

2016

Knowledge Development in Undergraduate Clinical Nursing Education

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Knowledge Development in Undergraduate Clinical Nursing Education

A Dissertation Presented

By

NANCY A. CRAIG-WILLIAMS

Submitted to the Graduate School of the
University of Massachusetts in partial fulfillment

Of the requirements for the degree of

DOCTOR OF PHILOSOPHY

February 2016

College of Nursing

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NANCY A. CRAIG-WILLIAMS

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DEDICATION

To my wonderful husband, John and children, Tanner and Callie, and
my Mom, Sally Craig,
for their unwavering love and support in this long and fulfilling journey of life
and to the wonderful additions,
Westley, the apple of my eye, and Mike and Amanda
who add to the enjoyment!

ACKNOWLEDGEMENTS

I would like to thank my chair, Ginny Chandler for her willingness to support this project during good times and bad and her encouragement to continue 'bird by bird'. I appreciate your including me in your projects and class to help support the research. Many thanks to my long time colleague and committee member, Joan Roche for her many suggestions and support, and meetings at Starbucks which boosted my confidence and urged me forward. Your friendship has been invaluable. Thank you to my committee member, Sally Campbell Galman for her perspective as a qualitative researcher, your creativity has been inspiring.

A special thank you to my brother Dr. John D. Craig, for his positive suggestions and support!!

A special thank you to the nursing students who participated in this study and to all the students I have had the privilege to teach and support in their journeys.

I would like to thank my colleague in this process of doctoral education, Clare Lamontagne, for her many years of support throughout our years in this endeavor.

I wish to share my appreciation to all those colleagues and friends who have been vital to my continuing to move forward and finish. A special thank you to Liz Theroux for her help and support.

ABSTRACT

KNOWLEDGE DEVELOPMENT OF UNDERGRADUATE NURSING STUDENTS

FEBRUARY 2016

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The changes in the healthcare environment, safety concerns of the practice setting and patient acuity has supported reform and research to identify areas for improvement (IOM, 2001, 2003). The Carnegie Foundation's *Educating Nurses, A Call for Radical Transformation* (Benner, P., Sutphen, M., Leonard, V. & Day, L., 2010) explored the state of American nursing education. Among the findings are: patient safety issues, higher patient acuity, the increased complexity of nurse's work, shortages of nursing faculty and clinical learning sites, the current and predicted shortages of registered nurses, and the chaotic, fragmented hospital work environment. The call to action is to improve patient care through transforming the education of undergraduate nursing students.

This study is a qualitative exploration of how nursing students develop practice knowledge in their undergraduate clinical experience. Clinical practice knowledge development is explored using the epistemological concepts of the discipline of nursing-empirics, aesthetics, ethics and personal knowing as described by Carper (1978), unknowing by Munhall (1984) and sociopolitical knowing as described by White (1995).

The study utilized individual interviews exploring the learning processes of developing nursing practice knowledge by undergraduate baccalaureate nursing students from UMASS at Amherst who have had clinical experiences in both a Dedicated Education Unit (DEU) and non-DEU clinical settings.

Change in the education of nurses must be guided by research to support best practices. Clinical education is a crucial aspect of the practice development of student nurses. The development of nursing knowledge comes together in a model of Synergistic Clinical Education, incorporating the identified attributes supporting learning: the student, learning environments and relationships. This study supports the utilization of Dedicated Education Units as a clinical education model providing an optimal learning environment in which the development of nursing knowledge and clinical practice is more likely to happen than in any other clinical experience setting.

Keywords: knowledge development, nursing students, clinical learning

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CHAPTER I

STUDY

The purpose of this study is to explore undergraduate baccalaureate nursing students' nursing knowledge development during their clinical learning experiences in a dedicated education unit (DEU) and in traditional clinical environments.

Operative Definitions

Definitions for the purpose of this study are:

Non-Dedicated Education Unit (Non-DEU) - Any clinical learning environment designated by the curriculum which is not a DEU.

Dedicated Education Unit (DEU) – is “a pre-existing clinical unit, such as a ward in a hospital or community health programme that is collaboratively developed to provide practical experience for students” (Ranse and Grealish, 2007. p. 172).

Nursing Student- a current student in an undergraduate baccalaureate nursing program

Aims

1. To explore undergraduate nursing students' development of nursing knowledge in the clinical experience.
2. To describe the processes of clinical knowledge development by undergraduate nursing students in a purposely constructed learning environment (DEU) and in traditional clinical learning environments

Questions

1. What is the experience of undergraduate baccalaureate nursing students' developing knowledge into their practice during their clinical learning in a Dedicated Education Unit?
2. What is the experience of undergraduate baccalaureate nursing students' development of nursing knowledge in a clinical learning environment that is not a Dedicated Education Unit?
3. What is the experience of undergraduate baccalaureate nursing students' development of nursing knowledge based on the epistemology of nursing, specifically as described by Carper (1984), Munhall (1993) and White (1995).

Background and Significance

The nursing profession, in concert with the healthcare community, is experiencing changes in the knowledge base, methods of care, economic concerns and delivery systems affecting the practice and delivery of nursing care and services. Expanding knowledge, use of computers and other technologies for diagnosis and treatment, as well as economic issues related to providing care for all, has affected the type and quality of care provided for patients (National League for Nursing, 2003, 2005; American Association of Colleges of Nursing, 1998; and Institute of Medicine, 2003, 2000). Thus, the charge of the nursing profession is to provide professional care defined by the profession to ensure patient safety. The practice of nursing in hospitals has evolved as the knowledge and technology of healthcare has advanced. Current hospital environments

are fraught with problems related to patient safety as noted by the Institute of Medicine's (IOM) reports -*To Err is Human* (2000), *Crossing the Quality Chasm* (2001), *Patient Safety: Achieving a new standard of care* (2004), and *Preventing Medication Errors* (2006). The concern for patient safety in an environment, which is committed to care, support human health and illness, is a mandate for all healthcare providers to explore possible ways to uphold and support safety concerns.

In response to this concern and the changing practice environment, the education and qualities of future nurses is currently in the forefront of both education and practice nursing groups (Benner, et al, 2010, National Academy of Sciences, 2010, AACN, 2010). Nursing is the largest group of healthcare providers in the hospital setting and is the first line of care and advocacy for patients committed to their care. The current concerns for patient safety should be paramount to the practice of nurses .

In nursing education, an expert panel of nurse leaders explored and developed competencies for the nurse of the future to support patient safety (Cronenwett, L., Sherwood, G., Barnsteiner, J., Disch, J., Johnson, J. Mitchell, P., Sullivan, DT., & Warren, J, 2007).) The group, Quality and Safety in Nursing Education (QSEN), describes the necessary educational needs and competencies for the nurse of the future. They recommend improving patient safety; it must begin with education of future nurses. Developing competency of nurses to provide safe and effective patient care must begin during the process of educating the student nurse, continue throughout from the initial undergraduate experience, and persist in their practice careers. The nursing competencies provide a framework to support specific knowledge, skills and attitudes necessary to

practice professional nursing. This expert panel has developed recommendations to education and service to explore what is necessary to support the process for educating nurses to these standards. The QSEN task force developed six competencies it deems necessary for pre-licensure education. Within these competencies (Patient Centered Care, Teamwork and Collaboration, Evidence-based Practice, Quality Improvement, Safety and Informatics) are the knowledge, skills and attitudes identified for adequate preparation of new nurse graduates (Cronenwett, et al, 2007). These competencies provide broad-based criteria to promote nursing graduates whom are both qualified and safe to practice in the current and future healthcare systems. The criteria do not specify how they are to be met and do not suggest how nursing education is to integrate them into the curriculum. As they are specific to support practice safety, the underlying premise is competency and nursing knowledge development is to happen during student's clinical experiences.

In the recent past, nursing research has concentrated on the development of the science and practice of nursing, but not in educating future nurses. Research and development of best practices in nursing education have taken a backseat to the development of the science and practice of nursing. Nursing education has supported the need to address these issues and is struggling to explore and develop the curriculum content necessary to address the competencies. The education of nurses has a many challenges to address these issues. The knowledge and experiences needed to develop acquisition of these competencies and the pedagogy to support this is in need of radical transformation (Benner, et al, 2010). Education of undergraduate nurses is often based on traditional educational practices and older nursing education research. Nurse educators are in search of new evidence on the best practices to support optimal learning of nursing

students to prepare them for the complex environment in the current and future nursing practice arenas. Recent research in nursing educational practices demonstrates a lack of evidence on what educational practices support optimal student learning. Nursing researchers outside of the United States (US) have taken the lead in the research and development of teaching and learning environments and educational practices in nursing. Their quantitative and qualitative research studies and innovations in educational practices in nursing have begun a process to support optimal learning of nursing students in their respective countries. The need for nursing research to provide evidence-based practices in education of students in the US supports this study.

CHAPTER II

LITERATURE REVIEW

Nursing Knowledge

There are many aspects in the discussion of nursing knowledge. A specific definition of nursing epistemology by Schultz and Meleis (1988) is “the study of how nurses come to know what they think they know, what exactly nurses do know, how nursing knowledge is structured and on what basis knowledge claims are made”(Schultz & Meleis 1988, p. 217). They further explain nursing knowledge particularly is reflected in the ideas presented in the practice, theories and research in nursing. Kim (2000) discusses the confusions in the discussion of nursing knowledge as the “ambiguity with which authors treat the differences between the knowledge possessed by individual practicing nurses and that of the discipline of nursing as a whole (p.3)”. She explains there is knowledge of the practitioner or ‘private knowledge’ and knowledge of the discipline’s scholars’ or ‘public knowledge’. She further explains “Confusion exists because often nursing scholars are both practitioner and scientists who contribute to the development of the public knowledge and at the same time are generators of their own private knowledge” (p. 3). Meleis (2007) states nursing has “accumulated much nursing knowledge” (p. 487) in the past 20-30 years and warns the profession needs to pay attention to our knowledge development or we will not progress in a manner or direction “we choose” (p. 487). It is not the intent of this research to explore all the particulars of the discussions of epistemology in nursing but to consider some of the accepted concepts

of the nature of nursing knowledge as described by Carper (1978), Munhall (1993), and White (1995).

Carper (1978) describes the nature of nursing knowledge as “empirics, aesthetics, personal knowledge, and ethics”. Carper describes these as: empirics—“the science of nursing” evidence based practice and nursing theory (p.221); aesthetics- “the art of nursing” perceiving and empathizing with the individual (p.224); personal knowledge- “the knowing, encountering and actualizing of the concrete individual self” (p.225); and ethics- the moral component- “right and wrong action in connection with the care and treatment of illness and the promotion of health” (p.226). Additional contributions to describe the nature of nursing knowledge are unknowing (Munhall, 1993), and sociopolitical knowing White (1995). Unknowing is described by Munhall as “knowing that one does not know something, that one does not understand someone who stand before them and perhaps this process does not fit into some pre-existing paradigm or theory” (Munhall, 1993, p.240). Sociopolitical knowing is defined by White as the “wherein...the context of the person...nursing as a practice profession, including both society’s understanding of nursing and nursing’s understanding of society and its politics” (White 1995, p. 255-6). The holistic aspect of integration of these concepts is an expectation of the practicing nurse. The practice of nursing frequently contains the definition or explanation “nursing is an art and a science”. Cognitive processes of developing empirical, ethical and sociopolitical knowledge necessary to achieve the holistic practice knowledge is often apparent to the student as the scholarly undertaking in the nursing curriculum of the biological and social sciences, and in the evidence based practice aspect of nursing science. The aesthetic or art of nursing and unknowing may

not be as visible to the student or clear as to how one is to acquire these as an essential aspect to the practice of nursing.

Development of nursing practice knowledge is identified by Benner (1984) as a facet of developing tacit knowledge or skilled action, in her landmark work *Novice to Expert*. This developmental process is the basis for practice knowledge development of the newly graduated nurse over a time to become an expert in practice. This developmental process has not been specifically explored in the early development of the student nurse. Tacit knowledge is acknowledged in the nursing literature as a developmental process of integration of all the aspects of nursing knowledge that informs the nurse to provide the direct care of patients. Tacit knowledge, described by Polanyi (1959), and cited by Benner (1984) for its relationship to acquiring nursing knowledge in expert practice, is not considered in the discussion of the acquisition of nursing knowledge by nursing students.. The relationship of the person and knowledge is what Polanyi calls 'skilled action'. Polanyi's premise is that empirical knowledge and personal knowing, participation of the individual through their senses in the integration of knowledge, is a truer description of knowledge. Tacit knowledge's four dimensions; *the functional, the phenomenal, the semantic and the ontological* have implications for the development of all the concepts which define nursing knowledge for educating nursing students.

Empirics

Carper (1978)'s definition of the empirical basis of nursing education includes "empirical knowledge specific to nursing" (p.222). Included in this are nursing science,

and what is “factual, descriptive and ultimately aimed at developing abstract and theoretical explanations. It is exemplary, discursively formulated and publicly verifiable” (p.223). Kim (2007) further explains the human practice science of nursing involves the “specific empirical constructs (health, illness, functioning, recovery and healthcare)” (p. 238). The empirics’ necessary to the development of nursing knowledge requires “scientific competence leading to explanations and structure, requiring replication and validation, and resulting in theories and models” (Meleis. 2007, p. 488). The research underpinning nursing science and nursing knowledge has been the focus of recent nursing research; this has supported the evidence based practice of nurses and provided guidelines for both students and nurses to guide best practice. The ever changing and expanding knowledge base of nursing science challenges nursing to continuously examine and refine its practices and build practice knowledge and lends itself to positivist scientific realm.

Personal Knowledge

Personal knowledge has varied explanations and controversies. Carper (1978) explains personal knowing as an aspect of interpersonal contact with the patient of knowing the self and actualizing this in the development of a therapeutic relationship with the patient. Therapeutic use of self in patient encounters through use of stories and genuineness of the nurse and reflection (Meleis, 2007) in addition to developing understanding of the nurse and patient’s subjective experiences and their meaning(Kim, 2000) expand the understanding of this pattern. Benner’s (1984) theory of expert practice and personal ways of knowing in nursing as a critical component of nursing practice

identifies intuition rather than personal knowledge as one of these components of knowing. Intuition as a personal way of knowing in which nurses' utilize to practice, has received mixed reactions from the nursing community as 'magical' knowledge gained without tangible evidence or as an interiorization of previous personal experiences. This inclusion has spurred many detractors, much of this based on the use of the word 'intuition' as a source of knowledge by expert nurses. Paley (1996) summarizes a debate by English (1993) and Darbyshire (1994) on concerns and inconsistencies in Benner's theory. His concern of the ambiguity of "intuitive judgment" and intuition as weaknesses in the process of acquiring nursing knowledge and in expert practice, considers intuition as difficult to define and distinguish from "prejudice, whim, habit or extrasensory perception"(Paley, p.666). Paley asks, "...how and why some people manage to acquire it while others, who have ostensibly similar experiences, do not?"(p.666). He considers the nature of intuition and learning to be intuitive, as concerns of the development of expert practice, and the philosophic discussion of the development of nursing knowledge and science. The philosophic discussion of intuition poses some interesting questions for the concept of intuition rather than the process of pattern recognition, another aspect of Benner's concepts. Paley discusses in passing, the chess analogy of novice chess players versus chess grandmasters as playing the game from different knowledge and performance positions. While the novice plays from the rules and an unknowing of the nuances of the game, the grandmaster as expert, plays from long association with the game and winning consistently, knowing the rules, process and nuances of tactics in their performance. The lesson for intuition in this case is that grandmasters become so, from winning as external to the internal nature of intuition (p.669-670). Nursing students as

'novice' practitioners know the frameworks related to patient care but not the nuances needed to become experienced, holistic practitioners. In support of intuition as personal knowing, Effken (2007) argues intuition is in fact, based on direct perception. She makes the argument that intuition has "an informational basis" (p. 187). Her philosophic premise is based on Gibson's theory of direct perception. Gibson, a perceptual psychologist, describes how one knows the world. Gibson's assumptions (in Effken, 2007) assert the information of the world comes through the senses and "is stored in memory where it is added to new sensory data to create meaning" (p. 192). This information or signals are specific to the receptors(person) but not the world; that information exists in the mind, but must be interpreted by the mind; and perception is dependent on some processing of the input of the mind. It is the person's perception of what something is and simultaneously perceives what it means to the person. It is his concept of affordances, ("opportunities for action that constrain organisms' subsequent behaviors" (p. 195)) which Gibson reconnected the "organism to the environment and perception to action' (p.195). Effken suggests the view of what intuition is, and it's acceptance in the nursing world is a debate of the quantitative versus qualitative view of the nurse. As direct perception, intuition is the "specific knowledge for action within the context of a particular clinical or administrative situation" (p. 198). The perception is situational, direct and objective, "because information specifies its source" (p. 199). Intuition is thus the compilation of direct interactions and sensory perceptions of the nurse in their interactions with patients over time, resulting in their ability to act in situations in a seamless manner based on prior practice experiences. Continuous interaction with patients in the clinical setting provides nursing students the opportunity

to develop intuition through direct interactions and sensory perceptions. This contributes to students' acquiring tacit knowledge noted by Polanyi and Benner but this does not contribute to personal knowledge as noted by Carper.

Perry (2000) discusses intuition as described by Benner and Tanner in her experience of 'knowing the patient'. She describes a process of co-creating with the patient the necessary knowledge for patient care, and includes time as supporting this process. The process of being with the patient over time includes the experiential aspect of the nurse and the interaction experience with the patient. She supports this process as intuitive understanding by the nurse (described by Ashburner, 1996, p.300) and is a 'useful metaphor for describing the personal ways of knowing' (Perry, p.142) posited by Carper (1978). Her connection of tacit knowledge to questions of the 'magical and mystical experiences' of intuition is closer to Meerabeau's (1992) more holistic ideas. Meerabeau, drawing on the work of Polanyi (1967) and Schon (1983), proposes the need for rules (or framework), tacit knowledge and in depth reflection as essential to the process of developing practice knowledge. This connection of tacit knowledge and intuition requires the nurse to reflect on the interaction process with the patient about their concerns and care needs through a specific context or framework in order to develop practice knowledge. This reflection by the nurse provides a basis for continuing to develop the knowledge necessary to provide patient care.

The pattern of personal knowing is a complex and requires development of interpersonal relationships and self knowing by the nurse. This process of relationship development requires the nurse to "actualize authentic personal relationships between

two persons...incorporating movement towards growth and development of human potential” (Carper, 1978).

Ethics

The moral component of nursing knowledge addresses the fundamental questions of right and wrong in the context of the patient and their healthcare. It encompasses obligation, principles and codes of law and conduct and understanding of philosophical principles. For the nurse the understanding of complex healthcare issues and examination of them through a framework of assessing values, beliefs and consequences to the patient, healthcare and society is a complex process. Nursing beliefs of independence, self determination and restoration of health are basic to the examination of moral dilemmas presented to the nurse in everyday practice (Carper, 1978).

Aesthetic knowledge

Aesthetic knowledge is described as the art of nursing, communication and patient interactions. Defining the concept of art is daunting, and its use in the discipline of nursing is varied, and as many nurse authors have suggested, nursing as an art has taken a back seat to the pursuit of the science of nursing. Definitions of art include:

Skill acquired by experience, study or observation; a branch of learning; an occupation requiring knowledge and skill; the conscious use of skill and creative imagination especially in the production of aesthetic objects (Merriam-Webster, 2002, p.64).

...a universal feature of human society inhibited only by the exigencies of life...a rare feature of society, confined perhaps to the post-medieval Western culture so that for instance when artifacts of other societies are displayed in Western museums

this generally involves imposing inappropriate categories and values on the material.(www.groveart.com).

To consider what art is and what is not art appears to be a perceptual event of the individual based on one's pleasure or displeasure in the moment one encounters art, as well as skill and knowledge attained over time. It is unclear to this writer if there is a non-art entity in the real or theoretical world, as art is all-encompassing of what is not science in the philosophic and academic realms, and the subjective interpretation of the objective presentation of the art.

Nursing identifies itself as an art and science. In its continued inquiry to define what this means, the idea of the art of nursing has been linked to the concept of aesthetics, another aspect of nursing knowledge, and the skill and practice of the nurse. The science has evolved into evidence-based practice, the research of best practices of nursing care interventions. The art of nursing (nursing as art or nursing art), has various interpretations and theories which have been explored and researched by many nurses attempting to define what this means (Nightingale 1859/1946, Appleton 1993, Johnson, 1994, Levassuer, 1999, 2002, Jenner 1997, Finfgeld-Connett, 2008, among others).

Nightingale wrote, "The art of nursing, as it is now practiced, seems to be expressively constituted to unmake what God had made disease to be, a reparative process" (Nightingale, 1859/1946, p.6) and continued to describe nursing as the greatest art of helping to put the person in the best position for the body to repair itself. Later Peplau (1988) posited nursing art as not identical to art forms

“but with elements in common with other art forms (It is) “...helping art with three major components: medium (care environment), process (nurse-patient relationship) and product (successful patient outcomes)” (p.9, 10).

Appleton(1994) describes the art of nursing as “ a way of being there in caring, the way of being- with in understanding caring, the way of creating opportunities for fullness of being through caring, transcendent togetherness and the context of caring”(p.892). The most referenced work in the discussion of nursing art is described by Johnson (1994). Her discussion included the grasping of meaning in patient encounters, establishing a meaningful connection with the patient, skillfully performing nursing activities, rationally determining an appropriate course of nursing action and morally conducting one’s nursing practice (1994). Jenner (1997) expresses a thoughtful summary of these ideas:

The art of nursing is the intentional creative use of self, based on both expertise and skill, to give to another emotion and meaning. This subjective process requires sensitivity, interpretation, active participation and imagination. (p.5)

Levassuer (2002) grounds the conceptual and theoretical in the pragmatic view of art as “helping a patient: connect and trust, through a hard time, see new possibilities and change and take charge” (p.14). Succinctly put by Price (2007) “the art of nursing: (is) communication and self expression” (2007).

A current addition to the discussion is the concept synthesis by Finfgeld-Connett (2008). The synthesis, a review of 59 English language narratives, provides a clearer understanding of the art of nursing. Finfgeld-Connett states, the concept “appears to be grounded in two types of knowledge: empirical and meta-physical” (p.383), formal knowledge of science and sensory awareness. She further acknowledges the values of holism, acceptance and comfort with others, respect and empowerment as being vital to

understanding the concept. The key attribute of nursing art is a core of relationship-centered practice based on trust, connection, reciprocity, meaning, caring behaviors, self knowledge, “awareness of the invisible, inaudible and untouchable”(p.384) and the openness in nurse to patient experiences in “interpersonal balance, harmony, rhythm, tone and unity”(p.384), and expert practice. Finfgeld-Connett (2008) comments:

The art of nursing is perceived to be a complicated undertaking that involves the temporal acquisition and synchronous use of empirical and metaphysical knowledge and values. Because of the time necessary to acquire the requisite knowledge and perfect one’s practice, the art of nursing is inferred to lie on a continuum. (p.385)

She acknowledges the discourse of nursing art, craft and aesthetics as an ongoing debate of Carper’s(1978) aesthetic ways of knowing; Chinn, Maeve & Bostick’s (1997) ontological shift from epistemology in which nursing is “focused on the execution of the corporal aspects of nursing art, vs. risk taking, creativity and relation-ship centered interpersonal sensitivity and intimacy”(p. 386); Johnson’s (1994b) sensory interpretation of art as meaning, skill, rationality and moral conduct; and Benner’s (1984, 1997, 2001) articulation of nursing art as connected to expert practice and in context with other nursing concepts. Finfgeld-Connett (2008) concedes these “speak to the challenges involved in trying to enhance the understanding of the art of nursing as a singular construct” (p.386).

The consensus of these esteemed nurses is that aesthetic knowing or art of nursing continues to be an elusive concept but it is integral to the practice of nursing. The artistic aspect of caring for, and being with, those who are in pain/ suffering or in need of health care, cannot inextricably be negated from the development of the nurse. The artful nurse

is an experienced practitioner of knowledge and skill in a sensory experience of interaction with the patient. In the education of the student, the knowledge and skill may be apparent in the course of their curriculum, is the art of nursing or esthetic knowledge as visible or acknowledged as an unspoken dimension of their development as a practitioner?

Unknowing

According to Munhall (1996), the assessment of the patient requires the student or nurse to UN-know the patient's subjective experience in order to support an authentic encounter. In this situation, the nurse or student must be aware of personal bias, prejudice, preconceptions, assumptions, and stereotypes in order to view the patient as a unique individual with particular worldviews and experiences. The development of tacit nursing knowledge may require students to 'unknow' aspects of personal tacit or intuitive knowledge as a process of their professional development. Tacit knowledge the student brings to the educational setting may hinder the interaction by making assumptions or 'knowing what was best for the patient' rather than interacting from an open and educated professional interaction.

Sociopolitical Knowing

White (1995) identified sociopolitical knowing as the 'context of nursing'. The context being the social and political world of the nurse, patient and the policy and cultural 'location of the healthcare experience frames the nurse and patient interaction in a larger world view. She states this framework for nurses to understand, become

involved and find the “intersections between the health-related interests of the public and nursing....in an increasingly economically driven world” (p.85-86).

Nursing Knowledge and Tacit Knowledge

The practice of nursing knowledge has been described as tacit knowledge or skilled action by the nurse in their performance of patient care. Tacit knowledge is an underlying premise of Dr. Patricia Benner in her early work (1979) and in the landmark work of *Novice to Expert* (1984). The development of nursing practice as a trajectory from the beginning of formal education to expert practice was the focus of these works. Her premise includes empirics and an evolutionary process of aesthetics culminating in the expert practice of care and healing by the professional nurse. The role of development of tacit knowledge and professional practice is explained in the process of professional development, most significantly in the post-formal education process, advanced beginner to expert practitioner. The nursing student, minimally addressed, is said to gain tacit knowledge from the study of empirics and clinical field experiences in their formal education. Benner, Tanner, Chelsea & Gordon (1987) speak of pattern recognition of signs and symptoms or cues from a patient about their condition. This continuous, ongoing process of the nurse’s observation of specific patient cues in a particular disease/disorder which when put together, forms an assessment of a change in their condition is a key to expert practice. The basis of nursing student education is to begin this process of assessing for specific patient cues in the framework of nursing process. What is missing is the art of focusing on the whole, and the observation and

discussion of the whole with experts, aspects of tacit knowledge acquisition described by Polanyi.

Tacit Knowledge

Tacit knowledge, grounded in Gestalt, is “...the outcome of an active shaping of experience performed in the pursuit of knowledge” (Polanyi 1966, p. 6). Michael Polanyi, scientist and philosopher, describes human knowledge from the perspective that “we can know more than we can tell” (Polanyi 1966, p.4). He describes a situation that provides a clearer explanation of the phenomenon.

A distinguished psychiatrist demonstrated to his students a patient who was having a mild fit of some kind. Later the class discussed the question whether this had been an epileptic seizure or a hystro-epileptic seizure. The matter was finally decided by the psychiatrist: “Gentlemen,” he said, ‘you have seen a true epileptic seizure. I cannot tell you how to recognize it; you will learn this by more extensive experience (Polanyi 1966, p. 124).

He defines this experience as *physiognomy*, which identifies particulars and describes the relationships among the particulars to a whole entity. He relates how this is representative of medicine; one learns the sciences needed to know how to practice medicine, but only practice can promote this integration of empirical knowledge in the context of the patient. This is analogous to nursing.

Polanyi believed the pursuit of scientific knowledge required a personal knowledge aspect in which new knowledge is explored and discovered. Polanyi believed this is a truer representation of knowledge development. Tacit knowledge’s basic structure - *knowing what and knowing how* are distinctly different, but necessary pieces of the whole of human action. These ways of knowing include the practical or skill,

theoretical or intellectual knowledge, and the logical relationship between the two terms. In the act of tacit knowing, *one attends from something to attend to something*, a ‘from... to....’ process. An example of this process is that a person knows the letters of a familiar word individually, but attends *from* the letters *to* the written word and its meaning.

Polanyi defines four aspects of tacit knowledge- functional, phenomenal, semantic and ontological. The *functional* structure is elementary acts combining for joint purposes- the knowing one thing “by relying on our awareness of it for attending to the second” (p.10). He illustrates this in the process of face recognition by “awareness of the features (eyes, nose, mouth, etc- author insertion)) for attending to the characteristic appearance of a face” (p.10). The *phenomenal* is to attend to the appearance of ‘the thing’, a face, and what it means, friend/ stranger, “it is difficult to separate mentally the features from their meaning” (p.12). The *semantic* involves tactile experiences, “we are attending to the meaning of its impact on our hands in terms of its effect on the things to which we are applying it” (p.13); the act of touching and feeling attends to the meaning of the thing that is separate from us. The *ontological*, the ‘*knowing of*’, is described as the “understanding of the comprehensive entity” (p.13) of the ‘*knowing what and knowing how*’. The three aspects of tacit knowledge consider the individual pieces of knowledge that make up the fourth or whole. For nurses, the understanding of the sciences (theoretical knowledge) is the *functional* aspect, the human experience (human interaction) the *phenomenal* aspect, and patient interaction and the physical examination, the *semantic* aspect, come together in the understanding of the meaning of the interplay of the totality of the three, the *ontological*, the evidence and theory based care and interaction with the patient.

Tacit knowledge operates on internal knowledge and perceptions one is quite incapable of controlling or feeling in itself. Polanyi (1966) states, "We don't experience our body as an object" (p.16); as such, tacit knowledge is an indwelling or interiorization, one is not looking at, but dwelling in one's body. "We possess a practical knowledge of our own body, but the physiologist's theoretical knowledge of it is far more revealing" (p.20). Subjective knowledge of the self is separate from the objective sum of biological and psychological makeup. Polanyi distinguishes indwelling as an aesthetic process and interiorization, as reliance on theory for understanding and the 'true knowledge lies in our ability to use it" (p.17). He concludes:

Tacit knowing is shown to account (1) for a valid knowledge of a problem, (2) for the scientist's capacity to pursue it, guided by his sense of approaching its solution, and (3) for a valid anticipation of the yet indeterminate implications of the discovery arrived at in the end (p. 24).

Tacit knowledge continued to be refined in Polanyi's later works but the basic premises continued to hold true. Tacit knowledge requires knowledge of specifics that blend into a whole representing something else.

Tacit and Nursing Knowledge

Polanyi's work has been cited in the fields of science, medicine, business, among other disciplines. There is considerable nursing research linking tacit knowledge and nursing knowledge (Carlsson, Dahlberg & Drew, 2000, Carlsson, Drew, Dahlberg & Lutzen 2002, Herbig, Bussing & Ewert, 2001, Welsh & Lyons, 2001, and Whitehead, 2005). Prominent and underpinning their work on tacit knowledge in nursing, was the work the work of Patricia Benner. Their research explores tacit knowledge as an aspect

of the direct interaction of the nurse with the patient. Carlsson, et al. (2000) conducted a qualitative study in which they interviewed and reviewed written narratives of mental health nurses and nursing assistants exploring their experiences with aggressive and violent patients in which there were a positive outcomes. The positive outcomes were aggressive behavior and violence was diminished, and injury or destruction of property prevented. The results suggest the nurse–patient interaction requires a holistic approach requiring mutual respect, dialogue, situated knowledge, stability or mindfulness in the moment, touch, and pliability or sensitivity to the patient’s situation in an embodied moment. They describe this as “characterized by pliability, the professional’s ability to be at the same time close, as well as distant, active as well as passive, willing to wait as well as to take action.”(p. 542).

Welsh and Lyons (2001) sought to examine nurses’ use of formal knowledge and other types of knowledge to support assessment and plan patient care. Data was collected through case reviews and unstructured interviews of nursing staff (N=8). Their conclusions identified three types of knowledge that support nursing practice -

1. Research evidence that informs the practitioner of knowledge indications, but limits this to assessment and treatment of a disorder,
2. Tacit knowledge, an informal assessment and understanding only gained through experience; and
3. The experienced practitioner’s skill, which supports the confidence to intervene in the most productive and appropriate manner in the interaction (p.301).

Their model posits a continuous process of formal knowledge, validated by intuition-informing tacit knowledge based on previous formal knowledge, the underpinnings of

reflective practice as described by Schon (1983), and the need for extensive formal knowledge, are fundamental to the process of providing expert nursing care.

Carlsson, et al (2002) study involved re-enactment role playing and post re-enactment interviewing of experienced nursing staff. The reenacting of a patient care event by a participant involves the setting up of the event and interacting in the environment of the event, and a post reenactment discussion of the event processes, concentrating on body language and participant's thoughts and feelings. Their conclusions state tacit knowledge that "directed the caregiver's actions was apparent in their bodily responses to situations... in which they were able to respond by reassurance and support of the patient" (p.150).

Welsh and Lyons (2001) study was conducted through case analysis, staff interviews and documentation of the model case's assessment and treatment, examined nurses' use of different types of knowledge to inform holistic practice. Analyzed data produced three themes - "research evidence, tacit knowledge and advanced practitioner skills" all "related to information gathering and decision making" (p.320); their conclusions support the nurse is informed by intuition in concert with formal and tacit knowledge.

Herbig, et al (2001) examined tacit knowledge in experienced registered nurses in three different hospitals by analyzing data from their performance in a created simulated critical patient situation and interviews of experienced registered nurses from three different hospitals. The critical situation was constructed by researchers following extensive questioning and testing of critical incidents suggested by expert nurses. The

interview answers following viewing and discussion of the critical incident were evaluated on a scale, and further information was gathered through semi-structured interviews. Statistical analysis on the differences in the performances of nurses successful in correct interpretation of the patient situation, versus those less successful in interpreting the patient situation was completed. Their analysis resulted in a P value of .98, indicating, “differences in performances could not be attributable to differences in explicit professional knowledge” (p.692). The distinctions in performance were based on “use of feelings and the organization of tacit knowledge along a time line” (p. 694). The less successful nurses had a ‘sequential organization’ of their tacit knowledge and analysis of the patient situation, responding to the critical incident in a ‘step by step process’ of assessing the patient condition. The successful nurses having a ‘holistic perception’ were able to interact with the patient in a manner which their feelings and work guided experiences, or tacit knowledge, informed their interactions, assessments and interventions produced better outcomes or performance in the critical scenarios, or improved patient outcomes.

Conclusions

The conclusions of the recent nursing research in tacit knowledge suggest nursing knowledge is not an isolated, mystical or unsubstantiated intuition phenomenon, but a piece of the whole of the nurse “an embodied moment” (Carlsson 2000, p. 542). This process of nurse patient interaction is described as

...the insight that two people have into one another. Who we are, is telegraphed in our appearance, the clothes we wear, the expressions on our faces, the + tone of

our voices, and in our ways of moving. Our initial impressions of another are made up of both projected transference and accurate intuition (p.542).

The development of tacit knowledge of nursing requires the incorporation of formal knowledge-the *functional* aspect, the understanding of empirics of the human body and human experience; the *phenomenal* aspect, patient interaction and physical examination, the *semantic* aspect; and the *ontological*, the coming together in the understanding of the meaning of the totality of the three: the patient and their health experience. Tacit knowledge of the nurse in practice requires a holistic experience of tacit knowledge in concert with patient interaction.

Nursing Knowledge and Education of the Novice

The knowing of empirical science is the positivist basis of the education of the nurse and a part of the vision of professional education known as ‘Technical Rationality’ explained by Schon (1983). He describes a hierarchy of components to professional knowledge including the empirics, the application of the empirics, problem solving and diagnostics, and the skills and attitudes of the professional in the relationship with the client. Schon speaks to the work of Edgar Schein and the Flexner Report on medical education, about professional education and the progression of the division of professional knowledge. This he describes as ‘the physical arrangement of the curriculum’ between the science and the practical. The positivist approach of science and problem solving lends itself to professional practice based in Technical Rationality when there is “agreement on the ends” (p. 41). Where this professional knowledge is problematic is the world of “uncertainty, uniqueness, instability and value” (p.42), the view of the gray areas of professional practice clash with the rigor of objective

knowledge and truth. Schon's response to this dilemma is "Reflection in Action" a search for the practice knowledge that is based in art and intuition. Reflection in Action complements the work of Polanyi as the action in the moment in an artistic performance of knowledge based behavior. For Schon, the artistry may be intuitive, or reflection in action as intuitive knowing. He concludes they are both desirable, and through discussion of the practitioner with another practitioner, yields the rich and thoughtful understanding of the action event.

The education of nursing students parallels this process in their learning to care for patients. The arrangement of the nursing curriculum follows a pattern of the empiric physical, social and nursing sciences, followed by, or in concert with, the clinical practicum courses of nursing content. The focus of nursing content is the application of empirical and nursing knowledge, problem-solving using nursing process, and the rudimentary practice of applying these to patients, both human and robotic in real and simulated patient care arenas. The process of putting the pieces together is the challenge of the student in the art of knowing how nurses practice. The knowing and behaving is a holistic process of tacit knowing which Polanyi (1969) describes as "the understanding of the physiognomies, the performance of skills, the proper use of sensory organs and the mastery of tools and probes" (p. 128). In nursing, expert nurses cue into subtle signs and symptoms patients exhibit as predictors of both positive and negative changes in patients' conditions. Student nurses do not have this 'physiognomy' of the patient to cue into either blatant or subtle cues of symptoms and behavior, yet they are exposed and expected to function in a nurse role in the clinical experiences of the curriculum.

The nursing clinical curriculum's objective is to begin this process of the convergences and integration of empirics, problem solving in the behaviors and skill of professional nurses. The empirical knowledge of science is evident in the anatomy, physiology, and pathophysiology. Problem identification may be prior to actual patient contact or during actual providing of patient care activities. Where and how does the art of nurse-patient interaction present itself in this curriculum? Do the students have or should possess tacit knowledge of human interaction, caring, compassion and innate problem solving skills? The nurse-patient interaction is a contract in which the nurse provides the necessary nursing care services to the patient; does this require artistry to provide these services? The development of professional practice requires this knowledge and artistry to complete the process of integration of knowledge in the providing of patient care.

The student nurses have need to observe the artful expert nurse in action, an opportunity to practice the services he or she is expected to provide, develop the artistry by which to practice them, and reflect through discussion of the process which occurred. The component crucial to the development of professional practice is the requirement to reflect on the processes in which the student participated. Schon (1983) refers to the gap of professional education as a historical concern of the convergence of the knowledge necessary to practice and the divergent aspect of practice. This gap of integrating all the ways of knowing in nursing is an integral aspect of the education of student nurses.

Significance

The acquisition of nursing knowledge is the essence of nursing education. The advent of new competencies and expectations of nurses for the present and future healthcare system demand education evaluation and reform. The education of the student includes the convergence of formal curricular studies and the divergent practice arena. The development of nursing knowledge as an educational process requires divergent experience as a foundation of developing all the ways of knowing in nursing. Nursing art is the nurse–patient interaction, is there a tacit component of the student that needs to be considered? The artistry of caring, being with the patient, communicating and participating in an embodied moment of care, are essential to the whole of nursing practice. The convergence of the hard and soft sciences, nursing science and artistry need to come together to support the fledgling student nurse. The tacit knowledge and intuition of interpersonal communication a student brings to and develops in the formal educational process of nursing is a consideration to be made to support the student. The current nursing world emphasis on educational competencies for the nurse of the future and the changing practice environment bring into question the tacit knowledge and personal qualities expectation of the nursing student. Is the student’s tacit knowledge and intuition a considered as a part of the admission criterion to nursing schools? One cannot teach tacit knowledge or intuition as a formal course, so where does this take place and how can this be fostered in the formal educational process? Is there innateness to the process of nursing practice? Nurse–patient interaction is the foundation of most nursing practice with purposeful and deliberative motivation and skills as its underlying premise. Acquisition and evaluation of knowledge of the empirics, is determined in the academic

setting through reading and testing of facts and theories in examination, discussion and formal papers. Acquisition and evaluation of artistry in nurse-patient interaction is situated in the perception of the beholder, both the student and faculty. The development of this process can be fostered in the formal education of interpersonal and communication theories, another empirical basis of the process. The development of the artistry of practice should be an interactive process of the experienced practitioner and student, a *from...to* process of dialogue. The clinical practice setting provides situational experiences for supporting the student in the artistic development of interpersonal communication. The artistry of meaningful connection and encounters in student nurse and patient interactions may be tacit to some students but might be elusive to those burdened by task completion and self-consciousness.

The nursing education student competencies developed by the Quality and Safety Education for Nurses (QSEN) (2007) group have provided a rich and thoughtful framework for development of nursing educational program curricula. Underlying and a consistent thread in these competencies is the need of the nurse to interact verbally and non-verbally in direct patient care as well as with colleagues and others. Imbedded in these competencies are specific skills for communication and attitudes to aid student development. Professional interaction situations requiring questioning in assessment, data collection, collaboration with colleagues, boundary management in therapeutic relationships, facilitating consent for care and consultation with experts are some of the communication skills that need to be supported (Cronenwett, et al. 2007, 123-129).

Nursing students come to the educational setting at various levels of education and personal development; they are not a tabula rasa. The embodied moment of the nurse, as described by Carlsson et al (2000), is a convergent process of the presentation of self and knowledge of empirics in an encounter of connection. The patient care situations they describe require knowledge of the empirical nature of the patient, aesthetics, personal knowledge or intuition, ethics, sociopolitical knowledge and unknowing. Carlsson et al.'s (2000) conclusions suggest the need for '*subjective bodiness*' in caring encounters as an essential element to development of expert practice. They describe the need for development of insight to support professional knowledge outside of the empirical and cognitive realms. Support of the education of the nursing student should include

Reflection and discussion of caring encounters which give students and caregivers the opportunity to change and expand their perceptions, exploring a variety of caring approaches. When tacit knowledge is explored and articulated, events are seen in a new way, thus enlarging the knowledge and understanding upon which expert practice is built... When tacit knowledge and reflection are combined, there is competence. (Carlsson et al., 2000, p.542).

Carlsson, et al. (2000) examined the meaning of caregiver's experiences with violent clients in the psychiatric-mental health setting. The research process of reflection and discussion following nurse-patient interaction by the caregiver's to the researchers describe this encounter as an "embodied moment". Carlsson, et al.'s (2002) research involves re-enactment interviewing, a technique which "brings to conscious awareness memories that the body has stored" (p. 147). The experience of re-enacting a situation, similar to role-playing, the participant is able to describe and analyze their thoughts and actions. They conclude that through re-enactment interviewing "tacit knowledge can be

described and understood” (p.150). These processes of reflection, discussion and re-enactment interviewing supported the growth of the caregivers’ interactions, which in turn supported improved patient outcomes. In this research, the participant was able to interact verbally in a calmer and more confident manner and this was further expressed in her body language, thus helping to embody the experience and lead to a more positive patient outcome of decreasing aggression. This process is further corroborated in the model proposed by Welsh and Lyons (2001) by which formal knowledge, tacit knowledge, and intuition, converge in the interactions of the three concepts. Their model is an integration of formal knowledge validated by intuition that informs tacit knowledge based on formal knowledge in an ongoing fluid fashion (figure 1). In order for this development of knowledge, reflection and discussion is imperative to the process.

For the nursing student, this should happen in all aspects of the formal education experience. The clinical practicum and post conference experiences are the predominant setting for this process. This is the divergent arena where the science and art converge. Paton (2005) proposes the ‘Unready to Hand’ mode of engagement, a Heidegger model in which Polanyi’s ideas of subsidiary awareness of the whole entity, physiognomy, and focal awareness, functional awareness of particular aspects, “guide the educator to support and guide nursing students through everyday complex clinical situations” (p.53). In this interactive process, educators are required to “make sense and respond within complex and unpredictable clinical situations” (p.58). This process takes place in the clinical aspect of education. Paton (2005) focused on the experience of nurse educators and their immersion in the clinical experience of the student. The challenge she identifies is the “explicating the knowing within the knower” (p.58) and the reflection and

dissection of the experiences are pivotal to effective and high quality undergraduate education.

Unknowing through the convergent integration of formal knowledge in discussion and reflection with the expert practitioner supports professional knowledge. The integration of new information and examination of different scenarios can lead to more authentic, therapeutic and professional nurse-patient interactions thereby improving the artistry and tacit knowledge of their maturing practice. The development of tacit knowing by the student is fostered in the 'from... to...' process (described by Polanyi) in the dissection and testing of practice possibilities in dialogue and observation by expert practitioner.

A model of the process of growing nursing knowledge based on the model proposed by Welsh and Lyons (2001, p. 305) integrating tacit knowledge, intuition, formal knowledge, and nursing artistry, is represented in figure 1. Growing nursing artistry is represented as a continuous process of expanding knowledge, reflection and interaction of student, patient and expert nurse. The model proposes an evolutionary expansion of nursing knowledge through formal knowledge, tacit knowledge and intuition in the nursing student over time, through the intermittent reflective interaction between the student and expert nurse, and embodied moments in patient interaction by the student. The growth of all aspects of nursing knowledge becomes intertwined throughout the growth and development of the novice student, into a developing professional practitioner.

This process should be evident in nursing education in the clinical setting, post clinical conferences, reflective journaling and classroom discussions. Case review, role-playing, integration of film, poetry and art in the classroom provides an additional venue to support reflection and discussion of relevant nurse and patient experiences between expert faculty and students. A promising and future direction to support this process is in clinical simulation laboratory experiences, in which clinical scenarios of patient care situations provide an opportunity for role-play, re-enactment and then discussion and feedback of behaviors and other interactions. The growth of knowledge and artistry is a continuum of reflection of practice that begins with the student, and builds as they integrate the convergent aspects of science, nursing and intuition into a working model of individual professional practice throughout their careers. The growth of tacit knowledge as a component of intuition and engaging in embodied patient encounters, are the divergent aspects in the development of professional artistry in the nurse-patient encounter. It is in the embodied moment of nurse- patient interaction that the convergence of all aspects of knowledge- formal, tacit and personal knowing or intuition, aesthetics, sociopolitical, ethics and unknowing is brought to bear; the physiognomy or whole of the patient surpasses the sum of their parts. The student is able to grow and develop their practice through the ongoing reflection with expert nurses in the academic and clinical settings.

Nursing Education Learning Environments

Nursing education is seeking to develop best practices for educating students to become practicing registered nurses. The scope of educational practices has traditionally

been based on educational theories, applied knowledge and methodologies, which can best be described as role modeled from many educator's personal educational experiences. The call for development for nursing education based on nursing research has been made (AACN, 2010, NLN, 2003, Oermann, 2007), and is currently being pursued within the discipline. The educational learning environment of student nurses is foundational to supporting complex learning. The research on learning environments in nursing presents methodologies and psychosocial aspects of the learning of content. The learning environment research does not specify specific nursing content, such as nursing process, health/ wellness or specific skills deemed necessary for the practice of nursing, instead, it speaks to the experiential aspects of the process. Experiential learning involves an active process of co-creating knowledge between teacher and student in the framework of curriculum objectives.

Nursing education has evolved from traditional apprenticeships in hospital diploma programs to collegiate and university institutions of higher learning. Teaching and learning methodology is grounded in the pursuit of knowledge based in the basic natural and social sciences, liberal arts and humanities, nursing and skill acquisition. Educational practices range from role modeling, repetition of tasks, to integration of theory and evidence in the classroom and clinical setting by a variety of nurse educators. Development of nursing curriculum has been described by Iwasiw, C., Sidani, S. and Hall, L.M. (2005) as building a theoretical educational model integrating philosophical premises; these models are not based on research.

Clinical Learning Environments

The exploration of a variety of clinical learning environments is the subject of research internationally in Australia (Edgecombe, et al, 1999, 2001, 2006, 2008; Wonton & Gonda, 2004), Hong Kong (Chun-Heung, and French, (1997), New Zealand (Casey, et al, 2008) and the US (Moscato, 2002, 2007 and Mulready-Schick ,2009, 2013, 2014).

The research describes the educational experiences of students supported learning, sometimes unexpectedly, from the learner perspective. The environment created by nursing faculty included qualities of trust, caring and support for the students' ability to learn through problem based and creative experiences in the classroom and clinical setting. Support of student learning was accomplished through the integration of classroom content and clinical experience and the process of reflection, either by group discussion or journaling. An interesting aspect of this review was the specific environment- classroom, clinical or online- was inconsequential to the psychosocial aspects of the learning experience.

Nursing students' learning requires their active involvement in the academic setting stimulating cognitive processes of critical thinking about content, and the integration of the content and cognitive processes in the clinical setting. The need for students to be self-directed learners is part of this process. As noted by O'Shea (2003)"Nurses unable to direct their own learning will not have the skills necessary to meet the changes in modern healthcare."(p. 62). The complexity of these activities requires trust, care and clarity of communication by faculty in a supportive environment that values students, their ability and capability. This process requires trust by the student

to actively engage in the curriculum through critical thinking and clinical reasoning. Clinical learning is a progression over time of making meaning of the content and skills by the individual student, which as noted by Schon (1983) requires dialogue with oneself and others. The process of reflection is fundamental to this undertaking, and the guidance of faculty is crucial to structuring this reflection to promote essential learning and integration of knowledge.

The changing of practice supports the need to reflect and revise pedagogy, a challenge for faculty that requires education and support to learn and recreate nursing education. The current hospital practice environment is a fast paced, highly acute setting, not often the most conducive to supporting student learning. The disparities between the academic and practice environment appear to continue as the demands of the clinical setting often take precedence over student nurses developing practice. The research supports the effectiveness of a variety of environments as being favorable for clinical learning of undergraduate students. The use of alternative learning environments requires planning and coordination by faculty and service partners. A model of collaboration of student, faculty and service partners engaged in an environment of trust, valuing and acceptance of the participants in a planned and intentional setting appears to be a learning environment for nursing students to flourish.

Dedicated Education Unit

The Dedicated Education Unit (DEU) is an innovative model of clinical education currently in use in a variety of acute care settings to support undergraduate clinical learning. The DEU is a model to support development of educational opportunities for

nursing students while optimizing the clinical knowledge and experience of nurses in the practice setting. The original concept was the vision of nurse educators in Australia. (Edgecombe, Wooton, Gonda & Mason, 1999; Gonda, Wooton, Edgecombe & Mason, 1999; Edgecombe & Bowden, 2008). Since the original paper was presented, similar DEUs were implemented in acute care centers in Australia and the United States (US) to support undergraduate clinical education (Wotton & Gonda, 2004; Miller, 2005; Moscato, Miller, Logsdon, Weinberg & Chorpenning, 2007; Pappas 2007; Casey, Hale, Jamieson, Sims, Whittle & Kilkenny, 2008; Mulready-Shick, Kafel, Banister & Mylott, 2009; Warner & Burton 2009). The evaluation of the DEU has been the subject of research from a variety of perspectives for its effectiveness as a viable model for student learning and practice collaboration (Wotton & Gonda, 2004; Miller 2005; Pappas 2007; Ranse & Grealish; 2007; Moscato, et al, 2007; and Mulready-Shick, et al, 2009).

The research presented identifies a variety of roles specific to the DEUs that are determined by their vision of the DEUs they have created. These roles are of the academic and clinical educators and are consistent throughout the studies. The following definitions are utilized to clarify the roles identified in the studies -

Academic faculty- any lecturer or clinical faculty whose primary responsibility is to direct the educational experience from the academic setting (either college or university).

Clinical teachers- staff nurses directly involved in the clinical learning activities of students

Staff- all other registered nurses involved in patient care on the DEU not directly responsible for student learning experiences

Partners- executive level nurses in the clinical setting and academic faculty involved in the DEU planning and execution, in most cases, but not limited to Directors of Nursing in the practice setting and Academic Deans of the school of nursing

The Australian Experience

The DEU is a purposely-constructed clinical education model originally developed in Australia (Edgecombe, et al 1999, Gonda, et al, 1999) to address issues in nursing clinical education. The concerns at the time were between the academic education and the practice experiences. This issue was identified in both academia and clinical practice arenas. The ‘traditional’ nursing student clinical experience model of short, condensed clinical placements was not supportive of practice concerns of new graduate “time management, pharmacological knowledge and implementation of clinical skills” (p. 167). Staff nurses voiced concerns with the lack on information of student learning needs and expectations and additional stress and effort to support student learning. Academic educators were concerned with integration of theory and evidence into practice knowledge for students, and the knowledge, experience and high turnover of inexperienced clinical educators. Complicating these concerns was the unpredictability of clinical environments, the variable relationships among students, educators and clinicians, and random disruptions inherent in a hospital environment. The DEU was created through collaboration between academia and practice. The participants constructed it to support the education of students by enhancing student learning, and

addressing the experience, the DEU program expanded to four units and eventually seven hospital units (Edgecombe, 1999).

The Australian DEU was developed on the premises mutual trust and respect, and ongoing dialogue among the stakeholders (Edgecombe, 1999). Extensive planning and development of the physical unit and education of clinicians and students about the process and expectations in the DEU, was conducted prior to the clinical placement in support for clinicians around teaching and learning concepts and processes (Edgecombe, 1999). The education included academic teaching roles and guest presentations from outside nursing academics completed the vision of the model to put it into practice (Edgecombe, et al 1999). Following the second semester of implementation, the partners conducted a formal evaluation of the units by anonymous self-administered questionnaires to students and clinical teachers (Gonda, 1999). The evaluation included 91 students and 60 clinical teachers, academic faculty and staff on 3 DEUs. Response rate of students was 54% (N=49) and clinical teachers, academic faculty and staff 35% of (N=21). Responses were analyzed using thematic analysis following verbatim transcription of each questionnaire (p.173) Themes were developed by the researchers which best described the data, and validity was supported by an independent review of a random selection of transcripts by a researcher familiar with thematic analysis. The findings of the evaluation were six dominant themes-

1. Preferred placement-the DEU as a preferred learning environment by students and support of continuation by clinicians.
2. Student/clinician learning-a stronger opportunity to support integration of theory into practice and refinement of clinical skills;

3. Peer teaching and learning-supportive student peer interactions around teaching and learning.
4. Clinician and academic facilitation-ease in supporting student learning by clinicians; intellectual stimulation of clinicians;
5. Workload- concerns around increased workload by both students and clinicians.
6. Relationships-genuine positive relationship development;

(Gonda, et al, 1999, p173-176).

These reports support positive perceptions by the students and clinicians of the DEU as a positive learning experience. The study specifically describes the experiences of those involved in the Australian DEU model and as such the findings are applicable to this setting and generalizability is limited to those units. The use of anonymous surveys does not support an in-depth analysis of the students' practice development. The number of study participants (N=70) is small but not relevant to qualitative analysis in which continuous similar findings among the participants supports ending data collection. The study is a snapshot of the DEU experiences of all students, academic, clinical teachers and staff involved in the DEU developed by the Australian partners.

Wotton and Gonda (2004), early collaborators in the DEU model, reevaluated their DEU by surveying the experiences of the students, clinicians and academics. An instrument was devised to elicit responses about the DEU based on the responses from their previous study (Gonda, et al 1999). The questionnaires designed by the researchers consisted of demographic information and 18 statements related to the "impact of the DEU on the ward, student knowledge and skills, staff teaching and learning, the principle academic role and students' relationships" (p. 123). The research-elicited a response rate of 77% (N=248) 121 students and 127 clinical teachers and staff; seven academic faculty

responses were not included due to small sample size. Responses were analyzed using comparative analysis, χ^2 test of association or Fisher's exact test "where expected cell values were less than five (p.123). Results were distributed and analyzed "under the sub-categories of: impact on the ward, student knowledge and skill, staff teaching and learning, principal academic role, and student relationships (p. 123). Data supported positive perceptions of the students' benefit to the ward by the clinicians (79.0% of clinical teachers and 88.5% of students). A majority of the participants (92.2%) reported that the quality of care was "upheld" and the statements "were "able to provide patients with more holistic care and take the time to do the little things that one always wants to but never had the time."(p. 123). Perceptions of acceptance of the students on the ward rated highly by clinical teachers but less by students. Workload concerns of clinical teachers identified in a previous study (Gonda et al 1999), confirmed an initial increased workload of the clinical teachers. Clinical teachers (73.86%) and students (78.7%) reported a decrease in the workload, "...as the placement progressed". The intensity of the workload was strongly reported by clinical teachers (70.6%) and less so by students (30.7%), and a "significant association ($p=0.001$) was found with third year students more likely than second or third year students to agree their(third year students) combined clinical and theoretical workload to too intense" (p. 124). Students and clinical teachers reported the DEU placements increased practical skills and knowledge (74.4% students, 84% clinical teachers). This study also reported about clinical teachers' perception of the learning. They reported a significant association ($p=0.001$) in the perception of clinical teacher and students related to student ability to perform tasks rather than develop knowledge. Clinical teachers reported requiring more information on

clinical teaching (51.2%) than student (32.8%) did. They reported perceived support from academic faculty for clinical teachers (85.5%) and students (83%). “Both clinical teachers and students agreed *academic faculty* supported *clinical teachers* in their teaching role” (p.124). Clinical teachers who spent more than 50% of their time with students rated higher positive academic support versus clinical teachers working less than 50% of their work time. Students (77.2%) and clinical teachers (74.6%) reported that there were stronger and more positive relationships in the DEU than in traditional clinical placements. There were differences in the responses of third, second and first year students in their support and assistance peer teaching.

The authors’ concluded that the DEU is a successful model for clinical learning. They cited improved working relationships, ease of communication and negotiation between academic faculty and clinical teachers. Collaboration of clinical teachers and academic faculty was found to improve over time. The increased workload was reported as “worthwhile because of the perceived positive long term benefits to the unit (i.e. increased recruitment)” (p. 125).

“...developing a collaborative clinical culture...conducive to learning and maintaining quality care” (p.125) and to have “a variety of positive effects...its ability to assist academics, students and clinicians to ground theory introduced in the university in real practice and provide an opportunity to evaluate the relevance of such theory to practice” (p. 126).

This reported success prompted Flinders University to expand all of its clinical placements for its undergraduates to the DEU settings. The study supported students and clinical teaching staff perceptions of the DEU as a positive learning environment. In this report, the instrument used for the research was not identified. The research evaluated the

perceptions of the students and clinical teachers about the DEU. This research did not describe the process of knowledge development of the students participating in the study.

Ranse and Grealish (2007) studied student experiences of learning in a DEU utilizing a 'communities of practice' framework developed by Wenger (1998). Their research sample consisted of 25 second and third year nursing students participating in focus groups following their DEU experiences. *Communities of Practice* (Wenger, 1998) is a theory "based on learning as social participation" (p. 4). The theory encompasses processes of active participation and identity construction within these communities.

Principle concepts of this theory include:

“1) Meaning: a way of talking about our (changing ability-individually and collectively- to experience our life and the world as meaningful.

2) Practice: a way of talking about the shared historical and social resources, frameworks, and perspectives that can sustain mutual engagement in action.

3) Community: a way of talking about the social configurations in which our enterprises are defined as worth pursuing and our participation is recognizable as competence

4) Identity: a way of talking about how learning changes who we are and creates personal historically of becoming in the context of our communities” (Wenger 1998, p.5).

The community of practice framework was used to research the development of professional identity and learning by nursing students in a place in which to experience the real world of acute care nursing by interacting and collaborating with role models of health care providers in all professional disciplines.

This research was conducted using a convenience sample of students who had recently concluded their clinical experience in a DEU. The sample consisted of 25 second and third years students with a response rate of 34% and 24% respectively. These

students participated in focus groups moderated by one of the authors(Ranse) Two focus groups were conducted each containing students in the same year. During the focus group, open-ended questions facilitated the discussions. The questions-“What did you like about your clinical placement? What did you dislike about your clinical placement? If you had the opportunity, what would you change about your clinical placements?” (p174). During the focus groups, the group members’ responses were recorded on transparencies to allow for ongoing validation and audio taped. A summary of the responses was presented to the focus groups to verify their views. Focus group notes and audiotapes for the research were analyzed using note-based analysis and to identify themes. The three major themes identified by the focus groups were: 1) acceptance; 2) learning and reciprocity; and 3) accountability. Students reported they were welcomed and supported by the staff, and included in unit activities and outside the unit social activities. Staff familiarity with the unit, academic program and interest in student learning contributed to their learning and added to their feeling of being valued. Some students felt unwelcomed on the unit by staff ignoring them or speaking to them ‘abruptly’. These feelings subsided over time. Underclassmen appreciated support by upperclassmen and this assisted in their assimilation on the unit (*Acceptance*). The students reported the clinical experience assisted them to understand the knowledge presented in the classroom, though some students were focused on tasks. Students reported the learning context in clinical provided a very different experience from classroom activities. The length of the clinical (not noted) and the two-day a week format supported comfort of the students and familiarity by the staff. Students reported peer learning reinforced their knowledge and ‘enhance their confidence’. The students

identified difficulties in their learning experiences. These included working with student who was not self-directed and sharing patient care, limited their exposure to practice. The students reported that learning was reciprocal between the students and staff. One student reported, “We made it interesting for them” (p. 175) (*Learning and Reciprocity*).

Students identified the active coordination of patient care activities with appropriate student abilities by clinical teachers increased confidence to accomplish their assignments successfully. Students reported concerns of being workers when there were staff shortages. A student stated the expectation to complete work rather than being able to pursue learning activities due to the unit demands (*Accountability*).

The study concluded student perceptions support the theory of the communities of practice framework and enhanced the understanding of student learning in the clinical setting. The study reported student participation in the DEU supported the premises of the community of practice framework and concluded the theory is a way to understand how students identify themselves as nurses. Student learning was supported through the ‘real life’ engagement of students with the ‘workplace community’ through 1) being accepted by the community members, 2) knowing- “a matter of participation in those enterprises” and 3) meaning “ultimately the focus of learning” (p.176), and 4) knowledge “a matter of competence in valued enterprise” (p. 176). Meaningful learning described by Wenger (1998) supports student learning by students contributing to the community in which they are engaged. Student responses cite staff welcoming behaviors and acceptance, emotional support of peers, and engagement in actively caring for ‘real’ patients as being valuable to their learning and provides for motivation for learning”(p. 176).

The conclusion suggest the need for more research to explore teaching and learning strategies, explicit curriculum objectives and communication of them, and the explication of clinical learning by students vs. nursing work. The recommendations presented are the value of adopting alternative learning approaches, preparation of students and staff prior to the clinical experience, and expanding further development of educational strategies to support learning in practice, “what constitutes learning” and perceptions of nursing work vs. clinical learning.

This research explored the perceptions of nursing students in the DEU using a theoretical model as a framework. It presented an initial foray into the learning process of the students which the focus of participation with a clinical unit to learn the work of nurses. It was small convenience sample of students (N=25) in DEUs in existence for one year or less. There was no discussion of saturation of the data presented but only the conclusions of focus groups. The development of knowledge was not a focus of the study but acknowledged that learning took place and suggested “further research to ascertain students and clinicians’ perceptions of what constitutes learning and how they perceive nursing work may provides insight into the perception of learning vs. working”(p.178).

Edgecombe and Bowden’s (2009) study of undergraduate students identified factors that affect students’ learning into their growth as novice nurses. The gap they identified was the lack of information on negative student perceptions of the clinical learning environment. This study explored the clinical learning of undergraduate nursing students in both DEU and traditional block clinical placements. The study employed

mixed methods- focus groups responding to two open-ended questions-“What were the strengths of your clinical experience?” and “What were the weaknesses of your clinical experience?”, and a 23 item likert scale questionnaire based on the Clinical Learning Environment Scale(CLES) created by Dunn and Burnett(1995). Questionnaires were sent to 111 students, 80 students completed the questionnaires and 31 students participated in six focus groups. “Triangulation, complimentarity and initiation ensured reduced researcher bias, consideration of any unpredicted phenomena and students’ open expression of positive and negative experiences related to their current and past clinical learning” (p.94). Data analysis was done using factor analysis and non-parametric Mann-Whitney test and focus groups whose transcripts were analyzed using Nud*ist software for coding patterns and themes. These analyses compared students whose clinical placement was in the DEU and students in traditional clinical placements. Mann-Whitney analysis of a modified CLES (Dunn and Burnett, 1995) questionnaire considered the five areas identified- Staff-student relationships ($Z = -.244$); CNC Commitment ($Z = -.775$); Patient relationships ($Z = -.460$); Student satisfaction ($Z = -.171$); and Hierarchy/ritual ($Z = -.760$). No statistically significant difference was found between the two groups in their responses to the questionnaires. Analysis of transcripts of focus groups were coded for patterns and themes utilizing Nud*ist software. Emergent themes from the data about the clinical learning environment identified were-

Major Themes-

1. Student as learner/evolving practitioner- students reported discomfort in the clinical setting, needing to function as qualified staff in spite of their student status and survival skill of manipulating relationships to find needed information for completing their assignments.

Subthemes- valuing and understanding self, learning skills (intrinsic) tools and strategies, personal relationships (extrinsic).

2. Learning outcomes- students reported a sense of achievement and ‘deep personal impact (DEU students), peer support was a major influence to success, ability to related theory to practice and need for more guidance and support (traditional setting).

Subthemes- positive- sense of achievement, mastery, personal impact, reflection, confidence and comfort; negative- personal impact- dependence, dissatisfaction, anger (intrinsic). Positive- time and opportunity, better than block, peers satisfaction in traditional placement, negative worries within the DEU and clinical assessment (extrinsic).

3. Influence of ward/unit staff- students reported “exploiting senior clinical staff’s skills and good will” was necessary for getting learning experiences.

Subthemes- Positive experiences being trusted and valued (DEU students) and negative- isolation, and lack of positive interaction with staff (traditional students). Positive- personal impact, being a valued and trusted part of the team, and negative – survival skills (intrinsic). Positive - personal impact, staff relationships (roles), staff strategies and preceptorships. Negative - lack of support and resentment, learning environment structure, staffing structure (extrinsic)

4. Influence of lecturers in clinical- students reported academic faculty as ‘peripheral’ and a source of support. Positive contributions of availability and confidence (DEU students) and ambivalent and dissatisfied, too busy, and not interested in students (traditional students)

Subthemes- academic workload, responsibility (extrinsic)

5. Students’ perceptions of patients- students reported not being prepared for patient ‘circumstances’ and verbalized no personal impact on their professional development.

Subthemes- personal impact and patient circumstances (extrinsic)

Students identified other factors the outside of the clinical environment that affected their learning- family and work commitments, and academic assignments. (p. 95-100). Further research of the CLES+T has continued to support its validity and reliability (Watson, Seaton, Sims, Jamieson, Mountier, Whittle & Saarikoski (2014) and transferability (Bergjan & Hertel, 2013).

Following analysis of the themes, the authors have constructed a ‘model of student evolution to proficient novice nurses’, linking these factors to the student experience (p.99). The model identifies the central intrinsic factors of student experience between the positive and negative extrinsic factors affecting the evolution of student proficiency. The model poses a broad vision of student learning in the clinical setting taking into account student – 1) individual processes (prior learning, valuing of self, belonging, deep personal impact and sense of achievement and mastery); 2) integrating practice development influenced by dynamics of the clinical environment (home, family, work support, time; and 3) opportunity to practice, and support, feedback, assessment and relationships). The model is presented with the “aim of generating critique... and consideration of its implications for future curriculum development, academic and clinical staff roles in student learning, clinical placement approaches and research” (p. 100).

This research was the first to utilize mixed methods in examining the teaching and learning of the student in the DEU. Their model is about student learning and practice evolution in the DEU environment. It takes into account the learning environment, learning processes and factors affecting student learning. The researchers do not acknowledge the limitations of their study and explanations of themes were brief or not defined. The CLES questionnaire developed by Dunn and Burnett (1995) identified as being modified to 23 items, but the authors included no discussion of the modification process or why it was necessary. An earlier draft (Edgecombe & Bowden 2008, online) identified the 23 questions included in the questionnaire but no discussion about modification was included there. The convenience sample of students reported their

experiences in a specific nursing program, thus call into question the generalizability of the results. The authors did identify the constructed model as a work in progress and a step to exploring the teaching/learning process of student nurses in the clinical setting. The study acknowledges the culture and process of learning of students in the clinical setting but does not specifically address the development of nursing knowledge.

The United States (US) Experience

In the US, Pacific Lutheran University (PLU) instituted the DEU in partnership with MultiCare HealthCare System Hospital (MCHCSH) as a cost effective solution to support student learning (5% of students complained the experience was bad enough to consider leaving nursing), and increase capacity of students in an environment of shrinking clinical placements (Miller, 2005). The project to institute and operationalize the DEU was a collaboration of university and practice partners. Each entity describes issues related to the need for changing the clinical education experience in their perspective institutions. The PLU describe student dissatisfaction of clinical placement, frustration of faculty in student supervision, and unmet learning expectations of students and faculty as concerns. The MCHCSH describe recruitment and retention of nursing staff, expensive and lengthy new graduate orientations and residencies, and excessive complaints of patient care by patients, families and physicians. The DEU project began in 1998, the exact start of student placement and evaluation of the project was not specified, though addition of graduate students in 2003 was mentioned, indicating it had been in existence prior to 2003. Measurements to define successful outcome of the DEU project for MCHCSH included registered nurse turnover rate, vacancy rate, medication errors,

falls, employee evaluation scores, RN residency rates, physician satisfaction, and student exit evaluations. For PLU, nursing students' ATI medical surgical nursing test scores, NCLEX-RN pass rates, and faculty satisfaction served as measurements of successful outcomes (Miller, 1999, p.172). Their evaluation findings (all methodology used or at what point they were initiated is not clear) supported increased revenue for PLU, as they were able to increase school capacity, decrease expenses with less clinical faculty, and notice improvement in both organizations' reputations in the community. Former PLU nursing students, because of their experience in the DEU, have taken positions at MCHCSH, reducing hospital recruitment and orientation costs of approximately \$18,000 per hire. Staff satisfaction improved (no data specified), and patient and family complaints were reduced, resulting in an increased patient census (437 admissions "recaptured") and physician complaints have significantly lessened (<1% of previous year). Student complaints of clinical placements decreased 15% (20% to 5%) and the DEU was identified as strength of the PLU nursing program in graduate exit interviews. Twelve students applied for positions in the DEU and 10 were hired within 2 years (p.173). Specific results of other indicators are not mentioned. The conclusions identify concerns of universities and clinical agencies pressures to provide expanded capacity and cost effective recruitment and retention of registered nurses. The conclusions presented are a recommendation of the DEU as a clinical education model as it provided expanding enrollment at PLU and improved the reputation of both the PLU and MCHCSH. These conclusions were not supported by any further data. The author submits the results as an example of the PLU and MCHCSH experience with a DEU as a successful partnership based on financial, student satisfaction and patient admission data. The article describes

the experience supported by incomplete data and limited description of the process, it does serve as a model for considering the cost-benefit analysis of the DEU for administrators and deans considering pursuing DEU development.

The University of Portland in collaboration with practice partners, Providence St. Vincent Medical Center, Providence Portland Medical Center and Portland Veterans Affairs Medical Center, developed DEUs as a model for clinical education. Their model, based on the Australian model, began as a discussion and partnership between the university and community (Moscato, Miller, Logsdon, Weinberg and Chorpenning, 2007). The description of their three-year process of implementation and evaluation supports the need for collaborative partnerships at the executive, manager and clinical faculty, instructor and student levels. Consultations with DEU faculty and staff in Australia and among stakeholders in their collaborative cited a need for adjustments from the Australian DEU model to fit the needs of the Portland model. Initial success led to the expansion of the project to an additional six medical surgical DEU units. Evaluation of the project and an investigation of possible expansion were conducted utilizing multiple methods to explore student, faculty and practice partner experiences. Specific interests for the research included comparing and contrasting traditional clinical placement and the DEU placement, student and clinical instructor perceptions, identification of challenges and suggestions for improvement. Methods included student surveys administered prior to and after the DEU experience, focus groups of students and clinical teachers, faculty meetings, a Clinical Faculty Coordinator time survey, and meetings of partnership members. Data analysis of the focus group transcripts were reviewed by senior nursing faculty for coding and themes. Meetings with faculty, instructors, CFC, nurse managers

and staff educators “were used as a quality improvement strategy” (p. 34). They reported increased capacity to support larger numbers of students (333 versus 227) in a smaller clinical space and more efficient use of clinical resources. They used six DEUs for the medical surgical experience that was estimated to have needed 25 medical – surgical units and 14-15 clinical faculty. They report student learning in the DEU was significantly different ($P < .05$) from students in traditional clinical placements. Specific reporting of students- feeling wanted, consistency of one instructor who knew them and was available, and accountability for expanding knowledge and learning due to continuous interaction with the same person (p.34)). Clinical teachers reported liking “being accountable for the student learning and expressed satisfaction in watching ‘my students grow’” (p.35). They appreciated the opportunity to be the primary instructor of the students, and the challenges and energy from the results of their interactions. Challenges they identified included clinical teachers uncertainty with their ability to teach, want of expert validation of their methods, support of their own learning to support student teaching and learning, and providing student evaluation of skill and critical thinking consistent with nursing program outcomes. Students reported the welcoming environment, consistency and availability of an instructor who was familiar with them and the learning needs and able to challenge them, and the accountability to improve and integrate their experiences. An unexpected finding was student clinical performance in a subsequent traditional clinical model where they were hesitant and waited for unit staff nurses prior to performing patient care as they were used to the clinical teachers validating and guiding their practice. Students further reported improving “assessment and communication skills, ability to work with families, physicians and interdisciplinary

teams, and the confidence and accountability for performance they had built” (p. 35) and recognized they would be able to carry these skills forward.

Clinical teachers identified four themes from their focus group discussions. They liked being accountable for student learning and progression; they felt challenged and energized by working with students; they were challenged to translate nursing theory and classroom content in the clinical situation; they were uncertain of their knowledge and expertise about teaching skills and methodology; and comfortable evaluating skills but not performance and critical thinking.

Time Survey was conducted to address the concerns of maintaining communication and clinical teacher development. The results report the nursing faculty spent their time with student teaching and learning activities rather than providing support and instruction for the clinical teachers. Clinical teachers were often too busy with patient care activities to meet with faculty. As the partnership continued both parties became more comfortable in their roles and were able to confer on all aspects of student learning and develop additional teaching skills.

Costs are a concern for DEU development and implementation of a new clinical learning model. This translates as cost for unit staffing, nurse productivity, release time for clinical teachers and nurse managers, and student learning needs and abilities. Authors report this is an ongoing process for determining overall costs for the programs, and noted the PLU model as an example of the cost-benefits of a DEU as a viable clinical education model. They additionally note the intangible benefits of clinical teachers’

support of the model and the nurse managers' observations of increased work satisfaction among clinical teachers versus staff nurses not in the clinical teacher role.

The researchers realize the project is a work in progress and that there are currently strategies in place to support concerns about teaching and learning of clinical instructors and expansion of the model to additional medical-surgical units and a psychiatric unit. They identify incidental supports for the model includes clinical instructors returning to further their education (an interesting point was the education level of the clinical teachers, which suggest that some of them had basic preparation, was below the baccalaureate level) and recognition by Magnet(c) reviewers of the DEUs as exemplars of nursing excellence. Future focus of the program is to sustain and increase education and support of clinical teachers; explore critical thinking and clinical reasoning development of students by clinical teachers; implement peer teaching, an aspect of the Australian model not in place in the Portland model, and to continue to support the partnerships. The authors present an overall description of their experiences and perceptions of operationalizing a DEU program and partnership. Their surveys and focus groups provided basic feedback specific to their partnership and program. Their research is not transferrable to other units or programs. An interesting point is the educational preparation of the clinical teacher role. Clinical teachers were identified in an early part of the article(p.33) as being at the BSN level but later describe them as "completing their BSN"(p. 36). Many state boards of nursing require a minimum of a BSN to obtain a waiver for clinical teaching and a master in nursing degree for teaching nursing.

The Colorado experience with DEUs was the result of nursing leaders' concerns of their nursing shortage and need for increased school of nursing capacity (Pappas, 2007). The DEU was created within the Centura hospital system in collaboration with the Colorado State Board of Nursing, the Colorado Center for Nursing Excellence and Caring for Colorado, a non-profit funding agency. This DEU was created to orient new graduate for their first four weeks of orientation to the hospital system. This DEU vision was different from other DEUs as it was designed for new nurses rather than undergraduate nursing students. The author's focus was not on the creation of the unit, but evaluation of operational outcomes and perceptions of new graduates and retention of new graduates. The outcome measurements included cost of running and maintaining the unit (staffing, orientation and turnover) and nurse sensitive outcomes (medication errors, falls, patient satisfaction scores, RN retention) and new graduate surveys (p.42). Their results found costs of the unit to be higher than costs associated with traditional Medical-Surgical units, but were in line with other 'special units' (no data supplied) and retention rates decreased (94% of DEU RNs vs. 85% from a traditional orientation). Medication errors were unchanged; fall rates decreased an average from five per month to one per month (after 12 months of DEU operation) and patient satisfaction remained unchanged (p. 42). New graduates identified needs for opportunities for delegation and supervision of assistive personnel, practice in incorporating evidence into practice and communication with physicians. The conclusions report the DEU as a positive transitioning model for new graduates citing the intentional approach to has "improved the experiences and perceptions of the new RNs and improve patient safety" (p.42). The author reports operational outcome data but the new RN perceptions are presented in a

generalized manner with data analysis methods not mentioned. The author reports the partners were encouraged by their approach and plan to explore further options for expansion of their program.

A pilot study initiated by the University of Massachusetts, Boston, and Brigham and Women's Hospital, Boston (Mulready-Shick, et al , 2009) explored student learning about quality and safety competencies in nursing (QSEN), and supporting quality improvements in nursing care delivery in a DEU environment. Following implementation of the DEU, the pilot study assessed clinical learning and educational outcome measures. Sixteen students from DEU clinical experiences and nine staff nurse clinical teachers were engaged in focus group discussions to answer questions about the quality and safety competencies- teamwork and collaboration, safety, informatics, patient-centered care and evidence –based practice and quality improvement, student competencies presented by the QSEN report(Cronenwett, Sherwood, Barnsteiner, Disch, Johnson, & Mitchell, 2007). Mulready-Schick, et al. report increased cooperation and collaboration from both students and staff nurse clinical teachers citing welcoming and shared patient assignments as contributing to feeling included by students, and increasing student opportunities through collaboration of clinical instructors with other staff nurses (*Teamwork and Collaboration*). Medication administration safety was improved, “smaller student to teacher ratios reduced the potential for errors and supported medication knowledge gains” (p. 718) (*Safety*). Students and staff identified easy access and availability of technology, such as computers, and their utilization for supporting patient care and learning (*Informatics*). They report students practiced in a more holistic manner, encompassing all patient needs, and positive role modeling by staff was

significant for student improvement of their patient interaction (*Patient Centered Care*). Best practice projects, a unit based teaching and learning activity by the students presented to the staff supported learning of both staff and students (*Evidence Based Practice*). As students were fully integrated into the unit, opportunities for ‘teachable moments’ increased, and staff and students’ clinical learning expectations were exceeded. Their conclusions support the DEU model as “clearly facilitated learning of quality and safety competencies” (p.719) and a beginning step towards evaluation of learning outcomes. (Barton, Armstrong, Preheim, Gelmon & Andrus, 2009).

Purposely-Constructed Learning Environment

The DEU is a purposely-constructed learning environment to support the learning of undergraduate nursing students (Wotton & Gonda, 2004; Miller, 2005; Moscato, Miller, Logsdon, Weinberg & Chorpensing, 2007; Pappas 2007; Mulready-Shick, Kafel, Banister & Mylott, 2009; Warner & Burton 2009) and new graduate orientation to a practice environment (Pappas, 2007). The collaboration of education and practice recognized the need for increasing the numbers of nurses identified by the US Labor Department and surveys by nursing organizations. Additionally, the declining availability of clinical experiences for nursing students and faculty prompted the exploration of options to increase both supply of nursing students and capacity of undergraduate education to meet these need. (Edgecombe, et al, 1999, Miller, 2005, Pappas 2007, Warner and Burton, 2009, Mulready-Schick et al, 2009). The development of the DEU learning/ practice environment began with the vision of Edgecombe et al, (1999) in Australia and was undertaken and materialized in the US to meet the local needs of the

education/practice partners. The construction of the DEUs began with reviews of research to learn more about learning environments, redesigns of existing hospital units, restructuring of current nursing staff employed on the unit or new hires of interested nurses to the unit and its mission, realignment of faculty roles and responsibilities and identification of successful outcome measures.

Expansion of the DEU in other nursing education settings was the focus of two studies (Moscato, Nishioka and Coe, 2013; Melillo, Abdallah, Dodge, Dowling, Prendergast, Rathbone, Remington, Shellman, & Thornton, 2014). Moscato et al (2013) describes the need for essential elements to support implementation and development. The essentials include a strong academic-clinical partnership, a collaborative commitment to develop the DEU, and establishing quality assurance systems. The University of Tennessee DEU was developed to support their master's entry level program and the University of Portland DEU for their undergraduate program. The results for their experiences included positive outcomes from student perspectives including "a very realistic view of how nursing really is. We were treated as colleague rather than students, and this mutual respect made for a more inviting learning experiences" (Moscato, et al, 2013, pg.265) for students at UT; and the "welcoming environment that students felt and their ability to 'gain a more realistic view of the work of the nurse and the importance of cooperation in nursing'" (p.266) in the UB setting. There were additional outcomes of increased NCLEX scores, early identification and intervention of student clinical challenges. Concerns raised included little change in the number of clinical faculty needed because of state board requirements of faculty presence on the clinical units and the need for clinical faculty to be oriented and supported in their

new roles. The conclusions suggest the DEU model is able to be replicated in a variety of educational settings and “show(s) promise in addressing the nurse faculty shortage, strengthening academic-clinical collaborations and improving educational outcomes for students” (Moscato, et al 2013, p.267).

Development of a DEU in long term care was a pilot project to explore their use as a clinical site for undergraduate students (Melillo, Abdallah, Dodge, Dowling, Prendergast, Rathbone, Remington, Shellman, & Thornton, 2014). Utilizing a skilled nursing facility for student clinical, the pilot results included positive responses from students, clinical teachers and academic faculty regarding awareness of Gerontological nursing and continued interest by clinical teachers for continuing their role. The need for strong academic-clinical collaboration was crucial to the process. As a result of the partnership and DEU model, there was increased student usage of the DEU and plans to continue the model.

Partnerships

The partnerships of education and practice were constructed to formalize the DEUs. The separation of nursing education into the academic setting from the previous hospital practice settings had been identified as a barrier to the meeting the need to expand supply and capacity. Education and practice settings have independent missions, policies, governing boards and financial obligations. Both parties had a stake in the outcome of educating more nurses, increasing capacity (education) and additional nurses to meet the demand for patient care (practice). Nursing education settings had need for more faculty and clinical placements to support expanding their ability to educate more

students and practice settings had a need for more practicing nurses in an environment poised to lose many seasoned practitioners to retirement and changing healthcare needs and policies. Development of partnerships and many meetings of nursing education deans and directors and nursing practice executives nurtured the process of developing DEUs. The first steps, discovery of needs, barriers and opportunities to develop and support a shared mission and vision, identified issues to overcome and compromise. Outcome measures and financial concerns were significant factors to consider, as these were separate measures of success and fiduciary responsibility. National and local accrediting bodies, state and local governing boards, funding, and faculty developed program objectives govern nursing education, whose mission is to educate. Practice is governed by similar structures, their mission is to provide healthcare. Though not specifically addressed in the DEU literature, the discussion of developing collaboration stresses the need for relationships of trust, mutual respect, sharing of resources and vision on the part of the collaborating partners were essential aspects of the process. These processes were identified by a variety of academic-practice partnerships (Barger et al, 2004; Burke et al, 2009, Downie et al 2001, Gassner et al, 1999, Horns et al, 2007, MacPhee, 2009, MacPhee, et al 2009, Novotny, Truglio-Londrigan & Macali, 2005 and Warner& Burton, 2009). A description of this process and identification of common ground was elaborated by MacPhee, et al (2009) to clarify important components in relationship development.

Faculty and Nursing Staff

A challenge to the process of developing education models to support clinical environments is distinguished by the roles of the faculty and nursing staff. The original model developed by Edgecombe, et al (1999) posits a model of clinical teachers directly involved in patient care and clinical teaching of students and supervisory faculty overseeing the curriculum and supporting clinical faculty. This model has continued in some fashion in subsequent units with some modifications. Academic faculty roles are varied, course lecturers, responsible for course and clinical curriculum and clinical instructors for facilitating clinical experiences, supporting clinical teachers and conducting clinical pre/post-conferences. Academic faculty describe their role is as 'peripheral' to the hand-on clinical education of their students, a change from the traditional 'hands-on' education and preceptor models widely used in nursing education. Clinical teachers' roles are practice, 'hands-on' directed and interactive with students in the hospital environment. They are active clinical practitioners in their areas of expertise, responsible for enhancing the learning of the students through directing, informing and evaluating student performance in the clinical area. The expectation is they embrace the student in all aspects of the clinical experience from direct patient care to socialization in to the profession. They are chosen for their interest in students and expertise in patient care. Preparation for this role includes some form of in-service education on clinical teaching and information of curriculum and clinical expectations. This need was identified by Smyer, Tejada and Tan (2015) in their description of the initiation of a three step process of identification and education of clinical dedicated unit instructors (CDI) (clinical teacher) to support the mission of the DEU partnership of the University of

Nevada Las Vegas (UNLV) and Summerlin Hospital Medical Center to provide “optimal student learning”. The process includes formal orientation (phase 1), ongoing education (phase 2), and evaluation (phase 3) of the CDIs. The initial education and continuing education comprised of UNLV nursing program information, communication and teaching and learning best practices. An evaluation of the initiative through surveys of the CDIs and students reported rating the orientation highly and the interaction between students and CDIs as the most beneficial part of the DEU experience.

Academic faculty perspectives on the teaching and learning experience in the DEU are limited to a small sample (N=7) of qualitative findings suggesting there is support from clinical staff and a focus by staff on tasks versus clinical teaching. Their responses to a questionnaire were eliminated do to low numbers for statistical analysis, (Wotton & Gonda, 2004). Clinical teaching staff reported concerns with the initial time commitment in the early part of clinical, lack of knowledge about clinical teaching, and developing of an intermediary relationship between academic faculty and staff nurses (Moscatto et al, 2007). Research into the role of the clinical teachers has been a focus of the DEU literature. Clinical teachers supported the increased time students spent in the DEU as providing an opportunity to get to know students better, felt positive about their progress, challenged by student questions, and supported by academic faculty. Clinical teachers acknowledged an increased desire to expand their own knowledge, and some sought out continuing their formal education. They were able to facilitate clinical experiences through their ongoing understanding and knowledge of the clinical opportunities by their direct role on the unit, increase their ability to explain and integrate theory into practice and focus on relationship and role development. Their concerns were

the increased time for preparation, and the initial orientation and clinical experience; assumption of academic partner of their (clinical nursing staff) willingness and ability to teach, needing more information on teaching and learning theory, ways to support integration of theory into practice and information to evaluate student learning (Gonda et al 1999; Wotton &Gonda, 2004; Moscato et al, 2007).

Students

The DEU experience has been an overall positive experience according to students evaluating their experiences. The DEU is described as a preferred placement allowing for greater exposure to clinical experiences, improvement in knowledge and skills, peer support, feeling accepted and a sense of belonging and developing accountability for their learning, and comfort with their practice level and skills. The experience provided professional role modeling and supported acquisition of QSEN competencies (Gonda et al, 1999; Wotton & Gonda, 2004; Ranse & Grealish, 2007; Moscato et al 2007, Mulready-Shick et al, 2009). Detractors identified by the students about the experience were identified as: the increased time and workload associated with the DEU setting: not feeling prepared for patient contact and circumstances, conflicted about it being a work experience rather than an educational experience; being used as staff; and outside personal commitments influencing their learning (Gonda et al, 1999; Wotton & Gonda, 2004; Ranse & Grealish, 2007; Moscato et al 2007, Mulready-Shick et al, 2009).

The quality of the student's education in the DEU was explored by Mulready-Shick, Flanagan, Banister, Mylott & Curtin, (2013) and Sharpnack, Koppelman &

Fellows, (2014). Mulready-Shick et al (2013) studied learning outcomes of undergraduate students in their second clinical experience who were randomly assigned to either a traditional clinical experience or to a DEU clinical experience of using a survey instrument developed by two of the authors, the Student Evaluation of Clinical Education Environment (SECEE) instrument, the Growth in Clinical Learning Scale, and the Quality and Safety Competency Development Scale; Sharpnack et al (2014) explored the effectiveness of the DEU as a clinical learning environment for an accelerated second degree undergraduate program for a mixed method study of the effectiveness of the DEU as a clinical model by comparison of student achievement in standardized tests and self-evaluations of students in either a DEU clinical placement or a traditional clinical placement. Mulready-Shick et al (2013) found increased in positive learning experiences and SECEE score by the students in the DEU over the students in the traditional clinical learning environment. Sharpnack et al (2014) results supported higher scores of students in the DEU on Assessment Technology Institute (ATI) tests, Creighton Simulation Evaluation Instrument (C_SEI) and student self-reports of “higher levels of confidence in clinical skills and clinical judgement capabilities, capacity to prioritize care, mindfulness of quality and safety measure required for the care of patients, and ability to think like a nurse through collaborative learning experience” (p. 688). In addition, the students in the DEU all passed the NCLEX, while not all of the students in the traditional placement passed the NCLEX (n=4). A significant finding was the positive response by the practice partner at the quality of the graduates upon hire and the reduction in orientation costs.

The findings of both studies support the DEU clinical learning experience as a strong, positive learning environment resulting in improved student learning outcomes and test

scores over students in traditional settings, positive regard from students, clinical teachers and employers of DEU graduates.

Moore and Nahigina (2013) explored students' perceptions of nurse collaboration differences in the DEU and in traditional clinical learning environments. The descriptive qualitative study found there were no differences in how students perceived nurse to nurse or nurse to student collaboration but student did report an increase in collaboration "among nurses in the DEU ...providing increased opportunity for students to work in close and consistent alignment with staff nurses" (pg.349).

Conclusions

The DEU is, and has shown promise as, a successful model of collaboration and partnership of academia and practice to support nursing education. The premise has led to support of student, graduate and staff nurse learning, retention and recruitment of RNs in the practice setting, improvement in QSEN competencies and nurse sensitive practice outcomes (Edgecombe, et al 1999, Gonda et al. 1999, Wooton & Gonda 2004, Miller 2005, Ranse & Grealish 2007, Moscato et al 2007, Pappas 2007, Warner & Burton, Mulready-Shick, 2009, Edgecombe & Bowden, 2009, Tanner 2010). DEUs have supported increasing the capacity of nursing school programs and the academic faculty responsible for student learning through expanding their ability to teach and facilitate both student and staff education. It would appear to be a win-win situation overall. There are unanswered questions about costs associated with the unit, the expansion of nursing and DEU programs, and long-term outcomes measures of students and staff of their experiences. Student concerns of their role and focus of the experience- is it work

or learning? Satisfaction, positive responses and fiscal benefits for both academe and practice by students, staff, administrators and faculty are the key outcome measures described by surveys, interviews (individual and focus groups) and revenue cost-benefit analyses. The process of the development of nursing knowledge and practice has not been part of the discussion. A student question poses an interesting point of the process of educating nursing students in the DEU –is it work or learning? A strong indicator of student satisfaction is the relationship with the staff and continuous exposure to the clinical environment as supporting their perception of learning. Clinical teachers/unit staff positive perceptions centered on their positive relationships with students, increased time/opportunity with students to interact and expose them to clinical care, and satisfaction with the role of teaching students. Negative comments about the experiences include time commitment to the DEU (students) and lack of specific teaching knowledge (unit staff/clinical teachers). Students' clinical experiences from traditional clinical models show no quantitative differences in the clinical experiences and qualitative measures support personal and social relationship factors as supporting self-esteem and sense of achievement (Edgecombe & Bowden, 2009).

The DEU literature does not consider the acquisition of nursing knowledge and how this is impacted by the clinical experience. There is no clarity on what students are learning, how they are being taught, and professional knowledge development. The socio-cultural and relationship factors appear to have significant impact on the learning experience of nursing students. The DEU has provided significant benefits for all involved in the partnership and clinical learning experience. What and how are students

learning in the clinical setting? How is nursing knowledge being developed in the clinical experience? This research will explore these questions.

Theoretical Framework for the Study

This study will explore the nursing knowledge development of undergraduate nursing student's clinical education experience through the lens of the epistemological concepts of nursing's ways of knowing as described by Carper (1978), Munhall (1993) and White (1995). The call for nursing education transformation does not call for a change in the knowledge base of nursing but how it should be expressed in the curriculums of current and future nursing programs. The profession of nursing is a practice profession and as such the development of practice is the essential component of a nursing student's education and socialization into the profession. The current discourse and research in nursing education is related to integration of essential competencies which addresses the student's perception and knowledge acquisition of safe practice competencies. It does not address the acquisition or integration of nursing knowledge/ways of knowing or how this is experienced, nor does it reflect the diverse nature of nursing in its many areas of practice. Exploration of knowledge development falls within the philosophical branch of epistemology. As the education of nursing students is in need of change, the exploration of how students have developed their knowledge of nursing as developing practitioners may provide another perspective to address ways to reframe the clinical education

This study concentrated on the experience of the nursing student developing nursing knowledge during their clinical practice experiences. An additional aspect of this examination was the compare and contrast of DEU and Non-DEU experiences. This

process was examined utilizing a framework developed by the researcher that intersects the concepts described as nursing's ways of knowing in concert with development of tacit knowledge, intuition and communication/artistry in the educational clinical interactions of nursing students with expert nurses. This framework identifies student nurse growth and development of nursing knowledge and practice as an evolutionary trajectory of expansion and integration of this process through the reflective interaction with clinical teachers, faculty and nursing experts in their embodied moments of artistic patient interaction (Figure 1).

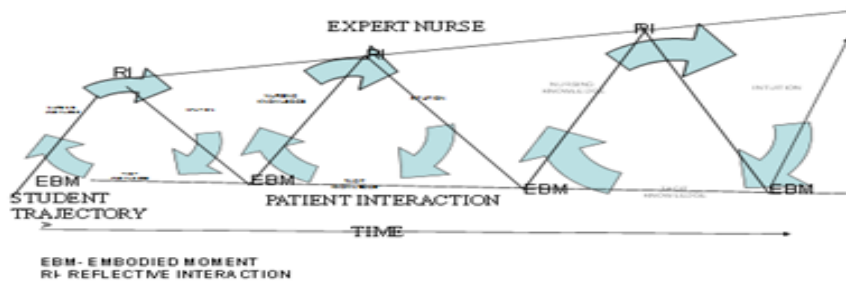


Figure 1: Framework- Growth of nursing knowledge and practice through the artistry of interaction

CHAPTER III

METHODOLOGY

Research Design

This study explored and describes knowledge development of nursing students as they develop nursing practice in the clinical setting. The study uses a qualitative design of in-depth interviewing and a site visit of the DEU the participants spent part of their educational clinical experience. The researcher did not visit other clinical sites as researcher is a nurse educator for 17 years and is familiar with other clinical sites and experiences.

Validity

In this study, the researcher spent time in the DEU observing the setting and processes taking place during the clinical rotation of UMASS undergraduate nursing students. The researcher wrote extensive field notes of the observation and kept a personal journal of the experience. Data was continuously examined during the research experience by reading and re-reading, triangulating, comparing and contrasting the data, examining for outliers and exceptions to validate findings, and ongoing research in the literature to examine possible explanations and theories. During the individual in-depth interview, the researcher elicited feedback from participant during and at the end of the interview to verify data. Researcher sought participant permission to contact them after the interview in case there were questions about the data

Sample

The development of sampling strategies in qualitative research is described by Munhall (2007) as “theoretical”; and sample size is purposeful until there is saturation of the data. Theoretical sampling involves seeking answers to questions or hypotheses that arise during analysis by interviewing new participants with relevant experiences, looking for comparisons in the data already collected, returning to the participants to ask new questions, conducting participant observation consulting policies or documents and looking at literature.(p. 248).

In this study, UMASS at Amherst undergraduate nursing students were invited through the School of Nursing list serve following IRB approval for study. The researcher sent an emailed invitation (Appendix A) to the list serve following IRB approval. The researcher conducted email correspondence with interested students and arranged for interview date and setting. The researcher interviewed 10 students which were deemed to be sufficient to achieve data saturation. After initial invitation via list serve did not provide sufficient number of subjects, the researcher sent follow-up invitations to the list serve. This did not provide sufficient number of subjects, and the researcher sought permission from junior and senior student faculty to visit and present the invitation in person to their classes. These methods produced a sufficient number of subjects and the researcher did not need to consider expanding the subject pool.

Procedures for the Protection of Human Subjects

Participants were invited to participate by the researcher by email solicitation to the UMASS at Amherst undergraduate nursing student email list serve. The study was presented in an introductory letter explaining the study, role of the participants, and commitment to the research process. The introductory letter notified the possible subjects that participation is voluntary; interviews will be audio taped and transcribed verbatim by the researcher and or a professional transcriptionist; there was opportunity for the participant to withdraw their consent for participation or may exclude of any specific aspects of the interview they wish to be eliminated from the interview or database. In the description of the study potential participants were informed of the procedures to maintain their confidentiality during and after the study. Specifically, that identifying information and interview data was coded by the researcher sequentially (subject one with audio tape/transcript one) with the coding information was kept in a locked box in the researcher's home office; that the audio tapes were kept in a different locked box in the researcher's home office; that transcripts were kept digitally in a password-protected file on the researcher's home computer, and that there was no identifying data connected with either database. (Appendix A)

Setting

UMASS at Amherst is part of the flagship Massachusetts higher education system. It is located in the Pioneer Valley of Western Massachusetts. As of fall 2014, it serves 22,252 undergraduate and graduate students and employs 1,174 full time instructional faculties. Supported research activities total more than \$191 million in

FY2013. It grants degrees in 111 bachelor programs, six associate, 76 masters and 47 doctoral programs is eight school and colleges. The library system is the largest at a state sponsored school in New England with more than 7 million items (<http://umass.edu/umhome/about>). The College of Nursing was founded in 1953 and provides nursing education for undergraduate and graduate nursing students in three undergraduate programs- traditional, RN to BSN, Second Bachelor Program, two master's level programs- Clinical nurse leader(CNL) and MS/MPH and two doctoral programs- a Doctorate in Nursing Practice and PhD.

The Baystate Medical Center (BMC) in Springfield, Massachusetts is an academic, research and teaching hospital that serves as the western campus of Tufts University School of Medicine and is a site of many clinical experiences for nursing students in the Greater Pioneer Valley in Western Massachusetts. It is a 659-bed facility with 57 bassinets. It is the only level 1 trauma center in western Massachusetts and home to the second busiest emergency department in Massachusetts. BMC is designated a Magnet Hospital of nursing excellence by the American Nurses Credentialing Center and has won the Beacon Award for critical care excellence two years in a row (www.bmc.org).

The Dedicated Education Unit (DEU) is a purposely-constructed learning environment for nursing students located at BMC. It is a collaboration/partnership of BMC and UMASS at Amherst, College of Nursing. The DEU provides clinical instruction for nursing students using a variation of the models described by Edgecombe, et al (1998) in Australia and Moscato, et al (2008) in Oregon. The DEU provides clinical

education of students through clinical teaching by the nursing staff directly involved in patient care, that have been selected for the unit by UMASS faculty and the Baystate clinical partners responsible for its creation. UMASS nursing faculty determines clinical education curriculum objectives and outcomes according to the AACN Essentials of Baccalaureate Education for Professional Nursing Practice (www.aacn.org), and the specific experiential learning is coordinated in collaboration with DEU clinical teachers and faculty. Students are required to apply for this particular experience and are selected by DEU faculty and staff. DEU faculty meets with potential students in the semester prior to explain the DEU clinical experience and provide applications. Students submit applications and resumes, and are invited for an interview at the DEU. Students tour the unit and talk with the clinical teachers. Clinical teachers and DEU faculty meet and discuss the pool of candidates and then review potential students based on predetermined on criteria related to professional image, attitude, leadership and delegation experience, interest in the DEU and compatibility with DEU unit. Applicants are ranked and invited to spend their clinical experience in the DEU. The DEU accepts between 6 to 10 students per semester, smaller groups in the early development of the unit to a maximum of 10 students as required by the Massachusetts Board of Nursing. (Personal communication, Cara Kenny, DEU faculty, April 13-17, 2011).

It is important to note this is not the usual process for nursing student assignment for clinical experiences. Traditionally, clinical experiences for students are controlled and assigned by academic faculty based on course objectives and available faculty and agency openings. In addition, clinical time is determined by the nursing program

calendar and course credit requirements. In many cases, students do not have any control over the clinical placements in which they are assigned.

Trustworthiness

The issue of ‘trustworthiness’ is addressed by Lincoln and Guba (1985) to defend the concern of rigor in the qualitative research process. They suggest four questions for researchers to foster ‘rigor’ of the qualitative process. These are,

“1) “truth value”: How can one establish confidence in the ‘truth’ of the findings of a particular inquiry for the subjects (respondents) with which and the context in which the inquiry was carried out?

2) Applicability: How can one determine the extent to which the findings of an inquiry have applicability in other contexts or with other subjects (respondents)?

3) Consistency: How can one determine whether the findings of an inquiry would be repeated if the inquiry were replicated with the same (or similar) subjects (respondents) in the same (or similar) context?

4) Neutrality: How can one establish the degree to which the findings of an inquiry are determined by the subjects (respondents) and conditions of the inquiry and not by the biases, motivations, interests, or perspectives of the inquirer?” (Lincoln & Guba, 1985, p. 290).

The issue of “truth value” can be supported through the idea of ‘isomorphism’ that the findings have a one to one relationship with the reality of the inquiry and a belief of multiple realities and that the nature of reality is a “multiple set of mental constructions” (Lincoln & Guba, 1985, p.295). The credibility of the findings is paramount to the trustworthiness of the inquiry and need to resonate with the constructors of the reality of the original respondents.

In this study, the researcher questioned all participants in the proposed study at the end of the interview to check for representativeness of the data collected by the

researcher, giving the respondents the opportunity to verify or clarify their answers to the interview questions. The researcher continued to interview participants as necessary to further explore participant's experiences. This continued until the researcher deemed there was saturation of the data collected. Saturation is determined when the subjects' answers to the interview questions are repetitious and "no new themes or essences have emerged from the participants" (Speziale & Carpenter, 2007, p.95). The researcher invited the participants to review preliminary thoughts of the researcher at the end of the interview to gain the perspectives of the respondents, and to verify their view of the feedback of the researcher. Their comments were further reviewed by the researcher through listening and reviewing the verbatim audio recordings and transcripts for consideration to confirm or further develop research findings. Participants were not contacted following the interviews.

Specific activities to support credibility of this study were prolonged engagement with the data, brief observation of the DEU, and triangulation of the data. During data collection, the researcher engaged in participant checking of their comments to verify their statements. Researcher reviewed verbal comments made by the subjects during the interview following each question (Appendix A). This happened during the interviewing process and at the end of the interview. At the end of the interview, participants were be invited to share their contact information with the researcher for review of their interview transcripts, follow-up questions to further verify information and elicit their feedback regarding their interview answers. Following the completion of a preliminary report of research findings, findings were shared with committee members for their feedback.

Activities to Support Credibility

The researcher spent two days at the BMC DEU during a UMASS nursing student clinical rotation, observing activities and the physical surroundings of the unit.

Observation in the setting provided a snapshot of the environment and experience among the participants of the setting to be studied. It was an activity to support understanding by the researcher about the uniqueness of the setting. The researcher began observation in the DEU after the acceptance of the proposal and subsequent approval by the UMASS at Amherst and BMC institutional review boards. There had been some preliminary contact with some of the nursing personnel involved with the setting to discuss the proposed study. This activity was necessary as the researcher has not observed or been involved as a clinical instructor in a DEU. The researcher's experience as a nurse educator in clinical education has been in non-DEU or non-purposely constructed nursing education learning environments. Observation of the participants involved in the clinical DEU setting supports the identification of the relevant issues, problems and depth of the phenomenon studied.

Triangulation of the data to supports credibility by verifying findings from a variety of sources. Triangulation of the data as noted by Speziale and Carpenter (2007) occurs when there is more than one source of data and support "understanding or to obtain completeness and confirmation" (p. 381). In this study, triangulation was accomplished by the review of sources- observation by the researcher, individual audio tapes and interview transcripts of participants, field notes kept by the researcher and review of relevant literature.

Negative case analysis is a process of continuous refining of hypotheses for pattern recognition and development, and eventual ‘fitness’ of the data to the conclusions drawn by the researcher. The process is to consider the exceptions to the consistent findings by the researcher, and reduce these to the least possible amount. This process included keeping and completion of field notes, peer debriefing and ongoing discussion with dissertation committee members. In this study, there was audio recording and verbatim transcription of individual interviews by the researcher and a professional transcriptionist for review of the data and data analysis. Member checking is an additional process for supporting credibility, this requires the participants to review the findings and interpretations of the researcher through both informal discussion with the respondents and formal checking by presenting findings to the participants for feedback and clarity of findings. Member checking is expected to examine the construction of the findings by the researcher as to the adequacy of the findings. For this study, the researcher discussed and clarified data with participants in an ongoing fashion during interviews with all participants to clarify points and seek feedback of interpretations.

The applicability of the findings, the idea of generalizability of findings, has been reframed “to a question of transferability” (Lincoln & Guba, 1985, p.297) to similar contexts. The onus of the transferability of findings is on the reader wishing to apply findings elsewhere. The researcher can only determine and verify the applicability of findings is consistent with the reality of the participants in the study. The findings and implications of the study can only be attributed to the specific setting and participants studied as a statement of the reality studied by the researcher.

For this study, the acceptance of what was investigated and is subject to the peculiarities and experiences of the setting contributes to supporting the findings and thus affirming the validity. To accomplish this, it is the intention to support the data with ‘thick description’ by developing a sufficient data base of information compiled by the observation, interviews and audio tapes, the collected data of the study. This was done by conducting in-depth subject interviews and collection of the data until the researcher determined the nature of the interview responses are sufficiently similar or there is saturation of the data. This occurred following interviews with 10 participants

In this study the issue of dependability is a part of the larger picture of the setting and phenomenon being studied. Activities to support dependability were the development of an audit trail of the data collected and make the data available to the reviewers. The data collected for this study was audio tapes of the participant interviews, verbatim transcripts of the interviews, field notes of the site visits by the researcher, observation notes of the interviews, notes and preliminary reports of coding and themes identified by the researcher, and the final written report of the study findings. These data sources were collected and kept by the researcher in locked files and password protected computer files and available to committee members as needed and requested. The dissertation committee are the ‘auditors’ of the process and provide the authentication and dependability of the researcher and data collection throughout the process of the proposed study. The study materials which provided the audit trail for this study include:

1. A written self reflection of the researcher prior to the beginning of data collection to examine bias which may be present in the research by virtue of the researcher's background,
2. Interview schedules and guides,
3. Electronic audio recording of interviews;
4. Verbatim written transcriptions of the interviews;
5. Field notes by the researcher (recordings, field notes, and other relevant written materials);
6. Data reduction and analysis products, (summaries, notes, memos);
7. Process notes of data analysis by the researcher, notes of meetings related to the research and research process, (category structure, findings);
8. Process notes, (methodological notes, trustworthiness notes and audit trail notes);
9. All necessary and appropriate IRB approvals, participant agreements; and
10. A final report in the form of a dissertation to include findings and necessary inclusions.

The subject of the neutrality of the researcher concerns the objectivity of the research. The objectivity of the researcher will need to be continuously examined throughout the data collection process as the researcher is a nursing faculty member with

20 years of clinical education experience. This process was noted in the self-reflection notes and process notes collected following IRB approval and continued during the study.

Interview Questions

Interview questions were designed by the researcher based on the epistemology of nursing as described by Carper, Munhall and White. Questions were reviewed with a committee member and deemed to be too theoretical for undergraduate students and may be anxiety producing as originally constructed. Interview questions were revised by the researcher following this discussion to be more student-friendly by reframing the epistemological concepts to defining activities or experiences that are consistent with the spirit of the concepts and easily understood by students. (Appendix A). Undergraduate nursing students not eligible for the study were invited to review interview questions to clarify their understanding of the questions. Feedback from these students supported clarity and understandability of the questions.

Data Collection Plan

In summary, the following strategies were proposed, accepted and put in place to address trustworthiness and validity for this research;

1. A proposal to Institutional Review Boards of UMASS at Amherst and Baystate Medical Center was submitted and granted by UMASS at Amherst. The proposal to BMC was determined to not be appropriate for the study purpose, and withdrawn. Included in the proposal were consent forms that described the plan for protection of human subjects.

2. Development of an interview schedule guide for interviewing of participants; Individual interviews of nursing students and DEU participants (nurses, faculty and staff) by researcher. This included audio recording and written transcription of the interview. Audio tapes will be destroyed following completion of study.
3. Direct observation of the DEU setting by the researcher during the times when UMASS nursing students were present.
4. Data collection and audit trail documents was kept and filed for analysis purposes and for supporting findings. Included in this was:
 - A. A self-reflection by the researcher to address bias; recordings and interview transcriptions;
 - B. Field notes divided into- 1. Observations; 2. Reflections; 3. Memos of data analysis; 4. Notes of dissertation committee meetings;
 - C. Notes of meetings of participant checking, both informal and formal proceedings; documents related to proposal acceptance, IRB approvals, participant consents and other necessary forms;
5. Meetings with dissertation members throughout research; and
6. Completion of written final report for committee member checking and eventual dissertation completion and defense.

Data Collection Protocol

The researcher carried out the data collection. The researcher engaged a transcriptionist for transcribing data from audiotapes to written data. The specific protocol was as follows:

1. Development of interview guide questions and consent forms and they were reviewed by the dissertation committee and a reference peer group of nursing students for confirmation and clarification of questions.
2. Meetings with committee members was done at intervals throughout data collection and analysis for supervision and further consultation for feedback and recommendations
3. Researcher used three notebooks for data analysis and field notes. One for observation notes, one for researcher reflections and one for research memos.
4. Recruitment of all undergraduate nursing students in DEU for their clinical rotation. This was accomplished by discussing with clinical faculty and meet with group to explain study. Additional recruitment was by email solicitation of appropriate students through the UMASS College of Nursing student list serve.
5. Meeting with DEU staff members to discuss observation and review study, and obtain consents if necessary(to be determined by DEU faculty, staff and BMC)
6. Observation day schedule to begin with clinical rotation of student group. Collection of field note data throughout the observations during the student clinical days through written notes and audio taped commentary after observation by researcher.
7. Interviews were conducted by the researcher at Skinner Hall of the UMASS CON. A two-hour period was planned to include obtaining informed consent, the interview and discussion of possible need for follow-up information and participant checking of the interview data.
8. Analysis of data began with the beginning of data collection and continued throughout and after data collection. Data was analyzed by reading and rereading of the data, triangulation of the data and organization into themes.
9. Data was transcribed as soon as it was collected and analysis of interview data began following obtaining completed transcripts. Transcripts were transcribed word for word, double-spaced with wide margins for notation by researcher of relevant themes and categories in a manner which was discussed and clarified with the professional transcriptionist. Data analysis was done by researcher through listening to the audio tapes, reading and rereading of data (data immersion), and writing research memos. Following this process, analysis for concepts and themes and development of categories was undertaken. Concurrent review of relevant literature to support data finding occurred during this time.

10. Following analysis of data by researcher, a preliminary report was completed and sent to the committee members. Final analysis and writing of the report followed and completion of research process.
11. A final meeting of the committee for feedback for final writing of research findings was done through email sending of research paper drafts.
12. This process began in the spring of 2011, and the final report and defense of findings completed by December of 2015.

Data Treatment

Data collected throughout the study was kept by the researcher in the following manner:

1. Informed consent forms were coded by the researcher. The researcher prepared a list of the codes and subject identification. The codes were used to identify audio-taped recordings and written transcripts. The informed consent forms and list of identifying codes were kept in a locked box in the home office of the researcher. The subject identification list and informed consent will be kept by the researcher until the dissertation defense is completed.
2. Audio-tapes were coded at the interview and kept in a locked box in the researcher's home office until the dissertation defense is completed. At that time the tapes will be destroyed by the researcher unless dictated otherwise by the committee for doing follow-up research.
3. Coded transcripts were kept in both digital and hard copy. The digital copies were kept in a password protected file on the researcher's home computer. The hard copies were kept in a file in the home office of the researcher. Transcripts will be shared as needed with dissertation committee members, peer and other consultants directly involved with the dissertation process. Transcripts will be kept for as long as the data collected is necessary for further research. When it has been determined the data is no longer relevant to the researcher, it will be destroyed.

Data Analysis

Qualitative data analysis begins with the research data collection. Analysis of qualitative data will be guided by the processes described by Miles and Huberman (1994), Corbin and Strauss (2008) and Wolcott (2008). This process requires extensive 'dwelling with the data', reading and re-reading transcripts and field notes, listening and

re-listening to audiotapes and identifying common themes and categories. Triangulation of the data should provide the story of knowledge development by undergraduate nursing students. During analysis and interpretation, a review of related research and literature to explain and support findings were conducted. In this study, the researcher throughout the data collection process utilized notebooks for collection of written field notes, codes, and reflections and observations. Initial interviews were audio recorded and transcribed to written data. After receiving written transcriptions, researcher reviewed written data with audiotapes for review of data and initial coding and theme development. Participant checking was done during the interview for checking accuracy of the researcher perceptions. Development of initial codes and themes was reviewed and refined throughout the research process, with continuous checking of the transcripts. The data was coded onto the transcriptions and in the researcher's notebooks. Review of data and refinement of categories and themes was ongoing until there was agreement that the analysis is reflective of the experience.

This process began at the beginning of the observation and continued until the final report is completed. The researcher, in notebooks and in memos kept by researcher, carefully recorded this entire process. Once saturation of data and satisfaction of data themes and categories was perceived by the researcher, writing of the final report began. Continuous review of relevant research and literature to support and explain the findings of the researcher for theory development will be ongoing. Modification of the emergent themes and categories was a continuous process until the codes and themes developed, fit with the study data collected. Ongoing meetings and email discussions with committee helped to clarify and solidify the final research report.

CHAPTER IV

RESULTS

This qualitative study explored nursing knowledge development of undergraduate nursing students in their clinical experiences. Specifically, the study explored differences in students' learning experiences developing nursing knowledge in a Dedicated Education Unit (DEU) and a traditional clinical placement. This exploration was conducted using the concepts of the knowledge of nursing based on Carper (1978), White (1995) and Munhall (1984) as a framework for interview questions. Exploration of these concepts was further explored utilizing comparisons with their clinical experiences in traditional clinical environments and dedicated education unit environments. The researcher used the experiences and stories of the nursing students interviewed to search for commonalities.

Design, Sample and Demographics

The qualitative study was conducted in two parts: 1. observation of undergraduate nursing students during two clinical days of a Dedicated Education Unit in a tertiary care medical center by the researcher; and 2. Individual interviews with 10 undergraduate nursing students who were purposely recruited because they had spent at least one clinical experience in a DEU and another in a traditional clinical setting and voluntarily agreed to participate in 1.5 hour individual interviews. The age range was 22 years to 44 years; junior and senior students in a large, research intensive, flagship, public university. Students were in either a traditional BSN program (n= 8) or in a Second Bachelor in Nursing program (n= 2) at the university. All students had been in both a dedicated

education unit and a traditional clinical education setting for their clinical experiences. The dedicated education units were in acute care medical surgical units setting, using an academic faculty supervised, clinical teacher model. The traditional clinical experiences were in acute care settings and sub-acute care settings utilizing an on-unit clinical instructor from the university with 6-10 students to 1 faculty ratio, and 1 to 1 preceptor models. Interviews were conducted in classrooms in Skinner Hall on the UMASS at Amherst campus.

Data Collection

Following approval by the UMASS at Amherst Institutional Review Board, data collection was done according to the protocol described in the Informed Consent (Appendix A). The researcher/author conducted both the observation and the individual audiotaped interviews. The observation of the DEU was conducted as the researcher is an experienced nurse educator in both the classroom and clinical setting and had no prior experience with working with students in a DEU setting. The interviews began with audiotape recording the review of the study and completion of the informed consent, and then a general question about the students' experiences in their clinical rotations—"How would you describe your clinical experiences?" Participants were asked the questions in the Interview Guide (Appendix A) verbatim and in the order written. Follow-up questions and explanations for clarification of students' answers, and clarification and description of concepts presented in the questions were also done throughout the interviews. Interviews were conducted over a period of two years and there were no obvious differences in the first student interview and the last interview, both contained

similar stories and experiences. Audio-taped interviews were transcribed by a professional transcriptionist.

Data Analysis

Following the two DEU observations and individual interviews, notes were kept by the researcher reflecting her thoughts and observations of the experiences. Initial reading of the participants' interviews and descriptions of their experiences was done for a general understanding. Notes were kept prior to and after the interviews and read after the transcripts. The transcripts were then re-read to examine and extract common words and statements. Themes and subthemes were constructed from these commonalities by making notes and highlighting of common words and phrases. The commonalities were written in notes and diagrams of each questions and answers were developed and drawn to examine links among common experiences. Review of observation notes and commentary during and following the DEU observation were consulted and integrated into the review. This process assisted in composing the data tables (figure table 5.1). This process led to the separation of common phrases from which were further separated into single word themes with related subthemes. Preliminary results were shared with committee members for additional feedback and results from the feedback were further reviewed and changes for clarification were incorporated.

The trustworthiness of this study is a strength in that the 'operational techniques' identified by Guba and Lincoln are clearly supported. The credibility is supported by the prolonged engagement with the material and results by the author. The process of the research has been a period of four years from the acceptance of the

proposal and the two year period of data collection. The dependability of the results is evident by the triangulation of the data collected by the researcher- observation of the DEU, field notes during the observations and interviews and interview question answers. The confirmability of the findings is evident in the audit trail of field notes and research notes the researcher has kept throughout the research. It is possible another researcher may draw different conclusions but the prolonged dwelling with the data by the researcher has supported the findings. The transferability of the results of this study is directly related to the support of evidence from previous research studies verify and substantiate the confirmability and dependability of their stories. The results provide additional evidence for nurse educators and clinicians to inform and provide evidence based clinical education of student nurses.

This section contains the data for the observation and a table containing commonly occurring and remarkable comments from the individual interview transcripts divided into the five common questions(DEU and Non-DEU) and Other for comments not related to the clinical settings(see Table 5.1).

DEU Observation

Observation was conducted on two separate clinical days using an unstructured observation approach in which the researcher spent time watching the students and clinical teachers interact on the patient care unit, and recording descriptive data of unit activities and interactions. This was done ‘to make the familiar strange’ as the researcher has many years of teaching nursing students in a variety of clinical settings but not in a DEU. The DEU was a medical-surgical unit which is a different clinical area from the

researcher's area of experiences which are maternity and mental health units. The medical-surgical inpatient setting is a setting with patients who are acutely physically ill with a variety of medical and post-operative conditions. The mental health setting has patients with mental health illnesses who are not physically ill and are created as a milieu to support mental health and patients are expected to be participating in the unit milieu, patients in a Medical surgical unit are expected to be in their rooms are unable to be up and participating in the unit activities. The inpatient maternity setting, patients include primarily mothers and babies and families and in most cases are not acutely medically ill. These differences were evident from the observation by the researcher that there were few patients out on the unit and are isolated from one another, thus presenting a different aspect of inpatient care which was not familiar to the researcher. Prior to the observations, the researcher met with the DEU university faculty and unit staff to explain and elicit support of the research experience and discuss the role of the observation. The researcher observed during two 12 hour clinical days, mid-semester. On one of the days, the researcher attended a clinical conference with the clinical faculty and students as an observer. The unit was an acute respiratory care in-patient hospital unit, a different discipline from the researcher's areas of expertise, and in a facility the researcher has no role. Observation involved being present on the unit, standing in the hallways and touring the unit halls and staff spaces. During this time the researcher took notes of unit environment, design and activities of all the people engaged in patient care activities, specifically noting activities of the students and their CNTs. On the unit there were a number of posters and information about the unit being a DEU hanging on the walls throughout DEU unit. There is a separate room for the students with reference material

and a place for their belongings. During the observation there were four students on the unit during the observations and 2 CNTs who were experienced clinical nurses, one with 31 years' experience and another with 3 years' experience. They were both present during the observations. During the observation and following conversations extensive notes were taken by the researcher to record observations, thoughts and questions by the researcher and comments of students and staff of the DEU during the observation

Specific Observations of DEU

Observation notes of the researcher during the observation are summarized and highlighted here. Students arrive and independently search for their CNT for their assignments. At this time they discuss the patient assignment(s) and plan for the day. There is a familiarity and 'easiness' between the students with the clinical teachers and unit staff, with discussions of patient care and personal social chatter. Students independently go to the Electronic Medical Record (EMR) to read and then go into their patients' rooms. There were many instances of the clinical teacher or other unit staff seeking the students, and students seeking the clinical teacher or other staff for patient care information and activities. Students appeared to be comfortable on the unit and there was easy interaction in both directions.

There is ongoing consultation between the CNT and the student throughout the shift, especially around patient treatments, ongoing charting throughout the shift, and medications. CNT's were observed asking questions of the students seeking their input regarding patient care and their knowledge about certain aspects, especially medications student are scheduled to administer. Questioning appears collegial and scholarly during

their interactions. Students are observed independently seeking information in reference material on the unit, the EMRs and their textbooks. They are engaged and purposeful in their activities. There is interaction with other members of the unit staff and students were observed to offer assistance to them when they were not engaged with their patients or CNTs.

Conversations with the CNTs they shared their preparation of formal classes and consultation with academic nurses to explain the curriculum for the students and their active learning of teaching methodologies for them to utilize with their assigned students. Discussions following the observations by the researcher, revealed their genuine interest in the students' learning and wanting students to be "competent and proficient" in their knowledge and practice. They engage in weekly meetings with the students to review their activity and understanding following the clinical days. They refer to them as 'my students' and appear to take pride in this notion. They speak of working 'side by side' and want to make sure "(they) understand the knowledge and process of the patient care experience".

Reflection of the DEU Observation

The familiarity and collegiality of the student with the staff is apparent throughout the observations. This appears to support a trusting relationship between the students and CNTs and inclusion by the unit staff. Students appear engaged and immersed in the experience. They are independent in their participation in the experience and comfortable in their interactions with both the CNTs and unit staff. They were observed seeking out opportunities to learn or assist the staff if needed. Additionally they appeared

motivated to learn and reflect on the experience by seeking out information by questioning CNTs or staff or researching in reference materials.

Interviews

Interviews were conducted individually, face to face using 2 audio digital and tape recorders. Recorded interviews were transcribed by a professional transcriptionist, verbatim. Transcripts and recordings were reviewed by the researcher and were reviewed, read and reread multiple times for the analysis. The content analysis of the collected data is organized according the interview questions in Table 5.1. Analysis was done by continuous dwelling with the data according to the methods described in the previous chapter. Results from the interview questions are described by utilizing and incorporating the data from the questions presented (see Interview Guide Appendix A), and integrating the same questions asked about the students' experiences in the two units. The data is presented in the following manner in Table 5.1 with interview questions in the first column and data separated into three categories- 1. DEU comments; 2. Non-DEU clinical unit comments; and 3. Other, this column was for learning experiences described which occurred outside of the DEU or the Non-DEU settings. This was deemed necessary as there were comments made by participants about their knowledge development which did not happen in any clinical learning environment.

Summary of Qualitative Analysis of Data

Knowledge Development

Participants' general comments about their clinical experience noted in the data included 'very positive' 'very interesting' and 'awesome'. Students described all of their

experiences as contributing to their clinical learning. They were appreciative of the variety of experiences in a variety of settings. There was a spontaneous overall comparison of the units (DEU and Non-DEU settings) and the nurse educators (both clinical nurse teacher and clinical and academic faculty). The DEU setting elicited comments about ‘my nurse’ and the small number of students assigned with the CNT, a 1 or 2 student to CNT ratio; differences in the processes of learning- more independence; personal attention; interactions with CNTs (DEU), and supervising faculty(DEU), and unit nurses and unit staff peripherally involved. One student described it as the “Cadillac of clinical experiences”. The Non-DEU setting elicited comments about being independent; self-directed; mixed interpersonal experiences; aloneness; differing expectations of abilities of clinical faculty(Non-DEU) and curricular expectations; large numbers of student colleagues hindering interaction with the clinical instructor (6-10 student to nursing faculty ratio); and inconsistent involvement and reactions of the unit nurses and unit staff peripherally involved.

Knowledge development was directly impacted by the methodologies employed by all educators in the clinical setting, CNTs of the DEU, supervising academic faculty of the DEU, staff nurses as preceptors, traditional expert nurses involved in teaching the students, and traditional clinical faculty. Positive methods by CNTs, academic faculty and preceptors in all clinical settings which supported their learning were: knowledge of their learning needs; positive interpersonal interactions; challenging them by Socratic questioning about the specific patient care situations and guiding their thinking processes; trusting the student to perform patient care in a responsible way; and a sense of a team of unit staff supporting their learning. Negative methodologies which were detrimental to

their learning were- indifference to them and their learning; lack of knowledge of their abilities and needs; lack of support or direction in planning and supporting patient care needs; anxiety and fear of interaction with unit nurses; too much independence; not enough trust in the student to perform; abandonment to perform patient care without any consultation by assigned nurse; lack of faculty supervision as clinical instructor was unavailable; and lack of a supportive team on the unit.

Purposeful construction of the clinical experiences includes both clinical experiences (DEU and Non-DEU settings), and curricular expectations of assignments and objectives. These experiences shared commonalities of an expectation of students to provide nursing care to an assigned patient(s), clinical learning objectives, and clinical teaching and supervision by expert nurses (who may be CNTs-expert clinicians and or academic nursing faculty). The preparation of clinical learning experiences by academic faculty requires the faculty to construct academic and scholarly activities to meet academic goals and objectives of the individual course. The knowledge, skills and attitudes of student expectations are derived from expert faculty, clinicians, faculty and professional organizations. It is these that require the faculty to construct the experiences to meet them. Pedagogical principles and research guides this process of construction of clinical learning experiences. This scholarly activity builds a guiding framework for engaged teaching and learning of nursing students.

Student experiences in the purposely constructed DEU provided “individual learning” experiences as described as “my nurse... (who) knew me and my learning needs” and “provided direction” to meet them. There was a personal relationship, and

individual attention and guidance which supported learning both knowledge and skills by the students. The presence of a consistent DEU clinical teacher led to trusting relationships between student and teachers to invest in the learning process. In the DEU setting, two students described recognition of nursing content presented in class and with the questioning and added explanation by her DEU clinical teacher, the student described a ‘deeper and more holistic’ understanding of the application and the interrelationships of patient’s pathology, symptoms and interventions. The DEU setting in general had patients with consistent medical diagnoses and provided continuous care of the ‘same type’ of patient supported acquiring new nursing knowledge and development of tacit knowledge over time to provide patient care. The relationship of the student with the clinical teacher provided a bond of trust to ask questions and willingness of the student to verbalize their not knowing or understanding. “There was never any- do this, don’t do that”; it ‘felt collegial’. The consistency of the relationship over the course of the semester, supported students developing more opportunities for learning as the clinical teacher incorporated explanations and Socratic questioning at the bedside or immediately after the patient care encounter. This was the experience of all but one of the students interviewed whose DEU experience did not consistently meet the expectations of the DEU learning environment of a consistent CNT. Repetition of similar cases that built upon previous experiences allow for constructed knowledge.

The Non-DEU settings provided a different, traditionally constructed clinical experience of an on-unit clinical faculty instructor and/or preceptor model. Frequently described experiences to support their knowledge development were “it depends”.

Inconsistency of the experience, either due to the unit nurses and staff ‘not sure what to

do with me'; 'not knowing what I needed'; 'no one was around to ask', availability of consultation or supervision with either nursing staff, clinical faculty or other unit personnel; 'knowledge and experience of the clinical faculty' and the number of students on the clinical unit being supervised by a clinical faculty. In settings with traditional 8-10 students to 1 clinical faculty ratio, clinical experiences differed by the interest of the staff, 'she (the staff nurse or preceptor) took me under her wing (his wing) and explained everything which was going on'; 'my course instructor was my clinical faculty and (this was very helpful)'. Positive learning experiences in the Non-DEU settings were mostly in specialty clinical settings- specifically in patient care units in Psychiatric-Mental Health, Maternity, and in Pediatric experiences in a school setting with a school nurse preceptor which in most cases provided a consistent type of patient. These experiences were described as improving their comfort levels and confidence and provided opportunities to develop tacit knowledge of patient care. Students, who had multiple clinical experiences and had spent time in traditional setting on Medical-Surgical units, again described the 'it depended' on the quality of the learning experience.

The structure of the DEU provided a means to support a holistic and optimal learning experience through a purposely constructed framework which takes into account all of the nursing concepts, pedagogical theories and education research to support the development of clinical practice. Through this construction the development of tacit knowledge and intuition are supported to create embodied learning by the students.

Other (outside of either clinical setting)

Students described assigned curricular assignments of weekly writing in a clinical evaluation tool (CET) and/or Journal were activities which supported knowledge development and integration of nursing theoretical concepts. “We had to write every week in our CET” “the CET included a lot of these areas (interview questions)”. “We had to journal each week” and reflect about our clinical experience.” Self-motivation to support clinical learning “I looked it up”; availability of resources (hard-copy, on-line), independence and self-direction was identified as positively impacting their learning. Post conference discussions supported reflective discussion “if there was time” and clinical faculty was knowledgeable in conducting and eliciting relevant information to support student learning. Additionally, students described Simulation experiences and de-briefing afterwards as another experience and place in which they were aware of integrating evidence based nursing, during the scenarios and in the debriefing discussions afterwards. Casual discussions with student colleagues outside of the clinical experiences- in student lounges, car rides and casual conversations- provided serendipitous opportunities to reflect and integrate concepts. In one case, this conversation provided an ‘AHAH’ moment. “I think it’s all the talking with friends, I think that no one understands us like we understand each other...we yap away about everything and we talk through things with each other...it brings things together.”

Knowledge Development

Nursing Knowledge

Empirics-Evidence Based Practice.

Awareness of empirics and evidence based nursing not presented prior to the clinical experience was described as 'segmented' with a mixture of experiences. Incorporation of evidence at the point of care was dependent on the nurse assigned to the student/patient and availability of clinical teachers and academic faculty. Inconsistency was a common occurrence for students. Stories about an awareness of incorporating evidence-based nursing described similarities of this occurring during the clinical experience if: 1. the content had been presented prior to the experience; 2. the presence of the DEU clinical nurse teacher; and 3. the presence of nursing faculty on the unit.

Students described their awareness of evidence based nursing immediately as patient care experiences presented themselves, if the information was presented prior to the clinical experience, and they were able to incorporate this into their care. One student described having a class from a lactation consultant prior to being assigned to a breastfeeding mother and felt more confident she was providing the appropriate care and education, this experience was not in a DEU setting.

Aesthetics-Communication

Interpersonal interactions/communication and development of relationships with patients were described by students in both clinical experiences. Describing these experiences showed very little differences in awareness as students were able to quickly

described specific patients and situations, development of interpersonal relationships and conversations. The personal statements of wanting to help patients were a common theme in this discussion. Students described not always feeling able to provide patient care based on their lack of knowledge, experience, or self-consciousness to initiate or participate in patient interactions. Engaging in patient interaction presented both practical and personal challenges. Practical challenges included language barriers and multiple patient support people present during care. Personal challenges included comparing and contrasting personal experience with patients' experiences. Students were able to incorporate theoretical knowledge of communication skills such as listening to support communication as well as mindful non-verbal communication including eye-contact, listening and personal touch or comfort measures which supported relationship development and trust. There were no specific differences in based on which type of unit the students were assigned.

Personal Knowing

Self-learning was described by students in both the DEU and non-DEU settings. Differences in experiences were related to presence of the clinical teacher providing immediate conversations about the patient encounter with the student. Self-learning occurred was in student to student conversations in which students were comfortable discussing personal issues in a more intimate setting. The self-reflection required by weekly writing assignments of the CET and journaling provided the students with opportunities to give their experiences nursing context and to engage in examination of

their values, beliefs and preconceptions about individual patient care and healthcare situations.

Ethics

Ethical issues presented themselves to students in both settings related to patients, patient care circumstances, and nursing. Students described experiences they recognized as ethical issues due to previous learning in an ethics class as well as the recognition of their own perceptions of right and wrong. Specific instances of medication situations described by students- an opioid dependent patient needing pain medication, and family discussions and decision-making about care options of terminally ill patients were particularly poignant to students.

Unknowning-Assumptions/Preconceived Ideas

Awareness of assumptions or preconceived ideas was another experience which led to self-learning. Awareness of assumptions/preconceived ideas was readily evident to students in conversations with clinical teachers in the DEU during patient care, most often after a patient encounter when ethical or cultural patient care situations presented themselves. Again the weekly writing in the CET and reflective journaling were important processes for examination of students' preconceived notions.

Socio-Political Knowing

Social or political issue awareness was a more difficult topic for many of the participants. An explanation of what this meant or giving an example was a frequently

encountered. A specific situation often described was when students were exposed to healthcare insurance issues related to patient care. This was noted in a variety of settings.

Nursing Knowledge and Student Education/Practice Development

Student's consistently credited their learning and knowledge development to the DEU experience and was identified as the major contributor to the along with a consistent DEU Clinical Nurse Teacher (CNT). The nurses most frequently identified as assisting in integration of concepts into clinical learning was the DEU academic clinical instructor. The academic clinical faculty discussions during clinical conferences, was specifically mentioned as supporting learning. One student identified a clinical preceptor in the Emergency Room, and another, her academic clinical instructor, who was also her course faculty. When questioned about not knowing about a practice issue (specific disorder or medication, procedure usually identified) a student stated that in the DEU, 'I spoke with my clinical teacher' and reviewed books in the nurse's station. In the Non-DEU, "I looked for someone to ask; looked it up myself; "did a lot of lateral asking (of unit staff) and grabbed my clinical instructor... (I) learned it was OK to ask". In Other settings, "(this happened)...all the time"; "lab and class...being held accountable (supported my learning)".

An 'AHAH moment' when all of the aspects of the patient's case or a clinical situation made sense to the student or was suddenly clear was often an unexpected realization of what the student knew. In the DEU- a general realization of the breadth of knowledge and responsibility of the nurses was an AHAH moment for one student; support and encouragement of the CNT to perform a procedure and being questioned

while watching a procedure- “I knew all the answers!” In the Non-DEU, setting self-realization of a specific patient “I saw him as a whole”; individual meeting with clinical faculty in which the student was “mapping out (patient information)...stepping back... it made it all clear...it all connects”

Specific answers about enhanced or hindered clinical learning were apparent to the students. Knowledge development in clinical was specifically affected by the people and places in which the students had their clinical experiences. Specific responses to enhanced learning experiences: In the DEU, “you can ask anybody, anything” “having our own space”; Three students similarly identified the DEU experience...“I felt I got all of my foundations there...it was a good process”. In the Non-DEU, the clinical faculty was identified as enhancing or hindering their learning. In Other experiences, the CET, reflective journaling, being self-directed and seeking out experiences were identified as supporting knowledge development.

Specific responses to hindered learning experiences were: In the DEU, one student described not having a “consistent CNT” as hindering her learning. In the Non-DEU, experiencing “we are working...hoping to get a good nurse”; nurses eat their young (in Med/Surg); having a corner to put our stuff; a palpable atmosphere, you were afraid to go ask a question, basically ignored” were comments which students were uncomfortable and felt they were not in a learning environment. Additional comments included “any place I am not comfortable” “(being) talked down to... rude (treatment)” prevents me from learning.

Coding

Following collection of data and transcription of the data, the researcher read and re-read the interviews and listened to the audio-tapes. Review of the transcripts was done line by line to identify common words or phrases. Following the review a table of student responses to each question was constructed. Quotes were placed in a table in which was divided by the DEU based questions and the Non-DEU questions as six of the questions were asking the same questions but differentiated by the clinical setting the student was in.

Themes and Subthemes

Themes and sub-themes identified from the data suggest a student's journey to develop the requisite knowledge to begin professional clinical nursing practice. The journey required a holistic process of embodiment of knowledge, tacit knowledge and intuition was apparent as the practice of nursing was an evolution of self learning and discovery supported by relationships of expert nurses and framed by purposely constructed learning experiences. The themes emerged from the data through ongoing reading and re-reading, and listening to the student stories from the beginning of the first interview and continuing over the course of interviewing all of the participants. Following the conclusion of all of the interviews, the researcher reviewed the written transcripts, comparing and contrasting stories, and identifying similar patterns and clustering the data to identify commonalities. In addition, review of field notes from the DEU observations and after-interview notes kept by the researcher were reviewed for additional context to the interview data. Initial codes were identified from the students sharing similar experiences of their clinical rotations in the DEUs and Non-DEUs within

the framework of the epistemological concepts of nursing. The DEU and Non-DEU experiences provided a tangible framework for comparisons of contrasting and commonalities of the data. The commonality of the questions asked about both setting experiences identified areas of similarities and differences in the experiences. The coding of the transcripts and identification of the relationships within the data was further done by listing identified codes and then identifying common themes which emerged from the statements and the relationships of the data.

The themes emerged as a process of the individual student integrating knowledge, including theoretical and skilled knowledge into the embodiment of the student being able to act with tacit knowledge and intuition by the end of their clinical experiences. This process of embodiment was possible by key relationships of expert nurses, both academic and clinical teachers, and supportive interactions with peers. The process was achieved through a context of purposely constructed experiences and activities in the DEU and Non-DEU clinical experiences and curricular assignments with the expectation and opportunity to write and reflect about them for the student to develop their individual clinical practice. A table of the individual findings related to each of the concepts of nursing knowledge is found in Appendix D

The identified themes were further researched through the CINAHL database to explore verifying evidence in the literature. Utilizing search terms of nursing students; clinical education and the individual themes, found related studies which provided additional support of study findings. The themes, subthemes and discussion of these constructs as noted in the literature are as follows:

ASSIGNMENTS		<p>CET-weekly entries</p> <p>Clear expectations...written down</p> <p>Journaling</p>
<p>EXPERT NURSES</p> <p>CNT</p> <p>Preceptors</p> <p>Academic Teachers</p> <p>Peers</p>	<p>RELATIONSHIP</p> <p>INVESTMENT</p> <p>CONSISTENCY</p>	<p>Support of one nurse</p> <p>Ability to process midday and briefly at the end of the day and validating our feelings with our CNT</p> <p>Preceptor most helpful...got nothing from the nurses who worked on the floor</p> <p>I had a really tough instructor and I loved her for it</p> <p>Learned it was OK to ask for help</p> <p>Clinical instructor was lecturer</p> <p>Post-conference</p> <p>I think no one understands us like we understand each other...we yap away about everything...it brings it together</p>
KNOWLEDGE	<p>PROCESS</p> <p>INTERATION</p>	<p>Self-directed</p> <p>A class project on oral hygiene(changed my approach to patient care)</p>

	INTERACTION	<p>Research before going to clinical</p> <p>Class lecture...about breastfeeding... then having maternity clinical a couple of days later</p>
INTUITION		<p>Done research of music therapy...we had done a sing along with the 'old' vets, they don't remember who they are but they can remember 'Amazing Grace'</p> <p>'a little boys came in crying...scraped his knees and his new muddy sneakers were muddy...and said my parents are going to kill me... I washed his sneakers and he just visibly relaxed'</p>
TACIT KNOWLEDGE		<p>"Internship was coming to an end and ...instinctively just paged the MD ...and just like 'click' I was just 'maybe I can do this, maybe be a nurse'"</p> <p>"Clinical instructor...had us map out diagnoses' ...medication everything...it was really awesome...then taking a step back...made it clear...it all connects"</p>
REFLECTION		<p>'in maternity... not a lot of patho...put pieces together...confidence'</p> <p>Reflective conversations with CNT</p>

		<p>When I was doing my care plan and my CET</p> <p>Talking with (a student colleague) and it clicked</p> <p>CET-weekly entries</p> <p>Weekly journaling</p>
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The themes and sub-themes can best be described as intertwining as the student is at the center of this process. It is the inter-relatedness of these experiences which directly relate to the quality of their knowledge development. This process can be best illustrated in the diagram below:

Figure 2. Journey to Clinical Knowledge Development

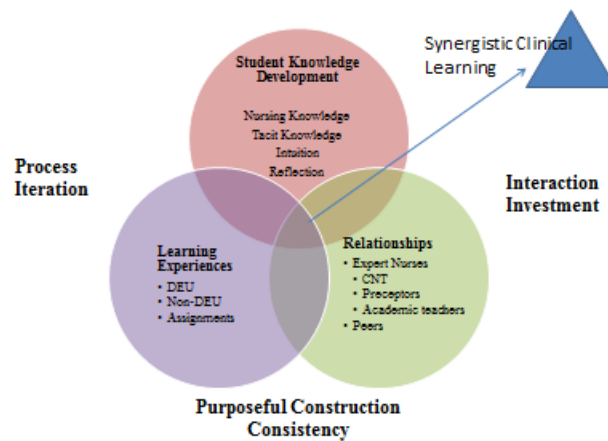
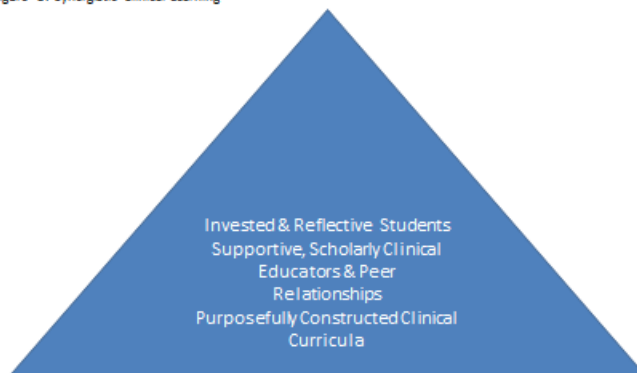


Figure 3. Synergistic Clinical Learning



Findings

Journey to Clinical Knowledge Development

The students described the journey of development of knowledge and skill to become nurses during their clinical education experiences. The changes over time from the beginning of their journey include the relationships with expert nurses and student colleagues and the learning opportunities that supported them during the journey. The relationships of the expert nurses, peers, self (through reflection), and the purposely constructed clinical settings and assignments which serve as the directions to the end were key aspects to the evolution and embodiment of nursing knowledge and artistry by the student. The process of bringing together the themes and subthemes related to student clinical learning comes together as a synergy to support knowledge development. The model of the interaction of the themes and subthemes provides an overlap of what is ‘Synergistic Clinical Learning’ (Figure 5.2) describing the essential elements of the

epitome of an optimal learning environment and processes to support student clinical knowledge development.

Student Clinical Knowledge Development

Embodiment is the process in which an act or process is made visible. Students described the ongoing experience of working with the same type of patients as supporting their skills, knowledge and self-confidence in the clinical setting. Continuous interaction of self with patients, expert nurses-both clinical teachers and academic faculty, peers, self through reflection, and with opportunities for researching needed information at the point of care, honed their integration of knowledge and the development of skilled action or tacit knowledge, intuition and self-confidence over time(iteration). This process was made visible by the students when an experience resulted in the student being able to independently act or provide care for their patient through integration of knowledge, skills and attitudes with more independent and professional self-confidence. This integration to feelings of competence was not only the grasp of theory and scientific knowledge but the development of tacit knowledge and intuition.

Tacit Knowledge

The process of developing tacit knowledge is described by Polanyi (1966) as 'learning to ride a bike'. This is visible in the students' process and skill development over time to the final product of coordination of the concepts of nursing knowledge. The process of acquiring tacit knowledge in student nurses' clinical practice was evidenced by students' descriptions of consistency of patients with similar diagnoses and treatment,

and support of DEU and clinical academic faculty during the clinical experience. This was further supported by their descriptions of exposure to situations and procedures student' experienced in their Skills labs or simulation experiences. These experiences provided the opportunities to put the pieces together over time to a point where one student described "...in maternity...I was going through all the steps and checking everything off... I can do this. It was making sense...I can do this." While immersed in clinical setting during an internship rotation, one student described an embodied moment while reviewing a patient's medical record and test results and "instinctively I just paged the MD... and just 'click' I was just, 'maybe I can do this, maybe be a nurse'." This was further supported by their descriptions of exposure to situations and procedures students' experienced in their Skills labs or simulation experiences. These experiences provided the opportunities to put the pieces together over time (iteration) to a point of understanding and embodiment. The acquisition, facilitation and development of tacit knowledge as an important aspect of development of nursing practice have been identified as vital to the education of nurses. Lake, Moss & Duke (2009) strongly suggest tacit knowledge of nursing is crucial to the process of prioritization of the patient's need for care and critical in everyday practice. The opportunities for experiential learning to have students develop tacit knowledge are crucial to beginning practitioners. The process of tacit knowledge development requires the consistent practice of knowledge, skills and attitudes over a period of time. The development of professional practice demands the opportunity to freely engage in the scholarly pursuit of nursing knowledge, it is apparent that this is possible in many different clinical experiences. The possibility of this happening for students in a consistent and predictable fashion is in the DEU.

Intuition

Intuition is the state of being aware of or knowing something without having to discover or perceive it. Effken (2007) argues that intuition is based on direct perception and processing what it is and its meaning is crucial to personal knowing. Intuitive experiences were described when the students incorporated past research on music therapy to start a sing-along or a personal experience and knowledge of exercise to teach and engage a patient in stretching, neither a part of the clinical curriculum. Initiating physical exercise, an area the student had previous knowledge about “I tried stretching with my psych patient to help alleviate his pain and it worked”; provides another aspect of integrating tacit knowledge of nursing and intuition into their developing clinical practice. One student described an intuitive moment in which while in clinical in the school nurse’s office a little boy who was crying about a scrapped knee and dirty sneakers came in and was worried about his parent’s response to his dirty sneakers “...my parents are going to ‘kill me’ and the student sensing his distress “washed off his sneakers and “he visibly relaxed”. Intuitive experiences were described when the students incorporated past personal experience and knowledge; neither a part of the clinical curriculum provided another aspect of integrating intuition into their developing clinical practice. For them it was integrating an aspect of personal knowledge into their beginning practice, an indication of understanding the meaning of the situation and processing the knowledge and acting on intuition. In these cases their intuition served them and their patients into a healthier state. Intuition is identified in studies as an important part of clinical decision making of expert nurses and for student development in their education. Robert, Tilley & Petersen (2014) suggest intuition is a key component

of “effective clinical decision making resulting in safe patient care. Schwind, Lindsay, Coffey, Morrison & Mildon (2014) state that limited exposure of students in the clinical setting hinders the development of intuition which is inherent in most traditional clinical settings. Smith & Glaser’s (2008) research of a tool to measure intuition of nursing students “Smith Intuition Instrument for Nursing Students” measured for student intuitive abilities around emotions and physical sensations support the recognition of intuition as an important aspect of clinical practice knowledge thus an important aspect of its development in students. King’s(2006) study of nurse practitioners and nurse practitioner students confirmed a relationship between diagnostic skills and experience, intuition and age but found use of intuition decreased their diagnostic ability, thus contrary to studies of nurses and intuition. The role and expectations of nurse practitioners as well as the graduate level of the students is obviously different from undergraduate nursing students, King suggest the need for further research into the role of intuition for diagnostic reasoning in expert nurse practitioners. Meyer& Xu (2005) suggest the rigid academic perspective of nursing hinders the students from learning how to practice in what they describe as an “intuitive-driven clinical reality”. The recognition of intuition as a critical component of nursing practice suggests the imperative for academia to support development of intuition in the nursing student. As suggested by Effken (2007), intuition is the continuous exposure of situations in which repeated behaviors and experiences supports development of intuition or personal knowing thus longer immersive clinical experiences rather than brief unengaged clinical settings support student’s knowledge development; another opportunity of iteration. Robert, Tilley and Petersen (2014)

further argue the promotion of intuitive skill development to support clinical decision-making and enhanced clinical judgment should begin in undergraduate education.

Interwoven in this, is the aesthetic aspect of nursing knowledge in which communication and patient interactions are the artistry of the expert practitioner (Benner 1994, 1996, 2001). The intuitive interactions in which students integrated their past knowledge resulted in positive patient outcomes. Intuitive knowledge of the students, although not necessarily nursing academic content, was a comfortable place for students to support their evolving clinical practice. Additionally, initial and subsequent practice of newly understood theoretical communication skills described by participants provided a venue for integration of knowledge and supported positive patient outcomes as well as confidence of students in their new abilities. Support of this integral aspect of nursing knowledge development as described by Finfgeld-Connett (2007) is “a complicated undertaking that involves the temporal acquisition and synchronous use of empirical and metaphysical knowledge and values....to lie on a continuum” (p385), is apparent in the students’ experiences. Stockhausen (2005) speaks of this as ‘*métier artistry*’, orientation to work or one’s activity one is especially well suited or excels at” and “individual unconscious, intangible, intuitive, tacit knowledge one develops through experience” (p58). She describes the salient features as reflection, experience and being in the moment” (p58). She supports the “identification of *Métier Artistry* clearly acknowledges and ratifies that nurses learn the artistry of practice form experience” (p60). She argues the important role of expert nurses in role modeling and discussions with students to reflect on the artistry of their everyday practice, is a contribution of the practicing expert nurse which has not been “given the status it deserves.... (and) requires serious

consideration” (p.61). This reflection of professional practice is supported by the ideas of Schon, Polanyi to evolve and refine the professional practice wisdom imbedded in the expert nurse. The imperative for students is to begin the process, for the students this was evident in their clinical experiences in which they had reflective interactions with expert nurses in DEUs, post conference discussions with expert faculty and through their writing in reflective journaling and CETs. The integration of intuition and tacit knowledge as two of the building blocks of expert clinical practice are supported by the work of Welsh and Lyons (2001). The responsibility of expert nurses to facilitate this as an aspect of student’s clinical learning is essential to student knowledge development. The opportunity for students to develop intuition as part of their learning was in an environment which supported and encouraged engagement in interpersonal dialogue with expert nurses. This process was specifically noted in most post conferences and the DEU with expert clinical teachers and peers with students feeling comfortable to question and voice their concerns and lack of knowledge or insight into clinical situations. The expert nurses in both of these cases were clinical teachers and academic faculty knowledgeable in pedagogy. Additionally, the development of personal knowledge was apparent in the process of writing encouraging reflection of experiences and thought directed by a prescribed framework, such as the CET. This process provides a venue for individual reflection with the opportunity to voice personal thoughts and feelings, especially in clinical situations which this is not encouraged or in which the student is not comfortable sharing. Again, the interaction by the expert nurse, either the clinical teacher or academic faculty can provide individual feedback to support self-knowledge. The process of development of intuition requires the ongoing exposure of repeated behaviors and

situations (iteration), the DEU learning environment provides the strongest possibility for this to happen in any learning environment. This was especially noted by students' 'AHAH' moments at the end of their experiences.

Reflection

Schon proposes the essential characteristic of professional development of practitioners is through reflection (Schon, 1983). The expectation of life-long learning and continuous development of knowledge and incorporation of new information is inherent in the professional practice and expectation of nurses in order for them to provide the best, quality and safe patient care. This process demands the nurse frequently learn and reflect on their knowledge and practices. Again the foundation to support this practice must begin at the beginning of practice. The students in this study readily shared the value of their writing experiences.

Relationships

Those who join the students in their journey include expert nurses and student colleagues. It is these individuals and the interpersonal relationships they develop, which are crucial to this process. The students overwhelmingly described the importance of a consistent, professional trusting relationship, collegiality and dialogue with the clinical teachers and academic faculty as enhancing their learning experiences. Expert nurses, both academic faculties as expert academicians to support and construct curriculum, and clinical nurse teachers (CNTs) who are expert clinicians provide the opportunities for trust development comfort in the process of scholarly interaction were essential to the

learning process. The optimal learning environment for this to consistently happen was noted to be the DEU.

Expert Nurses

Academic Faculty

Students described positive learning experiences from academic faculty who challenged them by asking questions and challenging them to think about the questions and situations presented. These faculty members encouraged them to explore the possibilities and to problem solve about clinical situations and integrate course content into the experiences. Post-clinical conference discussions were specifically pointed out as opportunities to reflect on the clinical experiences with the support and scholarly inquiry of the academic faculty. Some students described this as not always the norm of the clinical day. Less positive experiences were described when the academic clinical instructor was unfamiliar with the clinical unit and the clinical nursing staffs were unfamiliar with the students' learning needs. Consistent support of clinical learning did happen in most settings. Student comments of clinical learning experiences- "it depends"- the lack of interest of expert staff nurses or unit staff or the willingness of expert staff nurses and unit staff, shows the inconsistency and unreliability of some clinical settings. It was obvious there was an overall positive and sometimes glowing opinion the DEU, through the consistency of the environment and reliability of the nurses and unit staff, truly supported their clinical experiences and was invested in the student's progress.

Clinical Teachers

The relationship between clinical teachers and students in the DEU was powerful and impactful in supporting student knowledge development. The close and consistent relationship and role modeling over the course of the clinical experience was described by the students as the reason they learned. The relationships were described as trusting, respectful and interactive, with positive regard from both the clinical teachers and students. This relationship supported student comfort and self-confidence in providing patient care over the course of the semester, and a sense of ownership by the clinical teachers. An example of this was students' referring to "my nurse" and clinical teachers as 'My students...my responsibility'; another example of the investment of the CNTs. Student described being comfortable asking any question or advice from the clinical teacher. Clinical instructors, also the academic faculty teaching the course, the clinical experiences were specifically identified as being exceptionally effective in supporting student learning. Relationships between nursing students and teachers were a key ingredient to support student clinical learning (Spence, Vallant, Roud & Aspinall, 2012; Haitana & Bland, 2011); Nelson, 2011; Livsey, 2009; Brown, Herd, Humphries & Paton, 2005; and Schroyen & Finlayson, 2004). Expert nurses are described in the literature as possessing professional knowledge, tacit knowledge and intuition in their clinical practice. Skilled action and knowledge is embodied and made visible through their interaction with patients, it is logical that this would apply to expert educators. Academic faculty, though not always formally educated in education methodology, is immersed in the curricular content and expectations and invested in the student's experiences and success. The experiences of the students describe the differences in embodied teaching

practices inherent in academic faculty and DEU and Non-DEU settings. CNTs are consistent and knowledgeable and supportive of learning methods and methodologies, whereas the inconsistency of clinical teaching experiences in the Non-DEU setting which resulted in some students' learning being hindered which was detrimental to their ability to function as a student and promote their self-confidence as a fledgling nurse. The expectations of the DEUs and CNTs are expert clinicians educated in academic methodology to support student learning and to provide the learning environment to support. Gustafsson and Fagerberg (2004) suggest the advantages of staff nurses to reflect and express tacit knowledge "promote the nurse's professional development, will imply better nursing care" (p.XX). Hunter, Spence, McKenna and Iedema(2008) further the notion of the support of interactive interpersonal learning among experts practitioners supports a safe practice environment in their research in a neonatal intensive care. Their findings recognize the crucial aspect of non-formal and less recognized learning for development of professional practice. Lake, Moss and Duke (2009) further recognize the need for synthesis of tacit knowledge in clinical decision making and prioritization as "an advanced skill of nursing practice" (p.383). Although these studies did not include nursing students, they verify the need for a foundation of these practices for students in their educational experiences.

The role of the educator has been described as "complex and dynamic" in an ever-changing clinical environment(Gillespie & McFetridge, 2006); "crucial and diverse" to facilitate a multifaceted teaching role (Brown, Herd, Humphries & Paton, 2005) and the need to role model caring behavior (Livsey, 2009) to support student learning in the clinical experience. The role of the clinical preceptor in the clinical has been associated

with providing extensive direct experience of the students in realistic practice settings (Hendricks, Wallace, Narwold, Guy & Wallace, 2013). The expectations include providing role modeling (Blum & Gordon, 2009) and supporting student's integration of knowledge (Schwind, Lindsay, Coffey, Morrison & Mildon, 2014). These expectations are not all universal in every clinical experience but a significant aspect of these expectations are often without any formal educational preparation as teachers. In contrast the CNTs of the DEU are educated in teaching and mentoring students in the clinical experience and support of academic faculty (Nishioka, Coe, Hanita & Moscato, 2014). These support the findings of this study, students in the DEU found a consistency of scholarly and practical experiences in their clinical experiences as well as a comfortable and collegial atmosphere to support their role as students.

Student Colleagues

The relationship with student colleagues with the student provided another opportunity to discuss reflect and question clinical situations and integrate knowledge. This interaction was a comfortable space where peers on the same journey can problem solve and support knowledge integration. "It is mostly how I get to that point (of understanding)...by checking with my peers and try to figure out how to do those things for myself." The importance of peer relationships among nursing students was supported in findings by Christiansen and Bell (2009). They suggest peers supporting each other led to 'reducing the feelings of isolation', helping them to cope and improve confidence in practice. Similarly, Stone, Cooper and Cant (2013) found students could benefit from peer learning to increase confidence, decrease anxiety, and help them gain

skills as nurses. This is in contrast to the findings of Brannagan, Dellinger, Thomas, Mitchell, Lewis-Trabeaux and Dupre (2012) who found peer tutoring did not support increased knowledge acquisition or self efficacy by students. Walsh (2015) in working with students in mental health found that peer group relationships were important to reassure, provide emotional and practical support and are “central to learning”. It is through these relationships students understand through “comparison and competition with peers”, as well as “encourage each other’s understanding” (p11). These studies formalized the peer relationships in formal groups and tutoring, their findings support the importance of peer relationship. Formal peer tutoring as describe by Brannagan, et. al., (2012) was not supportive of the importance of peer relationships; it could be argued that the tutoring process did not put the students in a ‘level peer relationship’ but more of a student-teacher relationship. The findings of this study show informal peer support among the participants mimic the findings of the importance of these peer interactions and the mutual investment in one another.

Clinical Learning Experiences

Purposeful Construction

Context is the structure and spaces for the student to take their journey to become professional nurses. This includes the clinical settings and curricular assignments of the course which are purposely constructed to support the journey. Purposeful construction is a deliberative process of creating experiences which support the educational objectives and goals of the curriculum and student. Clinical settings are the physical spaces where student begin to integrate and develop their practice. Assignments created in a course are

another education methodology to support the objectives and goals of the curriculum. Specific assignments identified in this study were writing assignments, reflective journaling and clinical evaluation tool (CET). DEU and Non-DEU clinical settings are the spaces these students traveled to begin to practice the integration of developing knowledge and skill of nursing with patients. Curricular assignments of weekly writing through their reflective journaling and their clinical evaluation tool (CET) were described by the students as providing crucial direction to think and reflect about their experiences and integrate this into their practice; another opportunity for iteration.

Dedicated Education Unit

The DEU setting provides a purposely constructed clinical experience in which the student is immersed into the nursing environment, and with a CNT familiar with education methodologies and is an expert clinician in the setting. This setting has been credited in the literature for its success as providing an optimal learning environment for nursing students in numerous qualitative and quantitative studies. This is consistently supported in the literature about optimal learning environments.

Non-DEU Setting

Non-DEU clinical settings have provided the bulk of nursing student clinical experiences from the very early apprenticeship models of the 19th century to the current day. It provides an inconsistent clinical learning experience for students. Currently it is inherently flawed as the inconsistency of clinical instructors who may or may not be attached to the clinical unit, savvy with educational methodologies or a clinical expert in

the curriculum topic. The inconsistency was noted by the students and directly affected their ability to learn- the essential objective of the educational process.

The role of the construction of the clinical experiences was evident from the student experiences. The DEU provided a positive learning experience which supported knowledge development and clinical learning, findings similar to Mulready-Schick & Flanagan,(2014) Nishioka, Coe, Hanita & Moscato, (2014a, 2014b) and Mulready-Schick & Flanagan, Banister, Mylott & Curtin, 2013.

Writing Assignments

Reflective Journaling

The process of weekly writing through reflective journaling of the clinical experience allows the student to explore the meaning of the clinical experience. This thoughtful process allows the student to weave the knowledge gained and skills performed in the context of the patient into the student consciousness. Reflective journaling has been found to support a myriad of learning for nursing students and is an educational methodology historically used in nursing education.

Clinical Evaluation Tool

The clinical evaluation tool (CET) is an outline of clinical objectives or knowledge the student is expected to accomplish over the course of the clinical experience. The expectation of these students is to document their experiences which

indicate how they have met a specific objective. This is another opportunity for the student to put their experience in a demonstrable framework. The framework of the CET situated the knowledge and experiences of the students into nursing context. The essential nursing concepts became another framework for students to identify and grow their knowledge of nursing practice through integration of their experiences with identified concepts, as well as another vehicle for reflective learning. Schuessler, Wilder and Byrd (2012) concluded that reflective journaling not only develop critical thinking but “progressively develop self-reflection skills and cultural humility” in a setting which was culturally different from their native culture. Williams, Gerardi, Gill, Soucy and Taliaferro (2009) describe four themes which emerged for reflective journaling by graduate mental health nursing students. Becoming Aware; feeling the pain; what I learned and personal growth were identified from reflective journaling done over the course of a semester. The purposely constructed educational assignment showed the growth of the students both in their theoretical learning and personal growth. Bussard (2014) found reflective journaling to be an effective tool for supporting clinical judgement in pre-licensure students. Her findings found similarities with Tanner’s work on clinical judgement and reflective journaling as a means “to determine whether a student is achieving course and program goals” (p.39). The findings from these studies support the findings of this study. Although Williams, Gerardi, Gill, Soucy and Taliaferro (2009)’s study was with graduate students the findings are easily transferred to undergraduates, especially in an undergraduate mental health course. The students in this study readily described the journaling process and use of their CET (clinical evaluation tool) as significantly shaping their thinking and knowledge development throughout their

clinical learning. This process supports the UMASS pedagogical approach to writing through the 'Writing to Learn' philosophy.

CHAPTER V

DISCUSSION

This study was conducted to describe the knowledge development of undergraduate nursing students in their clinical experiences based on the identified concepts of nursing by Carper (1978), Munhall (1984) and White (1995). The key qualitative findings of the study as well as the limitations, strengths and implications for nursing practice, education, policy and future research are presented in this chapter.

The findings of this study are in concert with many previous studies and past practices which support the experiences and educational methodologies to promote students and nurses developing clinical knowledge and practice. The experiences of the student in the DEU support the findings of Gonda, et al(1999) as being a preferred placement; a stronger opportunity to support theory integration; supportive peer relationships; ease in supporting student learning by clinicians and positive relationships. Conversations with CNTs did not address the issue of workload but supported the positive relationship with the students and took pride and ownership of the student's learning. This differs from Gonda's, et al (1999) finding of reports of increased workloads by CNTs. The student experiences of the DEU further support previous research by Moscato, et al (2007, 2013) of students perceiving positive relationships, feeling wanted, consistency of one clinical instructor who knew them and had consistent and continuous interaction with them, and fluid learning environments which supported their learning and confidence. The positive learning environments of both DEUs and in specialty Non-DEUs shared consistency of types of patients and in the DEU consistent clinical teachers and in certain cases, consistency of having academic faculty as clinical

instructors. In these instances, there were expert nurses knowledgeable and supportive of student learning, providing a scholarly environment for students to learn. This mirrors findings by Mulready-Schick, et al (2007, 2009) where the DEU environment supported student's learning while meeting the QESN competencies of teamwork, collaboration, safety, informatics, patient- centered care, and evidence based practice. The findings differed from the findings of Mulready-Schick et al (2013) in that there were traditional clinical placements where student's described similar experiences in specialty rotations as they did in the DEU. The iteration of the students in the weekly or more frequent practice of nursing knowledge in a consistent clinical environment which provides support by an invested group of expert nurses and peers provides the optimal opportunity for students to acquire and develop clinical practice knowledge. This supports finding by Moore and Nahigina (2013) the collaboration with nurses in the DEU increased student learning opportunities.

The question "How students learn to be nurses"- the development of nursing knowledge by nursing students was evident from their clinical experiences as well as was supported in other ways. The process was transformational for the students as their journeys unfolded over time. The identification of theoretical concepts of nursing – empirics, aesthetics, personal knowledge and ethics (Carper), unknowing, (Munhall) and socio-political knowing (White) were not always specifically identified by students or experienced in a one-time clinical situation but when specifically questioned about them during the interviews, the concepts were identifiable and understood by all students. The academic faculty in the clinical setting as clinical teachers and the CNTs of the DEU were identified as very strong influences of supporting knowledge development. This

would be expected as they are both familiar with pedagogy and curricular expectations of the students. The support of peers as scholarly and practical support were easily identified by students as supporting their learning , and the use of reflective writing, were unexpected findings but not unusual in a holistic view of their education. This is consistent with the findings of Walsh (2015) regarding the importance of peer relationships and Schuessler, et al (2009) and Bussard (2014) on the importance of reflective writing to support critical thinking and supporting clinical judgment by undergraduate students. Students easily described nursing knowledge of each of the identified nursing knowledge concepts when they were identified as such by the researcher, it was clear they were learning about the essential elements of the concepts of nursing knowledge. The recognition and relevance of each of the nursing knowledge concepts did not always follow a sequential process and in many cases a singular patient encounter or interaction with an expert nurse provided student understanding of several concepts. The different clinical settings-DEU and Non-DEU at times provided different opportunities for students to identify certain concepts such as the mental health setting in which patients were discharged without housing illustrating socio-political knowing, or acute medical –surgical which provided exposure to ethical knowledge of advanced directives and resuscitate/do not resuscitate conversations The process of knowledge development was identified as a process over time and the comparisons and contrasting of their experiences showed an ongoing process which was fluid through their interactions with expert nurses and patients, though the knowledge acquired was not always equally distributed chronologically. The consistency of expert nurses and same type patient populations was evident to supporting knowledge development and a sense

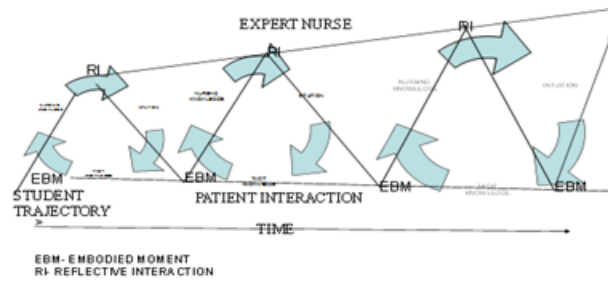
of saliency. The development of nursing knowledge, intuition and tacit knowledge was evident from the essence of the stories the students shared. There were ‘AHAH’ moments or epiphanies in which the ‘pieces of the puzzle’ fit together and caused them to pause and reflect on their progress. The knowledge development process was an internal embodiment of cognitive processes and sensory experiences which had been co-created through the interactions of the student with academic, the interpersonal and intrapersonal. For students, the development of learning through the frameworks and processes of the purposely constructed clinical environments and curricula which support these experiences are foundational to expansion of clinical practice skills which support safe and quality patient care. The embodied moment in providing patient care utilizing knowledge in concert with tacit knowledge and intuition signifies these moments in which then leads the student to the expansion of their clinical practice knowledge. The model 5.1 illustrates this process of growth and development. The trajectory of the evolving student’s clinical practice knowledge is not time limited but continuous and the pieces which support embodiment are asynchronous. The key in the framework is the interpersonal and intrapersonal interactions and relationships which drive the process. The process is very much the educational process of the DEU experiences of the students and this suggests the DEU is the most likely optimal learning environment in which this evolution would take place. The interactive processes as noted in Figure 2 and 3 illustrate the interactive pieces of the clinical education puzzle as a Venn diagram. The overlapping aspects come together to provide the synergistic properties of an optimal learning environment and support the “AHAH” moment or epiphany of the student as a

nurse and expanding the knowledge and awareness of the student to move forward toward a greater understanding of their clinical practice.

A surprising finding was the identification of the importance of the CET as a learning tool by the students. The literature and educational practices do not identify the CET as a learning methodology. The usual practice in education is the CET is a framework for faculty evaluation of student performance with an emphasis on expert observation. The strong identification by the students of the CET as an important aspect of their learning again supports the work of Schuessler, et al (2009) and Bussard (2014) regarding reflective writing but neither study identifies the CET in this process. The findings of this study suggest the use of the CET by the students is a learning methodology deserves further research.

The descriptions of students learning experiences are reflected in the framework originally presented earlier in the review of literature. (Figure 4.)

Figure 4: Framework- Figure 1: Framework-Growth of nursing knowledge and practice through interaction



Limitations of the Study

The results from this study can only be viewed from the perspectives of the researcher and participants of the study. The experience and experiences of the researcher, despite attempts to be impartial, are a limitation which may affect interpretation of data results. The telling of stories by the participants is limited by the recollection of their experiences which happened in the past, in some cases up to two years prior to the interview. It is assumed their recollections are correct and credible. The convenience sample of participants who self-selected to participate were from one school and two undergraduate programs whose the demographics were different-eight participants were traditional undergraduates 20-22 years of age and two were second bachelor degree students 30-44 years of age. The differences provide different perspectives from age, educational background and life experiences.

A limitation of the study could be the purposeful omission of literature from other disciplines. As the research was specifically aimed at nursing students, literature from education or other similar practice professions such as medicine was not included.

Strengths of the Study

The study strengths are the clinical teaching and curriculum development experience of the researcher as well as training as a psychotherapist which provides a knowledgeable lens of nursing education, and experienced interviewer. The interview guide provided an informal description of the concepts of interest to clarify them and place them in a vernacular which was easily identified by all students interviewed. All the students had participated in clinical rotations which differed by the construction of the clinical situation, all students have been in a DEU clinical experience and at least one other traditional clinical experience, provided a compare and contrast perspective.

Implications

The implication of the study on nursing education, practice, policy and future research are as follows.

Nursing Education Implications

The expanding and changing healthcare arena, expectations of nurses and need for nurses in the future, and the inability to attract faculty to replace retiring faculty, has challenged the nursing education community to expand the numbers of students in their programs, adjust expectations and clinical experiences of students and revise curricula. The diminishing traditional acute care setting, coupled with less experienced faculty, and

more students, has confronted academia to rethink and reimagine nursing education. These are the challenges presented by QSEN (2004), the Carnegie study of Nursing Education (Benner, et al, 2010) and the Institute of Medicine's Nurse of the Future (2010) white paper. These have sparked initiatives to re-invent nursing education. The call for evidenced based nursing education demands the continued research of educational methodologies which improve academic curricula and student learning.

The DEU has emerged as an innovative and creative option to support student learning and is considered an optimal clinical learning environment. Clinical education is the real life opportunity for students to integrate the theoretical nursing knowledge, skills and attitudes needed for safe, quality clinical practice. The findings suggest the importance students placed on to feelings of belonging and their participation as valuable to the unit as instrumental to their ability to be comfortable to ask questions and practice patient care. The studies of the DEU as a clinical experience have supported improved student learning, test scores, safety and comfort of the student, and empowerment to learn (Mulready-Schick et al. 2014,2013, Moscato et al (2014,). This study supports these findings. Traditional clinical settings as an inconsistent clinical experience have the possibility of providing less practice knowledge development through inexperienced clinical faculty, unsupportive, indifferent clinical settings, feelings of discomfort and intimidation by students and inconsistent opportunities to meet curricula objects. The opportunity for situated learning has been identified as crucial for the education of nursing student practice development. Key to this process is the purposeful construction of learning to support the conceptual knowledge, tacit knowledge and intuition identified as the whole in concert with expert nurses. Purposeful construction can be utilized in a

Non-DEU environment through the collaborative efforts of academic faculty and practice partners to support the scholarly outcomes of the curricular clinical experience and support of the students as learning colleagues. In order for this to be successful, outcomes need to be clearly communicated to the staff in the clinical setting and that their part in this educational process is beneficial to the students as future nurse colleagues. This process can also be supported by the students being clear of their learning needs and curricular outcomes.

Providing current nursing students in all educational levels with the expectation and necessity of expert nurses to support students and their educational experiences, and would be a step in decreasing students' anxiety and fear in their clinical experiences and increasing their knowledge development. A requirement of nursing curriculum and other education courses in all graduate level nursing curricula would support clinical expert's awareness of the language and expectations of the academic world.

Nursing Practice Implications

The evolution of healthcare has changed the way and where nurses practice nursing. The focus from acute inpatient care has shifted to the outpatient arenas of clinics, home care and skilled nursing facilities. The nursing knowledge needed to practice in these varied environments requires opportunities for novice nurses to build upon fledgling skills acquired during their undergraduate education. The need for knowledgeable and confident new nurses to practice at the highest level of their education is paramount to supporting the changing healthcare arena requirements. It behooves the nursing practice world to provide optimal learning experiences for student

nurses to support attracting potential nursing staff and begin and expand the process of knowledge development in their patient care settings. The creations of DEUs in the practice setting have been a win-win situation for the students and workplaces: students' learning is improved and opportunities for the workplace to hire new nurses, experienced at their facility, who want to work there.

Nursing Policy Implications

The quality and safety of patients is the hallmark of the healthcare community. The morbidity and mortality of the public is reliant on an educated and experienced nursing workforce. Policies to support nursing education in the workplace by providing monies to support expansion of education-practice partnerships, faculty development and expanding new nurses' clinical practice development are avenues to support quality and safety of patients.

Future Nursing Research Implications

Nursing knowledge development is an aspect of undergraduate student nursing education which has minimal research to explore and describe the process. The inclusion of multiple aspects of knowledge development supports a need for a larger sample of a group of participants from similar baccalaureate programs, or associate degree nursing programs. A study to incorporate the use of qualitative measurement tools, such as the CLES+T Tool (Saarikoski, Leino-Kilpi, Isoaho & Warne 2005; Bergjan & Hertel, 2013; Watson, Seaton, Sims, Jamieson, Mountier Whittle & Saarikoski, 2014), which measures student perceptions of the clinical learning environment and supervision or the Smith

Intuition Instrument of Nursing Students(Smith & Glaser, 2014?),which measures intuitive factors, would provide quantitative findings and may present an opportunity to increase the number of participants. The individual interview was an opportunity for in-depth student perspectives, the procurement of participants was challenging. The offer of an honorarium for participation may have encouraged more volunteers or an online questionnaire may provide a wider response for students unable to participate due to time constraints. The use of focus groups may provide a wider perspective and opportunity for peer interaction. The use of both an instrument(s) and individual interviews or focus groups would provide both a quantitative and varied qualitative perspective to the research on clinical learning and learning environments. Exploration of the use of clinical evaluation tools as a learning methodology is another modality of student learning is another area worthy of research.

Conclusion

The purpose of this qualitative descriptive study was to describe the experiences of undergraduate nursing students of acquiring nursing knowledge in their clinical experiences. The study explored this through the theoretical concepts of nursing knowledge and components of the identified related theories of tacit knowledge and intuition of expert nursing practice. This was accomplished by the exploration of student knowledge development experiences in both a DEU and Non-DEU clinical setting. This study contributes to the body of knowledge of nursing student education, the support of the process of nursing student practice knowledge development, and clinical learning environments.

Findings from this study suggest students develop nursing practice knowledge in various settings, at serendipitous times through various opportunities for relationships and dialogue with expert nurses in the holistic journey of their education. Furthermore, the clinical education of student nurses requires a “village of academics and clinicians” to provide the framework for successful knowledge development. From the findings, the opportunity to develop their nursing knowledge is more likely to occur in the DEU as it is a setting that provides an immersive, consistent, scholarly, supportive and safe environment “a village” for optimal student learning. The findings have implications for future research in nursing education for academia and practice who wish to support optimal learning of nursing students of foundational nursing concepts to develop expert practitioners, who in turn will provide safe and quality patient care in any setting.

APPENDIX A

INTERVIEW GUIDE

I am going to ask you eight questions about your experience with nursing knowledge, as described by Carper (1978), Munhall (1993) and White (1995), during your clinical experiences.

Please respond to the following-

1). Describe a direct patient care experience in the DEU which you were aware of-

- A. incorporating evidence-based nursing
- B. had an empathetic nursing experience
- C. learned something about you as a result of a patient interaction
- D. an ethical issue
- E. you had an assumption or preconceived idea in a patient care encounter
- F. a social or political issue related to your patient care.

2). Describe an indirect patient care experience in which you were aware of -

- A. incorporating evidence-based nursing
- B. had an empathetic nursing experience
- C. learned something about you as a result of a patient interaction
- D. an ethical issue
- E. you had an assumption or preconceived idea in a patient care encounter
- F. a social or political issue related to your patient care.

3) Describe an experience in which an expert nurse assisted you in integrating any of the above points into your patient care. What was the role of this nurse?

4). Describe a patient care experience in which you realized your practice knowledge was insufficient or incomplete. What did you do about it?

5). Describe a clinical practice experience in which you integrated all the above points.

6). In which clinical setting did these specific experiences happen?

7). Are there any other situations outside of your clinical experiences in which you were aware of understanding or integrating complex nursing concepts?

8). Can you tell me about anything that either enhanced or hindered your learning in clinical?

9). Now I will review some of the comments you have made today to verify and clarify your comments.

APPENDIX B
RECRUITMENT LETTER

107 Green Willow Drive
Longmeadow, MA 01106

Junior and Senior Students

UMASS at Amherst, School of Nursing

Dear Fellow Nursing Student,

I am a doctoral student at the UMASS School of Nursing seeking undergraduate junior and senior nursing students whose clinical experiences have been in both the DEU setting at Baystate Medical Center and any other clinical setting outside of the DEU to participate in my dissertation research. My dissertation is an exploration of nursing knowledge development in the clinical experience setting. I am interested in learning about how students develop nursing knowledge in their clinical experiences

I am inviting you to participate by agreeing to be interviewed by me and share your learning experiences during clinical rotations. The interview will be approximately 2 hours. During this time I will review the study aims and abstract, answer any questions you have about it, discuss and describe informed consent and confidentiality processes, ask you to sign the consent, engage in an in-depth interview of prepared and spontaneous questions, and a review of your answers to the questions for clarification. These interviews will be audio taped and transcribed verbatim by myself and or an authorized transcriptionist for analysis purposes. During the study, I will invite you to review the interview transcript and an initial findings report for participant checking of the research.

All identifying data will be coded by me and your identifying information and recorded interviews will be kept in a locked box in my home office and in password

protected files on my personal computer. Please email me as soon as possible if you are interested in participating. I will email you to plan an interview at a site, determined by you. You may choose to rescind your consent at any time. There will be no affect on your clinical grade or student status.

Many participants may find the opportunity to participate in nursing educational research a contribution to the knowledge of the discipline. Participants may request a letter of participation for program records and a copy of the research findings by contacting the researcher by email or at the above address.

Please email me with your interest to participate or if you have any further questions at ncraigew@nursing.mass.edu. Thank you for your consideration,

Nancy Craig-Williams MS, RN

Ph.D. Nursing student

UMASS at Amherst, School of Nursing

APPENDIX C

INFORMED CONSENT

Informed Consent for participation in Nursing Research

Principle Investigator- Genevieve Chandler PhD, RN

Associate Investigators- Joan Roche, PhD, RN and Sally Campbell Galman, PhD.

Doctoral Student Investigator- Nancy Craig-Williams MS, RN

Title- Knowledge Development in Undergraduate Nursing Students, a Qualitative Study (working title)

Purpose- To explore knowledge development of undergraduate nursing students during their clinical education experiences.

Procedures- I am asking you to participate by agreeing to be interviewed by me.

The interview will be approximately 2 hours. During this time I will review the study, discuss and describe consent and confidentiality processes, engage in an in depth interview followed by a review interview comments for clarification from you. These interviews will be audio taped and will be transcribed by an authorized transcriptionist for analysis purposes.

You will be given the opportunity to review the written transcripts for accuracy when they are completed as well as to review the initial findings report for participant checking of the research findings.

To support confidentiality of the participants, all identifying data will be coded by me, and information and audio-taped interviews will be kept in a locked box in my home office, and in password protected files on my personal computer. Specifically-

1. The researcher will prepare a list of the codes and subject identification. The codes will be used to identify audio-taped recordings and written transcripts. The informed consent forms and list of identifying codes will be kept in a locked box in the home office of the researcher. The subject identification list and informed consent will be kept by the researcher until the dissertation defense is completed.
2. Audio-tapes will be coded at the interview and kept in a locked box in the researcher's home office until the dissertation defense is completed. At that time the tapes will be destroyed by the researcher unless dictated otherwise by the committee for doing follow-up research.

3. Coded transcripts will be kept in both digital and hard copy. The digital copies will be kept in a password protected file on the researcher's home computer. The hard copies will be kept in a file in the home office of the researcher. Transcripts will be shared as needed with dissertation committee members, peer and other consultants directly involved with the dissertation process. Transcripts will be kept for as long as the data collected is necessary for further research. When it has been determined the data is no longer relevant to the researcher it will be destroyed.

Agreeing to be interviewed will be followed by written consent to participate. There are no foreseeable risks to participation in the study; any discomfort with the process may be discussed with the researcher during the interview process or by email to the student investigator or to the principle investigator. Students are reminded there are support services available through UMASS at Amherst health services for consultation if there is any discomfort caused by study participation. You may choose to rescind your consent at any time without penalty.

There is no compensation for participation. Many participants may find the opportunity to participate in nursing educational research a contribution to the knowledge of the discipline. Participants may request a letter of participation for program records and a copy of the research findings by contacting the researcher at the above addresses. Your direct participation is only for the interview, any follow-up clarification of data by the researcher and any contact you wish to make to the researcher regarding research findings.

The research process is expected take 6 months from the beginning of data collection until findings are presented at the dissertation defense. Participant confidentiality is taken seriously by the researcher and will keep participant information and data separately. Participation is voluntary and there are no consequences for not agreeing to participate. Request for more information can be made to the student investigator at ncraigew@nursing.umass.edu or through the principle investigator and dissertation chair, Dr. Genevieve Chandler at gec@nursing.umass.edu.

By my signature I am signing to agree to participate in the above-mentioned research study.

_____ (Signature and Date)

_____ (Print)

_____ (Witness)

APPENDIX D

NURSING KNOWLEDGE RESULTS TABLE

Questions	DEU	Non-DEU	Other
<p>1 & 2</p> <p>a) Incorporation of evidence based practice</p>	<p>Consistent type of patients</p> <p>Encouragement by clinical teacher to intervene in their presence</p> <p>“Patient with an issue I had just read a journal article about”</p> <p>Emulating unit nurse</p> <p>‘A class project on oral hygiene (changed my approach to patient care)’</p> <p>“I had done a lot of research before going(to the unit)”</p> <p>“Can’t think of one”</p> <p>“allot of skills we were learning in class and doing in lab”</p> <p>‘hospital spent a lot of time talking about(precaution)and utilizing the precautions during</p>	<p>Patient with a disease/issue or care need we covered in class</p> <p>Research before going to clinical</p> <p>“our clinical faculty...she’d come to the room and say ‘what’s happening with this person (ask questions)...kind of forcing you (to answer)...that was really helpful”</p> <p>“(had) done research on music therapy....we did a sing along with ‘old vets’ they don’t remember who they are but can remember Amazing Grace”</p> <p>“in the ICU, we did a hypothermia protocol...oh I took patho and I know this...Just thinking it through”</p> <p>“class lecture....about</p>	<p>Discussions with student colleagues/ peer groups</p> <p>“CET”(2 students)</p>

	<p>clinical'</p> <p>"looking up an article afterwards"</p>	<p>breastfeeding and then having maternity clinical a couple days later"</p> <p>"Maternity...kangaroo care...(read in articles) and instructor would point it out"(situations) we learned in class</p> <p>"having my class and clinical instructor the same person pointing out (2 students)</p>	
<p>b) Empathetic nursing experience</p>	<p>"Putting myself in their shoes"</p> <p>"being with them(the patient)"</p> <p>Patient in pain "I felt bad"</p> <p>"held her hand...she looked me in the eyes and said thank you so much I was afraid and you were the only one talking to me"</p> <p>'Felt needed'</p> <p>"Listened to their stories"(2 students)</p> <p>"spent the whole day with her"</p>	<p>"I am more empathetic after seeing people in the hospital who had terrible lives and terrible things happen to them"</p> <p>"first catheter...bonded over that...one of my first patients that I felt like I was providing...the full nursing care... gave him a manicure...he thought it was the funniest thing"</p> <p>" a really nice gentleman....my instructor allowed me to advocate for</p>	

		<p>him”</p> <p>“Mother my age and have 3 kids having their 4th...I just felt bad”</p> <p>“In psych rotation...my instructor said....if you don’t say anything eventually they will speak to fill the space...and it worked!”</p> <p>“in my psych clinical...using the communication skills...holding the space...letting her talk” (2 students)</p> <p>‘a little boys came in crying...scraped his knees and his new muddy sneakers were muddy...and said my parents are going to kill me... I washed his sneakers and he just visibly relaxed’</p>	
c) Learned something about you	<p>Reflective conversation with clinical teacher about patient with ‘self-imposed’ disorder</p> <p>‘Self-reflection after rude patient</p>	<p>Patient situation in which I realized I was a good listener</p> <p>“I worry about these people so much so I guess I realize I am more selfless than when I was a</p>	<p>Classmate with health issue</p> <p>“who didn’t look like it(unhealthy)”</p> <p>‘Appreciate I have another culture to help</p>

	<p>interaction' "I wanted him to be taken care of"</p> <p>Reflection in clinical post-conference</p> <p>"I am calm in when people are losing it"</p> <p>Reflection to self during care of a patient with family turmoil around treatment vs. comfort measures..."how I want to be a nurse"</p> <p>"learned I can be intimidated...patient did not like having a student nurse"</p>	<p>teenager"</p> <p>"I let go of that notion ,someone could lay there and you could take care of them, there would be no reward....that was a big eye opener"</p> <p>""thought I could work with the pediatric population and then after working with them, I said absolutely not"</p> <p>"I stereotype people who don't speak English...thinking they don't understand English....I am a child of an immigrant who has an accent"</p> <p>Tried stretching with a psych patient to help alleviate his pain and it worked. "I was able to help"</p> <p>"I don't want to do Pediatrics...child with a meltdown...hard to watch"</p> <p>"I can do something other than psych"</p>	<p>me communicate with so many people"(student spoke Spanish)'</p> <p>"realized (because of many advantages I've had)... many are disadvantaged.. .I can't always judge these people...many don't know(how to care for themselves)</p> <p>"Realized I have triggers...</p> <p>found a nursing blog that was very helpful"</p>
d) An ethical issue	Observation of	Patient situation in	In the

	<p>questionable clinical practices by staff nurses(2 students)</p> <p>Patient with communication issue in pain... of my culture in which staff made negative comments about-‘it wasn’t our place to judge(his pain)’</p> <p>“Family would change her(a very ill patient) to a DNR”</p> <p>(2 students)</p> <p>“A patient in pain in the ER...couldn’t prove he was drug seeking...but he was saying all the right things”</p> <p>“DEU nurse was really good at explaining to me” - conflict between the patient’s daughter and the nurse...trying to see both sides</p> <p>“staffing in the DEU- number of patients”</p>	<p>which I realized I was a good listener</p> <p>“because of (knowing about)HIPPA, I am aware of what I say”</p> <p>Reading the chart/files to find out the story-patient kept alive by pharmaceuticals and machines expensive patient...keeping alive with money and resources to someone who could improve</p> <p>‘Language barrier of a patient in pain’</p> <p>“during peds, patient they were questioning abuse...they removed the parents...there were 3 cases like that”</p> <p>“A patient with a DNR...was clear to all but his girlfriend”</p> <p>‘labor patient who did not speak English and husband and daughter translating for her’</p> <p>“staff issues- number of patients;</p>	<p>classroom</p> <p>Clinical Evaluation Tool (CET)</p> <p>Writing in Ethics class</p>
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		float nurses(not comfortable there)” “drug addicted babies... and giving them drugs’	
e) Assumption / preconceived idea	<p>‘big assumption’ of working with patients of different gender-‘didn’t realize I had an issue with it”</p> <p>Observation of nurses doing things I didn’t think they were supposed to do”</p> <p>Nurse’s role in the hospital</p> <p>Reading the chart before I went in the patient’s room, I assumed with all the diagnoses, she would be an absolute wreck, and she wasn’t”</p> <p>Caring for a doctor... I was intimidated....he was going through a lot... allowing myself not to take it personally...he</p>	<p>‘Mental health unit “I was terrified...thought they were ...crazy...not the case at all”</p> <p>“working with anyone with AIDS...being completely covered to work with them...only wash hands and wear gloves”</p> <p>“negative comments for the nurses...it turns out he was just a pleasant guy....(who) would try to control other things around him”</p> <p>“Spanish speaking man...never thought to ask about blood products... said he was a Jehovah’s Witness”</p> <p>“the schools...when</p>	Care plan assessment asking about 80 year olds being sexually active

	<p>was...a teacher”</p> <p>“hear people/staff labeling(patients)”</p> <p>“Nurse said patient was confused...the whole day he was alert and oriented but at 7 the end of my shift he (was confused)”</p> <p>‘a patient in pain...I wasn’t sure if she could get up...the nurse said she can get up...coaxed her and she got up’</p>	<p>you are a young person...sometimes there’s a sense that all kids are like me”</p> <p>“addicted baby’s mother...thought she didn’t care”</p>	
f) Social or political issue	<p>A woman and her huge family...I went back to the nurse’s station...I was like it was so sweet they(the family) was there and two nurses were like ‘that is just annoying...’they need to get out and let us work’ I thought...it was really nice this woman hadn’t been alone and (discovered it was) a source of irritation</p>	<p>Community clinical and access to Mass health</p> <p>People who are home bound and Medicare.</p> <p>”there are some people prefer no male nurses, some prefer nurses who are more similar to them”</p> <p>“A lady with private health care and stigma of Medicare”</p>	<p>Substance abusers on a cardiac unit, there for different reasons</p> <p>“Being a Mandated reporter”: learning role and seeing issues at my workplace</p>

	<p>for people trying to do their job”</p> <p>“Patient...only Spanish speaking...lack of knowledge and access(for her care)”</p> <p>My psych rotation in detox- you stayed only until the last dose of medication...</p> <p>then they kick you out”</p> <p>“ a woman living alone...possibly wanted to live in an assisted home...not knowing a lot about it”</p> <p>“language differences”</p>	<p>“laboring woman(who didn’t speak English)...not having an interpreter and the family dynamics”</p> <p>“about support systems available for detox patients”</p> <p>‘restricting visitors of an adolescent”</p>	
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