PERCEIVED BARRIERS TO TEACHING FOR CRITICAL

THINKING IN CLINICAL SETTINGS

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ABSTRACT

RESEARCH SUBJECT: Barriers to teaching Critical Thinking

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The NLNAC criterion for accreditation of nursing schools mandates that faculty evaluate the critical thinking skills of nursing students. The purpose of this study is to describe barriers that nurse educators perceive in teaching critical thinking (CT) skills to baccalaureate students in the clinical setting. The study is based on previous work by the National League for Nursing (2008) and Shell (2001) indicating that nursing faculty have identified several barriers to teaching CT. The study will take place at Grand Valley State University and University of Detroit-Mercy. The anticipated sample will be 40 faculty who teach nursing in the classroom or clinical settings. The Survey of Perceived Barriers to Teaching Critical Thinking by BSN Faculty (Shell) will be used to collect data about faculty perceptions. The findings from this research will provide information about the barriers faculty identify regarding teaching CT in clinical settings.

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Chapter 1

Introduction

Critical thinking skills are essential to practice nursing in the complex health care environment. Nurses are expected to recognize emerging patient problems and life-threatening situations, follow standards of care and best practices to provide quality care (Grubud-Howe, Schoessler, & Tanner, 2008; Wilgis & McConnell, 2008). Nursing studies have shown an association between critical thinking (CT) and competence (AACN, 2008; NLN, 2008; Wilgis & McConnell, 2008). New graduate nurses are expected to transition into practice at a competent level, yet there is a gap between education and practice that has both educators and hospital nurse managers addressing this problem (Burns & Poster, 2008).

The American Nurses Association (ANA)(2008) and National League for Nursing (NLN) (2008) maintain that institutions have an obligation to enhance professional development and promote critical thinking skills (Riddell, 2007). The NLN recognizes CT as a core competency for Baccalaureate and Master's nursing educational programs. The National League of Nursing Accreditation Commission (NLNAC) (2008) and the American Association of Colleges of Nursing's (AACN) Essentials of Baccalaureate Education (2008) require schools of nursing to document students' clinical reasoning skills to meet accreditation standards. The standards require nurse educators to develop definitions and teaching strategies which promote and evaluate CT in higher education settings.

Critical thinking (CT) is the basis of professional practice in health care (Gubrud-Howe, Schoessler & Tanner, 2008; Tanner, 2008; Sorensen & Yankech, 2008;). The AACN (2008) recommended the development of clinical reasoning skills as a top priority for faculty to address for baccalaureate nursing education. Although teaching CT has come to the forefront of nursing education, it has been difficult for educators to define, evaluate and teach. Educators are continuing to look more closely at content, design, and delivery of nursing curricula in relation to CT, clinical judgment, and clinical decision-making (Lasater, 2007). There is a compelling need in nursing education to ensure that the process of education is valued as much as the content in order for instructors to effectively teach for critical thinking (Ethridge, 2007).

Nurses must possess high-level reasoning skills for clinical decision-making to deal with complex patient care and ill-defined problems encountered in practice (AACN, 2008; Lasater, 2007; Murphy, 2004; Tanner, 2006). More recently nurse leaders have reconceptualized CT as a process to apply clinical judgment. The model of clinical judgment presented by Tanner (2006) emphasizes the role of the nurses' background, context of the situation, and nurses' relationships with patients as central to what nurses notice, how findings are interpreted, responded to, and reflected upon.
Tanner (2006, p. 204) drew five conclusions regarding clinical judgments:

1. Clinical judgments are more influenced by what nurses bring to the situation than the objective data about the situation at hand.
2. Sound clinical judgment rests to some degree on knowing the patient and concerns.

3. Clinical judgments are influenced by the context in which the situation occurs and the culture of the nursing care unit

4. Nurses use a variety of reasoning patterns alone or in combination

5. Reflection on practice is triggered by a breakdown in clinical judgment and is critical for the development of clinical knowledge and improvements in clinical reasoning.

Lasater (2007) used Tanner's Clinical Judgment model to develop a rubric for clinical decision-making in simulation laboratories. Lasater (2007) reported that educators believed the rubric was valuable in communicating with students about the concept of clinical judgments. It offered a language understood by both faculty and students, setting standards that students can comprehend and work toward. When students are clear about expectations and receive direct feedback about performance, students can better learn (Lasater, 2007).

According to Redding (2001), to facilitate the development of students' CT skills, nurse educators need to be aware of the variables contributing to the clinical environment where this occurs. The clinical environment is fast paced and complex, creating many barriers to teaching CT. Clinical nursing faculty must facilitate students' development of clinical judgment and critical thinking skills which are necessary for safe and effective practice (NCSBN, 2008).

Barriers which contribute to teaching CT ultimately make translating knowledge and theory into practice difficult (Del Bueno, 2005). Factors involved in teaching CT include: methods of teaching, the physical environment, and willingness of instructors to foster CT (Shell, 2001). Barriers to teaching CT include using the traditional lecture

format in the classroom, time constraints, class size, pressures to conduct research, and lack of perceived benefits by students to be open to new learning techniques (Shell, 2001). Shell (2001) reported that students' characteristics were the greatest impediment to the use of teaching methods that promote CT. The second greatest barrier was time constraints, such as insufficient time to learn new teaching methods, lack of time to prepare and plan critical thinking activities as well as inadequate time in class (Shell, 2001). Further study is needed to distinctly define the barriers faculty face in teaching and evaluating for CT in nursing students in the clinical setting.

Background and Significance

Critical thinking is a concept that is difficult to describe and measure, but it can be traced back to Greek philosophers such as Socrates, Plato, and Aristotle (Wilgis & McConnell, 2008). The Socratic Method as cited in Wilgis and McConnell (2008) was defined as:

A pedagogical technique in which a teacher does not give information directly but instead asks a series of questions with the result that the student comes either to the desired knowledge by answering the questions or to a deeper awareness of the limitations of knowledge (Wilgis & McConnell, 2008).

Plato believed education should allow students to examine issues, question, and reflect. Aristotle identified a relationship between the intellect and thinking (Wilgis & McConnell, 2008). Current definitions of CT have evolved from the historical perspective of philosophers.

Many disciplines have developed a definition of what critical thinking is for the profession, however none completely conceptualize what CT means to the nursing profession. Paul (1993), as cited in Brunt (2005), described CT as:

Purposeful, in which the thinker systematically and habitually imposes

criteria and intellectual standards on thinking, takes charge of construction

of thinking, guides the construction of thinking according to standards,

and assesses the effectiveness of the thinking according to the purpose, the

criteria and the standards (p. 21).

Chaffee (2000), as cited in Brunt (2005), defined CT as "making sense of the world by carefully examining the thinking process to clarify and improve our understanding" (p. 45).

Over the past 25 years, critical thinking has become an essential outcome of nursing education. Nurses' critical thinking processes should include a comprehensive assessment of the patient, analysis, and prioritization of the patient's needs, followed by problem solving that applies to evidence-based and outcome-directed interventions to improve the health of the patient (Wilgis & McConnell, 2008). A lack of consensus on a definition for Critical Thinking provides another barrier to teaching (Shell, 2001; Tanner, 2006; Twibell, Ryan, & Hermiz, 2005).

Many definitions of CT in nursing have been developed. A 2000 study by Scheffer and Rubenfeld arrived at a consensus definition of CT in nursing. Nurse experts in practice, education and research were included in this Delphi study. The authors did arrive at a more comprehensive understanding of CT in nursing and a definition reflecting the views of nurse experts from around the world. The definition is as follows:

Critical thinking in nursing is an essential component of professional

accountability and quality nursing care. Critical thinkers in nursing

exhibit these habits of the mind: confidence, contextual perspective,

creativity, flexibility, inquisitiveness, intellectual integrity, intuition, open-

mindedness, perseverance, and reflection. Critical thinkers in nursing

practice the cognitive skills of analyzing, applying standards,

discriminating, information seeking, logical reasoning, predicting, and

transforming knowledge (Scheffer & Rubenfleld, 2000, p. 357).

Faculty teaching nursing can foster CT growth by implementing specific teaching

methods designed to develop CT skills. Identifying barriers to the implementation of

critical thinking teaching strategies is important in order to validate the CT skills of

students (Shell, 2001). Shell (2001) reported that perceived barriers include eight areas:

self-efficiency, institutional barriers, time constraints, perceived importance and

relevance of critical thinking, perceptions of student abilities and resistance, faculty

resistance, perceived need to teach for content coverage, and lack of knowledge of the

concept of critical thinking. Having a clear understanding of barriers to CT will aid in the

development and validation nursing–specific tools to measure CT.

CT skills are essential in today's nursing environment in order to develop

independent thinking and assist nurses to effectively care for patients (Brunt, 2005;

Tanner, 2006; Twibell et al., 2005; Wilgis & McConnell, 2008).

Problem Statement

The AACN (2008) recommends the development of clinical judgment skills as a

priority for faculty to address with baccalaureate nursing students (Shell, 2001). Faculty

have described problems with addressing this challenge due to increased number of students, more acute level of patient care and the need for safety in the clinical setting. It is important to determine the barriers for faculty to teaching CT in the clinical setting. Shell (2001) reported that perceived barriers include eight areas: efficiency, institutional barriers, time constraint, perceived importance and relevance of CT, perception of student abilities and resistance, faculty resistance, perceived need to teach for content coverage and lack of knowledge of the concept of critical thinking.

Purpose of the Study

The purpose of this study is to describe barriers that nurse educators perceive in teaching critical thinking skills to baccalaureate students in the clinical setting. This is a partial replication of Shell's (2001) study.

Research Question

What barriers do faculty perceive in teaching critical thinking skills to baccalaureate students in the clinical setting?

Organizing Framework

Scheffer and Rubenfeld's (2000) definition of critical thinking is the organizing framework for this study. The comprehensive definition describes both affective and cognitive components of critical thinking. Nurse educators can use the habits of the mind framework to evaluate students' cognitive skills in the clinical setting.

Definition of Terms

Conceptual Definition: Critical Thinking.

Critical thinking in nursing is an essential component of professional accountability and quality nursing care. Critical thinkers in nursing exhibit habits of the

mind: confidence, contextual perspective, creativity, flexibility, inquisitiveness, intellectual integrity, intuition, open-mindedness, perseverance, and reflection. Critical thinkers in nursing practice the cognitive skills of analyzing, applying standards, discriminating, information seeking, logical reasoning, predicting, and transforming knowledge (Scheffer & Rubenfeld, 2000, p. 357).

Conceptual Definition: Barriers to CT.

Difficulties faculty encounter when attempting to implement critical thinking instructional strategies (Shell, 2001).

Operational Definition: Barriers to Teaching CT.

A questionnaire, Survey of Perceived Barriers to Teaching Critical Thinking by BSN faculty was developed by Shell (2001) in order to determine perceived barriers to faculty. The questionnaire consists of three parts. Part 1 requests demographic information and educational background. Part 2 consists of closed-ended statements regarding barrier that educators may face when implementing critical thinking teaching strategies. Part 3 asks respondents to rate to what extent the listed barriers interfere with the ability to implement critical thinking teaching strategies in the clinical setting (Shell, 2001).

Limitations

This study will be conducted among nursing faculty in one school in one state. Therefore this study is limited by geographical area and selected sample. Another limitation may be the lack of understanding of the dynamics involved in CT in the clinical setting.

Assumptions

Faculty will have taught in a clinical setting and will be able to identify the potential barriers to CT. It is also assumed that clinical nurse educators are knowledgeable about using methods to teach critical thinking skills. Another assumption is that CT will improve clinical practice.

Summary

Critical thinking is a requirement for accreditation from the AACN (2008) and NLNAC (2008). To facilitate the development of students' CT in clinical practice, nurse educators need to be aware of variables supporting or impeding teaching in the clinical environment (Redding, 2001). Scheffer and Rubenfeld's (2000) definition of critical thinking is the organizational framework for this study. The purpose of this study is to identify and describe barriers that nurse educators perceive in teaching critical thinking skills to baccalaureate students in the clinical setting. This is a partial replication of Shell's (2001) study.

Chapter 2

Review of Literature

Critical Thinking (CT) is at the forefront of discussions and research among

nursing educators (Chabeli & Muller, 2004; Shell, 2001; Twibell et al., 2005; Walthew,

2004). Research indicates that many definitions of critical thinking exist and reaching a

consensus on a nursing definition has been difficult. CT has been listed frequently as the

most important entry-level competency for graduate nurses, however it is ranked among

the lowest of observed competencies (Shell, 2001). Faculty perceptions of barriers to

teaching CT are to promote and assess CT skills.

The purpose of this study is to examine perceived barriers to teaching critical

thinking in the clinical setting by nursing faculty. The Literature Review is organized

into eight sections:

1. Organizing Framework

2. Models for CT

3. Faculty Perceptions and Skills of CT

4. Students' Perceptions of CT

5. Measuring CT

6. Methods of Teaching CT

7. Evaluating CT

8. Summary

Organizing Framework

The organizing framework for this study is the consensus definition of CT in nursing (Scheffer & Rubenfeld, 2000). A panel of 55 expert nurses gave input to clearly conceptualize what CT means to the nursing profession. Scheffer and Rubenfeld (2000) conducted a Delphi study to identify a consensus statement on critical thinking in nursing. The purpose of this study was to arrive at a consensus statement on CT in nursing from nursing experts in practice, education, and research (Scheffer & Rubenfeld, 2000).

A Delphi technique with five rounds of input from nurses in various practice areas of nursing and countries was used. The Delphi technique generates discussion and judgments on a topic, using experts who do not directly interact (Scheffer & Rubenfeld, 2000). Each of the five rounds of responses were analyzed to determine patterns and outliners, which were summarized. Revisions were returned to the panel with an additional set of questions for the next round. The number of rounds depended on how quickly the participants reached a consensus (Scheffer & Rubenfeld, 2000).

The panel of nurse experts (or research participants) was a diverse group. The aim was to include nurses employed in education, practice and research who were diverse in gender, geography, culture and practice specialties (Scheffer & Rubenfeld, 2000). Of the 135 potential participants that had been invited to participate, 86 agreed. In the first round of questioning 72 participants responded. At the completion of the research, the 5th round, 55 participants responded. The loss of participants was not unexpected due to the length of time between rounds (Scheffer & Rubenfeld, 2000).

The initial question for round one was: "What skills and habits of the mind are at the core of critical thinking for nurses in any setting: practice, education or research" (p. 356). Once the responses were categorized, Round 2 was initiated. The goal for round 2 was to continue to consolidate data. The focus for round 3 was to continue to refine the data. In round 4, the researchers wanted to move toward closure (Scheffer & Rubenfeld, 2000).

The first objective for round 4 was to arrive at a consensus on label names for the "habits of the mind" and "skills" of CT in nursing. The second objective was to arrive at a complete list of adjectives for the "habits of the mind" and "skills" lists. The third objective was to move toward consensus on definitions of habits of the minds and skills of CT in nursing. The fourth objective was to move toward consensus of the sub skills. The fifth objective was to get suggestions on the format for the consensus statement on CT in nursing. After the data from round 4 were analyzed it was decided that round 5 would achieve closure unless the participants chose to continue to study the sub skills (Scheffer & Rubenfeld, 2000). The final definitions and the qualities in each category are as follows:

Critical thinking in nursing is an essential component of professional accountability and quality nursing care. Critical thinkers in nursing exhibit these habits of the mind: confidence, contextual perspective, creativity, flexibility, inquisitiveness, intellectual integrity, intuition, open-mindedness, perseverance, and reflection. Critical thinkers in nursing practice the cognitive skills of analyzing, applying standards, discriminating, information seeking, logical reasoning, predicting, and transforming knowledge (Scheffer & Rubenfleld, 2000, p. 357).

The following were determined to be habits of the mind and skills of CT:

1. Confidence- Assurance of one's reasoning abilities

2. Contextual perspective- Considerate of the whole situation, including relationships, background and environment, relevant to some happening

3. Creativity- Intellectual inventiveness used to generate, discover or restructure ideas, imagining alternatives

4. Flexibility- Capacity to adapt, accommodate, modify or change thoughts, ideas, and behaviors

5. Inquisitiveness- An eagerness to know by seeking knowledge and understanding through observation and thoughtful questioning in order to explore possibilities and alternatives

6. Intellectual integrity- Seeking the truth through sincere, honest processes, even if the results are contrary to ones assumptions and beliefs

7. Intuition- Insightful sense of knowing without conscious use of reason

8. Open-mindedness- A viewpoint characterized by being receptive to divergent views and sensitive to one's biases

9. Perseverance- Pursuit of a course with determination to overcome obstacles

10. Reflection-Contemplation upon a subject, especially ones assumptions and thinking for the purposes of deeper understanding and self-evaluation (p. 358).

Skills of CT were defined as follows:

1. Analyzing: separating or breaking a whole into parts to discover their nature, function and relationships

2. Applying standards: judging according to established personal, professional or social rules or criteria

3. Discriminating: recognizing differences and similarities among things or situations and distinguishing carefully as to category or rank

4. Information seeking: searching for evidence, facts or knowledge by identifying relevant sources and gathering objective, subjective, historical and current data from those sources

5. Logical reasoning: drawing inferences or conclusions that are supported in or justified by evidence

6. Predicting: envisioning a plan and its consequences (Scheffer & Rubenfeld, 2000, p. 358).

The Delphi study provided a valid consensus statement from a diverse group of nurse experts to define CT in nursing. Results provided descriptions of affective and cognitive components of CT in nursing through the defined habits of the mind and skills of critical thinkers in nursing. An outcome of Scheffer and Rubenfeld's (2000) study was that nursing faculty and students now have a common language regarding CT in nursing. This should help faculty to streamline terminology when trying to explain why and how CT is so important to nursing and safe practice.

Models for Critical Thinking

Ferrario (2003) noted a difference in the way new nurses and experienced nurses processed information for triage and treatment decision-making in the emergency room setting and decided to investigate the issue. The author stated that clinical knowledge develops when detailed analyses and probability assessments are replaced with

representations similar to previous experiences, evaluation of associations and exemplars and attributions of causality.

The organizing framework for Ferrario's Study was Tversky and Kahneman's (1980, 1982, 1983,1985 as cited in) Representativeness Heuristics Model. The model describes mental representations stored in long-term memory which have been developed from textbook signs and symptoms, and applied in clinical practica where opportunities to transfer knowledge are reinforced. The more cues or signs and symptoms a patient gives, the more complex the diagnostic reasoning process.

There are four types of Representativeness Heuristics. First, Perceived Modal Frequency is the frequency which nurse's base decisions on past encounters with signs and symptoms. Second, Essential Similarity indicates that the patient's problem is assessed by relating to a previous case judged similarly. Third, Subset Variability refers to the idea that a patient is assessed similarly to ones with the same issues in the past, but subjective probabilities are based on nurses' perceptions of past patients. Fourth, Causal Systems is defined as patients' problems perceived as a composite or networks of cause-and-effect relations between etiologic factors and diagnostic categories (Ferrario, 2003, p. 41).

The investigator sent out 620 surveys with an overall response rate of 35%. The survey was a 16-item measure which included four clinical situations for each type of heuristic and demonstrated an internal consistency reliability coefficient (Kuder-Richardson 20) of .82. Nurses with 5 or more years experience in the ER were placed into the experienced group, while nurses with less than 5 years experience were defined as the less-experienced group.

Results showed that both experienced and less-experienced nurses used all four types of representativeness heuristics; however representations based on integrated clinical experience were used less than a third of the time (Ferrario, 2003). It was found that experienced emergency nurses used the Type 4 heuristic, causal systems, more than less experienced nurses (N= 3.98, p=0.046). However, advanced heuristic thinking was only used by both sets of nurses one-third of the time over all. The data indicated that complex and reflective reasoning strategies were not used most of the time (Ferrario, 2003).

Ferrario (2003) indicated that in order to keep pace with growing cognitive demands, educators need to promote diagnostic reasoning earlier in nursing education. Retaining opportunities for teacher-student dialogue and group discussions about case studies is critical for promoting diagnostic reasoning. Providing complex questioning also will help students develop advanced heuristic skills (Ferrario, 2003).

In conclusion, Ferrario (2003) believed that nursing heuristics can be subjective and error laden due to job stressors. This leads to the need to have evidence-based protocols, policies and clinical procedures implemented to help guide the nurses' judgments, regardless of experience.

Tanner (2006) stated that clinical nursing judgments are often related to the nursing model of practice. This is a linear thought process based on assessment, nursing diagnosis, planning and implementing interventions, then evaluation of the effectiveness of the interventions. This model fails to demonstrate the complexity of clinical judgment and the many factors that influence it (Tanner, 2006). To develop a better model for

practice, Tanner (2006) reviewed nearly 200 studies for consistent themes in developing

clinical judgment. The author drew five conclusions:

1. Clinical judgments are more influenced by what nurses bring to the situation than

   objective data about the situation at hand.

2. Sound clinical judgment rests to some degree on knowing the patient and typical

   pattern of responses.

3. Clinical judgments are influenced by the context in which the situation occurs and

   the culture of the nursing care unit.

4. Nurses use a variety of reasoning patterns alone or in combination.

5. Reflection on practice is often triggered by a breakdown in clinical judgment and

   is critical for the development of clinical knowledge and improvement in clinical

   reasoning (Tanner, 2006, p. 204).

The term "clinical judgment" means an interpretation or conclusion about a

patient's needs, concerns, or health problems and the decision to take action (or not), use

or modify standard approaches or improvise new ones as deemed appropriate by the

patient's response (Tanner, 2006). "Clinical reasoning" refers to the processes by which

the nurses and other members of the health care team make decisions (Tanner, 2006). It

was pointed out that good clinical judgment in nursing requires flexibility, an

understanding of pathophysiology and anatomy, along with the ability to individualize

care to the ill patient and family needs, then advocate for what is right for that patient

while managing up to five patients.

Based on the five conclusions, Tanner (2006) developed the Model of

Clinical Judgment which includes four key concepts: Noticing, Interpreting, Responding, and Reflecting. Noticing is a function of the nurses' expectations of the situation, whether or not made explicit. The expectations stem from the nurses' background, expectations of patient care, initial grasp of concepts, relationships. Interpreting and responding are based on the noticing. The nurse uses analytic, intuitive and narrative reasoning patterns in order to decide which course of action is most appropriate to take. Reflection is done in two ways: through reflection-in-action or reflection-on-action. Reflection-in-action is assessing the patient while implementing an intervention in order to achieve the desired responses, Reflection-on-action refers to what was learned based on the clinical problem being dealt with, whether or not it was correctly handled (Tanner, 2006).

The educational implications for using this model include a description of how nurses think when engaged in complex, undetermined clinical situations that require judgment. Applying this model to teaching would include simulating scenarios and reflecting on the decisions made and what could have been improved upon. Thinking like a nurse as described by this model is a form of engaged moral reasoning. Educators must help students engage with patients and act on a responsible vision for excellent care of those patients (Tanner, 2006).

Lasater (2007) states clinical judgment is viewed as an essential skill for every nurse and distinguishes professional nurses from nurses in a purely technical role. With recent advances in high-fidelity simulation, an ideal arena for developing clinical judgment exists (Lasater, 2007). The conceptual model for Lasater's (2007) research was Tanner's (2006) Clinical Judgment Model. The purposes of this study were to: (a)

describe students' responses to simulated scenarios within the framework of Tanner's (2006) Clinical Judgment Model, (b) develop a rubric that describes levels of performance in clinical judgment, and (c) pilot test the rubric in scoring students' performance (Lasater, 2007, p. 496).

The study participants were third-term juniors in an adult medical-surgical clinical rotation from a 4 year baccalaureate nursing program. Students (N= 48) were observed in a laboratory, a hospital-like room containing a computerized human patient simulator, one of two mornings per week in lieu of the clinical practicum for 7 weeks (Lasater, 2007).

The method used for this study was qualitative. Observation-revision-review was repeated weekly for 3 weeks until the rubric was developed and a pilot test could be done to score student performances during weeks 4 and 5 (Lasater, 2007). Weeks 6 and 7 allowed for continued observation and further refinement of the rubric (Lasater, 2007). A total of 53 observations were completed and video taped for further analysis. After the observations, a focus group with eight of the students was conducted.

Tanner's (2006) Clinical Judgment Model provided the basis for development of the Lasater Clinical Judgment Rubric (LCJR). The model contains four phases: (a) Noticing, (b) Interpreting, (c) Responding, and (d) Reflecting. Each of the four phases were further described by two or three dimensions which defines that phase. A total of 11 dimensions were formulated with developmental descriptors at each of the four levels. The developmental descriptors are exemplary, accomplished, developing, and beginning (Lasater, 2007).

Themes from the focus group discussions were: (a) strengths and limitations of high-fidelity simulation, (b) paradoxical nature of simulation (i.e. provoking anxious and stupid feeling, yet increasing awareness), (c) an intense desire for more feedback about performances, (d) importance of students' connection to others, and (e) general recommendations for improved facilitation (Lasater, 2007, p. 499).

The highest value of simulations identified by the student group was forcing students to think about what the patients needed, using the data, and expanding options for possible responses. Students also commented on the need for more definitive feedback, including what the patient outcomes could be if the judgments exercised were followed in reality as well as what might have been done differently (Lasater, 2007). Many of the participants discussed the value of debriefing sessions after the simulation. The discussions were a time to reflect on the situation and hear others' ideas and priorities adding to the students' knowledge base (Lasater, 2007).

Overall, the LCJR defines what is meant by noticing, interpreting and responding and reflecting with 11 dimensions. This assessment tool can be used to provide a basis for identifying students' gaps in understanding and obtaining feedback for simulation facilitation. The author concluded that although clinical judgment is clearly related to practical experience, which high-fidelity simulation provides for students in addition to clinical practica, students can better learn when clear about expectations, and receiving direct feedback about performance. The LCJR offers performance expectations, and language for feedback and assessment of students' clinical judgment development (Lasater, 2007).

Faculty Perceptions of Teaching CT

According to Shell (2001), educators are being challenged to teach critical thinking (CT) skills to nursing students. Shell (2001) believed that CT is not being realized in student outcomes and that the traditional lecturer role is not conducive for teaching critical thinking skills. Consequently, CT skills are lacking in many new graduates. Other barriers faculty encounter included time constraints, class size, pressures to conduct research, and lack of perceived benefits by students. The purpose of this descriptive study was to elicit nurse educators' perceptions of barriers that impede the implementation of critical thinking teaching strategies (Shell, 2001).

The population consisted of all nurse educators who currently teach in BSN programs in Tennessee. The participants varied in rank, teaching status, and educational background. Nurse educators (N= 262) participated in the study, and 175 (67%) of the surveys completed were usable. The nurse educators surveyed were full-time (90%), while 10% were part-time or adjunct nurse educators. Thirty-seven percent of the full-time educators were tenured, one third were on a tenure tract and one third not on a tenure tract. Over 80% of the educators were over 40 years old.

Shell (2001) developed a questionnaire called the Survey of Perceived Barriers to Teaching Critical Thinking by BSN Faculty. The three parts of the questionnaire were as follows: Part 1 requested demographic information about the faculty. Part 2 consisted of closed-ended statements regarding barriers that educators may face when implementing critical thinking teaching strategies. Participants ranked barriers on a 5-point Linkert scale ranging from 1 = "strongly agree" to 5 = "strongly disagree." Subscales for Part 2 were as follows: (a) Self-Efficiency, (b) Institutional Barriers, (c) Time constraint, (d)

Importance of Critical Thinking, (e) Student characteristics, (f) Faculty Resistance, (g)

Content Coverage, and (h) Lack of knowledge. Part 3 asked respondents to rate to what

extent the listed barriers interfere with the ability to implement critical thinking teaching

strategies (major factor, minor factor, or not a factor). Twenty items on the survey asked

respondents to rate the perceived barriers (Shell, 2001).

The findings for Shell's (2001) parts 2 and 3 indicated the greatest barrier

perceived by faculty to teach CT was "student characteristics." This included "lack of

student motivation," "student resistance to active learning," "students' expectations of a

lecture format," and "concerns of getting a good grade versus learning" (p. 288). The

mean value for parts 2 and 3 was M=60.28. Findings were consistent with other reports

on student resistance to innovative teaching methods as stated in the literature review.

The researcher noted that nurse educators may be fearful of negative student evaluations,

and concerned about the effectiveness of teaching methods that differ from student

expectations (Shell, 2001).

The second highest perceived barrier to teaching critical thinking was "time

constraints" (M=58.16). Constraints included "insufficient time to learn new teaching

methods," "lack of time for preparing and planning critical thinking activities," and

"inadequate time in class." Many faculty stated that research demands compete with

teaching responsibilities for time and effort. This finding is consistent with the literature

reviewed by the researcher (Shell, 2001).

The third highest perceived barrier was "content coverage" (M=51.09). The

amount of factual information is overwhelming to students and teachers. Therefore

distinguishing the need to know information from the nice to know content is a challenge for nursing educators (Shell, 2001).

The author concluded that nurse educators believed that critical thinking is an important objective in teaching, but there are several barriers to overcome to teach CT effectively. While confidant of teaching techniques, faculty believed there is a need for more education on teaching critical thinking. Nurse educators were open to innovative teaching strategies, but due to time constraints found strategies difficult to incorporate into their current formats (Shell, 2001).

Walthew (2004) explored the perceptions of critical thinking held by nurse educators in a large nursing school in New Zealand. The hope was that a clear understanding of the concept would help nurse educators facilitate the development of critical thinking (CT) in students. Walthew (2004) noted that a number of definitions of CT were borrowed from philosophy and education.

The author used a descriptive, interpretive approach. Twelve nurse educators (66%) of a possible 18 participated in the study. The participants all had a minimum of 10 years teaching experience. The data were collected through individual, semi-structured interviews approximately 1 hour in length, all conducted by the same researcher. The interviews were tape recorded, transcribed and analyzed. The following four questions were asked in the interviews:

1. In your own words, can you tell me what you understand by the concept of critical thinking?

2. What is it about this piece of work that leads you to think the student is thinking critically?

3. What did you observe the student in the clinical area that made you think he or she was thinking critically? (Walthew, 2004, p. 409).

Four themes emerged from the interviews with the educators. The first theme was "information gathering, linking theory to practice, and problem solving." One of the interviewees discussed the ability to link theory to practice as a process that develops as students' knowledge increases with experience. When discussing problem solving, many of the nurse educators considered the nursing process to be closely related to critical thinking. However, some disagreed with this position and considered the nursing process to inhibit critical thinking by stifling creativity due to the linear-type thinking it encourages (Walthew, 2004).

The second theme noted by researchers was "attitudes and dispositions of the learners." Nurse educators reported that being curious and open to a situation is a key trait in thinking critically. The educators noted that for some this seems to be an innate character trait, rather than a skill developed over time (Walthew, 2004).

The third theme nurse educators discussed was "intuition and subjective knowing related to CT" (Walthew, 2004). Walthew (2004) linked the perceptions of CT views to views more typically held by feminist writers. While many educators mentioned intuitive knowledge as a component of CT, it was noted it needs to be examined for reliability (Walthew, 2004). Many of the nurse educators gave testimony to the fact there is a subjective component in all thinking that is influenced by personal knowledge and affects clinical decision making. The researcher found this idea to be in contrast to the traditional view of CT, where it is suggested that reality can only be accurately represented by being impartial, consistent, and non-arbitrary (Walthew, 2004).

"Contextual knowing and connecting" was the fourth theme discussed by nurse educators. Several of the participants emphasized the importance of hearing the other's voice in order to be a good critical thinker (Walthew, 2004). This means truly hearing what the other person is saying and determining needs based on this.

Walthew (2004) concluded that nurse educators in this study provided a clear, rich description of conceptions of critical thinking. CT is considered a complex process that included rational, logical thinking, reflective of traditional theories of critical thinking. Nurse educators emphasized listening to other peoples' points of view, empathizing and sensing as key traits of CT. Although the nurse educators who participated developed conceptions of critical thinking through experiences, the experiences tend to be common to all nurses (Walthew, 2004).

Chabeli and Muller (2004) believed that in spite of the use of several teaching, assessment and evaluation methods by nurse educators in clinical nursing education, student nurses still demonstrate a lack of reflective thinking in practice. This is evidenced by lack of an inquiring mind and an inability to be reflexive as well as to adapt changes for the benefit of the patient. The research question was the following: "How can reflective thinking of learners in the clinical nursing setting be facilitated?" (p. 58). The primary objective was to describe perceptions of nurse educators in regard to how reflective thinking can be facilitated in clinical nursing education (Chabeli & Muller, 2004).

The research design was qualitative, exploratory and descriptive. Twelve nurse educators with 10 or more years experience in clinical teaching were selected to participate in the study. A focused group interview, about 3 hours in length, centered

around the question: "How can reflective thinking of learners be facilitated in clinical

nursing education in accordance with the three phases of reflective thinking as influenced

by the hierarchical cognitive and affective thinking skills?" (Chabeli & Muller, 2004, p.

60). The three phases of reflective thinking are: (a) how awareness and disequilibrium are

influenced by knowledge, receptivity, comprehension, and responsiveness, (b) how the

interactive constructing process is influenced by analysis, values, synthesis and

organizational thinking skills and could be facilitated, and (c) how consolidation of

knowledge and skills for rational clinical decision-making and problem solving are

influenced by evaluation and how internalization of thinking skills could be facilitated

(Chabeli & Muller, 2004).

After analyzing the group interview, the researchers found that the main theme

was "empowering learners to use reflective thinking skills" (Chabeli & Muller, 2004).

Categories consisted of three phases. The main focus of phase 1 was awareness and

disequilibrium. Subcategories of phase one were: (a) knowledge and receptivity, and (b)

comprehension and response. The educators discussed possible strategies for promoting

skills in learners. Questioning, lecture demonstration, observations, brain storming, field

trips, simulations were mentioned as ways of promoting these skills. Evaluating for

knowledge and receptivity includes direct observation and self-assessment.

Comprehension and response evaluation includes students using a poster presentation,

workbook, and observations of performance with checklist and rating scales (Chabeli &

Muller, 2004).

Phase 2 focuses on the interactive constructing process. This phase was divided

into two subcategories: (a) analysis and valuing, and (b) synthesis and organization.

Teaching strategies discussed by educators to promote skills included reflective journal writing, nursing process/case studies, peer tutoring, and concept mapping. The educators discussed peer assessment and portfolio assessment, as well as reflective tutorials as assessment methods (Chabeli & Muller, 2004).

Consolidation for rational decision-making and problem solving were the focus of Phase 3. Under this category the two sub-categories are evaluation and internalization. Teaching strategies discussed by educators to promote skills in students included clinical conference, values clarification, research/ community outreach projects and self-directed learning contracts. To evaluate the learning of this skill, research presentations, rounding on students on units, and comprehensive task performance assessments were strategies used by this group of educators (Chabeli & Muller, 2004).

Reflective thinking is viewed as a usable educational tool is a widely recognized as an effective and creative vehicle for promoting lifelong learning and to improve practice. The finding regarding nurse educators' perceptions on facilitating reflective thinking in clinical nursing revealed many teaching techniques, assessment, and evaluation methods with supportive attitudes that can facilitate this skill. The authors concluded that clinical nursing education is a dynamic, constantly changing, real-life environment where learners are able to combine the theoretical component with practice (Chabeli & Muller, 2004).

The rapid growth of knowledge and technology related to health and illness demands that nurses solve problems and make crucial decisions in clinical situations (Twibell, Ryan, & Hermiz, 2005). Currently, critical thinking skills are an expected outcome of nursing education programs. Nursing is a practice profession, and it is

important for faculty to know the cognitive process characteristics of expert nurses and to role model critical thinking (CT) in clinical settings. The purpose of this descriptive case study was to explore the perceptions of nursing faculty teaching CT skills to baccalaureate student nurses in clinical settings (Twibell et al., 2005).

Six clinical nursing instructors who supervised junior and senior level nursing students in clinical experiences participated in the study. The instructors were interviewed individually three times during 1 semester, at 2 week intervals. Specific questions were asked regarding how students performed in clinical situations and what the instructor said or did to support students in critical thinking. The interview sessions were audiotape, transcribed. The interviewing researcher kept a reflective journal to ensure rigor in the study (Twibell et al., 2005).

The authors used a modified version of the developmental research sequence (DRS) devised by Spradley (1979) to analyze data. This approach systematically examines a person's experiences and meanings from verbal descriptions. For analysis, first the cover terms were determined, and then semantic relationships between the terms were identified, followed by a taxonomic analysis. From the DRS analysis, five domains emerged. The cover terms that developed were as follows: (a) putting it all together, (b) strategies to promote critical thinking, (c) role of clinical instructors, (d) beneficial characteristics of instructors, and (e) rewards for critical thinking (Twibell et al., 2005).

"Putting it all together" and "strategies to promote critical thinking" were the domains that had the strongest consensus among participants. The respondents indicated the domain "Putting it all together" meant synthesizing various elements into an integrated whole. This domain is divided into the categories of terms that define what

putting it all together means. Terms and phrases that are discussed by participants included information seeking, reflecting on experiences, assigning meaning, problem solving, predicting, planning, and application to novel contexts. The second domain, "strategies to promote critical thinking," indicated that the instructor was an important factor in shaping students' ability to think critically. The participants identified four specific strategies to promote critical thinking in students that included questioning: written products, clinical conferences, and student journals (Twibell et al., 2005).

The researchers concluded that clinical faculty identified indicators of critical thinking. Additionally, the respondents agreed on four main strategies for teaching critical thinking in clinical settings, with questioning being the most used method. The authors concluded that critical thinking in nursing might be different than in other disciplines because of clinical processes, affective dimension of nursing practice, and the nature of nursing knowledge. The best approach for faculty to use is a variety of strategies to facilitate development of critical thinking skills in nursing practice (Twibell et al., 2005).

The nature of the relationship among nursing education, clinical practice, and critical thinking is unclear. The purpose of this study was: (a) to determine the critical thinking skills of nurse faculty, (b) to examine the relationship between epistemological position and critical thinking, and (c) establish a benchmark of performance for CT skills in nursing students (Zygmont & Moore Schaefer, 2006).

A randomized national sample of 300 full-time nurse faculty from the National League for Nursing member schools was targeted. All types of nursing education programs (excluding doctorate) were included. Five packets were sent to the director or

chair of a randomly selected sample of 60 schools of nursing. Each packet included the California Critical Thinking Skills Test (CCTST), the Learning Environment Preferences (LEP), and a demographic questionnaire. Thirty- seven faculty completed and returned the packets. Faculty could be contacted for an interview. The majority (78.4%) of the faculty reported having no formal or informal education in CT, 18.9% reported attending some educational program on the topic (Zygmont & Moore Schaefer, 2006). Two groups of college students (unknown how many, what level and from where) scores on the CCTST were compared with the faculty scores.

CCTST was used to measure the critical thinking (CT) skills of the faculty because it is based on a nationally accepted interdisciplinary definition of CT that includes analysis, inference, evaluation, and inductive and deductive reasoning. It is a 34-item multiple-choice instrument. The Learning Environment Preference (LEP) assesses learning environment preference, indicating epistemological position. Twelve 60-minute interviews were conducted with faculty who offered to provide a clinical or classroom example of a student's use of CT (Zygmont & Moore Schaefer, 2006).

The CCTST findings suggested most faculty are considerably more skilled at CT than the typical senior in a 4-year college; 70% achieved a total score of greater than 19. However, there was some variability in the CT ability of faculty. The LEP results indicated that no faculty viewed knowledge as absolute or dualistic, but no faculty achieved Position 5, which was indicative of advanced CT skills (Zygmont & Moore Schaefer, 2006).

The mean scores between faculty and students were similar, leading the researchers to believe: (a) CT is a process that occurs over time and may begin in

undergraduate education and, (b) there may be a relationship between the ability of nurse faculty to engage in CT and the ability of the learner to learn CT skills. Thus, students taught by faculty not skilled in CT may be at a disadvantage in developing the CT skills required in the work environment. Graduate nursing students may be a self-selected group, which could indicate the mean CCTST scores and the similarity to the nurse faculty mean score (Zygmont & Moore Schaefer, 2006, p. 266).

A specific benchmark for CT skills was not developed, but it was determined that CT skills may also be related to time and experience as well as education. Authors discussed the relationship between the ability of nurse faculty to engage in CT and the ability of the learner to learn CT skills (Zygmont & Moore Schaefer, 2006).

When examining the relationship between epistemological position and CT skills of faculty, the author found faculty seem to be in touch with critical thinking in the applied portion of the discipline, but not in the theoretical portion. The narrative inquiry of the study found that most faculty provided examples from a clinical setting (nine faculty) versus classroom (three faculty) of a student's use of CT (Zygmont & Moore Schaefer, 2006). Faculty indicated the role in helping students develop CT was described as "beyond giving information" and being "a guide to help them." The student-teacher relationship environment, where students can risk asking questions or issuing a challenge, had a key part to play in the development of CT skills (Zygmont & Moore Schaefer, 2006).

Recommendations were that the educator should place emphasis on how the learner understands and thinks about content, not on "covering it," reflecting on clinical

experiences and trying to recreate in the classroom, as well as incorporate active learning

methods into the classroom environment (Zygmont & Moore Schaefer, 2006).

The literature presents a variety of concepts related to CT, such as critical

decision making, critical analysis, critical awareness, critical reflection and clinical

reasoning. The concepts are elements of the CT process. The purpose of Riddell's (2007)

study was to develop an understanding of nurse educators' perceptions of critical thinking

and how it can be assessed.

The faculty at The University of Western Ontario, in London, Ontario, Canada

were interviewed with following three questions: (a) What is critical thinking? (b) How

do you teach or encourage critical thinking in your students? (c) What indicators do you

look for to determine that students are thinking critically? (Riddell, 2007, p. 123).

Riddell (2007) was looking for faculty perceptions regarding the definition of critical

thinking, how faculty teach or encourage CT and how is it evaluated in the classroom.

Responses to the question "What is CT?" centered on faculty agreeing that CT is

more than problem solving, yet found it difficult to describe. Responses from question

two, about teaching or encouraging CT, were reflected on the manner in which students

are questioned or challenged such as through case studies, role playing, journaling, or

Socratic questioning (Riddell, 2007, p. 123). The faculty expressed many different views

about indicators that students were engaging in CT. Faculty agreed that students seldom

iterate a "perspective transformation," but it is generally in what students are describing

(Riddell, 2007).

The third research question, "What indicators do you look for to determine that

students are thinking critically?" (p. 123) had varying answers from the faculty. Faculty

believed that early in the nursing program students' responses were superficial, but in time students begin to describe and identify thought processes, identify the need for more information, generate alternative measures and realize more than one way to view a situation (Riddell, 2007).

Elements of CT include examining assumptions and reflective thought. In order to promote concepts of CT, educators must use reflective learning techniques. The author believed that nursing is not a linear process, but tends to be taught as if it were, using analytical reasoning to find singular answers to complex problems. The alternatives require reasoning and reflection to identify the evidence for ones beliefs and change ones thinking accordingly (Riddell, 2007).

Measuring CT

Kennison (2006) stated that critical thinking and reflection are inextricably linked in nursing practice. The purpose of this study was to establish interrater reliability for the Critical Thinking Scale (CTS). The CTS was developed as a teacher-accessible tool for evaluating the data of students' reflective writing related to practice experiences during the course of a nursing program (Kennison, 2006).

The sample included 57 senior BSN students between 1999 and 2002 who completed a written description of the thoughts, feelings and happenings regarding a significant practice experience. The students also completed the California Critical Thinking Skills Test (CCTST). Three trained teacher raters used the CTS independently to evaluate the students' reflective writings for evidence of CT (Kennison, 2006). Results from the two tests were compared and analyzed.

The CTS has a Likert Scale based on seven critical thinking skills from the American Philosophical Association Delphi and Schaeffer and Rubenfeld's (2000) study: interpretation, analysis, inference, evaluation, explanation, and self-evaluation and reflection. Archival data (reflective writings) was used in a nonexperimental, descriptive, co relational design to explore the interrelationship between the variables of critical thinking (CT) and teacher ratings with the CTS (Kennison, 2006).

Results using a two-tailed Pearson product-moment correlation for the reliability on the 57 samples of reflective writings showed a statistically significant correlation (r = .407 to r = .702) between the three teacher raters.   The results indicated that ongoing development is needed to improve the inter-rater reliability of the CTS (Kennison, 2006).

The relationship between total critical thinking based on the CCTST and mean teacher rating of BSN students' reflective writings with the CTS was evaluated using a one-tailed Pearson product-moment correlation. A significant positive relationship (r = .233, p < .05) was found. The author believed that an improved interrater reliability may improve the correlation between the CCTST and the CTS (Kennison, 2006).

Kennison (2006) concluded that the CTS has the potential to serve as a valuable, accessible tool that will allow faculty to evaluate CT along the course of a nursing program. However, faculty need to be trained to use the tool in order to give a fair and consistent evaluation of critical thinking in reflective.

Kautz, Kuiper, Pesut, and Williams (2006) stated that as more health systems become computerized, the need for using standardized nursing language will become mandatory in order to standardize care and aid nurses in decision-making. Teaching students nursing language and how use it consistently in settings needs to be a goal of

clinical educators. The author evaluated students' use of standardized nursing languages with the Outcome-Present State-Test (OPT) model of clinical reasoning. The goal of this study was to analyze the degree to which standardized nursing language was used by baccalaureate nursing students completing Outcome-Present State-Test Model worksheet in a clinical practicum (Kautz, et al., 2006).

NANDA (nursing diagnosis), NIC (nursing interventions classification) and NOC (nursing sensitive outcomes) or NNN were developed at the Center for Nursing Classification at the University of Iowa as a tool for developing relationships between and among nursing diagnoses, interventions, and outcomes.   The OPT Model of Clinical Reasoning is the type of worksheets students use to put the clinical picture of patients together. The worksheets included the Frame (problem), Outcome State, Present State, Cue Logic, Testing, Client-in-Context Story, Key Issue, and Nursing Judgments, and Decision Making or Interventions. In this context, clinical reasoning is defined as reflective, concurrent, creative, critical thinking processes embedded in practice (Kautz et al., 2006, p. 130).

This research was conducted at a midsized southeastern school of nursing. The clinical settings for the medical-surgical practicum include a Level 1 trauma center and a nonprofit tertiary care hospital. The students were in a junior year medical-surgical rotation (10 weeks). The 10 students chosen reflected the same demographic characteristics as the whole student group of 23 (Kautz et al., 2006).   The data were derived from a sample of students who participated in a previous educational research project (Kautz et al., 2006). The aim of that project was to evaluate the effects of the OPT clinical reasoning model on the thinking processes of undergraduate nursing

students on acute care units with clients who had multiple health problems (Kautz et al., 2006). A retrospective descriptive evaluation of OPT Model worksheets was done to analyze the extent to which student used NNN language.

The findings indicated that 92% of the time students stated the priority keystone problem in the appropriate NANDA format. But NOC outcomes were only used 22% of the time, not always in the standardized language. Interventions using the NIC language, corresponding to the NANDA diagnosis occurred 61% of the time. NNN language was not used consistently by students in completing the OPT model worksheets in the clinical area (Kautz et al., 2006).

Kautz et al. (2006) concluded that inconsistent use of NNN language by practicing nurses, students and clinical instructors creates confusion and impedes the development and adaptation of standardized language among professional nurses. The researchers believed that disconnect in values and beliefs among the academic and clinical practice settings about the value of standardized language which influences clinical thinking and reasoning needs attention. Kautz et al. (2006) recommended that faculty use NNN and the OPT Model to help students to differentiate between patient needs, prioritize care and make more complex patient care decisions.

Methods of Teaching CT

Murphy (2004) believed that nurses must possess high-level reasoning skills to deal with complex patient care and the ill-defined problems encountered in the practice setting. Murphy (2004) explored the effects of focused reflection and articulation through the use of journal writing and post-conferences to promote clinical reasoning. Clinical reasoning was defined as the practitioner's ability to assess patient problems or

needs and analyze data to identify and frame problems' within the context of the individual patients' environment. Clinical reasoning (CR) refers not only to the what and why of care, but also to how to provide care. CR develops and expands over the course of a professional's career, following a novice-to-expert path (Murphy, 2004).

Three propositions were developed for this study. The first was that the use of focused reflection will promote the development of clinical reasoning. Murphy (2004) contended that research indicated reflection enhances learning by reducing error rates, correlates with self-regulation, and positively affects learning. The second proposition was that written or verbal articulation of thoughts will facilitate the development of clinical reasoning. Using both written and verbal articulation provided a comfortable means of articulation for both introverts and the extroverts in clinical groups (Murphy, 2004). Proposition three stated that reflection and articulation that are focused on connecting new experiences to existing knowledge will enhance the development of clinical reasoning (Murphy 2004).

The primary objective of Murphy's (2004) study was to determine whether the use of focused reflection and articulation would enhance the development of clinical reasoning. The sample for this study consisted of four clinical cohorts of first-semester students and instructors in a community college nursing program. The researcher trained two of the cohorts and the instructors in the use of focused reflection and articulation; the other groups did not receive the training.

To rate students' written patient assessments, clinical instructors used the researcher-developed Assessment and Analysis Instrument (AAI). This tool was used at midterm and at the end of the semester to evaluate students' assessment and analytical

ability. The second measure of clinical reasoning ability, domain-specific knowledge, was determined by using a unit exam test. Each item on the test was scored using a 5-point Linkert scale. To measure the student self-report of frequency and perceived effectiveness in the clinical setting the researcher used the Focused Reflection and Articulation Inventory (ARI) (Murphy 2004).

Research question 1 was:

The first research question was, "Is there a difference in clinical reasoning as measured by: ability to assess and analyze patient data, and domain-specific knowledge of assessments between nursing students who received explicit instruction in treatment methods, and student who did not receive instruction in treatment methods? (Murphy, 2004, p. 40). The results indicated there were no significant differences between the groups on the composite scores of clinical reasoning, however a significant difference (29%) was found between the two groups on the practice measure of clinical reasoning.

Interviews of the individuals who scored high and low clinical reasoners were conducted in order to answer question 2: "In what ways did students with high clinical reasoning scores and student with low clinical reasoning scores differ in relation to: (a) the use of focused reflection and articulation, and (b) perception of how the use of focused reflection and articulation affected learning?" (Murphy, 2004, p. 2). The findings showed that lower level clinical reasoners are more task and skill focused. Along with quality of reflection, the high level clinical reasoners indicated that reflection was self-initiated (68%). High reasoners were more enthusiastic and intrinsically motivated to think through the problem and explain it (Murphy, 2004). Murphy (2004) concluded that the innovative strategy of having faculty use expertise to focus, guide and

direct students to attend to salient points in the practice setting positively affected student outcomes.

Wilgis and McConnell (2008) stated that novice graduate nurses (GNs) have minimal clinical decision-making and critical thinking experience. Concept mapping is an effective teaching strategy for developing critical thinking and clinical decision-making skills. The purpose of this study was to determine whether concept mapping improved critical thinking skills in GNs during a hospital orientation (Wilgis & McConnell, 2008). The framework for this study was based on Benners' (1984) Novice to Expert Theory to aid in identifying and incorporating appropriate critical thinking elements from orientation objectives (Wilgis & McConnell, 2008).

This study took place in a Northeastern Florida hospital with the consent of 14 GN nurses attending orientation. The Graduate Nurses (GN's) were asked to map out a patients main health problem, key assessment findings, appropriate nursing diagnoses, and interventions at the beginning and then at the end of an orientation program. Only 1 of the 14 had graduated from a baccalaureate nursing program. Of the orientees, 79% had not taken the licensing exam yet, and 21% had NCLEX passed. The participants stated that 50% had been a caregiver, and 36% had past experience as a patient care technician (Wilgis & McConnell, 2008). The researcher assured all participants that involvement in this study would not affect employment status (Wilgis & McConnell, 2008).

The concept maps were evaluated based on an instrument developed by Schuster (2002). The evaluation tool has the essential elements to assess nurses' critical thinking and patient care planning skills based on the six American Nurses Association (ANA)

standards of nursing care practice. The ANA standards includes collection of health data, analysis of data to determining nursing diagnosis, identification of expected patient outcomes, development of a patients' plan of care, implementation of nursing interventions, and evaluation of patient progress toward outcomes (Wilgis & McConnell, 2008). Points are awarded for achievement of nursing care standards related to the specific case study and content of the overall map. Schuster (2002) reported that this tool is reliable (r= 0.07 or higher) if the same faculty who taught the course graded the maps (Wilgis & McConnell, 2008).

The pre-and post-concept maps were tallied and showed an overall increase in total score of 33 points (Wilgis & McConnell, 2008). The composite scores for criteria related to linkages of data with interventions showed substantial improvement in GNs' ability to identify the main health problem and indicate appropriate treatments and interventions on the post-concept map. Post-concept maps were more logical, more complex and arranged in an appropriate hierarchical order (Wilgis & McConnell, 2008). On both pre- and post-concept maps, most of the participants had difficulty with including important medications and correctly labeling the nursing diagnoses. Participants' individual scores were evaluated to determine areas of weakness for reeducation. Ten of the 14 GNs scored higher on the post-concept map, 2 obtained a lower score, and 2 had the same score as the pre-concept map.

The GN's comments from evaluation forms were categorized and summarized. The results indicated that 10 of the 14 participants believed that concept mapping assisted in linking knowledge together, improving prioritization, organization of patient care

planning and improving critical thinking. Two participants believed that concept

mapping was not helpful or too confusing (Wilgis & McConnell, 2008).

Wilgis & McConnell (2008) found that incorporating concept mapping into a

GN's orientation process can be valuable in accelerating GNs' ability to synthesize and

prioritize information, formulate appropriate care plans, and make judicious decisions

about critical clinical situations. Teaching the basic idea of concept mapping in

orientation and preceptor courses could prepare both new graduates and preceptors for

using this alternative way of promoting critical thinking (Wilgis & McConnell, 2008).

Concept mapping is an inexpensive strategy that can easily be included in GN orientation

programs.

Evaluating CT

Bowles (2000) believed that critical thinking and clinical judgment are necessary

to make rigorous inquires to care for patients. The purpose of Bowles' (2000)

correlational study was to evaluate the relationship of critical thinking (CT) to clinical

judgment in baccalaureate nursing students at the completion of the program. A critical

thinker was defined as:

Habitually inquisitive, well informed, trustful of reason, open-minded, flexible,

fair minded in evaluation, honest in facing personal biases, prudent in making personal

judgments, willing to reconsider, clear about issues, orderly in complex matters, diligent

in seeking relevant information, reasonable in the selection of criteria, and persistent in

seeking results that are as precise as the subject and circumstances of inquiry (American

Philosophical Association, 1990, p. 3).

Bowles (2000) used the definition for clinical judgment based on Tanner (1993) . Clinical judgment was defined by Tanner (1993) as the following: (a) decisions regarding what to observe in the patient situation; (b) inferential decisions, deriving meaning from data observed; and (c) decisions regarding actions that should be taken, which will be of optimal benefit to the patient (Bowles, 2000, p. 373).

Bowles (2000) distributed 126 packets with the California Critical Thinking Skills Test (CCTST) and The Clinical Decision-Making in Nursing Scale (CDMNS). The author determined Sixty-eight packets were returned, 65 of which were determined usable. The California Critical Thinking Skills Test (CCTST) and The Clinical Decision-Making in Nursing Scale (CDMNS) were employed to assess critical thinking and clinical judgment. The CCTST evaluates the attributes of a critical thinker while the CNMNS assesses clinical judgment. The total score possible on the CCTST was 34 and the samples ranged in score from 8 to 27. Findings of the two tests were analyzed to determine a relationship. The results indicated that there was a significant positive relationship between these two variables (r=.21, p=<.05) (Bowles, 2000).

The author indicated that the findings confirmed the results from previous research that demonstrated a relationship between critical thinking and clinical judgment abilities. Bowles (2000) concluded that the graduates of the nursing programs study do possess CT and clinical judgment skills at graduation. The researcher recommended a need for educational research to determine how CT and clinical judgment skills are acquired in nursing.

Stewart and Dempsey (2005) contended that rational-linear problem-solving activity historically used in the nursing process in many instances is no longer sufficient

because it fails to address the affective dimension inherent in critical thinking. Stewart and Dempsey (2005) followed Sophomore nursing students to the Senior semester to determine if and how critical thinking dispositions changed over the course of the nursing program.

The sample for this longitudinal study began with 55 students at the Sophomore II level, dropped to 49 at the Junior I level, then to 36 at the Senior I level, and ended with 34 (62%) Senior level II students. The students were assessed at five intervals as students progressed through the nursing program in the Midwestern United States.

The first research question was: "Is there a significant change in the critical thinking dispositions of baccalaureate nursing students as they progress from the sophomore level to the senior level?" (Stewart & Dempsey, 2005, p. 82).

The California Critical Thinking Disposition Inventory (CCTDI) was used to measure overall critical thinking disposition as the students progressed through the curriculum. This test measured seven aspects of CT dispositions (truth seeking, open-mindedness, analyticity, systematically, self-confidence, inquisitiveness, and maturity). The results indicated a significant difference in sophomore, junior, and senior students among five of the observations on the total CCTDI score. Truth seeking and maturity subscales did not warrant a difference between the students levels (Stewart & Dempsey, 2005).

The second question was "Are there significant correlations between critical thinking dispositions on the Educational Resources, Inc (ERI) RN Assessment scores, and GPA?" (Stewart & Dempsey, 2005, p. 82). The ERI RN Assessment and the students GPA were used to evaluate this question. The ERI RN test simulates the NCLEX-RN,

with a total of 32 subscales. Five of the subscales relate to Critical thinking (CT1=

prioritizing and discriminating, CT2= inferential reasoning, CT3=main idea and

predicting outcomes, CT4= application and knowledge, CT5= evaluating predicted

outcomes). One finding indicated at the senior level, the confidence subscale scores were

negatively correlated with GPA (r=-. 51, p=. 001), whereas at the sophomore (r=.28,

p=.044) and junior (r=.39, p=.001) levels a positive correlation was found (Stewart &

Dempsey, 2005).

The third question was "Is there a difference in critical thinking dispositions

between those students who passed the NCLEX-RN and those who did not?" (Stewart &

Dempsey, 2005, p. 83). This was addressed by evaluating the NCLEX-RN results of the

students who passed the test and students who did not. The researchers found no

significant differences in critical thinking dispositions (evaluated from the CCTDI) and

pass/fail rates taking the NCLEX-RN. The researchers found that the ERI RN

Assessment scores did not correlate with any CCTDI subscale scores or GPA. It was

further noted that the ERI RN Assessment and the NCLEX-RN evaluates minimal

knowledge for safe practice and does not reflect a propensity toward critical thinking

(Stewart & Dempsey, 2005).

Stewart and Dempsey (2005) concluded that CT dispositions did change from

sophomore to senior semester but did not reflect the NCLEX scores. It is recommended

that a discipline –specific outcome measurement should be developed that would more

adequately reflect changes in nursing students' critical thinking abilities and dispositions.

It is suggested that the NCLEX-RN may need to be revised to better assess critical

thinking.

Summary of Literature Review

While teaching for CT has come to the forefront of nursing education, it has been difficult for educators to define, evaluate and teach for critical thinking. It is evident that researchers are actively and diligently working on what Critical Thinking means to the nursing profession and how to incorporate teaching CT into nursing curricula. Scheffer and Rubenfeld's (2000) study was significant as it gave nursing a definition of critical thinking based on a consensus of nursing experts.

Ferrario (2003) found that evidence-based protocols, policies and clinical procedures need to be implemented to help guide the nurses' judgments regardless of experience. Tanner (2006) used the term "Clinical Judgment" and based on five conclusions, developed a model for practice which includes four key concepts related to critical thinking: Noticing, Interpreting, Responding, and Reflecting. Lasater's (2007) study used Tanner's (2006) Clinical Judgment Model to develop a rubric that describes levels of performance in clinical judgment.

Walthew (2004), Chabeli and Muller (2004), Twibell et al. (2005), Zygmont and Moore Schaefer (2006), and Riddell (2007) reported faculty perceptions of CT and various ways to promote CT in students. Chabeli and Muller (2004) concluded that clinical nursing education is a dynamic, constantly changing, real-life environment where learners are able to incorporate the theoretical component with practice. Twibell et al. (2005) concluded that it is good for faculty to use is a variety of strategies to facilitate development of critical thinking skills in nursing practice. If the faculty is not able to use

CT skills, then likely the students will not learn the skill (Zygmont & Moore Schaefer, 2006). Riddell (2007) believed that nursing is not a linear process, but tends to be taught as if it were. Riddell (2007) suggests that reasoning and reflection need to be taught to identify beliefs and then to change thinking accordingly.

Students' perceptions of CT have been evaluated in studies by Kennison (2006) and Kautz et al. (2006). Kennison (2006)'s Critical Thinking Scale is a tool that allows nurse educators a tool to evaluate CT along the course of a nursing program. Kautz et al. (2006) found that as more health systems become computerized, the need for using standardized language will become mandatory in order to aid nurses in decision making. Kautz et al. (2006) found faculty members who use the NNN and the OPT models may find that students are better at differentiating between patients' needs, and priority care and can make more complex patient care decisions.

Researchers such as Bowles (2000), Murphy (2004), Stewart and Dempsey (2005), and Wilgis and McConnell (2008) provided evidence based teaching strategies based on faculty perceptions of CT, that help develop students' critical thinking ability. Bowles (2000) found that graduates of nursing programs do possess CT and clinical judgment skills at graduation. While educators believed that CT is an important objective in teaching, there were several barriers to overcome to teach CT effectively. Murphy (2004) found that focused reflection and articulation through journaling enhanced clinical reasoning. Stewart and Dempsey (2005) found that rational-linear problem solving activity is no longer sufficient because it fails to address the affective dimension inherent in critical thinking. Wilgis and McConnell's (2008) research found that concept mapping is an effective teaching method to develop critical thinking and clinical decision making

skills. Concept mapping accelerates the students ability to synthesize and prioritize

information, formulate care plans and make judicious decisions about critical clinical

situations (Wilgis & McConnell, 2008).

Chapter Three

Methodology and Procedures

Introduction

Critical thinking is a key element of nursing and is an expected outcome for nursing education (Scheffer & Rubenfeld, 2000; Tanner, 2006 & 2008; Twibell et al., 2005). Nurse educators struggle with how to present critical thinking to students and assess it (Lasater, 2007). In the clinical setting, barriers can impede the implementation of critical thinking teaching strategies (Shell, 2001). The purpose of this study is to identify and describe barriers that nurse educators perceive when teaching critical thinking skills to baccalaureate students.

Research Question

What barriers do faculty perceive in teaching critical thinking skills to baccalaureate students in the clinical setting?

Population, Sample, and Setting

The population (N=40) will include clinical nursing faculty at Grand Valley State University's Kirkhoff School of Nursing and University of Detroit- Mercy's Aquinas Campus, all located in Grand Rapids, Michigan. A convenience sample of 20 clinical faculty from each school is anticipated for a total sample size of 40. The first 20 respondents from each school to respond to an invitation to participate in the study will be selected.

The clinical nursing faculty may be full time or adjunct and must teach more than one section of the clinical rotation per year. The faculty must have taught in the clinical setting for 2 years or more.

Protection of Human Subjects

The study will be submitted for review and approval to the IRB at Ball State University, Grand Valley State University and University of Detroit-Mercy. The Deans of Nursing at the Schools of Nursing where clinical faculty will be invited and notified of the purpose and procedures of the study. All information identifying the participants will be confidential. Participant responses to the two part questionnaire and other identifying data will be kept in a locked file drawer, with only the principal researcher having access. After completion of the study, all identifying data will be destroyed. Participation is voluntary. A cover letter explaining the study, confidentiality procedures, and voluntary nature for participation will be provided to the participants. The benefit to participating in the study is gaining knowledge regarding barriers to promoting CT in the clinical setting.

Procedures

The Deans at each school will be contacted by phone to set up a time for a meeting to provide information about the data collection and to obtain permission. The phone listing for the Deans secretary is available in the respective college directories on-line. A list of clinical faculty and corresponding University addresses will be obtained from the Dean at each school. A cover letter, demographics sheet, and the 2-part questionnaire "Survey of Perceived Barriers to Teaching Critical Thinking in the Clinical

Setting by BSN Faculty" will be mailed to each faculty member at the University. Faculty asked to participate in the study will be informed to complete the demographic sheet and survey, returning the questionnaires to the researcher by a stamped self-addressed envelope.

Methods of Measurement

The demographic information the participants will be asked to complete includes school, clinical site location, number of years teaching nursing clinical, level of students taught, number of years practicing nursing.

The participants will also complete the 2 part Survey of Perceived Barriers to Teaching Critical Thinking in the Clinical Setting by BSN Faculty. The tool consists of a total of 50 questions. Questions 1-25 (part 1) are closed-ended statement regarding barriers that educators may face when implementing CT strategies. The respondents will select one of five responses on a Likert-type scale, ranging from 0 (strongly disagree) to 4 (strongly agree). A high mean score (i.e., 2- 4) indicates a moderate to high agreement with that item. Part 2 of the questionnaire asked respondents to rate to what extent the listed barriers interfere with the ability to implement CT teaching strategies. In questions 26-50, participants will be asked to what extent (major factor, minor factor or not a factor) each barrier impeded efforts to teach for critical thinking.

Eight subscales were constructed for the closed ended statements of the instrument: Self-Efficiency, Institutional Barriers, Time Constraints, Perceived Importance and Relevance of CT, Perceptions of Student Abilities and Resistance, Faculty Resistance, Perceived Need to Teach for Content Coverage, and lack of knowledge of the Concept of Critical Thinking (Shell, 2001).

The survey tool is a modified version of Shell's (2001) survey "Survey of Perceived Barriers to Teaching Critical Thinking by BSN faculty." The reliability of this tool using Cronbach's alpha for each of the eight subscales ranged from .51 to .81 (Shell, 2001). Content validity of the perceived barriers of teaching CT is based upon content from the literature of CT in nursing.

Research Design

In order to examine the barriers to teaching critical thinking in the clinical setting an exploratory, descriptive design was used. A descriptive design identifies the phenomenon of interest and variables within the phenomenon, along with developing conceptual and operational definitions of variables, and describes variables in a study situation (Burns & Grove, 2005). In this study, clinical nursing instructors will be surveyed in an effort to identify and describe barriers to teaching critical thinking in the clinical setting.

Data Analysis

Descriptive statistics allow the researcher to organize data in ways that give meaning and incite (Burns & Grove, 2001, p. 734). Descriptive statistics including frequency distributions will be used to analyze the data from the Barriers to Teaching CT survey. The subscale and overall critical thinking barrier score will be converted and analyzed using a 0-100 scale.

Summary

This study will be conducted in attempt to determine the barriers clinical faculty perceive to teaching critical thinking in the clinical setting. Perceived barriers to be measured are Self-Efficiency, Institutional Barriers, Time Constraints, Perceived

Importance and Relevance of CT, Perceptions of Student Abilities and Resistance, Faculty Resistance, Perceived Need to Teach for Content Coverage, and Lack of knowledge of the Concept of Critical Thinking. An exploratory, descriptive design will be used for this study. An anticipated 40 clinical nursing faculty from Grand Valley State University and University of Detroit Mercy will be requested to participate. The questionnaire, Survey of Perceived Barriers to Teaching Critical Thinking in the Clinical Setting by BSN Faculty will be used to collect data. Descriptive statistics will be used to analyze data. This study will provide important incite about barriers faculty perceive in teaching CT in the clinical setting.

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