on transmitting information and requires that students be prepared to learn and use the information (Grasha, 1996). The following are the scoring scale ranges for Expert Teaching Style:

- Low = 1.0- 3.2
- Moderate = 3.3- 4.8
- High = 4.9- 7.0

High scores obtained by the participants in this teaching style indicates that the style is mostly preferred by the participants and is dominant among the participants' teaching activities; and the low scores reflect minimal utilization and little or no preference of the Expert Teaching Style. The statements in the Expert Teaching Style that the educators responded to show the behaviours and attitudes those educators exhibiting this style display in their teaching. Table 4 displays the means and standard deviation of each statement that shows that there are some differences in the behaviours and attributes displayed by educators in classroom teaching.

Table 4: Expert Teaching Style distribution

Item No	Item	n	Mean	SD
1	Facts, concepts and principles are the most important things that students should acquire.	18	4.17	1.10
6	Sharing my knowledge and expertise with students is very important to me.	18	4.72	.46
11	What I have to say about a topic is important for students to acquire a broader perspective on the issue in that area.	18	4.39	.61
16	I want students to leave this course well prepared for further work in this area.	18	4.67	.49
21	Lecturing is a significant part of how I teach each of the class sessions.	18	3.11	1.57
26	My expertise is typically used to resolve disagreements about content issues.	18	4.33	.84
31	Students might describe me as a "storehouse of knowledge" who dispenses the fact, principles, and concepts they need.	18	3.83	1.34
36	There is more material in this course than I have time available to cover it.	18	3.33	1.46
Total	**Mean and Standard Deviation scores for Expert Teaching Style**	**18**	**4.06**	**.98**

Out of the 18 participants, 72.22% (n=13) had moderate scores with the range of 3.3- 4.8 an indication of moderate use of the Expert Teaching Style, from the table there is indication that from the eight statements participants high scores were obtained on statements 6 and 16. Statement 6: *Sharing my knowledge and expertise with students is very important to me* (mean = 4.72 and SD=.46)*;* statement 16: *I want students to leave*

this course well prepared for further work in this area (mean=4.67 and SD=.48). There were low scores obtained on statement 21 *Lecturing is a significant part of how I teach each of the class sessions* (mean=3.11 and SD=1.57). However, the scores have a high dispersion around the mean as shown by the standard deviation. Most educators (61.1%: n=11) prefer Expert Teaching Style in their teaching activities as they scored moderately; 11.11% (n=2) had low scores in the ranges of 1.0- 3.2 indicating minimal use and no preference for the teaching style in the educators' teaching activities; high scores, in the range of 4.9-7.0 were obtained by 16.67% (n=3) of the participants indicating that a small number of educators preferred the Expert teaching style. The overall mean of 4.06 indicates a moderate preference for the teaching style in the educators teaching endeavours with a standard deviation of .98.

Formal Authority teaching style

The formal authority teaching style is signified by the possession of status among students because of knowledge and the role as a teacher. In this style the teacher provides positive and negative feedback; establishes learning goals and expectations and rules of conduct providing the students with a learning structure and feels that it is his/her responsibility to teach. The teacher ensures that students concentrate on correct, acceptable and standard methods. The following are the scoring scale ranges for Formal Authority Style.

- Low = 1.0- 4.0
- Moderate = 4.1- 5.4
- High = 5.5- 7.0

Table 5 displays the means and standard deviation of each statement that shows that there are differences in the behaviours and attributes displayed by educators in classroom teaching.

Table 5: Formal Authority Teaching Style distribution

Item No	Item	n	Mean	SD
2	I set high standard for students in this class.	18	4.22	.65
7	I give students negative feedback when their performance is unsatisfactory	18	3.44	1.24
12	Students would describe my standards and expectations as somewhat strict and rigid	18	2.83	.86
17	It is my responsibility to define what students must learn and how they should learn it.	18	4.00	1.03
22	I provide very clear guidelines for how I want tasks completed in this course.	18	4.33	.69
27	This course has very specific goals and objectives that I want to accomplish	18	4.61	.50
32	My expectations for what I want students to do in this class are clearly defined in the syllabus	18	4.33	.77
37	My standards and expectations help students develop the discipline they need to learn.	18	4.28	.67
Total	**Mean and Standard Deviation scores for Formal Authority Teaching Style**	**18**	**4.00**	**.80**

Statement 27: *This course has very specific goals and objectives that I want to accomplish* had high scores indicating that most participant are in agreement with the statement (mean= 4.61 and SD .50). The statement: *Students would describe my standards and expectations as somewhat strict and rigid* (mean=2.83 and SD= .86) an

indication that educators were not in agreement with the statement. However, the formal authority teaching styles had no participants with high scores in the range of 5.8- 7.0. According to the scores, the formal authority teaching style was not a dominant and preferred teaching style among the participants. Of the 18 participants, 66.7% (n=12) had low scores ranging between 1.4-4.0 indicating less preference and minimal utilisation of the teaching style in teaching activities. The overall mean score (mean=4.02) and standard deviation (SD=.80) indicates moderate preference for the teaching style.

Personal Model teaching style

In this teaching style, the teacher believes in teaching by giving personal examples on the subject she/he is teaching. The teacher establishes a prototype for thinking and behaviour, then he oversees guides and directs by showing how to do things. The personal model teacher encourages students to observe and then emulate the teacher's approach in their learning. The

The following are the scoring scale ranges for Personal Model Teaching Style.

- Low = 1.0- 4.3
- Moderate = 4.4- 5.7
- High = 5.8- 7.0

There are also some differences in the mean scores and stand deviation on the statements in the Personal Model Teaching style as illustrated in Table 6.

Table 6: Personal Model Teaching Style distribution

Item No	Item	n	Mean	SD
3	What I say and do models appropriate ways for students to think about issues in the content.	18	3.17	1.34
8	Activities in this class encourage students to develop their own ideas about content issues.	18	.94	.94
13	I typically show students how and what to do in order to master course content	18	4.00	1.24
18	Examples from my personal experiences often are used to illustrate points about the material.	18	4.28	.96
23	I often show students how they can use various principles and concepts	18	3.28	1.49
28	Students receive frequent verbal and/or written comments on their performance.	18	3.89	1.53
33	Eventually, many students begin to think like me about course content	18	3.50	.99
38	Students might describe me as a "coach" who works closely with someone to correct problems in how they think and behave.	18	4.33	.97
Total	**Mean and Standard Deviation scores for Personal Model Teaching Style**	**18**	**3.8**	**1.01**

Statement 38: *Students might describe me as a "coach" who works closely with someone to correct problems in how they think and behave,* has high mean score (mean= 4.33; SD=.97). Statement 3*: What I say and do models appropriate ways for students to think about issues in the content*, had low mean score (mean=3.17; SD=1.34).

Educators had low scores on the Personal Model Teaching Style; score range between 1.0- 4.3 was scored by 72.22% (n=13) of the participants meaning that the teaching style is less preferred by the educators in their teaching activities and 27.78% (n=5) had moderate scores with ranges between 4.4- 5.7 indicating moderate utilisation of the Personal Model Teaching Style in the participants' teaching endeavors. The overall mean score for personal model teaching style was 3.8 and the standard deviation 1.01; this illustrates that there is less preference for Personal Model Teaching style among the participants. There is high dispersion of the scores around the mean indicated by SD 1.01.

Facilitator Teaching Style

This style emphasizes the personal nature of the teacher – student interactions. The teacher guides and directs students by asking questions, exploring options and suggesting alternatives. The teacher concentrates on the overall classroom goal of developing the students' capacity for independent action initiative and responsibility while providing them with much support and encouragement as possible. The Facilitator Teaching Style allows the students to explore options and the alternative course of actions there by promoting students' empowerment as they engage with subject matter.

The following are the scoring scale ranges for Facilitator Teaching Style.

- Low = 1.0- 3.7
- Moderate = 3.8- 5.3
- High = 5.4- 7.0

There were also differences in the mean scores and stand deviation on the statements in Facilitator Teaching as illustrated in Table 7.

Table 7: Facilitator Teaching Style distribution

Item No	Item	n	Mean	SD
4	My teaching goals and methods address a variety of student learning styles	18	4.06	.80
9	I spend time consulting with students on how to improve their work on individual and/or group projects.	18	3.67	1.28
14	Small group discussions are employed to help students develop their ability to think critically.	18	4.28	.96
19	I guide students' work on course projects by asking questions, exploring options, and suggesting alternative ways to do things	18	3.89	1.28
24	Course activities encourage students to take initiative and responsibility for their learning.	18	2.78	1.52
29	I solicit student advice about how and what to teach in this course.	18	2.72	1.60
34	Students can make choices among activities in order to complete course requirements	18	2.94	1.51
39	I give students a lot of personal support and encouragement to do well in this course.	18	4.06	.99
Total	**Mean and Standard Deviation scores for Facilitator Teaching Style**	**18**	**3.55**	**1.24**

There are high score on statement 14: *Small group discussions are employed to help students develop their ability to think critically*, (mean= 4.28: SD= .96). Low scores were observed on statements 24 (mean=2.78; SD=) and 29 (mean= 2.72; SD=1.60). In this teaching style 61.11% (n=11) participants had low scores. There were no high scores

recorded for this teaching style an indication that facilitator teaching style is not very much preferred and is less utilized by the educators in their teaching activities. The overall Mean for facilitator teaching style was 3.55 and the Standard Deviation was 1.24.

Delegator Teaching Style

In the Delegator Teaching Style the teacher develops students' capacity to function in an autonomous fashion. Students are encouraged to work on projects independently or as part of autonomous teams. The teacher is available as a resource person and is also perceived as a consultant. This teaching style aims at developing students into self directed learners hence has the advantage of helping the students perceive themselves as independent learners.

The following are the scoring scale ranges for Delegator Style.

- Low = 1.0- 2.6
- Moderate = 2.7- 4.2
- High = 4.3- 7.0

Table 8: Delegator Teaching Style distribution

Item No	Item	n	Mean	SD
5	Students typically work on projects alone with little supervision from me.	18	2.56	1.15
10	Activities in this class encourage students to develop their own ideas about content issues.	18	3.50	1.15
15	Students design one of more self-directed learning experiences	18	2.50	1.38
20	Developing the ability of students to think and work independently is an important goal	18	4.33	.69
25	Students take responsibility for teaching part of the class sessions	18	3.00	1.72
30	Students set their own pace for completing independent and/or group projects.	18	2.44	1.15
35	My approach to teaching is similar to a manager of a work group who delegates tasks and responsibilities to subordinates.	18	4.11	.76
40	I assume the role of a resource person who is available to students whenever they need help.	18	3.72	1.23
Total	**Mean and Standard Deviation scores for Delegator Teaching Style**	**18**	**3.27**	**1.15**

High mean scores (mean=4.33; SD=.69) were obtained on statement 20: *Developing the ability of students to think and work independently is an important goal.* An indication that educators were in agreement with the statement; and low mean scores (mean=2.44; SD=1.15) were on statement 30: *Students set their own pace for completing independent and/or group projects.* There were variations in the educators' scores in this

teaching style. Of the 18 participants, 22.22% (n=4) had low scores ranging between 1.0-2.6 meaning that there is less preference for the teaching style, 5.55% (n=1) had a high score ranging between 4.3-7.0 and 72.22% (n=13) had moderate scores with the range of 2.7 – 4.2. This reflects minimal use of the delegator teaching style by educators in their teaching activities. For this teaching style there was an overall mean of 3.27 and standard deviation of 1.15.

Teaching style results show that there are differences in the preferences of the teaching styles by the nurse educators at the college and preferred styles are the Expert, Formal Authority and Delegator Teaching Styles. The educators had low scores in Personal Model and Facilitator Teaching Styles. Table 9 illustrates the summary of mean scores and standard deviations on the educators' preferred teaching styles. Based on the mean scores and the standard deviations, the Expert teaching style is the most preferred teaching style by the nurse educators (mean=4.06 and SD=.98) and Facilitator teaching style is the least preferred (mean= 3.55and SD= 1.24).

Table 9: Summary of mean scores and standard deviations for the preferred teaching styles

Teaching style	**Norm**	**N**	**Mean**	**SD**
Expert	Moderate	18	4.06	.98
Formal Authority	Moderate	18	4.00	.80
Personal Model	Low	18	3.80	1.01
Facilitator	Low	18	3.55	1.24
Delegator	Moderate	18	3.27	1.15

Conclusion

The Grasha teaching style results show that the educators preferred the teacher centered teaching approach which is evident in Expert teaching and Formal authority teaching styles with mean and standard deviation as follows; Expert mean=4.06 and SD= .981 and Formal Authority mean=4.00 and SD .80. The least preferred is the Facilitator teaching style which is the learner centered teaching approach with mean 3.55 and SD =1.24.

Learning preferences among participants

Moore and Fitch Learning Preference data

Learning preference mostly describes the attitudes that students have towards the learning environment that is, favouring one method of teaching over the other. As reported in chapter three participants' learning preferences were captured by using the Moore and Fitch Inventory of learning Preferences questionnaire. The ILP questionnaire was distributed to 98 participants and 90 participants returned completed questionnaires reflecting a 91.8% response rate.

Participants Learning Environment preferences

Frequency distribution method was used to analyse the results. Tables have been used to present the frequencies and percentages of participants who selected each item in each category as their preferred learning environment.

Category One

This learning environment is a teacher centered learning environment in which students are given the right answers, reproduce information in tests, teachers provide clear direction and guidance to the learners. Students view the teacher as the provider of

everything in their learning process. The statements in category one that students responded to show the learning activities that students prefer during learning. Table 10 illustrates the frequencies and the percentages of each statement that shows there are some differences in the preferences by the students.

Table 10: Scores on Category 1 learning environment preference

Category	Item No.	My Ideal learning environment	n	Frequency	Percentage
1	2	Would have the lecturer give me all the theory and information I need to know.	90	33	36.7
	4	Would be where I take effective notes on what is presented in class and reproduce that information on tests.	90	18	20
	8	Would include straightforward, not 'tricky' tests, covering only what has been taught and nothing else.	90	10	11.1
	13	Would be where the professor is an expert who knows all the answers.	90	25	27.8
	16	Would have the focus on having the right answers rather than on discussing methods on how to solve the problems.	90	8	8.9
	19	Would be where the lecturer provides me with clear directions and guidance for all course activities and assignments.	90	36	40
	28	Would be lectures since I can get the information I need to know most efficiently.	90	48	53.3
	33	Would be where I could listen attentively to the lecturer and not to classmates and peers for answers to questions.	90	9	10

In this category most students (53.3 %) preferred item 28 (*Would be lectures since I can get the information I need to know most efficiently*.). This indicated that students preferred more specific information from the educators during the teaching and learning processes. The results further indicated that more students also preferred lecture method of teaching to other methods and wanted more direct and specific information from their

teachers. Item 19 (*Would be where the lecturer provides me with clear directions and guidance for all course activities and assignments*.) was moderately preferred indicating that learners depended on the teacher to tell them what to do and how to do it. Item 16 (*Would have the focus on having the right answers rather than on discussing methods on how to solve the problems*) was the least preferred. 8.9% of the participants felt that they needed not to find ways of solving or problems but their teacher has provide them with the right answers to the problems; a sign of being solely teacher dependent.

Category Two

In Category Two students prefer a learning environment where lecture and other learning methods are employed. Now moving away from the teacher centered environment. Students prefer class discussion and other different learning methods including relevance of course material as well as reward with good grades. The statements in Category Two that students responded to show the learning activities those students prefer during learning. Table 11 illustrates the frequencies and the percentage of each statement shows that there are some differences in the preferences by the students.

Table 11: Scores for Category 2 learning environment preference

Category	No	My Ideal learning environment	n	Frequency	Percentage
2	1	Would be where the lecture provides assignments with practical everyday applications	90	43	47.8
	5	Would emphasize class discussion but I would expect the lecturer to tell us the right answer.	90	31	34.4
	7	Include grading that is by a pre-arranged point system (for homework, tests, final) since I think that is most fair	90	28	31.1
	10	Would be where the lecturer doesn't tell me the answers; rather he/she shows me how to find the answers for myself.	90	26	28.9
	14	Would provide experiences and material that is relevant to what I need to know.	90	63	70
	21	Would reward me the good grades when I worked hard to learn the material	90	29	32.2
	25	Would encourage me to learn using lots of different learning methods.	90	32	35.6
	29	Would have the lecturer who is not just an instructor, but more an explainer, entertainer and friend	90	47	52.2
	32	Would provide a relaxed atmosphere where discussion is encouraged.	90	21	23.3

Most of the students in this category appeared to prefer a variety of learning methods which are being guided by course relevance, applicability and rewarding as well as a relaxed atmosphere for class discussion as indicated in items (1, 29, & 32). Analyzing each item in this category individually, 47.8% of the participants preferred for more involvement in the variety of assignments given and different teaching methods relating to the assignments as indicated in item-1 (*Would provide assignments with practical everyday applications*).

With regard to Item – 29 (*Would have the lecturer who is not just an instructor, but more an explainer, entertainer and friend*) it indicates that 52. 2 % of the students see their teacher as an expert who has the capacity to pass all the required knowledge and information and they expect that this teacher should be able to do just that. In addition to this students see that it is important that their teacher should not only be an instructor but also an explainer, a friend so that he can be approached as well as an entertainer. The low percentage (23.3%) for Item 32 (*Would provide a relaxed atmosphere where discussion is encouraged.*) indicated that a relaxed atmosphere would mean too much independent learning for the students and may end up not learning much. It is also significant to report that Item – 14 (*Would provide experiences and material that is relevant to what I need to know*.) in the questionnaire is ranked number one as it has been the most preferred item; 70% of the participants chose this item. The high ranking is an indication that students want more relevant knowledge and skills from their teacher.

Category Three

In this category students prefer a learning environment which provides individual thinking, individual control over course content, express own opinions and learn from peers. Towards a more learner centered approach. The statements in Category Three that students responded to show the learning activities those students prefer during learning. Table 12 illustrates the frequencies and the percentages of each statement that shows there are some differences in the preferences by the students.

Table 12: Scores on Category 3 learning environment preference

Category	Item No	My ideal learning environment	n	Frequency	Percentage
3	**3**	Would be where I would have a lot of control over the course content and class discussion.	90	19	21.1
	6	Would be where I have my own opinions and I can think for myself.	90	16	17.8
	9	Would let me learn on my own because I hate being spoon-fed by lecturers.	90	6	6.7
	12	Is where my opinion counts, but I have to support it with factual evidence.	90	28	31.1
	18	Would reward me with high grades for independent thought	90	19	21.1
	23	Would let me learn from my classmates and peers	90	17	18.9
	26	Would allow peers the right to have their own opinions.	90	8	9
	30	Would be a 'free-flowing' class that does not follow a strict outline	90	11	12

On examining items in Category Three, all items had low percentages indicating that this type of learning environment was not very much preferred by the participants.

Items (9 and 26), students have clearly indicated in item 9 (*Would let me learn on my own because I hate being spoon-fed by lecturers*.), only 6.7% of the participants preferred this type of learning meaning that that most of the participants have a preference for more direction from their teachers and not to be left to make decisions on their own. Most students believe that the teacher is there to help them when they try to find out information on their own. Low percentage (9 %) in item 26 (*Would allow peers the right to have their own opinions*.) have also indicated that participants were not concerned with using their peers as those who have knowledge and skills they can share such as in a debate.

Category Four

In this category students prefer a learning environment which promotes personal motivation, provides an atmosphere for independent reflective and integrated learning. Students prefer learner centered approach where they become more responsible for their own learning. The statements in Category Four that students responded to show the learning activities those students prefer during learning. Table 13 illustrates the frequencies and the percentages of each statement that shows there are some differences in the preferences by the students.

Table 13: Scores for Category four learning environment preference

Category	No	My ideal learning environment	n	Frequency	Percentage
4	11	Would provide a flexible class where I can explore independent learning options.	90	12	13.3
	15	Would be where the learning is a mutual / shared experience where I contribute to the teaching and learning in class.	90	21	23.3
	17	Would value my classmates as sources of information, not only as companions	90	34	37.8
	20	Would take learning seriously and be where I feel personally motivated to learn the subject.	90	38	42.2
	22	Would provide me with a lecturer who is a source of expertise only in a particular subject area	90	14	15.6
	24	Would provide a classroom atmosphere of exploring and debating new ideas	90	23	25.6
	27	Would include exams and assessment as part of the learning process	90	15	16.7
	31	Would provide a workshop or seminar atmosphere so that we can exchange ideas and evaluate our own perspectives on the subject matter.	90	21	23.3
	34	Would be where I can make connections among various subject areas and am encouraged to construct an adequate argument.	90	45	50

Results also show that this type of learning environment was not very much preferred by the participants. Explanation in this category includes items (11, 27 and 34).

The score (13.3%) for item 11 (*Would provide a flexible class where I can explore independent learning options*.) is indicating that students preferred a more structured/organized learning environment such as concrete information rather than a class that is flexible. The participants visualized the teacher was as an expert who could provide everything. The low scores (16.7%) in Item 27 (*Would include exams and assessment as part of the learning process*) indicated that most students do not regard assessments as part of the learning process.

The item that clearly indicates a students' learning preference which focuses more on in- depth information and more correlations between various subjects is item 34 (*Would be where I can make connections among various subject areas and am encouraged to construct an adequate argument*.) 50 % of the participants selected this item and it shows students' preferences for classroom discussion, different learning methods including relevance of course material and relevant experiences.

The results of the Inventory of Learning environment Preference (ILP) indicate that few students preferred the learner-centered learning environment; category three (6.67%) and Category Four (11.11%) in which student active learning teaching strategies are used. Table 14 illustrates the percentages of student NMTs in each category of the learning environments.

Table 14: summary of the participants' learning environment preferences

Category	Frequency	Percentage
Category 1	25	27.78%
Category 2	49	54.44
Category 3	6	6.67%
Category 4	10	11.11%

Summary

Over all, the Inventory of Learning Preference (ILP) questionnaire percentage results indicated that the participants prefer to learn together in a classroom environment where the nurse educator is an expert who is able to provide them the experiences and material relevant to what they need to know in a teacher centered learning environment using lecture as a teaching method.

Participants clinical reflection and reasoning results

Roth's Self –Assessment of Clinical Reflection and Reasoning (SACRR) data

Ninety eight students were invited to participate in this study and ninety (n= 90) participants returned completed questionnaires reflecting a response rate of 91.8%. As described in chapter three the SACRR questionnaire has twenty six (26) items that represent behaviours or actions of clinical reflection and reasoning. The items total score is 130marks representing 100% and each group contributes the following; Knowledge/Theory Application 25 marks (19.23 %), Decision Making based on

Experience and Evidence 50 marks (38.46 %), Dealing with Uncertainty 35marks (26.92%) and Self Reflection and Reasoning 20marks (15.39). The quality of scores reflects the participants' level of self reflection and clinical reasoning ability.

Knowledge/Theory application results

Knowledge/Theory Application defines the ability of an individual to use theory, past knowledge and deferent frames of reference students for planning interventions and also understanding the clinical protocols and problems in order to select an appropriate management options. Application of knowledge or theory is a skill in on nursing profession since decision making is based on knowledge. The rating of the scores in Knowledge/Theory Application is as follows:

- Very low = 1- 5
- Low = 6- 10
- Moderate = 11- 15
- High = 16- 20
- Very High = 21- 25

The knowledge/theory application scores for the student nursing midwifery technicians varied reflecting students use of theory and past knowledge and various frames of reference when assessing, identifying problem, making decisions and planning of clients care. High score in Knowledge/Theory Application indicates that students apply the theory learnt and the past knowledge and the low scores reflects students' minimal use of the theory and past knowledge in identifying problem, making decisions

and planning of clients care. There were variations in the scores of the participants as illustrated in table 15.

Table 15: Participants' scores on Knowledge/ Theory Application

Variable	Frequency	Percentage
Knowledge/Theory Application		
1-5	-	
6-10	13	14.44
11- 15	46	51.11%
16-20	19	21.11%
21- 25	12	13.33

Only 13.33% (n=12) scored very high in the ranges of 21-25 indicating that there were very few participants who could ably apply theory and past knowledge in assessing clients, identifying problems making decisions and planning interventions; 14.44% (n=13) had low scores. Most of the participants 51.11% (n=46) had moderate scores in the ranges of 11-15 indicating that they had an average ability in using the knowledge in making decisions. Overall mean = 3.33 and SD= .852.

Decision making based on experience and evidence results

The items in Decision making based on experience and evidence reflect the basis of an individuals' decision making. High scores indicate that the students base their decision making on past experience and also on evidence gathered from other sources such as the clinical protocols, patient care guidelines, as well as other health professionals.

The scores rating the in this category is as follows:

- Very low = 1- 10
- Low = 11- 20
- Moderate = 21- 30
- High = 31- 40
- Very High = 41- 50

Scores varied among the participants in the decision making based on experience and evidence as illustrated in table 16.

Table 16: Participants scores on Decision making based on experience and evidence

Variable	Frequency	Percentage
Decision making based on experience and evidence		
1-10	6	6.7
11- 20	15	16.7
21- 30	48	53.3
31- 40	12	13.3
41- 50	9	10

Of the 90 participants, 18.89% (n=17) scored very high scores (41-50) indicating that evidence and experiences helped in their decision making towards patient care; 45.55% (n=41) had moderate scores, 8.89% (n=8) scored low (11-20) and 2.22% (n=2) scored very low (1-10). The overall mean was 2.75 and SD=1.07.

Participants results on Dealing with uncertainty

Dealing with uncertainty focuses on the student's ability to identify issues and viewpoints while dealing with uncertainty. Items in this group also focus on an individual's open mindedness to the views of colleagues in the profession while dealing

with unexpected changes in their clients' situation or any uncertainty in the different clinical situations before planning any interventions. The scores in this group reflect how students deal with unexpected problems they encounter in clinical practice. The rating of the scores in this category is as follows:

- Very low = 1- 7
- Low = 8- 14
- Moderate = 15- 21
- High = 22- 28
- Very High = 29- 35

Participants had varying scores in their ability in Dealing with uncertainty as illustrated in table 17 below.

Table 17: Participants' scores on Dealing with uncertainty

Variable	Frequency	Percentage
Dealing with uncertainty		
1-7	2	2.2
8-14	19	21.1
15- 21	53	58.9
22- 28	9	10.0
29- 35	7	7.8

From the group of ninety participants (n=90) only 7.8 % (n=7) of participants scored very high and 10% (n=9) had high scores an indication that very few students can ably deal with unexpected problems they encounter in clinical practice. The high scores indicate students' ability to deal with unexpected changes and uncertainties in different clinical situations. It also indicates that students have an open mind to the views of their colleagues before they plan for any intervention, 21.1% (n=19) had low scores and 2.2%

(n= 2) scored very low and 58.9% (n= 53) had an average ability in dealing with uncertainty. The overall mean= 2.64 and SD= .99.

Self- Reflection and Reasoning results

Items in Self- Reflection and Reasoning are mainly related to individuals' ability to reflect on different hypotheses about clients' clinical problems before planning any intervention and considering rationale for their planned interventions. The items also include reflecting on the hypotheses and interventions carried out to verify if they really worked. The scores in this category reflect students' ability to think, plan, decide and reflect on the care provided to the clients. The rating of the scores in this category is as follows:

- Very low = 1- 4
- Low = 5- 8
- Moderate = 9- 12
- High = 13- 16
- Very High = 17- 20

Participants had also scored differently in Self Reflection and Reasoning as illustrated in Table 18.

Table 18: Participants' scores on Self- Reflection and Reasoning

Variable	**Frequency**	**Percentage**
Self- Reflection and Reasoning		
1-4	1	1.1
5-8	26	28.9
9-12	45	50.0
13-16	10	11.1
17-20	8	8.9

The participants' scores were as follows: 8.9 % (n=8) scored very high scores and 11.2% (n=10) had high scores. Less than half of the students can ably reason and reflect on client care provided; and 50% (n=45) had moderate scores an indication that most students have moderate reasoning and reflection abilities and 28.9 % (n=26) had low scores and 1.1% (n=1) had very low scores. The overall mean= 3.22 and SD=.94.

The results have shown that the student NMTs have varied capabilities in clinical reasoning as shown in frequency Tables that indicate all the characteristics of clinical reasoning. The results show that majority of the student NMTs had average clinical reasoning ability. This has been shown by their scores in all the four areas that are attributes to Clinical reflection and reasoning. Apart from Knowledge/Theory Application scores, most of the students scored from moderate to low in the other three areas an indication that their reasoning ability is minimal raising a query on the teaching and learning process. The overall mean and standard deviation of the Clinical Reflection and Reasoning for the student nurses is (mean=2.895; SD=963).

Table 19: SACRR mean scores and standard deviations

SACRR Skill	**Mean**	**Standard deviation**
Knowledge /Theory Application	3.33	.85
Decision making based on experience and evidence	2.75	1.07
Dealing with uncertainty	2.64	.99
Self reflection and reasoning	3.22	.94

Qualitative results

Introduction

In- depth interviews with nurse educators and focus group discussions with student NMTs were conducted to complement and also clarify the findings of the quantitative data. Results of the interviews with nurse educators will be presented first followed by focus group discussion results.

Educators' perceptions on students' acquisition of clinical reasoning skills

In-depth interviews were conducted to complement the findings of the quantitative data. Content analysis was used to analyse the data. The individual interviews and focus group discussions were transcribed verbatim from the recorder and the transcription was. The transcripts were read and reread over a time whilst listening to the audios. The texts were examined line by line and descriptions that were relevant to the topic under study were underlined. Repeated words and expressions were coded with different colours. Important expressions with similar meanings were grouped together leading to the identification of themes. The educator's perceptions are presented in four themes which are; the educators' perceptions of their own teaching, promotion of clinical reasoning, resources for teaching and improving classroom teaching and learning. Sub themes from these themes were also identified.

Theme I: Educators' perception of own teaching

Educators were responding the question "*As an educator at this college, what are your perceptions on classroom teaching experience*?" The theme describes the individual educator's classroom teaching and learning experience in relation to promotion of clinical reasoning. Perception of own teaching, emerged as a theme following an observation on

the nurse educators' narratives that narratives revealed some variations on the preferences of their teaching approaches. The participants pointed out that their classroom teaching experiences were good however not very perfect; and the educators had different responses based on several factors

Preferred method of teaching

All the participants reported that they had their own preferred methods of teaching they used in their classroom teaching tasks but they stated that the commonly used teaching method was the lecture method. Some participants also reported that they used lecture method of teaching because of the amount of content they were to cover and the time allocated on the teaching schedule and it is time consuming to incorporate or use other teaching methods within the little time provided for a lesson. They stated that most of the courses in nursing have a lot of content which needs to be covered within a short period but sometimes type of content influenced their choice of teaching method. This is what was narrated by some of the participants;

> "I mostly use lecture and sometimes question and answer." (NE01).
>
> "I prefer lecture method to give my students the required information .I rarely use group discussion its time consuming." (NE02)
>
> "I generally like using lecture method when teaching because it helps me to cover a lot of content that we are supposed to teach within a short period of time given and I have also observed that almost all tutors use the same" (NE06).

"Choice of a teaching method may also depend on the content to be taught and time allocated for content, but most of the time I just use lecture with power point presentation so that I cover a lot of content".

However, regardless of their preferred teaching methods the nurse educators indicated that there was need to do something to the preferred teaching methods so that learning could be improved among the student nurses to facilitate development of clinical reasoning as one of the participants stated:

I think there is something that we can do to improve learning among students, so that they develop thinking and reasoning skills, otherwise most of them are not able think through the content provided they just memorise it with no understanding at all. And I think because we just use lecture in teaching the content at this college". (NE08)

Creating learner dependence

This sub theme emerged from the educators' perceptions as regards to their classroom teaching experiences. The participants indicated that during classroom learning, the students depend very much on the lecture notes provided by the educators as most of the students do not read on their own. According to the educators, dependence could be the outcome of the use of the teacher- centered teaching strategies .most of the time the students rely on the educators them the information as stated by the following participants:

"Of course there are some students who do not to read, they want to rely solely on the notes provided by their tutor, they I give them an assignment they are

reluctant to go and read, what they want is for me to give all the needed information but I feel they need to participate in the learning so I discourage this way of learning". (NE06)

"Most of the students ask for already prepared notes from the tutor each and every time you finish teaching a lesson they would follow you to give the notes". (NE01)

Other participants were open to indicate that their approach to teaching did not really facilitate thinking and reasoning in the students. The participants stated that student nurses lacked the thinking and reasoning abilities because they were being given all the learning information. This is what one of the participants had to say;

"I don't think the way we teach we are helping our students to develop the thinking and reasoning skills, it is not that we cannot do it but time is the contributing factor here, I think with the little time we have to cover the content we do not involve out students much. We just give them the needed information and the notes they regurgitate what we have given them and are sent for clinical practice in the clinical area" (NE06)

In summary educators narratives reflect that their chosen approach to classroom teaching in the NMT programme created dependence among the student evidenced by students asking for lecture notes from the educators after lessons.

Theme 2: Promoting clinical reasoning

Promoting clinical reasoning is very important in the teaching of nursing because clinical reasoning is the thinking that guides nurses in practice and all new nurses going into practice must possess this capability of recognizing patients' problems and make appropriate decisions towards their care (Rusch, 2013). Development of clinical reasoning requires students' active participation in the learning process to facilitate thinking and reasoning. Educators need to be aware of the teaching and learning strategies that have an influence on students' development of thinking and reasoning. The participants responded to the question "how do you promote clinical reasoning in your teaching?"

Student understanding

The results indicate that participants felt that methods used in classroom teaching can influence thinking that facilitates the understanding of subject material students learn. Clinical reasoning requires students to understand the subject material learnt that can be applied to learning situations through deep learning. Participants stated that clinical reasoning depends on the way the subject content is presented to the students as narrated by this participant;

> "Sometimes the way we teach our students just promote rote learning, it is difficult for the students to develop the thinking and reasoning skills. That is why these students have problems in thinking clinically and making decisions in practice" (NE08).

Some educators explained that the teaching approaches promote surface approach to learning as most students appear to have understood the content due to memorization. This surface approach to learning may also affect students' development of clinical reasoning ability. These participants had this to say;

> "I have observed that some students seem to understand the content I teach but in the real sense they just memorise the information given , they don't really understand what they have learnt and this is evident when the these students fail to apply this knowledge to practice"(NE01) .

> "Our teaching is mostly teacher centered; students do not really participate in the learning activities making this then has an effect on their understanding of the content this in turn also affects their application of the content in the clinical area."(NE06)

> "Our student nurses lack reasoning and decision making skills because we have not been able to help them along these lines because of the teaching approaches we use." (NE05)

Nevertheless, the results have also shown that other educators indicated that some of their teaching activities promoted students' understanding of the content and development of the thinking and reasoning abilities as some of the educators used learner active teaching methods. This is what they said;

> "When I am teaching medical nursing, for example care of patient with pneumonia I present to the students the etiology; risk factors and the pathophysiology of the condition using lecture method and then ask the students

to come up with signs and symptoms from the pathophysiology presented, and also the problems of the patient and the possible management" (NE01).

"I teach peadiatric nursing and when I am teaching nursing care of patients with different conditions I try as much as possible to give students scenarios that are common for them to find out the management of the patient to promote thinking and reasoning." (NE07)

Involving the learner

Learner involvement is an important component in promoting thinking and clinical reasoning among student nurses. Learner involvement comes from the use of teaching methods that make students active in the learning process. The participants stated that though they mostly use teacher centered teaching approaches, they understand that involving the students in the learning activities stimulates their thinking and enhances clinical reasoning. The participants stated that sometimes they used some active learning teaching methods in combination with lecture in order to involve the learners as and to stimulate their thinking. This is what they said;

"So basically when I am teaching I would sometimes use lecture combined with question and answer, or brain storming and sometimes put students in pairs or group of three to discuss and respond to an issue during classroom session. I do this so that they participate during the lesson" (NE06).

"When one uses discussion in teaching, you open up the students minds and make them think and understand the content better than when you are lecturing

where you give the students most of the information, when you use discussion the students are involved" (NE05)

"Questioning also facilitates thinking and promotes clinical reasoning especially when students are asked to elaborate their responses. When I combine lecturing with questioning students are encouraged to think" (NE03).

Participants also pointed out that students can be assisted to develop clinical reasoning ability if the teaching and learning activities that promote this skill are utilised starting from the first year of students learning. The following are some of the participants' narratives:

"Most of the time we do not use other teaching methods apart from lecturing when teaching the first year class, so I think we build in them the spirit of lecture as a better way of teaching, this makes them lazy in their learning as they do not to put a lot of effort in the way they learn" (NE05).

"I think students should be more involved in the teaching and learning activities as early as from year one throughout the training so that we stimulate and enhance their thinking and reasoning otherwise this is why we are ending up with graduates who have problems with deciding on what to do for patients out there" (NE08).

In summary, the educator's narratives indicate that there are efforts to foster students' development of thinking and reasoning abilities NMTs. However memorization of content was also observed among the students. learner involvement was reported to

have been reinforced through the use of interactive teaching methods in some of the educators teaching tasks.

Theme 3: Resources for teaching

This theme originated from the participants' responses regarding the impact resources have on their preference for specific teaching strategies. The question in particular was "what makes you choose a particular teaching strategy in your teaching? Educators' responses indicated that the choice of teaching strategy was based on the course content to be taught and number of students. They also indicated that availability of teaching and learning resources also had an impact on the quality of students' learning. The teaching resources influence the type of teaching strategy the participants used in their teaching tasks. This is what the participants narrated;

> "Sometimes during a lesson one would want to teach using group discussions but with the large numbers of students and time allocated to the content you are teaching, it becomes a challenge for you to work with the groups" (NE02).

> "The challenge is we have large numbers of students so this makes it difficult for me to use some of these teaching methods that involve students more such as PBL because of the limited resources like text books and limited access to internet from which students can source information for their task. So with the feeling that students may not be able to find the right information and the limited time allocated to teaching the content, I just give the information to the students and it is faster that way. It is even difficult to use group discussion in class because there is no space for the students to move their desks and be in groups as well as the

teacher to move around as the classroom space is small for the number of students." NE06

"Sometimes it becomes frustrating, when you prepared to teach your lesson using power point, you find that the LCDs are all in use so you just end up lecturing and give the hand out afterwards." (NE04)

In summary the teaching resources were not enough in terms of materials, time, and classroom space compared to the students numbers at the college. Information technology with regard to internet access and connectivity was also a challenge at the institution. Making it difficult for nurse educators to use other teaching strategies apart from lecture.

Theme 4: Improving Classroom teaching and learning

Participants gave their suggestions on how to improve classroom learning in order to promote students development of clinical reasoning abilities based on their teaching experience. This was in response to the question "What suggestions do you have on teaching in order to promote clinical reasoning among the students?" All the participants reported that if student learning and development of thinking and reasoning is to be enhanced, improvement in teaching approaches was required. Participation in the learning process and improvement on availability of teaching and learning resources

Learner participation

Participants observed that most of the student nurses depended on the educators in their learning and some of the participants reported that use of teaching methods that

actively involve learners need to be emphasized in order to improve student learning and facilitate development of thinking and reasoning abilities. This is what some participant stated;

> "I think if we adopt the strategies that actively involve students in most of our teaching tasks our students will be helped in developing thinking and reasoning abilities. Otherwise lecturing is making our students more dependent on us" (NE03).

> "If use case studies or short scenarios frequently for students to practice how they can tackle patient's problems can help our students' reason clinically I feel it can help. More especially scenarios that provide information about a patient's presentation, subjective and objective data which can help us teachers know if the students are able to identify and interpret the information and come up with patient's problems as part of clinical reasoning process. So if more case studies or say scenarios are used we will be able to sharpen our students' thinking and reasoning skills and our students will be able to connect the concepts learnt and practice"(NE01)

Some participants were of the view that orientation should be done for those who are not knowledgeable of the learner active strategies as some of the educators have no teaching back ground and also to remind those who have previous knowledge so that there is continued utilisation of these strategies as evidenced by these narratives;

> "I think we should learn from other colleges that have bigger groups of students and are utilizing Student Active Learning and Teaching Methods (SALTM) in

their colleges. We need to be oriented to these methods so that we help our students learn better" (NE02)

"I believe that if we were more conversant with these interactive or say student active teaching strategies may be would not be complaining of little time on the teaching schedule because students will become active participants in the learning activities. We would also be able to cover a lot of content within the allocated time and at the same time help our students develop reasoning and decision making skills. So we just need to be oriented to these strategies and use them." (NE07)

Improving learning resources

All participants also emphasized on improvement on availability of teaching and learning resources can contribute to improvement on educational quality as indicated in their responses:

*"*With these big groups of students we are enrolling the college has to consider improving on various teaching and learning resources that are needed in different teaching approaches to so that tutors can ably use different interactive teaching methods" (NE07).

"We need additional teaching resources such as laptops and LCDs because it is not "on" nowadays to teach reading from your hard copy as you may wish students to maybe to see some pictures." (NE03)

In summary, participants' suggestions on improvement on teaching and learning focus on the teaching and learning methods and teaching resources.

Student perceptions on their learning and development of clinical reasoning

Content analysis of the qualitative data obtained from the focus group discussions with the student NMTs led to the grouping of the results into four main themes that emerged. The student nurses perceptions are presented in four themes which are; Students' perception of own learning, Students preferred learning methods, Development of Clinical Reasoning and Readiness to practice. Sub themes from these themes were also identified.

Theme 1: Students' perception of their own learning

Knowledge acquisition

Participants in all the three focus groups showed an understanding of the importance of acquiring knowledge and they all recognize that knowledge is vital to their clinical practice. The ability to apply knowledge to clinical practice can only be possible if one has mastered the content in the subjects taught. Participants in all the three groups indicated that through the teaching and learning process, they had gained the required knowledge and skills which they are going use to provide quality care to patients. They also stated that the subjects taught are related to what they will be doing in clinical practice as indicated in some of the group members responses;

> "We have gained a lot of knowledge and skills during the training which we are going to use out there when we are posted to our various work places. The knowledge, the skills as well as expertise we have gained from the courses

through this training will help us practice and provide care our level of qualification."

Conversely, despite going through the programme for three years, some participants in the groups stated that they had problems in understanding some content material and have not really developed the competence in some areas as expressed through the following responses:

"We are in the final year and in two months time we will be sitting for council examination to certify our safety to practice, we have gained the required knowledge and skills but I feel we will still need the support from the staff in other areas of care."(FG2)

"We can say honestly here that if some of us will be allocated in the eye department or the STI section we will not perform because there was no much emphasis put on these subjects which was showed by not allocating us to these departments for clinical practice". (FG1)

Student involvement

Students learning and understanding of the subject content is facilitated when the students are involved in the learning processes. The participants reported that they realize that involvement in learning activities is very important to their understanding of subject content; but participants also reported that although some teachers made some effort to involve them in the learning processes, the involvement was very minimal as it has been narrated by some members in the groups in the following quotes;

"Lecturing was just too much and this means that the teacher is talking throughout the lesson with a few questions here and there for may be 2 hours or more. May

be if we are also give sometime within the lesson to discuss amongst ourselves in small groups to make the class live." (FG3)

"I wish our lecturers used other methods of teaching more often in which we could be given more chances to be participating during the lesson because I really like it when we discuss in groups and present our work to the class we look like champions in the topic we are presenting".(FG2)

"Other lecturers presented the content using other teaching methods that made everyone participate in class. Like putting us into pairs to discuss an issue within the topic she was teaching and then share our answers or information to class so we could get a lot of different ideas from the class." (FG3)

In summary, the participants' responses indicated that during their training they had acquired the required knowledge according to their level of practice that will enable them provide quality care to clients with some confidence. However some participants felt they will still need more assistance from the qualified staff. Participants' also recognize the importance of their involvement in classroom activities to their learning, but their responses indicated that they were not very much involved in the classroom activities by the teachers during their learning.

Theme 2: Students' preferred learning methods

Educators have the responsibility to use approaches that effectively enhance nursing students' learning so that they acquire the necessary knowledge and develop the skills for better practice.

Lecture

With regard to preferred learning methods, participants' were asked on the teaching methods they preferred the teachers use in classroom teaching. The participants from the three groups had varying preferences, others opted for lecture as their preferred method and others preferred teaching methods that actively involved them as students. The majority of the members from all the three groups stated that lecture method helped them learn as they got more information from the teacher as it is expressed in the following narratives from some of members:

> "Lecture is good because we are given the required information by the teacher and I feel that the teacher knows what we are supposed to learn". (FG2)

> "As students we believe that the teachers know the curriculum that was being followed therefore they know exactly what we were supposed to learn so what they give us we feel is what we are supposed to know. So though we were told the sources of the information some of us did not even bother read from the sources and add on to the notes because we already got enough".(FG1)

> "I can say I prefer lecture because I want to pass examinations as some teachers want you to give exactly what the teacher gave you in the notes if you add what you also read about what is being asked they put a question mark on your answer and say read your notes again. So for us to pass the teacher should provide the needed information so that we answer according to what they want and if you read well you pass the exam." (FG1)

Interactive methods

Despite lecture being a good method of teaching most of the content as some participants from the three groups indicated that they preferred teaching methods that actively involved them in the learning processes. Participants believe that active learning methods such as group discussions, assignments including use of case studies help them to understand content better and also promote their thinking and reasoning abilities. Participants from the groups said;

> "I can say lecturing is good of course, because we are given the required information by the teacher and more information is taught within a short period of time, but it shouldn't be the only method of teaching because we also need to learn how to find information on our own". So if we are also given some assignments to work in groups more often it can help us because we will be sharing ideas as we discuss".(FG3)

> "Lecture method is good because the teacher gives us required information but I prefer group discussion because it makes us students get involved and become active during the class session as we are kept busy looking for information for the group work given and discussing the information and it makes us look more knowledgeable when we are presenting our work to our fellow students in class. When I am involved I learn a lot and I can easily remember what I learnt."(FG3)

> "not all teachers like using case studies but once in a while when a teacher gives us a case study to work on it helps us to learn and understand the condition whether medical or surgical and its management better because we have to read

about that condition, think and decide on how we can manage patient with such condition given to us in the case study. And if we meet such a condition in the ward we have a clue of what to do for the patient." (FG2)

One participant felt that combining different teaching strategies in one lesson would also improve students' learning and understanding of the content as evidenced in this statement:

"I am able to relate theory to practice because of the way some lecturers presented the information to us when we learn theory in class. Like after teaching a condition using lecture then the teacher would evaluate our understanding of what she had taught us after the lesson by using a case created from what she taught us so we could answer relating to the information. So this made me to think through the information given and then answer the questions. This made our learning and understanding of the condition easy and when we go for practice it is easy to link such information." (FG3)

Some students from the groups felt that examinations also contribute to their learning. They stated that examinations enhance internalization of content and stimulate their thinking and reasoning. And they commented that feedback given on time was meaningful because it would make them rectify their problems as evidenced by this narrative:

"We write examinations yes, but not often and mostly is the mid semester and end of semester. It means one can only study to prepare for these two exams and mid semester comes at the end of learning when we are going for clinical practice and

it is after learning for may be 6 or 8weeks. So we just study to prepare for these exams. But if we were being given small tests or exams in between we could be reading a lot and this could help us learn the content more. And when you get feedback on your results it can make you to be motivated to study hard because if you fail you find ways of knowing what you failed and if you pass you can continue working hard so that may be you do better than before". (FG1)

In summary, participants preferred the lecture method mainly for the purpose of getting the required information from the teacher and passing of examinations. The participants also understand that the use of student active learning teaching methods in some of the lessons enhanced their understanding of the content.

Theme 3: Development of Clinical Reasoning

This theme comes from the question "how do you perceive the nature of classroom teaching in relation to development of CR skills during this training?" The level of learning that is achieved by students is an important factor which indicates the success of a learning environment. The educators teaching styles and students preferred learning environment can influence this level of achievement which includes, reasoning and decision making abilities as well competency in practical skills. Teaching approaches and understanding of subject content had an effect on the enhancement of participants thinking, reasoning and decision making abilities. Students appreciate that for one to make appropriate decisions towards patient care, he has to have knowledge and understanding of the condition the patient is presenting with. The participants in all the three groups stated that when lecturing becomes the only teaching method in a day's lessons they become tired of listening because they are passive participants in class and

their thinking and understanding of the content is affected. However participants noticed that their thinking and reasoning was stimulated when teachers used other strategies that actively involved them in the learning processes as evidenced in the following quotes:

> *"*When our teachers use lecture method we do not really participate during the lesson and this does not help us to think. So sometimes we don't even understand the content which we students are expected to apply when we are practicing in the clinical area."(FG2)

> "When teachers give us assignments to work in groups it makes us concentrate on our learning because in our groups we have to look for information and discuss before we present it .We learn how to source information on our own and share different ideas."(FG1)

A participant in FG3 however, felt that frequent use of case studies a teaching strategy that facilitate development of CR, or scenarios when learning nursing courses would help them improve their reasoning and decision making skills because they are given a situation on which to practice decision making just as they can do in a real practical situation as evidenced by the following quotation:

> "If more case studies or scenarios are given to us especially in the in medical-surgical nursing to work on and present in class it will help us to learn and understand the conditions better and also help us to think and make right decisions on the management of such conditions. Case studies make us think and reason as we decide on how we can manage the patient's condition given to us in the case study just like they are in a real situation." (FG3)

Participants also felt that assessments that teachers give to the learners also have a bearing on development of thinking and reasoning abilities among students. They stated that most of the questions asked in the mid-semester examinations require them to give straight forward answers but they would wish if more questions were essay questions that would require them to think. As it is evident in the following comments made by two participants:

> "The examination questions that ask us to express ourselves that is, the essay questions or questions that come in scenario form help us to think and reason before writing any answer especially when the question is related to patient management, I think teachers want to see if we can reason enough when taking care of our patients." (FG2)

> "When we are given case studies as group assignments at least we learn how we can identify problems and decide on plan of care we can give the patient". (FG1)

Reading further on the content taught and active participation in class facilitates participants understanding of the subject matter. This also helps in development of thinking and reasoning. Participants in the focus groups have also indicated that for one to be able to integrate knowledge to practice, it also depends ones understanding of the subject matter as evidenced by the following narratives:

> "Most of the times, what we have learnt in class is what we experience in the clinical area so if you have understood the theory part very well you are able to integrate the theory you learnt in class to practice."(FG3)

> "I wish our teachers would give us more of group work activities. I just like it when teachers in other courses give us group assignments and present it to the class. We read widely so that we come up with information that our friends can understand when we share to the class, this make us think and learn more when we are searching for the required information. This also helps us to understand the topic we are learning better."(FG2)

To summarise, the participants indicated that teaching methods contribute a lot their understanding of the content and development of thinking and reasoning abilities. Though participants liked the learner centered teaching methods, they have indicated that they have been exposed to more teacher- centered learning environment as evidenced by most teachers' utilizing lecture as the teaching method. Most of the assessments did not promote deep learning because they were straight forward and required no thinking at all.

Theme 4: Readiness to practice

In answering the question "how do you perceive your educational preparation in relation to your role as an NMT"? All participants in the three groups stated that they were ready to take their role as nursing midwifery technicians because they have been equipped with the necessary knowledge and skills. They further stated that they have been able to apply the theory learnt in class to practice during their clinical experience. In relation to competency in clinical skills, variations existed among the three groups. Members from FG1 were most open to say that they were not very competent in some other skills due to limited exposure during their training therefore learning will still continue as they work. This is what some students had to say:

> "We have been equipped with the knowledge and skills but our competency still need to be improved in some of the skills such as making decisions so that we are able to meet our patient's needs out there. So we will continue learning as we work." (FG3)

Despite the excitement of being in the final year and about to go and work in various health facilities as NMTs, some students in the groups were somehow scared to take the responsibility. For the students who felt scared to take up the role stated that lack competence in some skills will make their work difficult especially when they are deployed in health facilities where they might be working without a mentor whom to consult and make decisions about care of patients as evidenced by this statement from one of the group members;

> "Madam, yes we are finishing school and shortly we will be posted to different places to work, I just pray that I should be posted to a healthy facility where I will have someone to ask for support if I have problems. You know we have been working under supervision by you our teachers and the hospital staff and you were helping us making some decisions for patient care. So just going to a place where may be I will be alone like in the health centers where sometimes you are the only nurse, eeeh! I am afraid of making blunders that may even put a person's life and my job at risk." (FG1)

For those who were looking forward to the experience of being a qualified NMT and posted to work at any health facility said that they were sure that they will be able to

work because they have acquired the required expertise as confirmed by their passing of the college final examinations as one of the group members had this to say;

> "We are prepared to go out there to work because of the competencies we have gained during our learning. After evaluating our assessments grades for theory and clinical practice as well as the college final examinations, we feel we have assessed ourselves that we can work." (FG3)

In summary some students have some fear to work on their own as qualified NMTs in the health facilities because of lack of competence in some of the skills such as clinical reasoning and decision making required in nursing practice.

Conclusion

This chapter reported on the findings of the study. It has been learnt that educators prefer the use of teacher centered teaching styles/methods in classroom teaching in which lecture is a dominant teaching method. This has lead to students' favouring a teacher centered learning environment though a few students have a preference for learner - centered teaching learning environment. This type of learning environment has an effect on students learning and development of thinking and clinical reasoning abilities as the majority of the students have average clinical reasoning abilities. The next chapter provides discussion of the results of the study, limitations and recommendations.

CHAPTER FIVE

Discussion

Introduction

This chapter discusses the study's results presented in chapter four. The discussion will be based on the objectives of the study presented in chapter one and the philosophy of pragmatism that supports integration of study results from two different approaches thus quantitative and qualitative. The philosophy of pragmatism according to Johnson and Onwuegbuzie, (2004) supports the integration of data from the two research paradigms- the quantitative and qualitative approaches at this stage for the purpose of maximizing their strength and also fitting together the insights provided by the two approaches into workable solutions. To this end literature indicate that clinical reasoning among student nurses is enhanced through teaching styles/methods and students preferred learning environment as such the study results on teaching styles, learning styles and clinical reasoning shall be the core issues that form base to discussions. Therefore the discussion shall integrate these concepts in relation to the development of clinical reasoning.

Discussion of results

Demographic characteristics of the participants

The teaching process that stimulates development of clinical reasoning in any classroom requires the capacity of both the educator and the student. To this end demographic characteristics of both the learner and the teacher can have an influence on the teaching processes and learner achievements. The results showed that a bigger number (50%; n=9) of the educator participants were matured (41-50 years), had a lot of

teaching experience (8-10years) with sound educational qualifications to understand issues of teaching in terms of facilitating the development of clinical reasoning A well qualified teaching force has an impact on students' achievement. Thus, the educator participants in this study have the capability to teach learners and produce the intended outcome which is a competent nurse who has clinical reasoning abilities and is able to make appropriate decision towards patient care. The students' participants in this study are considered to be more mature and able to articulate ideas in a learning situation as the majority were between the ages of 22-25 years. According to the androgogy principles of adult learning theory these are adult learners who should be self-directed and willing to undergo learning transformation in terms of developing clinical reasoning. As such student nurses within this age group are expected to develop thinking and clinical reasoning abilities when exposed to a learning environment where the classroom teaching and learning processes stimulate these abilities. The demographic characteristics of both groups of the participants indicate that they have the capacity to produce positive effects on students' achievement specifically the development of clinical reasoning abilities basing on effective classroom teaching processes.

Educational processes in promoting clinical reasoning

Classroom teaching processes in nursing education are expected to help learners develop thinking and reasoning abilities that enable them to competently make decisions towards patient care. This can only be achieved when students are taught or exposed to a teaching/learning environment that will help them gradually develop these mental processes through stimulation and challenging learning tasks. The results in this study when the teaching processes were evaluated by using the Grasha (1996) teaching styles

inventory revealed that the most preferred teaching style is the Expert Teaching Style, 72.2% (Mean=4.06; SD= .981). The Expert teaching style implies the educator possesses all the knowledge and expertise needed by the student in any learning situation; and directs learners in what to learn. Expert teachers mostly use lecture teaching method in their teaching tasks and this is a teacher-centered teaching style. Similarly the lecture method was the most preferred teaching method as the participants (student nurses) indicated according to the Learning environment preference data results. The results showed that most students (53.3%) preferred a learning environment where lecturing is used because they get the information they need to know efficiently from the teacher. Lecture method makes learning process mostly effortless on the part of the student, as the student is placed in a passive rather than active role which hinders thinking and learning hence the low levels of clinical reasoning. In a study conducted by Hativa and Birenbaum (2000) that investigated university students preferred approaches to teaching styles and learning styles it was discovered that students indicated a preference for lecture method of teaching because they felt their professors would provide the information they may fail to find; but it was assumed that the students' preference for this method was a result of the students' recognition that a discovery learning environment entailed more work on their part. In this study, student nurses' preference of lecture method at St. Joseph's College of nursing could be because they felt the educators are experts and knowledgeable therefore are capable of providing all the knowledge and experiences the students needed. Since the most preferred teaching style is the Expert Teaching Style and the same applied to students' preferred teaching style it might be assumed that this was a factor that could have prevented the student from effectively developing clinical

reasoning skills. These study results are consistent with a study by Amini, Saman and Lotfi (2012); they found that Expert Teaching Style was the most preferred teaching style among the faculty members of Shiraz Medical School as 96% of the faculty members were inclined to Expert Teaching Style. This concurs with a study by Chilemba (2013) who found that the Expert Teaching Style was the most dominant teaching style among the nurse educators in a BSN programme. According to Biggs and Tang (2007) Good teaching is that which encourages student nurses to adopt a deep learning approach through the use of active learning teaching strategies; and discourages the use of surface learning approach that is promoted when educators adopt teacher –centered strategies. If expert teaching style was the teaching style that was being used by the nurse educators in classroom it could be postulated that it failed to develop clinical reasoning in the student nurses as observed by the stakeholders. Formal Authority Teaching Style with a mean of 4.00 and standard deviation .80 was second preferred teaching style by the nurse educators. The Formal Authority Teaching Style is also a teacher centered style and has status among the students because of the amount of authority, position and the knowledge the teacher possesses on the subject matter. The teacher exhibiting the Formal Authority teaching style tend to focus on content and feels responsible for providing and controlling the flow of the content; and students are expected to receive the content. In this type of learning environment student participation in class is also very minimal. The Expert and Formal Authority teaching styles according to Grasha (2002) are in cluster one and they provide a teacher centered learning environment to students. These are the dominant teaching styles among the educators at St. Joseph's college of nursing. This concurs with the students nurses learning environment preference results, the teacher centered learning

environment was the most preferred among participants as 82.2 % of the participants preferred category one and category two learning environments which are teacher centered. This is similar to the study by Dasari (2006) who found that student Occupational Therapists preferred to learn in teacher-centered learning environment where the teacher is an expert who was able to lead them through the learning processes and provide them with the necessary knowledge and experiences. Teacher centered learning environment according literature, is a relatively ineffective pedagogical tool for promoting student learning therefore fail to empower students and stimulate their thinking and clinical reasoning abilities (Knight & Wood, 2005; Grasha & Yangarber-Hicks, 2000). The teaching strategies used in teacher-centered environment make the student nurse to merely master limited sets of knowledge by memorizing content without thinking and reasoning, the actual process- skills as needed in professional practice (Schön, 1983). The Expert/Formal Authority teaching cluster being the learning environment to which student nurses are mostly exposed at St. Joseph's College of nursing; it could be the reason why student nurses failed to achieve the required learning outcomes including critical thinking and clinical reasoning abilities. Similar findings were also reported by Chilemba and Bruce (2014) who found that the teaching processes in the BSN program at Kamuzu College of Nursing, mostly focused on Expert/ Formal Authority teaching cluster which is teacher-centered teaching approach and this resulted in learner dependence and minimal development of critical thinking among graduate nurses. Facilitator teaching style (mean=3.55; SD= 1.24) was the least preferred teaching style among the educators in this study. Facilitator teaching style is a student centered teaching approach and it promotes active learning through learner involvement. Grasha

(2002) however, proposed the four teaching style clusters explained in Chapter two (page 22), to balance educators' attributes and behaviours that could significantly contribute to students' learning if utilized in classroom activities. Vaughan and Baker (2001) suggests that effective teaching can occur in a teaching and learning environment where educators utilize a variety of teaching styles and methods in order to promote student acquisition of knowledge and development of thinking and reasoning abilities. Student nurses' perceptions of the teaching approach used by the educators at the college were examination oriented and this type of learning environment failed to enhance the development of thinking and reasoning abilities in the students as it led to memorization of the content and not necessarily understanding. The educators' failure to use a variety of teaching styles in classroom teaching is a clear indication that the teaching endeavors did not help the student nurses to approach learning deeply and enhance the development of thinking and reasoning abilities.

Diversity in the use of teaching styles/methods in classroom teaching is very important as it exposes student nurses to different ways of learning. A study by Vaughan & Baker (2008) examined the effects of combination of teaching styles and learning styles in preceptor resident dyads in a long term teaching and learning environment. The study results revealed that teaching styles and learning styles need to be considered when pairing residents and preceptors; a combination or pairing of the preceptor's teaching style and resident's learning style supports a healthy teaching and learning environment as it is capable of accommodating the different learning preferences of the students in order to promote students' acquisition of the required knowledge and development of thinking capabilities. The Expert/Formal Authority teaching cluster that dominates in the

teaching tasks of the educators at St. Joseph's College of Nursing focuses on teacher centered approaches. It is therefore important to note that nursing students at St. Joseph's College of Nursing maybe put at a disadvantage because their knowledge is superficial as they often lack deeper understanding of the subject content (Grasha, 1996) because they acquire knowledge in classrooms taught by educators who mostly focus on teacher - centered teaching methods. The results of this study are in agreement with Benner et al. (2009) views that today's student nurses are undereducated for the demands of practice because they are being prepared in ways that do not help them to develop the knowledge and skills that are to be used in complex nursing practice. This is evidenced by their observed low clinical reasoning abilities.

The results of this study are consistent with a study that was conducted by Razak, Ahmad and Shah (2007) in Malaysia. The study investigated the teaching styles of the Polytechnic English Language teachers and the students' perceptions and preferences of their lecturers teaching style. Their study results revealed that the Expert teaching style was the most preferred and dominant teaching style (mean=4.29 and SD=0.53). Even though students preferred the Facilitator teaching style, the teachers' preferences were not in line with what the students wanted. The students' preferred teaching styles in that study were not favoured by the teachers reflecting a mismatch in the teaching styles.

It is noted in the qualitative results that student nurses preferred to learn some of the nursing courses using case studies and small group discussions but this was different from the educators' preferred teaching approach. These strategies are prevalent in the Facilitator Teaching Style, but these methods were the least preferred among the nurse

educators. These results are similar to the findings of a study conducted by Oyibe and Nnamani (2014) in Nigeria where the results revealed that students preferred instructional methods that involved active participation of students such as group discussions in teaching and learning of Social studies but most of the teachers relied more on lecture method where students had to take more notes. This was an indication that there was a mismatch between the learners' preferences and the teachers teaching approaches. The difference between the educators teaching approaches and students learning preferences in this study is also reflecting a mismatch of the nurse educators' teaching style and the student preferred way of learning. The low scores on the learner centered teaching styles; Facilitator Teaching Style and Delegator Teaching Style respectively show that these two teaching styles were not preferred and did not dominate in the teaching activities to promote deep learning and development of clinical reasoning abilities among the students. As indicated by the qualitative results some of the student nurses expressed preference for learner involvement in the learning processes but the teaching styles that provided such type of a learning environment were less preferred by the nurse educators. This is an indication that there was a mismatch between the strategies the nurse educators use in the teaching styles and how students learn to promote clinical reasoning. Mismatches between teaching strategies used but by the nurse educators at St. Joseph's College of Nursing and students' learning preferences may have affected students' learning and development of clinical reasoning. Balancing the five teaching styles, educators would possibly add a variety to the Expert/Formal Authority teaching cluster in which they reside and align their teaching styles to student nurses preferred way of learning in order to enhance learning. When nurse educators choose and use some

elements of the other three teaching style clusters, they would develop instructional strategies that more closely match the students' learning preferences (Stitt- Gohdes, 2001) thus, creating a learning environment that could accommodate the various learning preferences of their students. The more closely matched student nurses learning preferences are with the educators teaching styles, student engagement with the subject content will be promoted (Stitt- Gohdes, 2001; Alade & Ogbo, 2014), and this might lead to deep- learning a requirement to development of clinical reasoning.

Participants (student nurses) viewed the use of case studies and small group discussions as the best way to help them internalize the subject material, think and reason than the lecture method because these are student centered teaching methods that actively involve students in the learning activities. Case studies, as a learner centered learning opportunity, enhance students' understanding of the subject content; increase their critical thinking and reasoning as well as theory- practice integration. Results of self assessment of clinical reasoning indicate that only 13.3% of the participants could ably apply knowledge/theory in the process of identifying patients' problems and making decisions towards client care. This is evidence that the students do not really understand the content during the teaching and learning processes because of the teaching methods used by the educators thus rendering them incapable to apply the knowledge gained in class to clinical practice in making appropriate decisions for patient care. Students' understanding of the content provides the basis for the development of professional competency in assessing different patients' problems and evaluating different interventions of client care (Benner et. al, 2009). When educators use case studies in their teaching tasks, they help students to move sequentially through a series of logical

inferences that enable them to arrive at a final decision about the care to be provided to a client using the theory learnt. Kim, Phillips, Pinsky, Brock, Phillips and Keary (2006) stated that the use of case studies or scenarios in classroom teaching simulates students' actual clinical experience with realistic details and events; and this enables students to practice using the information gathered from the case study scenario and prior knowledge to analyze the data, identify problems and suggest appropriate interventions. A study conducted by Ghafourifad, rezaHiririan and Aghajanloo (2013) assessed the opinions of nursing students about teaching using case studies in comparison with lecture in Zanjan Faculty of Nursing and Midwifery found that the majority of the students agreed that teaching using case studies method increased comprehension as compared to lecture. Thus teaching using case studies has high efficacy as compared to lecture and nurse educators can use the method to promote student learning as well as development of clinical reasoning. Small group discussions provide an opportunity for the student nurses to obtain deep understanding of the subject material. When the students are involved in discussion with peers they are required to explain their thinking and this in- turn can improve their thinking; this is significant in the development of reasoning ability. A study conducted by Hadimani (2014) to depict undergraduate medical students' perceptions in learning biochemistry through small-group discussion revealed that 50% of the students agreed that small group discussions sessions facilitated active learning and promotion of clinical reasoning and communication skills. This method of learning is therefore ideal for promoting clinical reasoning. Qualitative results have indicated that the preference for case studies and small-group discussions teaching methods among the educators is very minimal but the NMT curriculum which is being followed, according to

the nurse educators' responses, these teaching methods are stipulated as methods that can be used to teach in the various courses that the students learn. From the nurse educators' narratives, it shows that educators prefer to use the teacher centered methods in most of their teaching tasks more often as compared to student centered teaching methods. The reason could be because some of the educators had minimal understanding of some of the student centered strategies despite knowledge of their importance to student learning as reported by some of the participants. These study results are consistent with the study that was conducted in Pennsylvania by Schaefer and Zygmont (2003) that investigated the predominant teaching method in a group of nursing faculty members as either teacher centered or student centered. The findings revealed that the participants were more teacher centered than student centered. Though the faculty members recognized the need and importance for student centered environment but they had difficulty in implementing it.

Learning through small group's discussions and case studies promote understanding of subject content as it demands active participation from the students and stimulates their critical thinking and reasoning since the cases do not offer concrete answers (Kaddoura, 2011). The results of this study have shown that the student nurses were dependent learners and they lacked confidence as they indicated that they had fear of working on their own despite being in their final year at the college. Clinical reasoning, critical thinking, as well as decision making skills are the foundation of confidence in nursing profession that enables the practicing nurse to deal with complex situations. It is very possible that lack of diversity in teaching styles among the nurse

educators led to the low levels of clinical reasoning abilities thus, contributing to lack of confidence among the student nurses.

Nurses confidence and competence is seen when they demonstrate the value of professional practice based on their ability to reason and make appropriate decisions on client care and knowledge that their proposed care interventions are the best possible for the particular patient at that time. Based on the results of Roth's Self Assessment of Clinical Reasoning it is indicated that there were low levels of clinical reasoning abilities among student nurses as the results have shown that 74.4% of the students' scores were between moderate and low. Failure to fully develop clinical reasoning abilities by the student nurse can be attributed to the teaching styles and methods that are preferred and used by the nurse educators at the college as well as the preferred learning environment by the learners as these could not stimulate thinking and reasoning among students. Similar findings have been reported by Gandhi, Mythili and Thirumoorthy (2015) that students exposed to teacher-centered learning environment had minimal thinking and reasoning capability than those exposed to innovative and learner centered teaching strategies as these were perceived to be motivated to learn and self directed in addition to thinking and reasoning abilities. Benner, et al, (2010) is of the view that clinical reasoning can be taught depending on the approach to teaching. Thus learner-centered strategies such as problem based learning, case studies or simulations are some of the good strategies educators can use to enhance clinical reasoning among students (Anshu, Gupta & Singh, 2015). These are the teaching strategies that were not preferred by the educators at St. Joseph's college therefore assumed to have contributed to the poor development of the clinical reasoning abilities among the student nurses. A study using a

quasi-experiment pretest - posttest design conducted by Scaffa and Wooster (2004) on the effect of a Problem Based Learning (PBL) on the development of clinical reasoning skills in an occupational therapy program found that there were statistically significant improvements in the PBL course with an overall score increase from 96.88 to 102.55 on the SACRR items and students perceptions were that their clinical reasoning capability had improved. This clearly indicates that PBL is a teaching method that makes students take a greater responsibility of their own learning, adopt deep-learning and become more involved in the educational process. PBL encourages students' greater understanding of the subject content, facilitates critical thinking and clinical reasoning as they work in groups to determine the best response to realistic a scenario. Development of clinical reasoning emerges from the use learning strategies which promote deep – learning. Therefore, PBL is an ideal teaching approach that can promote clinical reasoning among nursing students if utilised by educators in nursing education.

As it has been noted in the qualitative results that both the nurse educators and the student nurses preferred the lecture method as a method of teaching in all the teaching tasks at the college; this suits the teaching cluster that is dominant in the teaching of the nursing midwifery technicians at the college. It is important to understand that teaching styles are neither good nor bad because the important factor is that the teaching styles used should yield the intended outcomes which are clinical reason and decision making (Brown, 2003). The lecture method used in teaching promotes passivity among the students and does not promote thinking in students as they will always depend on the teacher to provide the necessary information. This finding confirms the issues of

dependency noted in the qualitative results that student nurses depended on their teachers in classroom activities and in clinical practice. The student nurses stated that the type of teaching utilized by the educators did not promote their thinking as well as reasoning which made them unable to make proper decisions towards patient care hence depending on their teachers or clinical staff during their clinical practice. The narratives by the student nurses reflect that student learning was influenced by examinations and this encouraged rote learning among learners.

Fowler-Durham & Alden (2008) assert that the instructional strategies utilized in didactic component of nursing education must change if nursing is to produce graduates who are capable of providing safe patient care. This means that nursing education should transform into a system responsive to the needs of the nurses and their job requirements (Benner et al., 2009). The nursing faculty must strive to provide high quality education to the students through the use of a variety of teaching methods that emphasize on student involvement in the learning process in order to enhance development of reasoning abilities and application of knowledge to practice. Benner, et al., (2009) states that teaching that advocates use of diverse teaching methods incorporates new pedagogies that close the gap between theory and practice and brings nursing education closer to what nurses need for a better practice. The use of different teaching methods therefore facilitates deep learning among learners and deep learning process make learners to become confident, creative and intelligent practitioners capable of making appropriate decisions towards patient care. However qualitative results reflect that in clinical practice student nurses were mostly depending on the qualified nursing staff and their instructors to decide on the care to be provided to their clients; this could be linked to lack of

diversity in the teaching approaches by the nurse educators that failed to promote students' thinking and reasoning abilities in order to make appropriate decisions for patient care. Clinical reasoning may be difficult to teach and learn because it is complex and tacit and invisible to students (Delany & Golding, 2014) but to cultivate clinical reasoning in student, the instructor must facilitate thinking by the student through the use of diverse teaching styles/methods in classroom teaching (Bradshaw & Lowenstein,2013).

The learning processes and experiences in the nursing midwifery technician program indicate the perspectives of the educators and the student nurses. The results of Moore and Fitch learning environment preference indicate that over half of the student NMTs (54.44%) had preference for Category Two type of learning environment in which students prefer to learn through lecture and other learning methods such as class discussion. Students want the educator to provide them with relevant course material and relevant experiences as well as rewarding them with good grades; followed by Category One (27.7%) in which students prefer to learn in an environment where the educator provides all the information needed to learn through lecture and clear direction and guidance during learning. Category One and Category Two are teacher centered learning environments. This means that 82.22% of the participants preferred teacher-centered learning environment. A study conducted by Ravkin and Gim (2013) had similar results where Pharmacy students preferred to learn in teacher-centered learning environment in which traditional lecture was use in teaching the Induced diseases and clinical Toxology course because they felt the professor needed to provide the learners with the required information in that course. This type of learning environment promotes dependence

among learners. The learning environment preference results in this study match with the nurse educators teaching styles results which showed educators preference for Expert/ Formal Authority teaching cluster; a teacher centered approach of classroom teaching. The least (6.67%) preferred learning environment is category three; a student-centered learning environment which provides the students with individual thinking opportunities as well as individual control over course content. This learning environment allows students to express their own feelings and learn from peers through use of teaching strategies that actively involve learners. The low percentage of students choosing Categories Three and Four learning environment confirms the learner dependence indicated in the students narratives in the qualitative results.

Students' learning environment preferences are of importance to the approach students take to learn as each individual learner's preferred learning environment influences their academic achievement. An understanding of the way the student learn improves the educators selection of teaching strategies that are best suited to student learning. Empirical studies suggest that; for learners, the matching of the teaching strategies to their individual learning preferences has shown positive results (Dinçol, et.al. 2011; Ogden, 2003; Rinaldi & Gurung, 2008). The preference for Categories One and Two learning environments is an indication that the student nurses depended on their teachers to provide all the knowledge they needed. Thus students' preference of teacher-centered learning environment could have been to suit the environment provided by their educators. A study conducted by Rinaldi and Gurung (2008) to find out whether teaching styles and learning styles should match, the findings indicated that it was not very necessary for the instructors to match their teaching styles to students learning styles but

the instructors must enhance learning by utilizing diverse teaching styles. Rinaldi & Gurung (2008) also support the designing of activities that would allow students to engage in active learning thereby promoting use of diverse learning styles among students. Student nurses lack of diversity in learning environment preferences is possibly a result of the educator's lack of diversity in teaching styles/methods despite the curriculum stipulating a variety of teaching strategies to promote learner centered approaches. With evidence from the qualitative results, student nurses learning environment preferences were further shaped by the type of assessments they were being given. Students felt that the teaching was more examination orientated resulting in rote learning where there is very minimal thinking and reasoning. Student nurses reported that most of the examination questions were presented in a way that required them to reproduce the information provided to them when responding to the examination questions.

Each individual student has their own way of learning and reliance on only one way or style of learning can lead to learning problems. It is, therefore, important that educators should know and have an understanding about student learning preferences in order to create a good learning environment that supports and promotes meaningful learning and acquisition of new knowledge among different types of learners (Clark & Latshaw, 2012; Montegomery & Groat, 1998). Baeten, Struyven and Dochy (2012) stated that teaching that utilizes different teaching and learning approaches creates an environment that meets different learning needs of the students; this therefore, motivates students and promotes their feeling of self- confidence, and adoption of deep- learning approaches that enhances students' engagement in the learning activities meaningfully.

As such, despite students having preference for a particular learning style, their preferences can be modified depending on the way the educator approaches teaching. This then gives the responsibility to the nurse educators to use diffident teaching methods more extensively in order to address the different learning styles. Qualitative results from the educators' perspectives indicate that there was minimal involvement of the students in their learning process. This was however, as narrated by the students, due to the fact that student active learning teaching methods such as group work, case studies were not frequently used by the educators. This method of teaching could have benefited every student including the weak students would have a chance to actively participate and show a potential in learning through the group discussions and case studies. An experimental study conducted by Sayre (2013) that had intent of exploring the effectiveness of integrating student- centered methods as a means of promoting thinking and reasoning skills in high school social studies classrooms found that student-centered teaching produced a higher average score increase in than the teacher centered approach. This is because the student centered teaching incorporate several styles through use of different teaching methods which are believed to promote critical thinking and reasoning abilities (Evertson & Neal, 2006; Russell, Comello & Lee Wright 2007; Sayre, 2013).

Despite results reflecting that 25.6 % of the participants had high scores in clinical reasoning, in this study, the nurse educators teaching styles do not promote thinking and reasoning in learning, as most of the students had moderate to low scores. These findings are in line with the qualitative results where the student nurses stated their reasoning ability was minimal. The teaching and learning processes had little effect in fostering the clinical reasoning and decision making abilities in most of the students. It is therefore

important to note that teaching styles and learning preferences have an influence on students learning and development of skills necessary for nursing practice as such; use of diverse teaching styles creates a discomfort in a learning situation that stretches the students beyond their comfort zone (Naimie et al. 2010) this then promotes students adoption of deep leaning and development of thinking and reasoning skills. The minimal development of clinical reasoning and decision making skills would probably affect the student nurses readiness to take up their professional roles as their statement of "being somehow scared to work on their own" point to the problem with their reasoning and decision making processes that did not give them the confidence. Lack of confidence in the student nurses could be attributed to the inability to reason and making of appropriate decisions towards patient care. Benner et.al, (2010) recommends that educators need to improve on the classroom teaching of the nursing courses and other supporting courses to ensure that all graduates are safe competent practitioners. To this end, educational processes that are used in training nursing midwifery technicians need to produce confident, competent and high quality nurses and this require educators' emphasis on the extensive use of diverse teaching styles/strategies that would meet the different learning preferences of the student nurses.

Sayre (2013) asserts that student - centered strategies, are more engaging to students because they take into account students different learning preferences. Students engage more deeply in the process of learning subject material and this encourages thinking, reasoning, and development of self-directed learning among the learners. Student nurses in the qualitative narratives reported that in active learning situations they are able to learn and understand the subject material better. Student centered learning

strategies also enable them to use the previously acquired knowledge during the learning process. When students understand and internalize the subject content they are able to refer to the theory learnt in class when deciding on the options of care to be provided to a patient using that knowledge. This is in agreement with what Thompson, Cullum, Mc Cuaghan, Sheldon and Raynor (2004) stated, that clinical reasoning and appropriate decision making involves choosing from discrete range of options and this choice is informed by an evaluation of the existing knowledge/information that the nursing student has acquired through the teaching and learning processes. This therefore, confirms the need for the utilization of the active learning teaching strategies that have been stipulated in the NMT program curriculum in order to promote student understanding of the subject content and development of thinking and clinical reasoning through deep-learning.

Student nurses perceptions on learning and development of reasoning skills was also linked to the type of assessments/examinations given. The students' narratives showed that the type of examinations given required memorization of the learnt subject material. The learning experience portrayed in these results suggests an observation to be made on the quality of learning at the college. Examination is an important part of higher education as Havnes (2002) posits that examination methods and questions have an impact on how the students study and learn. Examination as a learning task, its demands influences students thinking and how the students learn as these students adjust their learning according to the demands of the examinations (Havnes, 2002). Effective teaching therefore, should aim at teaching students to learn specified content to acceptable standard and it is important to align the examinations to what is learnt because

this is more effective in getting students to learn (Biggs & Tang, 2007). Qualitative results from the educators and student nurses indicate that only teacher centered methods of assessments were given to the students as they narrated that they only wrote a mid semester examination as continuous assessment and end of semester or year examination no another assessments such as quizzes or short test after learning a topic. Assessments are supposed to be part of the educational processes according to Rehman (2000); assessments provide the students the opportunity to display their full knowledge and skills in the areas they have learnt; assessment supports and also improves the teaching and learning process as educators can use them as a standard against which to evaluate student learning and thinking abilities. Results reflect that most of the examinations required direct answers which made students reproduce what they were given. These are in reality, the characteristics of teacher centered assessments that impede deep learning as they do not stress on understanding, mastery, insight and critical thinking approaches to learning (Rehman, 2000; Entwistle & Tait 1990). Assessments are part of learning and as such learners need to see the examinations in alignment with their learning (Biggs & Tang, 2007). What is needed here is for the nurse educators to introduce assessments that promote learning including thinking, creativity and reasoning among the student nurses as assessments are believed to be powerful educational tools for promoting effective learning. Therefore, it would be envisaged that the examinations that were administered during their training never allowed them to develop clinical reasoning skills and as such the learners only memorized the content thus surface learning to pass the examinations. This is in line with the choice of learning styles which is again teacher-centered.

Summary of Major findings

The teaching and learning processes were teacher-centered that fail to promote the development of clinical reasoning thus:

- **Teaching styles and methods:**
    - The teaching styles were teacher- centered as the Expert Teaching Style was the most preferred teaching style followed by Formal Authority Teaching Style. These teaching styles are in cluster 1 according to Grasha (2002) and reported to have not promoted the development of meta-cognitive skills including reasoning.
    - The most preferred and dominant teaching method is the lecture method which is corresponding with their preferred teaching styles and the lecture method is not known to promote deep learning among learners that may lead to the development of clinical reasoning.
    - Limited availability of resources and student numbers influenced the educators' choice of teaching approaches and this affected development of clinical reasoning among student.
- **Learning environment preference:**
    - The participants preferred teacher - centered learning environment as was seen in their preference for Category 1 and Category 2 type of learning environments. These two categories provide a teacher - centered learning environment. Teacher-centered learning environment promote learner dependence which may fail in instilling clinical reasoning abilities.

- The participants' perceived that their learning was based on examinations and not for gaining mastery and insight into the subject content.

- **Clinical reasoning:**
  - Most of the participants (74.4%) had low scores in clinical reasoning abilities
  - Minimal learner involvement was reported in teaching tasks

- **Perceptions**
  - **Educators:**
    - Educators perceived that the active learning approaches were effective in teaching.
  - **Students :**
    - The use of the teacher- centered teaching methods affected their development of clinical reasoning abilities
    - Student nurses experienced little involvement in classroom activities but felt their involvement in the learning process would have enhanced learning and development of clinical reasoning.

Limitations of the study

Some limitations were identified for this study.

- The study was primarily limited because it used a sample of participants within a single institution and may not represent the views of the other nursing colleges. Therefore the results can only be generalized to St. Joseph's College of Nursing.

- Time was also a limiting factor since the study was for academic purposes.

Recommendations

The recommendation are made for operationalization in nursing education and research

- The Teaching styles and teaching methods in the NMT programme should promote deep learning approaches for the development of clinical reasoning abilities among learners and there is also need for improvement on curriculum benchmarks that should portray indicators of learning. It is therefore recommended that nurse educators diversify classroom teaching styles/methods so that the teaching activities accommodate different student learning preferences. Perna, (2011) and Montegomery and Groat (1998) assert that diversification of teaching styles challenge students to learn in the ways that are not their preferred way in an effort to understanding. Thereby enhancing deep learning as students will be responsible for their learning to learn more, understand and master the subject content resulting in thinking and clinical reasoning.
- The learning environment at St. Joseph Nursing College should foster student's autonomy to enhance deep approaches to learning this emanate from learner involvement in their learning processes and essential to note is that deep approaches to learning is a pre-requisite to development of clinical reasoning.
- Assessments/examinations given to students must send signals to students about what they should be learning and how they should be learning it (Biggs & Tang, 2007), this will make them aware of what is expected of them. As such it is important for educators to know that assessments tasks must link all the important competencies required in the nursing profession.

- Assessments should also form the basis for choosing teaching styles/method in all the teaching tasks in order to foster deep learning. Assessments are a component of the teaching and learning processes and have an influence on how students learn. That is students will learn depending on how they will be assessed. It is therefore recommended that different strategies of assessments/examinations must be used in line with the competencies that the student nurses are required to achieve at the end of their training.

Areas for further research

- The curriculum for Nursing Midwifery Technicians should be revisited in terms of learning quality and safety for practice.
- Examine how educators/ instructors promote clinical reasoning among students in clinical practice.
- Factors contributing to quality assessment of students' learning in classroom.

Conclusion

The promotion of clinical reasoning in classroom teaching among student nurses is key to effective teaching tasks. The ratings and responses from both the educators and student nurses revealed that the teaching and learning processes had very little impact on the students' development of clinical reasoning skills and abilities. Students' learning and development of clinical reasoning have been influenced by lack of utilization of teaching and learning approaches that promote development of these abilities in students. Nurse educators need to be concerned about the choice and utilization of the teaching styles/methods that match the student nurses learning preferences/styles. This is because the teaching styles/methods and learning preferences/styles play a major role in molding

the student nurse into the competent nurse practitioners who is able to think critically, reason and make appropriate decision about patient care thereby providing quality nursing care to clients. As such nursing educational institutions are expected to provide favorable learning environments to student nurses. Clinical reasoning is a core competence that needs to be acquired and demonstrated by every practicing nurse. Thus, promotion of clinical reasoning in classroom teaching cannot be achieved without considering the features that are present in the teaching and learning processes. Conscious and sustained efforts are required to promote student nurses acquisition of this crucial skill in NMT programme. The findings of this study will help the educators in finding ways of improving the teaching and learning processes in order to achieve the desired learning outcome.

Reference

Abel, W., & Freeze, M. (2006). Evaluation of concept mapping in an associate degree nursing program. *Journal of Nursing Education,* 45(9), 356-364

Aiken, L. H., Clarke, S. P., Sloane, D. M., Lake, E. T. & Cheney T. (2008). Effects of Hospital Care and the project 2000 nursing student: factors influencing this process. *Journal of Advanced Nursing.* 21: 1152-1158.

Aina-Popoola, S & Hendricks, C.S. (2014). Learning Styles of First-Semester Baccalaureate Nursing Students: *Institute for Learning Styles Journal*, 1:1-10.

Aitken, L.M. (2003). Critical care nurses' use of decision making strategies. *Journal of Clinical Nursing,* 12(4): 476-483.

Ajjawi, R. (2007). *Learning to communicate clinical reasoning*. Retrieved from http://www.ses.library.usyd.edu/bitstream accessed on 07/07/14

Akinsanya, C. & Williams, M. (2004). Concept mapping for meaningful learning. *Nurse Education Today.* 24(1): 41-46.

Alade, O. M. & Ogbo A. C. (2014). A Comparative Study of Chemistry Students' Learning Styles Preferences in Selected Public and Private Schools in Lagos. *Journal of Research & Method in Education* 4(1): 45-53

All, C., & Havens, L. (1997). Cognitive concept mapping: A teaching strategy for nursing. *Journal of Advanced Nursing,* 25, 1210 – 1219

Allen, P. (2013). Preparing nurses for tomorrow's health care system. *American Nurse Today*, 8(5):46-50.

Amini, M., Saman, S. & Lotfi, F. (2012). Reviewing Grasha teaching methods among faculty members of Shiraz Medical School. *Research Development Medical Education*, 1 (2):37-43.

Amir, R. &. Jelas Z. M. (2010). Teaching and Learning Styles in Higher Education institutions: Do They Match? *International Conference on Learner Diversity*, 7(C): 680–684

Anderson, K.J. Factors affecting development of Medical students' clinical reasoning ability. Accessed on 17/08/15 from http://toniau.ac.ir/doc/books/Development%20of%20Clinical%20Reasoning%20Abilities%20in%20UME%20Students.pdf

Anshu J.N.M., Gupta, P. & Singh, T. (2015). *Teaching Clinical Reasoning skills*. Indian Peadiatrics 52: 787-794

Atkison, K., Ajjawi, R. & Cooling, N. (2011). Promoting clinical reasoning in general practice trainees: role of the clinical teacher. *The Clinical Teacher*, 8 (3): 278-283

Artvinli, E. (2010). Cografya ögretmenlerinin ögretme stilleri. *Elektronic. Journal of Social Sciences*, 9(33),387- 408.

Audétat, M. & Laurin, S. (2010). Supervision of clinical reasoning: Methods and a tool to support and promote Clinical Reasoning. *Canadian Family Physician,* 56 (3), e127-e129.

Ayodele, O. J.(2012). Validity and Reliability Issues in Educational Research**.** *Journal of Educational and Social Research,* 2 (2), 391-400.

Beaten M, Struven,E. K. & Dochy, F (2010). Using student - centered learning Environments to stimulate deep approaches to learning: factors encouraging or discouraging their effectiveness. *Educational research review*, 5: 243-260

Beaten, M., Dochy, F. & Struyven,E. K. (2012). The effects of different learning environments on students' motivation for learning and their achievement. *British journal of educational Psychology,* 83(3), 484- 501.

Baker, C. M. (2000). Problem-based learning for nursing: Integrating lessons from other disciplines with nursing experiences. *Journal of Professional Nursing, 16*(5), 258-266.

Banning, M. (2008) Clinical reasoning and its application to nursing: concepts and research studies. *Nurse Education in Practice.*8(3),177-83.

Banning, M. (2008). The think aloud approach as an educational tool to develop and assess clinical reasoning in undergraduate students. *Nurse Education Today,* 28(1): 8-14.

Beers, G.W. (2005). The effect of teaching method on objective test scores: problem based learning versus lecture. Journal of Nursing Education, 44(7):305-309.

Benner, P. Hughes, R.G. & Stuphen, M. (2008). *Patient Safety and Quality: evidence based hand book for nurses.* Rockville.

Benner, P., Stuphen, M., Leonard, V., & Day, L. (2009). *Educating Nurse: A Call for Radical Transformation.* San Francisco: Jossey-Bass Carnegie Foundation for the Advancement of Teaching.

Benner, P., Stuphen, M., Leonard, V., & Day, L. (2010). *Educating Nurses: A Call for Radical Transformation*. San Francisco, CA: Jossey-Bass.

Biggs, J. & Tang, C. (2007). *Teaching for Quality at University*. (3rd Ed.) McGraw Hill; Berkshire.

Boswell, C & Cannon, S. (2011). *Introduction to Nursing Research: incorporating evidence- based practice*. (2nd Ed.).Boston: Jones and Bartlett publishers.

Bradshaw, M. J. & Lowenstein, A. (2011). *Innovative Teaching Strategies in Nursing and Related Health Professions* (5th Ed.). Ontario: Jones and Bartlett.

Brown, K. L. (2003). From teacher-centered to learner-centered curriculum: Improving learning in diverse classrooms. *Educational Psychology,* 124(1), 49-54.

Brown, B. L 2003, „Teaching style vs learning style", Myths and Realities, vol. 26, pp. 54-55.

Burns, N & Grove, S.K. (2011). *Understanding Nursing Research; building evidence based practice.* 5th (Ed.). Maryland Heights: Elsevier Sounders.

Candela, L., Dalley, K. & Benzel-Lindley, J. (2006). A Case for Learning-Centered Curricula. *Journal of Nursing Education* 45(2): 59-66

Cabrera, A>F., Colbeck, C.L. & Terenzini, P.T. (2001). Developing performance indicators for Assessing classroom teaching and practices and student learning. *Research in Higher education*, 42(3):327-352.

Carr, S., (2004). A framework for understanding clinical reasoning in community nursing. Journal of Clinical Nursing 13 (7): 850–857.

Chilemba E. B. & Bruce J. C. (2014). Teaching styles used in Malawian BSN programmes: A survey of nurse educator preferences *Nurse Education Today.(in press)*

Clark, S. D. & Latshaw, C. A., (2012). Effects of Learning Styles/Teaching Styles and Effort on Performance in Accounting and Marketing Courses. *World Journal of Management* 4 (1): 67 – 81

Clayton, L. H. (2006). Concept mapping: An effective teaching-learning method. *Nursing Education Perspectives*, 27(4):197-203

Comer, S.K. (2005). *Patient simulations; Role playing to enhance Clinical understanding.* Nursing Education Perspective, 26(6), 357-361.

Creswell, J.W. (2008). *Educational Research; planning, conducting and evaluating quantitative and qualitative research* (3rd Ed.). New Jersey: Pearson Education Inc.

Creswell, J.W. (2012). *Research design quantitative, qualitative and mixed methods approaches*. (4th Ed.) Los Angeles: SAGE Publications.

Creswell, J.W. (2014). *Research design quantitative, qualitative and mixed methods approaches*. (4th Ed.) Los Angeles: SAGE Publications.

Cui,L., Li, H. & Song, Q. (2014). Developing the ability for deep approach to learning by students with the assistance of MOOCs. *World transactions for engineering and technology education*, 12(4):685-689.

Damodharan, V.S. & Rengarajan V. (2008). *Innovative Teaching Strategies*. Retrieved on 15/10/15 from http://math.arizona.edu/~atpmena/conference/proceedings/Damodharan_Innovative_ Methods.pdf

Dasari B.D. (2006). *An evaluation of the development of clinical reasoning skills in a cohort of occupational therapy students in Hong Kong*: implications for curriculum Design. University of Hull. PhD Thesis.

De Domenico, E. Ohl, R. , Matheus M. C., Moreira, R. S., Ferreira, P.& Gutiérrez, M. G. Piconez S. C. B. (2008) Concept map applied to the development of nursing students' clinical judgment. *Third International Conference on Concept Mapping.* Helsinki, Finland. Retrieved from http://cmc.ihmc.us/cmc2008papers/cmc2008-p268.pd Accessed on 11/07/14

Delany, C. & Golding, C. **(**2014). Teaching clinical reasoning by making thinking visible: an action research project with allied health clinical educators *BMC Medical Education* 14(20),1-10

Delpier, T. (2006). Cases 101: learning to teach with cases. *Nursing Education Perspectives, 27:204-209.*

Dembo, M.H., & Howard, K. (2007). *"*Advice about the use of learning styles: a major myth in education", *Journal of College Reading and Literature,* 37(2): 101-109

Dinçol, S., Temel S., Oskay, Ö. Ö., Erdogan, Ü. I. & YÕlmaz A. (2011).The effect of Matching learning styles with teaching styles on success. *Procedia Social and Behavioral Sciences* 15: 854–858

Doran, A.J., & Malhull,M. (2007). Bioterrorism in the simulation laboratory: preparing students for the unexpected. *Journal of Nursing Education,* 46(6):*292*

Dreifuers, K. T. (2010). Debriefing for meaningful learning: fostering development of clinical reasoning through simulation. School of nursing: University of Indiana (Unpublished Dissertation).

D'Souza , M. S., Chandrani, I. , Venkatesaperumal, R., Subrahmanya N. K, & Amirtharaj A. (2014). Exploring nursing student engagement in the learning environment for improved learning outcomes. *Clinical Nursing Studies,* 2(1).pp:1-16

Duncan O. M. C. (2012). An Examination of the Learning Styles of Brazilian Senior High School Students Attending Public and Private Schools in a Metropolitan Area of Brazil Doctor of philosophy dissertation. Auburn University; Alabama.

Duncan, T. G., & McKeachie, W. J. (2005). The making of the motivated strategies for learning questionnaire. *Educational Psychologist,* 40(2), 117-128.

Edelen, B.G. & Bell, A.A. (2011). *The role of Analogy- Guided learning experiences in enhancing students' clinical decision–making skills*. Journal of Nursing Education, 10 (10):1-8.

Elo, S. & Kyngas, (2007). The qualitative Content analysis process. *Journal of Advanced Nursing*, 62(1)107-115.

Entwistle, N.J.& Tait, H. (1990) Approaches to learning, evaluations of teaching and preferences for contrasting academic environments. *Higher Education* 19: 169-194.

Ericsson, K., Whyte, A. and Ward. J. (2007). Expert performance in nursing: reviewing research on expertise in nursing within the framework of the expert-performance approach. *Advances in Nursing Science*. 30 (1), 58-71.

Everston, C.M. & Neal K.W. Looking into learning- centered classrooms: implications for classroom management. National Education Association Research. Washington DC.

Filonova, L. (2008). Teaching style survey. Department of forest products Sweden. Retrieved from http://www.UPC_LadaFilanovateachingstyle accessed on 02/10/15.

Forsberg, E., Georg,C.,Ziergert,K & Fors, U. (2011). Virtual patients for assessment of clinical reasoning in nursing. *Nurse education today,* 31:757-762.

Forneris, S. G. & Peden-Mc Alpine, C.J. (2006). Contextual learning a reflective learning intervention for nursing Education. *International Journal Of Nursing Education Scholarship,* 3(1), 1-20.

Fowler-Durham, C. & Alden, K. R. (2008) Enhancing Patient Safety in Nursing Education through Patient Simulation Patient Safety and Quality. *An Evidence-Based Handbook for Nurses.*

Gale, N. K. Heath, G., Cameron, E., Rashid**,** S**.** & Redwood, S. (2013). Using the framework method for analysis of qualitative data. *BMC Medical Research Methodology*. 13 (117)

Gandhi,S., Mythil, D. & Thirumoorthy, A.(2015). Nursing Students' perceptions about Traditional and Innovative Teaching Strategies. *Journal of Krishna Institute of Medical Sciences University,* 4(1):123-129.

Gerrish, K. & Lacey, A. (2010). *The research process in nursing*.(6th ed.) West Sussex: Blackwell.

Ghada, S., Rima, B. and Nahla Nola, B. (2011). A Match or a Mismatch between Student and Teacher Learning Style Preferences *International Journal of Linguistics* 1(1):1-8

Ghafourifad, M., rezaHaririan, H. & Aghajanloo, A. (2013). The opinion of nursing students about cases based teaching method comparison with lecture. *Future of Medical Education Journal*, 2 (1):8-12.

Gierach, M., & Evenson, C. (2010). Clinical reasoning in the classroom. Nurse Educator, 35(6), 228-230

Gilakjan, A. P. (2012). A Match or Mismatch between Learning Styles of the Learners and Teaching Styles of the Teachers. *International Journal of Modern Education and Computer Science*, 11, 51- 60.

Golafshani, N. (2003). Understanding Reliability and Validity in Qualitative Research. *The Qualitative Report* . 8 (4), 597-607 retrieved from http://www.nova.edu/ssss/QR/QR8-4/golafshani.pdf accessed on 16/08/14

Grasha, A. F. (1994). A matter of style: The teacher as expert , formal authority, personal model, facilitator, and delegator. Taylor and Francis, Ltd, 42(4), 142–149

Grasha A. F. (1996). *Teaching with styles*. Pittsburgh; Alliance publishers.

Grasha A.F (2002). The Dynamics of One- on- One Teaching. *College Teaching*, 50(4): 139-146.

Grasha, A.F & Yangarber- Hicks, N. (2000) .Integrating teaching Styles and Learning Styles with Instructional Technology. *Taylor and Francis, Ltd,* 48(1):2–10

Grimley, M., Green, R., Nilsen, T., Thompson, D., &Tomes, R. (2011). Using computer games for instruction: The student experience. *Active Learning in Higher Education*, 12, 45-56

Gurney, P., (2007). Five Factors for Effective Teaching .*New Zealand Journal of Teachers' Work*, 4(2):89-98.

Haak, D. C., HilleRisLambers, J., Pitre, E., & Freeman, S. (2011). Increased structure and active learning reduce the achievement gap in introductory biology. *Science*, 332:1213–1216.

Hadimani, C.P. (2014).Effectiveness of Small Group Discussion Sessions in Teaching Biochemistry for Undergraduate Medical Students. *South East Asian Journal of Medical Education* 8 (1): 77-81.

Hakimzadeh, H., Ghodrati, A., Karamdost, N., Ghodrati, H. & Mirmosavit, J. (2013). Factors affecting teaching and learning in Nursing education. *Proceeding of the Global Summit on Education*. Kuala Lumpur

Hais,t S.A., Wilson,J.F., Pursley, H.G., Jessup, M.L., Gibson J.S., & Kwolek D. (2003). Domestic violence: Increasing knowledge and improving skills with a four-hour workshop using standardized patients. *Academic Medicine,* 78 (10):S24–6.

Handelsman, J., Ebert-May, D., Beichner, R., Bruns, P., Chang, A., & DeHaan, R., (2004). Scientific teaching. *Science*, 304(5670), 521–522.

Hanzelka, L. (2013).Learning Styles: A Viable Approach for Instruction? *Honors Thesis*. University of Northern Iowa

Harden R M & Crosby J R (2000). Education Guide No 20: The good teacher is more than a lecturer – the twelve roles of the teacher. *Medical Teacher* 22(4): 334-347.

Harpaz, I., Balik, C., & Ehrenfeld, M. (2004). Concept Mapping: An Educational Strategy for Advancing. *Nursing Education Nursing Forum*, 39(2),27-36

Hativa, N. & Birenbaum, M. (2000). Who Prefers What? Disciplinary differences in students' preferred approaches to Teaching styles and Learning styles. *Research in Higher Education*, 41:201-236.

Havnes, A. (2002) Examination and learning; An activity-theoretical analysis of the relationship between assessment and learning: Learning. *Communities and Assessment Cultures Conference*. University of Northumbria

Hawkins, K., Todd, M., & Manz, J. (2008). A unique simulation teaching method. Journal of Nursing Education, 47(11) 524-527.

Heinerichs, S., Vela, L.I. & Drouin, J.M. (2013). A Learner-Centered Technique and Clinical Reasoning, Reflection, and Case Presentation Attributes in Athletic Training Students. *Journal of Athletic Training;* 48(3): pp. 362–371

Higgs J & Jones MA. (2008). *Clinical Reasoning in the Health Professions*. Mass: Oxford: Butterworth-Heinemann

Higuchi S. K. and Donald, J. (2002).Thinking processes used by nurses in clinical decision-making. *Journal of Nursing Education, 41*(4), 145–154.

Hoffman, K. Dempsey, J., Levette- Jones, T. Noble, D., Hickey, N. Jeong, S. Hunter, S. & Norton, C. 2011. Design and implementation of an interactive Computerized Decision Support Framework as a strategy to improve clinical reasoning. *Nurse education today*, 31 (6):587-594

Hoke, M.M. & Robbins, L.K. (2005). The impact of active learning on nuraing students' clinical success. *Journal of Holistic Nursing*, 23 (3):348-355.

Honigsfeld, A., & Schiering, M. (2004). Diverse approaches to the diversity of learning styles in teacher Education. *Educational Psychology,* 24(4): 487-507.

Holloway, I. & wheeler, S. (2008). *Qualitative research in Nursing and health care*.(3rd Ed).Ontario: Wiley-Blackwell Science.

Hsieh, H.F. & Shannon, S.E. (2005). Three approaches to qualitative content analysis. Qualitative health research,15(9):1277-1288

Hsu, L. (2004). Developing concept –map from problem – based learning scenario discussions. *Advanced Journal of Nursing*, 48(5): 510-518

Ironside, P.M. (2003). New pedagogies for teaching thinking; lived experiences of students and teachers. Enhancing narrative pedagogy. *Journal Of Nursing Education*, 42(11)509-516

Johnson R. B. & Onwuegbuzie A. J. (2004), Mixed Methods Research: A Research Paradigm Whose Time Has Come? *Educational Researcher,* 33(7): pp. 14-26

Kaddoura, M. A. (2011).Critical Thinking Skills of Nursing Students in Lecture-Based Teaching and Case-Based Learning International. *Journal for the Scholarship of Teaching and*
Learning, 5 (2): 1-18.

Kalmakis, K.A., Cunningham, H., Lamoureux, E.T. & Ahamed, E.M. (2010). Broadcasting simulation cases studies to the didactic classroom, *Nurse educator,*35 (6):264-267.

Kamin, C., O'Sullivan, P., Deterding, R. and Younger, D. (2003). A comparison of critical thinking in groups of third-year medical students in text, video and virtual case modalities. *Academy of Medicine,* 78(2), 204–211.

Kamuche, F. U. (2005). Do Learning & Teaching Styles Affect Students' Performance? *An Empirical Study Journal of Business & Economics Research.* 3 (9):35-40.

Kassaian, Z. and Ayatollahi, M. A. (2010), Teaching Styles and Optimal Guidance in English Language Major. *Quarterly Journal of Research and Planning in Higher Education*, 55, pp: 251- 31 1.

Kautz, D. D., Kuiper R. A., Pesut D. J., Knight-Brown P. & Daneker D. (2005). Promoting Clinical Reasoning in Undergraduate Nursing Students: Application and Evaluation of the Outcome Present State Test (OPT) Model of Clinical Reasoning. *International Journal of Nursing Education Scholarship,* 2(1):1-19

Koharchk, L. Caput, L, Robb, M & Culleiton, A (2015). Fostering clinical reasoning in nursing students.*american Journal of Nursing, 115(1): 58-61.*

Khanyile, T. & Mfidi, F. (2005).The effect of curricula approaches to the development of the student's clinical reasoning ability. *Curationis,* 28(2): 70-76

Khurshid, F. & Ansari, U., (2012). Effects of Innovative Teaching Strategies on Students' Performance. *Global Journal of Human Social Science Linguistics & Education,* 12 (1):1-10

Kim S., Phillips W.R., Pinsky L., Brock D., Phillips K., Keary J.A. (2006). Conceptual framework for developing teaching cases: a review and synthesis of the literature across disciplines. *Medical Education*, 40: 867–876

Kostovich, C. T., Poradzisz, M., Wood, K., & O'Brien, K. L. (2007). Learning style preference and student aptitude for concept maps. *Journal of Nursing Education,* 46(5): 225-231

Knight, J.K. , & Wood, W.B. (2005). Teaching more by lecturing less. *Cell Biology Education* 4(4): 298-310.

Kuchinskas, G. (1979). Whose cognitive style makes the difference? *Educational Leadership*, 36(4): 269-271.

Kuiper J.C. & Clemens D.L. (1998). Do I dare? Using role-play as a teaching strategy. *Journal of Psychosocial Nursing and mental health Service* : 36 (7): 12-17

Kuiper, R., Pesut, D. & Krautz, D. (2009). Promoting the self-regulation of Clinical Reasoning Skills in nursing students. *The Open Nursing Journal, 3*, 76- 85.

Lee, C.J. & Lamp, J.K. (2003). The use of humor and role- playing in reinforcing key concepts. Nurse educator, 28(2):61-62.

Letele, M.J. Alexander, G. & Swanepoel, Z.I. (2013). Matching/Mismatching of teaching and
learning styles in rural Learning ecologies of Lesotho: Does it enhance academic achievement. Journal of Human Ecology, 4 (3),263-273.

Levett-Jones, T., Hoffman, K. Dempsey, Y. Jeong, S., Noble, D., Norton, C., Roche, J., & Hickey, N. (2010). The 'five rights' of clinical reasoning: an educational model to enhance nursing students' ability to identify and manage clinically 'at risk' patients. *Nurse Education Today*. 30 (6), 515-520.

Limbach, B., & Waugh, W. (2010). Developing higher level of thinking. *Journal of Instructional Pedagogies*, 3, 1-9.

Lincoln & Guba (1985) as cited in Polit, B., & Beck, C. (2008). *Essentials of Nursing Research: Methods, Appraisal and Utilization* (7th ed.). Philadelphia: Lippincott Williams and Wilkins

Lucas, S. B. (2005). Who am I? The Influence of Teacher Beliefs on the Incorporation of Instructional Technology by Higher Education Faculty; Doctoral Dissertation, University of Alabama

Mahboobeh, K., Kh T., & Alavi M. (2007). Comparition of Two Educational Methods of Lecture and Group Discussion on Learning and Reminding of Nursing Students. *Scientific Journal of Hamadan Nursing & Midwifery Faculty*, 2, 15-19.

Malawi Government. The nurses and midwives council of Malawi, Act. NO.16 of 1995 Zomba: Government Press.

Matveev, A. V., & Milner, R. G. (2010). An implementation of active learning: Assessing the effectiveness of the team infomercial assignment. *Innovations in Education and Teaching International,* 47, 201-213

McLean M. & Gibbs T.J. (2009) Learner-centered medical education: improved learning or increased stress? *Educational Health (Abingdon,* 22 (3):287

McNelis, A.M & Ironside, P.M. (2009). National survey on clinical education in pre-licensure Nursing education programmes. *Clinical nursing education: Current reflections. New York National league of nursing.*

Medley, C. F., & Horne, C. (2005). Using simulation technology for undergraduate nursing education. *Journal of Nursing Education*, 44(1): 31-34.

Miertová, M. & Lepiešová, M. (2013). Innovative teaching methods in the professional training of nurses – Simulation education. *Mefanet Journal*; 1(2): 55–60

Montegomery, S.M. & Groat, L.N. (1998). Student learning styles and their implications for teaching. *The Centre for Research on Learning and Teaching Occasional paper No 10*

Moore-West, M., Harrington, D. L., Mennin, S. P., Kaufman, A., & Skipper, B. J. (1989). Distress and Attitudes Towards the Learning Environment: Effects of a Curriculum Innovation. *Teaching and Learning in Medicine*, 1(3):151-157.

Nabors, K. (2012). Active learning strategies in classroom teaching practices of associate degree nurse educators in a Southern State. Degree Doctor of Education Theses. University of Alabama; Alabama.

Naimie Z., Siraj, S. Ahmed Abuzaid, R. &. Shagholi, R.(2010) Hypothesized learners' technology preferences based on Learning style dimensions. *The Turkish Online Journal of Educational Technology,* 9(4): 83-93

Neergaard**,** M.A., Olesen **,** F., Andersen R. S. & Sondergaard, **J. (**2009)**.** Qualitative description; the poor cousin of health research? *MC Medical Research Methodology* , 9 (52).

Neistadt, M. E., (1996). Teaching Strategies for the Development of Clinical Reasoning, *The American Journal of Occupational Therapy***,** 50**(**8**), 676-684 .**

Neistadt, M.E. (1998). Teaching Clinical Reasoning as a thinking frame. *American Journal of Occupational Therapy,* 52(3): 221-229.

Ogden, W.R. (2003).Reaching all the students: the feedback lecture. J. Instr. Psychol. 30 (1): 22–27

Onwuegbuzie, A.J., Dickson, W.B.,Leech, N.I. & Zoran, A.G. (2009). Qualitative framework for collecting and analyzing data in focus group research. *International Journal of Qualitative Methods*, 8(3):1-21.

O'Shea E.(2003). Self-directed learning in nurse education: a review of the literature. *Journal of Advanced Nursing*; 43:62-70.

Oyibe, O.A. & Nnamani, V.S.C. (2014). An Investigation into Students' Preference of Instructional Methods used in Teaching and Learning of Social Studies. *International Journal of Learning & Development*, 5 (1), 1-9.

Papastrat, K., & Wallace, S. (2003). Teaching baccalaureate nursing students to prevent medication errors using a problem-based learning approach. Journal of Nursing Education, 42(10), 459-464.

Pawson, E., Fournier, E., Haight, M., Muniz, O., Trafford, J. & Vajoczki, S. (2006). Problem based learning in geography, journal of geography in higher education . 30 (1), pp 103-116

Perna, J., (2011). Learning Styles and Their Effect on Student Learning. *Senior Honors Theses*. Paper 270. Eastern Michigan University; Michigan

Polit, B., & Beck, C. (2008). *Essentials of Nursing Research: Methods, Appraisal and Utilization* (7th Ed.). Philadelphia: Lippincott Williams and Wilkins.

Polit, D.F. & Beck, C.T. (2012). *Nursing research; Generating and Assessing Evidence for Nursing Practice*. 9th Ed. Philadelphia: Lippincott Williams & Wilkins.

Razak, N.A., Ahmad, F & Shah, P.M. (2007). Perceived and preferred teaching style (methods) of English Specific Purposes students. *Jurnale e- Bangi*, 2(2):1-20.

Rinaldi, C. & Gurung, R. (2008). Should teaching and learning styles match? *Journal of the scholarship of Teaching and Learning*, 1-8.

Ravkin, A. & Gim, S. (2013). Student preferences regarding teaching methods in a drug-induced diseases and clinical Toxology course. *American Journal of Pharmaceutical Education*, 77 (6), 213.

Rubin, L & Helbert, G. (1998). Model for active learning: Collaborative peer teaching. college teaching, 46 (1),26-31.

Rusch, L.M. (2013). Exploring Baccalaureate Nursing students' experiences with clinical preparation, clinical reasoning and decision making. doctoral dissertation. Villanova university college of Nursing.

Russell, A.T., Comello, R.J. & Lee Wright, D (2007). Teaching strategies promoting active learning in health care education. *Journal of Education and Human Development,* 1(1).

Ryan G. W. & Bernard H. R (2003) Techniques to Identify Themes: Field Methods, 15(1) :85–109 retrieved from http://www. nersp.osg.ufl.edu/~ufruss/documents/ryan accessed on 13/03/15.

Salsali, M. (2005). Effective Teaching. *BMC Medical Education*, 5: 29

Sandelowski, M. (2000)Focus on Research Methods Whatever Happened to Qualitative Description? *Research in Nursing & Health,* 23, 334±340

Sandstrom, S. (2006). Use of case studies to teach diabetes and other chronic illnesses to nursing students. Journal of Nursing Education, 45(6), 229-232.

Sayre, E. (2013). Integrating student centered learning to promote critical thinking in high school social studies classrooms. Theses for Honors in Social Science Education. University of Central Florida; Florida.

Scaffa, M. E., & Wooster, D. M. (2004). Brief Report—Effects of Problem-Based Learning on Clinical Reasoning in Occupational Therapy. *American Journal of Occupational Therapy,* 58:333–336.

Schaefer K.M. & Zygmont D. (2003) Analyzing the Teaching Style of Nursing Faculty: Does It Promote a Student-Centered or Teacher-Centered Learning Environment? *Nursing Education Perspectives*, 24(5): pp. 238-245.

Schön, D.A. (1983). *Reflective Practitioner*. New York. Basic Books. Senita, J.

(2008).The use of concept maps to evaluate critical thinking in the clinical setting. *Teaching and Learning in Nursing* 3, 6–10

Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects *Education for Information* 22: 63–75

Shin, I., & Kim, J. (2013). The effect of Problem- based learning in nursing education: meta analysis. *Advances in Health Sciences Education,* 18 (5): 1103-1120

Seybert,A.L., Kobulinsky, L.R., & McKaveney, T.P (2008). Human patient simulation in a pharmacotherapy course. *American Journal of Pharmacotherapy Education,*72(2):37

Simmons, B. (2010). Clinical Reasoning Concept Analysis. *Journal of Advanced Nursing* 66 (5): 1151–1158.

Sprawls, P. (2002).Teaching the physics of medical imaging. *Radiologic Science Education*, 7(1): 8-13.

Stanford, A.G. (2014). The effects of teachers "teaching styles and experience on elementary students" mathematical achievement. Doctor of Education Degree Dissertation Liberty University, Lynchburg.

Stein, S.M., Fugisaki, B.S. & Davis, S.E. (2011). What does effective teaching look like? Profession-Centric Perceptions of Effective teaching in Pharmacy and Nursing Education. *Health and Interprofessional Practice,* 1(1): eP1003/1-eP1003/14

Sternberg, R.J. (1997). Thinking styles. New York. Cambridge. University press

Stitt-Gohdes, W.L. (2001). Business Education Students. Preferred Learning Styles and Their Teachers. Preferred Instructional Styles: Do They Match? *Delta Pi Epsilon Journal*, 43(3): pp. 137-151.

Subasinghe S D L P & Wanniachchi D N (2003).Approach to learning and the academic performance of a group of medical students – any correlation? Accessed on 12/08/15 from www.med.cmb.ac.lk/.../Page%205-10%20-%20**Approach**

Schumacher, P., & Kennedy, K. T. (2008). Lessons learned concerning a student centered teaching style by university mathematics professors from secondary school educators. *Education*, 129(1), 102-109.

Stewart, K. (2006). Analysing focus group data. SAGE Research Methods. Accessed on 02/09/15 from www.sagepub.com/../1007_Chapter_7.pdf .

Tahereh, S Leili, S. Shahnaz, M., Hossein A. M., & Hassan, D.M. (2007). Comparing the Effects of Lecture and Work in Small Groups on Nursing Students' Skills in Calculating Medication dosage, *Iranian Journal of Medical Education,*7(1), 79-84.

Tanner, C. (2006). Thinking like a nurse: A research –based model of clinical judgement in nursing. *Journal of Nursing Education*, 45(6): 204-211.

Thomas, M. D., O'Connor, F. W., Alber, M.L., Boutain, D., & Brandt, P. A. (2001). Case-based teaching and learning experiences. *Issues in Mental Health Nursing,* 22, 517-531.

Thompson, C., Cullum, N. McCaughan, D. Sheldon, T. & Raynor, P. (2004). Nurses information use, and clinical decision making—the real world potential for evidence-based decisions in nursing *Evidence Based Nursing,* 7 :68-72

Taylor, J., & Wros, P. (2007). Concept mapping: A nursing model for care planning. *Journal of Nursing Education,* 46(5):211-216.

Tiwari, A., Lai, P., So, M., & Yuen, K. (2006). Comparison of the effects of problembased learning and lecturing on the development of students' critical thinking. *Medical Education,* 40, 547-554.

Tomey, A. (2003). Learning with cases. *Journal of Continuing Education,* 34(1)34-38.

Tynjälä, P., Salminen, R. T., Sutela, T., Nuutinen, A., & Pitkänen, S. (2005). Factors related to study success in engineering education. *European Journal of Engineering Education,* 30(2), 221-231.

UNESCO (1996). Report of the International Commission on Education for the Twenty-First Century

Uzuntiryaki, E. (2007) Learning Styles and High School students chemistry achievements. *Science education international,* 18(1):25-37

Vanderstoep, S. W., Pintrich, P. R., & Fagerlin, A. (1996). Disciplinary differences in selfregulated learning in college students. *Contemporary Educational Psychology,* 21, 345-362.

Vaughn, L. & Baker, R. (2001) Teaching in the medical setting: balancing teaching styles, learning styles and teaching methods. *Medical Teacher,* 23(6): 610-612.

Vaughn, L. M. & Baker, R. C. (2008). Do Different Pairings of Teaching Styles and Learning Styles Make a Difference? Preceptor and Resident Perceptions. *Teaching and Learning in Medicine,* 20 (3): 239-247.

Vermunt, J. D., & Vermetten, Y. J. (2004). Patterns in student learning: Relationships between learning strategies, conceptions of learning, and learning orientations. *Educational Psychology Review,* 16, 359-384.

Vincent, A. & Ross, D. (2001). Personalized Training: Determine Learning Styles, personality Types and Multiple Intelligence Online. *The Learning Organization*, 8(1), 36-43.

Wheeler, L. A., & Collins, S. K. R. (2003). The influence of concept mapping on critical thinking in baccalaureate nursing students. *Journal of Professional Nursing*, 19(6), 339-346.

Wilson, M. L. (2011). Students' learning style preferences and teachers' instructional strategies: correlations between matched styles and academic achievement. Doctoral Dissertation, Liberty University, Lynchburg.

Wolters, C. A., & Pintrich, P. R. (1998). Contextual differences in student motivation and self-regulated learning in mathematics, English, and Social Studies classrooms. *Instructional Science*, 26(1/2), 27-47.

Wood, L. & Haber, J. (2006). Nursing Research: Methods, Critical Appraisal, and Utilization. Mosby Inc. Missouri.

Yoo, M. S., & Yoo, Y. (2003). The effectiveness of standardized patients as a teaching method for nursing fundamentals. Journal of Nursing Education, 42(10), 444-448

Yilmaz-Soylu, M & Akkoyunlu, B. (2009). The effect of learning styles on achievement in different learning environments. *The Turkish Online Journal of Education Technology*, 8(1):43-50.

Zimmerman, B.J. (2002). Becoming a self – regulated learner. *Theory into practice*, 41(2), 65-70.

Zusho, A., Pintrinch, P.R., & Coppola, B. (2003). Skill and will: The role of motivation and cognition in the learning of college chemistry. *International Journal of Science Education,* 25, 1081-1094

Zuzovsky, R. (2003) Teachers' qualifications and their impact on student achievement: Findings from TIMSS 2003 data for Israel. Retrieved from http://www.ierinstitute.org/fileadmin/Documents/IERI_Monograph/IERI Accessed on 17/11/15

Appendices

Appendix 1: Information sheet for nurse educator

Study title: Assessing the promotion of clinical reasoning in classroom teaching among nursing midwifery technician students at St. Joseph's College of nursing"

I am Mtinkheni Wezi Bonyonga, a student at Kamuzu College of nursing pursing a master degree in nursing education. I am carrying out a research titled "Assessing the promotion of clinical reasoning in classroom teaching among nursing midwifery technician students" The study is in partial fulfillment of my Masters in Nursing and Midwifery Education. The study will involve an investigation by the administration of a questionnaire to explore nurse educators ideal teaching styles and an in- depth face to face individual interviews with the nurse educators. The study has been approved by the College of Medicine Research Ethics Committee. Before making a decision to participate in the study it is very important that you understand the reason for conducting the study and what will be involved.

What is the purpose of the study?

The purpose of this study is to determine how clinical reasoning is promoted among student nursing midwifery technicians in classroom teaching at St. Joseph's College of Nursing focusing on teaching and learning approaches. It is hoped that the findings of this study will contribute towards the improvement in the preparation of student nurses for practice and their ability to function as nursing midwifery technicians. Furthermore the findings may provide evidence for curriculum review to incorporate teaching and learning approaches that enhance students learning and development of clinical reasoning.

Do you have to take part?

Your participation in this study is voluntary. You have the right to refuse to participate or withdraw at any point you feel you cannot continue to participate in this study and there is no penalty for that. It will not even have effect on your relationship with the college.

What will be expected of you during this study?

If you decide to participate in this study, you will be asked to write your responses on a questionnaire that you will be given and to be interviewed. The questionnaire is on teaching styles and has 40 items which will take you about one hour to answer. You will be required to respond to the questions as frankly as possible. The interviews will take between 45 minutes to one hour and will be tape recorded. Interview session will be tape recorded upon your consent.

How will your privacy be maintained?

To ensure confidentiality and anonymity, your name will not appear on the data collection instruments; all the information will be number coded. The interviews will be conducted in a private place. Please be assured that your responses will be used for research purposes only and all the information collected for the study will be kept in strictest confidence. The researcher and her supervisor will be the only persons who involved in the handling of all the collected information in this study. Be assured that you will not be identifiable at all during and after the study or in any reports that may be published.

What are the possible benefits of participating?

There are no direct personal benefits for you as a participant in the study. However, the results may contribute to the improvement of the quality of client care in Malawi.

What are the possible risks of participating?

There are no known risks associated with the study.

Who can you contact if you have any questions about the study?

If you have any questions or you wish to have more information about this study please feel free to contact;

Mtinkheni Wezi Bonyonga, Kamuzu College of Nursing, Private Bag 1, Lilongwe. Phone: 0888366919

Dr. Evelyn Chilemba, Kamuzu College of Nursing, Private Bag 1, Lilongwe. Phone: 01 751 622/600 or 0999257746

The Secretariat, COMREC, P.O Box 36, Chichiri Blantyre 3. Tel. 01877245

Appendix 2: Consent form for nurse educators

Before signing the consent form make sure that you have read and understood all the information in the Information Letter.

I, _____, agree to participate in the above study to be conducted

by Mtinkheni Wezi Bonyonga. I have read and understood the details of the study procedure. I also understand that my participation in this study is voluntary and that I am free to refuse to participate or withdraw my consent and discontinue my participation in the study without an effect on my relationship with the college. I have also understood that the data collected in this study will be kept confidentially by the researcher and will be accessed by the researcher and her supervisor only. I have understood that there are no direct benefits for me in participating. I have also been informed on who to contact if have any concerns about the study. All the questions I have asked have been answered to my satisfaction.

Participant's Signature: _____Date: _____

Researcher obtaining consent: _____Date:_____

Thank you for participating in this study

Appendix 3: Information sheet for student nurses

Study title: Assessing the promotion of clinical reasoning in classroom teaching among nursing midwifery technician students at St. Joseph's College of nursing"

I am Mtinkheni Wezi Bonyonga, a student at Kamuzu College of nursing pursing a master degree in nursing education. I am carrying out a research titled "Assessing the promotion of clinical reasoning in classroom teaching among nursing midwifery technician students" The study is in partial fulfillment of my Masters in Nursing and Midwifery Education. The study will involve an investigation by the administration of two sets of questionnaires to explore nursing midwifery technician students' ideal learning environment and self assessment of clinical reasoning; and a focus group discussion with the students. The study has been approved by the College of Medicine Research Ethics Committee. Before making a decision to participate in the study it is very important that you understand the reason for conducting the study and what will be involved.

What is the purpose of the study?

The purpose of this study is to determine how clinical reasoning is promoted among student nursing midwifery technicians in classroom teaching at St. Joseph's College of Nursing focusing on teaching and learning approaches. It is hoped that the findings of this study will contribute towards the improvement in the preparation of student nurses for practice and their ability to function as nursing midwifery technicians. Furthermore the findings may provide evidence for curriculum review to incorporate teaching and learning approaches that enhance students learning and development of clinical reasoning.

Do you have to take part?

Your participation in this study is voluntary. You have the right to refuse to participate or withdraw at any point you feel you cannot continue to participate in this study and there is no penalty for that. It will not even effect on your relationship with the college.

What will be expected of you during this study?

If you decide to participate in this study, you will be asked to write your responses on two sets questionnaires that you will be given and to be involved in a focus group. The questionnaires are on learning preferences and self assessment of clinical reasoning. The questionnaires have 34 and 26 items respectively which will take you about 45 to 60 minutes each answer. You will be required to respond to the questions as frankly as possible. The focus group discussions will take about hour and will be tape recorded. Focus group discussion sessions will be tape recorded upon your consent.

How will your privacy be maintained?

To ensure confidentiality and anonymity, your name will not appear on the data collection instruments; all the information will be number coded. The interviews will be conducted in a private place. Please be assured that your responses will be used for research purposes only and all the information collected for the study will be kept in strictest confidence. The researcher and her supervisor will be the only persons who involved in the handling of all the collected information in this study. Be assured that you will not be identifiable at all during and after the study or in any reports that may be published.

What are the possible benefits of participating?

There are no direct personal benefits for you as a participant in the study. However, the results may contribute to the improvement of the quality of client care in Malawi.

What are the possible risks of participating?

There are no known risks associated with the study.

Who can you contact if you have any questions about the study?

If you have any questions or you wish to have more information about this study please contact; Mtinkheni Wezi Bonyonga, Kamuzu College of Nursing, Private Bag 1, Lilongwe. Phone: 0888366919

Dr. Evelyn Chilemba, Kamuzu College of Nursing, Private Bag 1, Lilongwe. Phone: 01 751 622/600 or 0999257746

The Secretariat, COMREC, P.O Box 36, Chichiri Blantyre 3. Tel. 01877245

Appendix 4: Consent form for student nurses

Before signing the consent form make sure that you have read and understood all the information in the Information Letter.

I, _____, agree to participate in the above study to be conducted

by Mtinkheni Wezi Bonyonga. I have read and understood the details of the study procedure. I also understand that my participation in this study is voluntary and that I am free to refuse to participate or withdraw my consent and discontinue my participation in the study without an effect on my relationship with the college. I have also understood that the data collected in this study will be kept confidentially by the researcher and will be accessed by the researcher and her supervisor only. I have understood that there are no direct benefits for me in participating. I have also been informed on who to contact if have any concerns about the study. All the questions I have asked have been answered to my satisfaction.

Participant's Signature: __Date: _____

Researcher obtaining consent:_____Date:_____

Thank you for participating in this study

Appendix 5: Grasha teaching styles questionnaire for tutors

Introduction

The following is a Grasha – Reichmann teaching style questionnaire. Respond to each of the items below in terms of how you teach. Please try to answer as honestly and as objectively as you can. Resist the temptation to respond as you believe you should or ought to behave or in terms of what you believe is expected or proper thing to do.

Respond to the questions below by using the following rating scale:

1= strongly disagree; 2= moderately agree; 3= undecided; 4= moderately agree;

5=strongly agree

NO	ITEMS	RESPONSES				
1	Facts, concepts and principles are the most important things that students should acquire.					
2	I set high standard for students in this class.					
3	What I say and do models appropriate ways for students to think about issues in the content.					
4	My teaching goals and methods address a variety of student learning styles					
5	Students typically work on projects alone with little supervision from me.					
6	Sharing my knowledge and expertise with students is very important to me.					
7	I give students negative feedback when their performance is unsatisfactory					
8	Activities in this class encourage students to develop their own ideas about content issues.					
9	I spend time consulting with students on how to improve their work on individual and/or group projects.					
10	Activities in this class encourage students to develop their own ideas about content issues.					
11	What I have to say about a topic is important for students to acquire a broader perspective on the issue in that area.					
12	Students would describe my standards and expectations as somewhat strict and rigid					

NO	ITEMS	RESPONSES				
13	I typically show students how and what to do in order to master course content					
14	Small group discussions are employed to help students develop their ability to think critically.					
15	Students design one of more self-directed learning experiences					
16	I want students to leave this course well prepared for further work in this area.					
17	It is my responsibility to define what students must learn and how they should learn it.					
18	Examples from my personal experiences often are used to illustrate points about the material.					
19	I guide students' work on course projects by asking questions, exploring options, and suggesting alternative ways to do things.					
20	Developing the ability of students to think and work independently is an important goal					
21	Lecturing is a significant part of how I teach each of the class sessions.					
22	I provide very clear guidelines for how I want tasks completed in this course.					
23	I often show students how they can use various principles and concepts					
24	Course activities encourage students to take initiative and responsibility for their learning.					
25	Students take responsibility for teaching part of the class sessions.					
26	My expertise is typically used to resolve disagreements about content issues.					
27	This course has very specific goals and objectives that I want to accomplish					
28	Students receive frequent verbal and/or written comments on their performance.					
29	I solicit student advice about how and what to teach in this course.					
30	Students set their own pace for completing independent and/or group projects.					
31	Students might describe me as a "storehouse of knowledge" who dispenses the fact, principles, and concepts they need.					

No	ITEMS	RESPONSES				
32	My expectations for what I want students to do in this class are clearly defined in the syllabus.					
33	Eventually, many students begin to think like me about course content					
34	Students can make choices among activities in order to complete course requirements.					
35	My approach to teaching is similar to a manager of a work group who delegates tasks and responsibilities to subordinates.					
36	There is more material in this course than I have time available to cover it.					
37	My standards and expectations help students develop the discipline the need to learn.					
38	Students might describe me as a "coach" who works closely with someone to correct problems in how they think and behave.					
39	I give students a lot of personal support and encouragement to do well in this course.					
40	I assume the role of a resource person who is available to students whenever they need help.					

Thank you for participating

Appendix6: Moore and Fitch inventory of learning preferences (ILP)

Introduction

Each of us has an ideal learning environment. Think of how you learn best. Try not to focus on one particular course or one particular instructor.

Instructions

In this questionnaire, you are required to select **ONLY** 10 items out of the 34 items that best reflect your ideal or most preferred learning environment. Read all the items carefully.

Out of the 34 statements in this questionnaire, put a check mark (tick) in the column with * to only 10 statements that best describe your ideal learning environment.

Those statements that do not best describe your ideal learning environment leave them blank.

No	My Ideal Learning Environment	*
1	Would be where the lecture provides assignments with practical everyday applications.	
2	Would have the lecturer give me all the theory and information I need to know.	
3	Would be where I would have a lot of control over the course content and class discussion.	
4	Would be where I take effective notes on what is presented in class and reproduce that information on tests.	
5	Would emphasize class discussion but I would expect the lecturer to tell us the right answer.	
6	Would be where I have my own opinions and I can think for myself.	
7	Include grading that is by a pre-arranged point system (for homework, tests, final) since I think that is most fair.	
8	Would include straightforward, not `tricky' tests, covering only what has been taught and nothing else	
9	Would let me learn on my own because I hate being spoon-fed by lecturers.	
10	Would be where the lecturer doesn't tell me the answers; rather he/she shows me how to find the answers for myself.	

No	MY IDEAL LEARNING ENVIRONMENT	*
11	Would provide a flexible class where I can explore independent learning options.	
12	Is where my opinion counts, but I have to support it with factual evidence.	
13	Would be where the professor is an expert who knows all the answers.	
14	Would provide experiences and material that is relevant to what I need to know.	
15	Would be where the learning is a mutual / shared experience where I contribute to the teaching and learning in class.	
16	Would have the focus on having the right answers rather than on discussing methods on how to solve the problems.	
17	Would value my classmates as sources of information, not only as companions	
18	Would reward me with high grades for independent thought	
19	Would be where the lecturer provides me with clear directions and guidance for all course activities and assignments.	
20	Would take learning seriously and be where I feel personally motivated to learn the subject.	
21	Would reward me the good grades when I worked hard to learn the material.	
22	Would provide me with a lecturer who is a source of expertise only in a particular subject area	
23	Would let me learn from my classmates and peers	
24	Would provide a classroom atmosphere of exploring and debating new ideas	
25	Would encourage me to learn using lots of different learning methods.	
26	Would allow peers the right to have their own opinions.	

No	My ideal learning environment	*
27	Would include exams and assessment as part of the learning process	
28	Would be lectures since I can get the information I need to know most efficiently	
29	Would have the lecturer who is not just an instructor, but more an explainer, entertainer and friend	
30	Would be a 'free-flowing' class that does not follow a strict outline	
31	Would provide a workshop or seminar atmosphere so that we can exchange ideas and evaluate our own perspectives on the subject matter.	
32	Would provide a relaxed atmosphere where discussion is encouraged.	
33	Would be where I could listen attentively to the lecturer and not to classmates and peers for answers to questions.	
34	Would be where I can make connections among various subject areas and am encouraged to construct an adequate argument.	

Thank you for participating

Appendix 7: Self-Assessment of Clinical Reflection and Reasoning (SACRR)

Code ---------- Date of interview----------

Demographic Data

Instructions: tick what is applicable to you

Sex

Your age in years: tick the appropriate column

18- 21 years	
22-25 years	
26-28 years	
29-31 years	
32-35 years	
36 and above	

Introduction

This questionnaire has questions on how you can assess your ability to reason after undergoing the teaching and learning processes. It is very important that you answer each question as honestly as you can.

Response key: The letters in the responses column stand for the following

1 = strongly disagree (SD)
2 = disagree (D)
3= undecided (U)
4= agree (A)
5= strongly agree (SA)

No	Item	Responses				
		SD	D	U	A	SA
1	I question how, what and why I do things in practice.					
2	I ask myself and others questions as of learning.					
3	I don't make judgements until I have sufficient data.					
4	Prior to acting, I seek various solutions.					
5	Regarding the outcome of proposed interventions, I try to keep an open mind.					
6	I think in terms of comparing and contrasting Information About a client's problems and proposed solutions to them.					
7	I look to theory for understanding a client's problems and proposed solutions to them					
8	I look to frames of reference for planning my intervention strategy					
9	I use theory to understand treatment or management techniques.					
10	I try to understand clinical problems by using a variety of frames of reference					
11	When there is conflicting information about a clinical problem, I identify assumptions underlying the differing views.					
12	When planning intervention strategies, I ask "What If" of a variety of options					
13	I ask for colleagues' ideas and viewpoints.					
14	I ask for the viewpoints of clients' family members.					
15	I cope well with change.					
16	I can function with uncertainty.					

No	Items	Responses				
		DS	D	U	A	SA
17	I regularly hypothesize about the reasons for my client's problems					
18	I must validate clinical hypotheses through my own experience.					
19	I clearly identify the clinical problems before planning intervention.					
20	I anticipate the sequence of event likely to result from planned intervention.					
21	Regarding a proposed intervention strategy, I think, "What makes it work?"					
22	Regarding a proposed intervention, I ask, "In what context/ situation would it work?"					
23	Regarding a particular intervention with a particular client, I determine whether it worked.					
24	I use clinical protocols for most of my treatment.					
25	I make decisions about practice based on my experience					
26	I use theory to understand intervention strategies.					

Thank you for participating

Appendix 8:Interview questions for nurse educators

Introduction

As I explained during our first contact as regards to the study on promoting clinical reasoning skill among the student NMTs, may you please answer the following questions as honestly as possible.

1. As a tutor at this college, what is your classroom teaching experience?
   Probes:

   The teaching methods/approaches used
   Students' learning styles/approaches
   Promotion of clinical reasoning

2. What teaching strategies do you prefer when teaching students in class?
   Probes:

Lecture	Simulation/Role play
Interactive lecture	Discussion
Problem based learning	Concept map
Cases study	Reflection

3. What makes you choose the particular strategies?
   Probes:
   Student numbers
   Promoting thinking and reasoning

4. How do you promote clinical reasoning in your teaching?

5. What challenges do you experience with teaching student NMTs?

6. What suggestions do you have on promotion of clinical reasoning skills the students

Appendix 9: Questions for focus group discussion with student nurses

Introduction

As I explained during our first contact as regards to the study on promoting clinical reasoning skill among the student NMTs, may you please answer the following questions as honestly as possible.

1. How do you perceive your educational preparation in relation to practice?
   Probe
   Readiness to take your role as NMTs
   Integration of theory to practice
   Clinical reasoning skills
2. How do you perceive your own learning in this NMT program you are pursuing?
   Probe
   The content taught
   The teaching
   Clinical reasoning and decision making
3. How does the teaching promote your ability to reasoning
4. What is your perception on the nature of classroom teaching in relation to development of CR skills during this training?

   Probe
   Integration of theory to practice
   Teaching strategies/approaches
5. How do you perceive the classroom assessments your training programme?
   Probe

   Clinical reasoning skill development
6. Do you have any suggestions as regards to promotion of clinical reasoning?

Appendix 10: Acceptance letter from Holy family College of Nursing for pilot study

HOLY FAMILY COLLEGE OF NURSING

Telphone 0111940376 P.O Box 51224,

Email holynursing@gmail.com Limbe.

2nd October, 2014

Mrs. Mtinkheni Bonyonga

Kamuzu College of Nursing

Private Bag 1

LILONGWE

Dear Madam

PERMISSION TO CONDUCT PILOT STUDY ON "ASSESSING THE PROMOTION OF CLINICAL REASONING SKILLS AMONG NURSING MIDWIFERY TECHNICIAN STUDENTS IN CLASSROOM LEARNING"

This letter serves to confirm that Mrs. Mtinkheni Wezzie Bonyonga has been granted permission to conduct a pilot study on "Assessing the Promotion of Clinical Reasoning Skills among Nursing Midwifery Technician Students in Classroom Learning" at Holy Family College of Nursing and Midwifery for her thesis fulfillment of her Msc. Degree in Nursing and Midwifery Education from Kamuzu College of Nursing.

For further information please contact the college principal on 0882822624/0996110414/0111940376 or email holynursing@gmail.com.

Yours sincerely

THE PRINCIPAL
HOLY FAMILY COLLEGE OF NURSING
01 OCT 2014
P.O. BOX 51224
LIMBE

SR. E. KAMBALAME

COLLEGE PRINCIPAL

Appendix 11: Response from St. Joseph's College of Nursing

ST. JOSEPH'S COLLEGE OF NURSING & MIDWIFERY
P.O Box 5505
LIMBE, MALAWI, CENTRAL AFRICA
EMAIL:stjosephn@yahoo.com
TEL :(265) 0111 621 742/0111 621 209
CEL :(265) 0888 574 993/0999 669 207

19th August, 2014

To : Mrs M. Bonyonga
Kamuzu College of Nursing
P/Bag 1
Lilongwe

Cc : The Dean of Faculty,
St Joseph's College of Nursing,

Dear Madam,

RE: REQUEST TO CONDUCT A STUDY ON: "ASSESING THE PROMOTION OF CLINICAL REASONING AMONG NURSING MIDWIFERY TECHNICIAN STUDENTS"

Reference is made to your letter dated 18th August 2014, on the above subject. I am pleased to inform you that College Management has accepted your request. By copy of this letter, the Dean of Faculty is authorised to assist you with the information you may need to facilitate your study.

If any changes, please notify the college as soon as possible. We wish you well in your studies. It is the Colleges' hope that the results will be communicated in time so that we can have an evidence based practice in the way we conduct our clinical teaching. It is also hoped that the results will assist to improve the quality of care which our graduates provide.

Yours faithfully

ST. JOSEPH'S COLLEGE OF NURSING
THE PRINCIPAL
2014 -08- 19
SIGN:
P.O. BOX 5505, LIMBE

Roselyn Kalawa **(College Principal)**

All communications should be addressed to the Principal

Appendix 12: Letter of permission to use the Inventory for Learning environment

Preference (ILP) from Fitch and Moore

wsmoore51@comcast.net

To
Mtinkheni,

Sep 9 at 5:04 PM

You have my permission to use the instrument and I have attached a copy. After you have collected your data contact me and I will send you a file with instructions for submitting the data for scoring. Good luck with your research!
Bill

William S. Moore, Ph.D.
Center for the Study of Intellectual Development
1505 Farwell Ct. NW
Olympia, WA 98502
wsmoore51@comcast.net 360-528-1809

Appendix 11: COMREC certificate of ethics approval

CERTIFICATE OF ETHICS APPROVAL

This is to certify that the College of Medicine Research and Ethics Committee (COMREC) has reviewed and approved a study entitled:

P.10/14/1643 – Assessing the promotion of clinical reasoning in classroom teaching among nursing midwifery technician students at St. Joseph's college of nursing version 2 dated January 2015 by Mtinkheni Wezi Bonyonga

On 5th February 2015

As you proceed with the implementation of your study, we would like you to adhere to international ethical guidelines, national guidelines and all requirements by COMREC as indicated on the next page

Approved by
College of Medicine
05 FEB 2015
(COMREC)

05/02/15

Dr. V. Mwapasa - Chairperson (COMREC)

Date