TEACHING STRATEGIES UTILIZED BY CLINICAL NURSING INSTRUCTORS IN CLINICAL CONFERENCES

RESEARCH PROPOSAL
SUBMITTED TO THE GRADUATE SCHOOL
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE
MASTERS OF SCIENCE

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MUNCIE, INDIANA
MAY 2011
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Clinical instructors have classically used multiple teaching strategies to incorporate and develop critical thinking skills in their students. The purpose of this study is to analyze and categorize teaching techniques utilized by clinical nursing instructors in clinical conferences. This study is a partial replication of the 1998 study performed by Sellappah, Hussey, Blackmore, and McMurray. The framework used to guide the study would be Craig and Page’s (1981) conceptual framework based on Bloom’s (1956) taxonomy of cognitive domain. The nursing faculty will be second through final semester clinical instructors at Ball State University teaching in the baccalaureate nursing program. The sample size will be 10 clinical instructors. Participants will tape record two mid-semester clinical conferences. The teaching techniques will be classified according to Craig and Page’s (1981) framework. Findings will determine teaching techniques utilized by clinical instructors in clinical conferences.
Chapter I

Introduction

In today’s fast paced nursing field, it is necessary for graduate nurses to demonstrate critical thinking and clinical reasoning skills. Nursing is a science and professional discipline that necessitates effective and efficient thought processes in order to provide quality-based care (Lunney, 2008). The development of critical thinking skills is imperative as no two patients are ever exactly the same (Phillips & Duke, 2001). Twibell, Ryan, and Hermiz (2005) explains that as a result of the rapid growth of knowledge and technology as it relates to health and illness, nurses must be able to effectively problem solve and make crucial decisions in the clinical setting. The rapid growth in knowledge and technology has also caused critical thinking to become increasingly important in nursing (Stewart & Dempsey, 2005). According to Billings & Halstead (2005), thinking, reflective thinking, and critical thinking have been topics of discussion among educators for many years. Faculty must be facilitators of learning in order to foster the development of critical thinking skills. The foundation for critical thinking is established during one’s education (Zygmont & Schaefer, 2006).

Background and Significance

The American Association of Colleges of Nursing (2008) explains that in the field of baccalaureate nursing education, items essential for professional practice include
clinical reasoning and critical thinking skills. Desired outcomes that are core characteristics of new graduates include critical thinking as an essential quality (Billings & Halstead, 2005). Nurses are taught to problem-solve utilizing the nursing process, which stipulates that a nurse must think critically and reason accurately (Huckabay, 2009). Appropriate thinking processes for decision-making and problem-solving must be in place if nurses are to correctly utilize the nursing process (Lunney, 2008).

Critical thinking is a nonlinear process that requires complex methods for both instruction and evaluation (Kuiper, 2005). The critical thinker has well-developed critical thinking skills which are evident by demonstration of disposition, attitude, and traits of a critical thinker (Billings & Halstead, 2005). It is the role of nursing faculty to help students develop and nurture critical thinking processes, as critical thinking is not an independent skill but one that is developed in the context of domain knowledge (Lunney, 2008). Methods utilized to foster critical thinking in baccalaureate nursing students include questioning and group discussion (Billings & Halstead 2005; Phillips & Duke 2001; Sellappah, Hussey, Blackmore, & McMurray, 1998).

Questioning is a widely used tool for teaching that is able to assist students to apply knowledge and develop critical thinking skills (Phillips & Duke, 2001). Appropriate utilization of questioning by clinical nursing faculty can foster the development of critical thinking skills and increase decision-making abilities of nursing students (Sellappah et al., 1998). Clinical questioning promotes active thinking, encourages students to ask high-level questions, and that questioning fosters a higher level of problem-solving skills (Billings & Halstead, 2005). It is evident however, that many nursing instructors mainly utilize fact-based and low-level questions, which does
not promote critical thinking (Philips & Duke, 2001). The utilization of high level questioning assists in the development of critical thinking due to the higher cognitive level required to answer appropriately (Philips & Duke, 2001).

Statement of the Problem

Critical thinking abilities of student nurses have been reported as an integral part of a nursing program, and are considered to be an indicator of higher learning accomplishment. The clinical environment is an excellent place for critical thinking development to take place and for classroom information to be utilized, synthesized, and evaluated. One of the primary functions of the clinical nursing faculty is to encourage and cultivate critical thinking in the clinical setting. It is imperative for clinical nursing faculty to ask questions to effectively encourage and promote critical thinking skill development.

Purpose of the Study

The purpose of this study is to analyze and categorize teaching techniques utilized by clinical nursing instructors in clinical conferences, and determine if education and experience plays a role in the questioning techniques. This study is a partial replication of the 1998 study performed by Sellappah et al., (1998)

Research Questions

1. What are the primary tools used by clinical instructors to promote critical thinking in the clinical conference setting?

2. What types and levels of questions are clinical instructors utilizing during clinical conferences?
3. Does overall instructor clinical experience have an effect on the level of questions asked?

4. Does overall instructor clinical teaching experience influence the type of questions asked?

5. Does the level of education of the clinical instructor affect the levels or types of questions asked?

**Conceptual Framework**

The framework used to guide the study is Craig and Page’s (1981) conceptual framework based on Bloom’s taxonomy of cognitive domain. The taxonomy within the cognitive domain describes cognitive function and the types of questions in six different areas. Knowledge, comprehension, and application questions are defined as low-level questions. Analysis, synthesis, and evaluation are defined as high-level questions. The primary means to classify a question is by analyzing the words used to construct the questions (Sellappah et al., 1998).

**Definition of Terms**

**Critical Thinking: Conceptual:**

Critical thinking includes “the cognitive skills and subskills of analysis, which includes examining ideas, identifying arguments, and analyzing arguments; evaluation, which includes assessing claims and arguments; inference, which includes querying evidence, conjecturing alternatives, and drawing conclusions; interpretation, which includes categorizing, decoding significance, and clarifying meaning; explanation, which includes stating results, justifying procedures, and presenting arguments; and
self-regulation, which includes self-examination and self-correction” (Billings & Halstead, 2005).

*Low-level question: Conceptual:*

Low-level questions are knowledge and comprehension and they are not considered factors when considering the development of critical thinking skills (Sellappah et al., 1998).

*Low-level question: Operational:*

Low-level questions are defined by Craig and Page’s (1981) framework based on Bloom’s (1956) taxonomy of the cognitive domain, which include knowledge and comprehension questions (Sellappah et al., 1998).

*High-level question: Conceptual:*

High-level questions, which include application, analysis, synthesis, and evaluation, are considered optimal in the development of critical thinking of nursing students. (Sellappah et al., 1998).

*High-level question: Operational:*

High-level questions are defined by Craig and Page’s (1981) framework based on Bloom’s taxonomy of the cognitive domain, which include application, analysis, synthesis, and evaluation questions (Sellappah et al., 1998).

*Limitations*

One limitation of this study is the small sample size. Another limitation is that the sample is taken from only one school of nursing. Both limitations will limit generalization of the study results.
Assumptions

Nursing faculty utilizing low level questioning techniques are not adequately developing critical thinking skills, as opposed to those instructors who regularly incorporated high-level questions during clinical conference with baccalaureate nursing students (Sellappah et al., 1998).

Summary

In today’s nursing practice it is imperative for nurses to be able to think critically in order to efficiently and accurately solve problems and make decisions. Critical thinking is essential to appropriately utilizing the nursing process. Baccalaureate nursing programs are responsible for initiating the development of critical thinking skills in students. Clinical instructors are in position to assist in the development and growth of clinical reasoning and critical thinking. Clinical nursing faculty utilizing high-level questions encourage the development and continued use of critical thinking skills in baccalaureate nursing students.
Chapter II

Review of Literature

Introduction

Critical thinking skills have been reported as necessary to succeed as a nurse in today’s high-paced nursing profession (Profetto-McGrath, 2003). Developments in medical technology, the increase in the number of patients with chronic health problems, and the demand for high-quality nursing care has led to increasingly complex professional, legal, and educational issues in the nursing field requiring the utilization of critical thinking skills (Shin, Jung, Shin, & Kim, 2006). The concepts of critical thinking and critical thinking dispositions have become increasingly important in the field of nursing (Stewart & Dempsey, 2005). Critical thinking skills have become an indicator of learning in higher education (Stewart & Dempsey) and essential to nursing practice (Profetto-McGrath, 2003). The ability to think critically is essential for professional nursing practice and is required if quality client care is to be provided (L’Eplattenier, 2001). Contemporary nursing curriculum is obligated to lay a foundation for critical thinking (L’Eplattenier).

Purpose

The purpose of this study is to analyze and categorize teaching techniques utilized by clinical nursing instructors in clinical conferences, and to determine if education or
experience plays a role in the questioning techniques. This study is a partial replication of the study performed by Sellappah et al. (1998).

Organization of Literature

The literature review to support the study is divided into five segments: (a) implications of critical thinking on nursing practice; (b) critical thinking skills, dispositions, and development; (c) nursing faculty role in the development of students’ critical thinking; (d) tools to promote critical thinking in nursing students; and (e) the use of questioning in clinical conferences.

Theoretical Framework

The framework used to guide the study is Craig and Page’s (1981) conceptual framework based on Bloom’s taxonomy of cognitive domain. The taxonomy within the cognitive domain describes cognitive function and the types of questions in six different areas. Knowledge, comprehension, and application questions are defined as low-level questions. Analysis, synthesis, and evaluation are defined as high-level questions. The primary means of question classification is the analysis of the words used to construct the questions (Sellappah et al., 1998).

Implications of Critical Thinking on Nursing Practice

Ferrario (2003) reported that nurses, particularly those working in acute, critical care settings, need to make rapid decisions to institute life-saving measures, often despite the lack of access to complete or confirmed clinical or laboratory data. Often, expert nurses (≥5 years of experience) find it difficult to explain distinct facets of information that were utilized to formulate a nursing diagnosis. Novice nurses (<5 years of experience) were able to cite textbook signs and symptoms that they had observed, but
were unable to see subtle nuances in patients’ presentations, and lacked the ability to perceive a perspective patient problems that indicated discrete signs and symptoms. The purpose of this study was to compare the use of mental representations (heuristics) in diagnostic reasoning of expert and novice emergency room nurses. A nonexperimental design was used for the study.

For this study, 620 surveys were mailed to a randomized sample of the 21,577 member International Emergency Nurses Association. The total number of surveys returned was 51% (n=314), of which 219 (70%) were usable. The final sample of 219 surveys was divided into novice nurses (n=46) and experienced nurses (n=173) (Ferrario, 2003).

The researcher utilized clinical simulations with diagnostic reasoning inferences from the Clinical Inference Vignettes for Community Health Nurses. This was a 16-item measure, which included four clinical situations to demonstrate each type of heuristic. The instrument demonstrated an internal consistency reliability coefficient of 0.82. Adaptations were pre-tested for clarity with an estimated modified measure content validity index of 1.00. The types of representative heuristic were: type 1, perceived modal frequency; type 2, essential similarity; type 3, subset variability; and type 4, causal systems (Ferrario, 2003).

The study found that all nurses utilized all four types of representativeness heuristics. Experienced nurses used type 4 heuristic more frequently than novice nurses. The study found that both groups generally used similar representative heuristics, which may be due to the fact that nurses with a lower level of experience had proportionately
more education and a relatively high rate of certification in emergency room nursing (Ferrario, 2003).

This study also found that complex and reflective reasoning strategies were not used the majority of the time. In order to keep up with current cognitive demands of nursing, it is imperative to promote diagnostic reasoning early in nursing education. Restructuring instructional strategies and evaluation mechanisms may produce a greater number of effective thinkers and problem solvers. Each clinical course within nursing education must promote in-depth levels of thinking and cognitive development. Activities for integrating diverse facets of information and experiences should be provided early in the nursing program, and incorporated throughout the curriculum into the last term (Ferrario, 2003).

Currently, nursing practice is one of the most knowledge-intensive career fields, which demands complex diagnostic reasoning. Heuristics that shortcut the reasoning process in order to allow nurses to quickly reach decisions is imperative. Nurses need to be able to utilize a combined methodology approach to diagnostic reasoning. Nurses utilizing evidence-based standards and standardized guidelines to complement diagnostic reasoning will be able to perform in a cognitively efficient and effective manner (Ferrario, 2003).

Critical Thinking Skills, Dispositions, and Development

Profetto-McGrath (2003) discussed that critical thinking skills are necessary to succeed as a nurse in today’s high-paced nursing profession. For a nurse to be successfully educated, attention must be paid to practical experience, the content of the discipline, and critical thinking. Critical thinking is a primary part of nursing education
and is essential to nursing. The purpose of this study was to investigate the critical thinking skills (CTS) and critical thinking dispositions (CTD) of nursing students. This was a non-experimental study using a cross-sectional design.

The subjects \((n=228)\) for the study consisted of 35% of the students enrolled in a 4-year baccalaureate program at a university in Western Canada, and the sample was demographically comparable to the population of nursing students registered in the nursing program. The sample consisted of 228 (35%) of the 649 full-time undergraduate baccalaureate nursing students enrolled in the 4 year program at the University (Profetto-McGrath, 2003).

The study utilized the California Critical Thinking Skills Test (CCTST) and the California Critical Thinking Disposition Inventory (CCTDI). The CCTST consists of 34 questions with a range in score of 0-34, with a higher score indicating stronger CTS. The internal consistency reliability of the CCTST is reported at 0.68-0.70, and was correlated positively with the Watson and Glaser Critical Thinking Assessment \((r=0.405, P<0.001)\). The CCTDI 75 declarative statements with nine to 12 items attributed to each with a maximum score of 420. The alpha consistency for the study was reported at 0.91 (Profetto-McGrath, 2003).

The study found that the mean scores from the CCTST increase from years 1-4, there was no statistical significant difference between the groups in CTS \((F=1.243,\ d.f.1=3,\ d.f.2=224,\ P=0.295)\). The CCTDI found that only one student in the first year and 16% \((n=13)\) of fourth year students scored >350, although no statistical significance was found between the groups \((F=0.822,\ d.f.1=3,\ d.f.2=224,\ P=0.483)\). The study did
find a significant relationship between CTS and CTD ($x^2 = 9.37$, $P = 0.014$, power $> 0.80$).

For all analyses, a significance level was set at $P = 0.05$ (Profetto-McGrath, 2003).

This study found no statistically significant difference among the students across the program in CTS, and CCTST scores did not increase with each academic level indicating an association of scores to cognitive development. This indicates that greater than the 4 years it takes to complete a baccalaureate degree may be needed for cognitive development. The highest mean score was for inquisitiveness which indicates the students’ curiosity and willingness to obtain knowledge (Profetto-McGrath, 2003).

The study did find that the majority of nursing students did possess the CTD that are essential for developing CTS, but needed continued assistance to develop in these areas. The researcher discusses the role of nursing educators to be aware of the role of CTS and CTD. Nurse educators need to evaluate current curriculum and implement strategies to promote CTS. Nurse educators must also be aware of CTS disposition of students and incorporate strategies to increase CTS. Nursing students who utilize critical thinking are able to process and form ideas, search for clarity, and continue to strive for answers. CTS are necessary for excellence in nursing education, practice, and research (Profetto-McGrath, 2003).

Shin et al. (2006) discussed that developments in medical technology, the growing number of patients with chronic health problems, and the demand for high-quality nursing care have led to increasingly complex professional, legal, and educational issues. It is necessary for nurses to think creatively and demonstrate critical thinking abilities. The purpose of this study was to investigate the critical thinking dispositions
and skills of senior nursing students. A nonexperimental design was utilized for this study.

The study was conducted at ADN, BSN, and RN-to-BSN programs in Seoul, Gyeonggi Province, North Chungcheong Province, and North Jeolla Province in South Korea. For this study a convenience sample of ADN ($n=137$), BSN ($n=102$), and RN-to-BSN ($n=66$) students were used. All of the students (100%) involved in the programs participated in the study (Shin et al., 2006).

The California Critical Thinking Disposition Inventory (CCTDI) was used for this study. The CCTDI consists of seven scales: truth-seeking, open-mindedness, analyticity, systematicity, critical thinking self-confidence, inquisitiveness, and maturity of judgment. In this study, the CCTDI was translated into Korean and translated back into English to ensure accuracy, with the Cronbach’s alpha coefficient of 0.7847. The California Critical Thinking Skills Test (CCTST) was also used for this study. The CCTST tests cognitive skills including analysis, inference, evaluation, and inductive and deductive reasoning. In this study, the CCTST was translated into Korean and translated back into English to ensure accuracy, with the Cronbach’s alpha coefficient of 0.70 (Shin et al., 2006).

The study found that the scores for maturity of judgment, open-mindedness, systematicity, and truth-seeking were all below standard scores, indicating weaknesses in the critical thinking dispositions of the students. The students’ mean score was found to be below that of the established mean for the test. The study found that the BSN students scored significantly higher critical thinking disposition scores. BSN students also scored the highest on the CCTST subscales (Shin et al., 2006).
This study also found that the average CCTDI score for senior nursing students in ADN, BSN, and RN-to-BSN programs falls short of the previously established mean scores. The low CCTDI scores could be due to the authoritarian educational system in South Korea, which emphasized obedience to elders over autonomous thinking. This type of educational style can greatly limit the development of critical thinking in students. This study did show a statistically significant difference in critical thinking dispositions of students in the ADN and RN-to-BSN versus the BSN students. The students did demonstrate a high score for inquisitiveness, indicating the potential for the development of critical thinking skills (Shin et al., 2006).

The authors of the study concluded that the nursing students’ CCTDI and CCTST scores were not high as compared with other reported studies. The relationship between CCTDI and CCTST scores were positively correlated. Nursing educators and researchers need to develop a curriculum to improve students’ critical thinking skills. Within this curriculum, specific teaching methods and clinical education needs to be developed that would foster the development of critical thinking skills (Shin et al., 2006).

Stewart and Dempsey (2005) discussed that the concepts of critical thinking and critical thinking dispositions have become increasingly important in the field of nursing. Critical thinking skills have become an indicator of learning in higher education. The purpose of this study was to answer the following questions: Is there a significant change in the critical thinking dispositions of baccalaureate nursing students as they progress from sophomore to senior level?; Are there significant correlations between critical thinking dispositions, Educational Resources, Inc. (ERI) RN Assessment scores, and GPA?; and Is there a difference in critical thinking dispositions between those students
who passed the NCLEX-RN® and those who did not? A longitudinal, descriptive design was used to guide the study (Stewart & Dempsey, 2005).

This study was conducted at a baccalaureate nursing program in the Midwestern United States. The beginning sample (n=55) for this study consisted of the entire Sophomore II level. Throughout the program, the number of students participating in the study decreased (Stewart & Dempsey, 2005).

The California Critical Thinking Disposition Inventory (CCTDI) was used to measure overall critical thinking dispositions as the students progressed through the curriculum. The CCTDI measures seven aspects of critical thinking disposition. The CCTDI reports a reliability of 0.90 (Stewart & Dempsey, 2005).

The first question posed was: Is there a significant change in the critical thinking dispositions of baccalaureate nursing students as they progress from sophomore to senior level? The researchers utilized a one-way ANOVA to compare the CCTDI subscale and total scores among the group of students at the intervals of the Sophomore II, Junior I, Junior II, Senior I, and Senior II levels. The results indicated significant differences among the total CCTDI scores and on all subscales except truth seeking and maturity. CCTDI scores were found to be highest at the Junior I and Junior II levels; however the scores between these two were not statistically different. The second question posed was: Are there significant correlations between critical thinking dispositions, Educational Resources, Inc. (ERI) RN Assessment scores, and GPA? This study found that there was a positive correlation with GPA and open-mindedness at the Sophomore II and Junior II level. The study also found a positive correlation between GPA and maturity at the Junior I level. The scores for the systematicity subscale were positively correlated with
GPA. At the Senior I level the confidence subscale scores were negatively correlated with GPA. The final research question posed was: Is there a difference in critical thinking dispositions between those students who passed the NCLEX-RN® and those who did not? The study found there was no significant difference between critical thinking dispositions of students who passed the NCLEX-RN® and those who did not (Stewart & Dempsey, 2005).

This study found that overall there was not a significant increase in students’ critical thinking subscale and total scores from Sophomore II to the Senior II levels. Highest scores were found at the Junior I and Junior II levels. The study also noted that ERI RN Assessment scores did not correlate with any CCTDI subscale scores. Overall the study did not find a consistent, positive relationship between critical thinking dispositions, GPA, NCLEX-RN® pass status, and standardized test scores. The study found no relationship between critical thinking and the ability to pass the NCLEX-RN®, which assesses basic safe practice (Stewart & Dempsey, 2005).

The authors concluded that discipline specific outcome measurement should be developed that would more adequately reflect changes in nursing students’ critical thinking abilities and dispositions. The researchers also suggest that research be repeated to include a larger sample, as some of the findings are contrary to previous studies. It is also proposed that if a larger dataset is able to determine a relationship between critical thinking dispositions and the ability to pass the NCLEX-RN®, the examination may need to be retooled to better assess critical thinking (Stewart & Dempsey, 2005).

L’Eplattenier (2001) discussed that critical thinking is essential for professional nursing practice and to provide quality client care. It is necessary for contemporary
nursing curriculum to lay a foundation for critical thinking. The purpose of this study was to trace the development of undergraduate students’ critical thinking ability during their course of study in a baccalaureate nursing program. The design for this study was nonexperimental.

The setting for this study was a nursing program at an inner-city private university in the northeastern United States. The sample (n=83) consisted of baccalaureate nursing students. The subjects were split into two groups. Criteria for inclusion included taking the Watson-Glaser Critical Thinking Appraisal (WGCTA) at selected testing times (L’Eplattenier, 2001).

The study utilized the WGCTA to measure student’s critical thinking ability. Watson and Glaser reported split-half reliability coefficients between 0.69 and 0.85, with a 0.73 correlation between to administrations of the test which reflected stability in results over time. Alternate form reliability was reported at 0.75. Construct validity was determined by the use of the test in instructional settings designed to improve critical thinking and by comparison with other mental ability and comprehensive tests (L’Eplattenier, 2001).

The study found that the critical thinking scores of both groups of students were unchanged from the first medical-surgical class to the completion of the nursing program. Trend analysis found that both groups similarly developed critical thinking from the fist common testing point, and during test 3 the mean scores of Group Two dropped. The study found that the mean change in scores did not differ significantly from year to year; but those students whose score considerably improved during the first year of nursing scores had substantially lower pretest scores than the rest of their cohort. Quartile
comparisons showed that students whose pretest scores were below the median (\(N=22\)) demonstrated a linear improvement (\(p=0.000\)) (L’Eplattenier, 2001).

This study found that on average, scores tended not to improve throughout the nursing program; however this may be due to the one-school sample setting as well as sample size. It is noted by the authors that the overall sample scores were below published norms for other college students, including other baccalaureate nursing students. This may be due to the school’s mission that the sample was drawn from to accept all students with a desire for a college education, and to channel students with academic deficiencies into remediation, enrichment, and development courses. It was also noted that the WGCTA may not be the best measure of the critical thinking skills necessary to make nursing judgments (L’Eplattenier, 2001).

This study indicates no change in student’s critical thinking ability as they progressed through a professional nursing program. During the study, multiple unanswered questions emerged regarding critical thinking in nursing and its measurement, the nature of nursing education and its effect on critical thinking, and the connection between critical thinking and clinical judgment. The field of nursing needs to decide how critical thinking is articulated in nursing practice from student to expert. An exact definition of critical thinking must be determined prior to finding a way to discover and implement appropriate ways to measure and evaluate critical thinking abilities (L’Eplattenier, 2001).

**Nursing Faculty Role in the Development of Students’ Critical Thinking**

Twibell et al. (2005) discussed that critical thinking abilities are utilized to develop clinical decision making skills that are a required outcome of most nursing
programs. The purpose of the study was to explore the perceptions of nursing faculty members on how teach critical thinking skills to baccalaureate student nurses in clinical settings. A multiple case-study approach was utilized to explore faculty’s perceptions of the critical thinking of students in the clinical setting.

The authors chose a sample of six faculty members from a public university in the school of nursing in the Midwest with a minimum of 5 years of clinical experience and 1 year of clinical teaching experience in a baccalaureate nursing program, and that taught at either the junior or senior level (Twibell et al., 2005).

Spradley’s (1979) developmental research sequence (DRS) guided data analysis. Some of the 12 steps of this study were combined or slightly modified to fit the research’s needs (Twibell et al., 2005). The interviews were analyzed by domain and taxonomy analyses. First, cover terms (naming a category of cultural knowledge) were identified. Within the domain analysis, five semantic relationships were found within terms utilized: strict inclusion, spatial, function, means-end, and attribution. During the taxonomic analysis, relationships between the terms within a domain were further scrutinized, and subcategories or levels of terms were discovered. Rigor in testing was ensured by the same researcher conducting all of the interviews. Two researchers identified biases and analyzed data individually without collaboration. Prolonged engagement, as well as persistent observation of the informants occurred as well as leaving an audit trail of tools utilized by the primary data collector to allow a verification of dependability and confirmability (Twibell et al., 2005).

Twibell et al. (2005) found that 5 domains surfaced from the analysis. The authors focused on the first 2 of the 5 domains. The cover terms were: (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.” “Putting it all together” was the way that all of the informants viewed the core of critical thinking. Terms that were included within this category were: information seeking, reflecting, assigning meaning, problem-solving, predicing, planning, and application.

“Strategies to promote critical thinking” were the tools that the clinical instructors could utilize to foster critical thinking within their clinical group, and included the terms questioning, written products, clinical conferences, and student journals.

The researchers concluded that questioning is the primary strategy used to promote critical thinking. The level of difficulty and different types of questions facilitate the students to pull information together to develop critical thinking skills. Clinical faculty can center on asking effective questions and allowing students time to reflect on clinical experiences and determine meaning. Although the necessity of critical thinking in the nursing field is known, there needs to be continued research and faculty education on how to teach critical thinking to students (Twibell et al., 2005).

Rossingol (2000) discussed that as of late, there has been a push to revise nursing curriculum to foster a different kind of student-teacher relationship which promotes cooperation and lays a base for caring. Traditionally students play submissive roles in the classroom and clinical setting, which stifles learning and hampers the development of cognitive, affective, and psychomotor abilities which students need to develop. The purpose of this study was to analyze the verbal and cognitive activities between and among students and faculty in the clinical postconference setting. This study utilized a descriptive nonexperimental design.
The study was conducted at a National League of Nursing accredited baccalaureate nursing program in a small northeastern state. A convenience sample was drawn from available faculty and students from a senior year leadership and management course. There were a total of 74 nursing students enrolled in the course. The students could opt out of the study by not completing a demographic questionnaire. The study sample consisted of 57 students and 10 clinical instructors (Rossingol, 2000). The discourse analysis system was adapted for use in this study. This instrument was chosen due to the fact that its categories described verbal and cognitive activities in the natural context of conference interactions. Interrater reliability for type of pedagogical move was between 83% and 100% and for cognitive level ranged from 64% to 94%. Cohen’s kappa was computed for the pedagogical move category and was reported at 0.87 (Rossingol).

Based on the verbal activities, the clinical postconferences in this study suggested a strong student-centered curriculum models for this cohort. It was reported that students were able to assume the teaching role, due to the liberated student-faculty verbal relationship. These findings indicate a cooperative student-faculty partnership in learning. Student-governed conferences produced more topics for discourse, allowed students to ask more questions, allowed students to responded readily to questions, and presented the students with opportunities for extended dialog. These clinical postconference sessions were found to have cooperative group participation. Feedback played an important role as 65% of discourse was faculty and students’ responses and reactions (Rossingol, 2000).
Conference discourse focused on empirical information, with students leading in stating facts, possibly due to student reports of clinical topics and experiences. Faculty led in explaining, which may have been in order to clarify or expand student reports. Although high cognitive levels were of greater use than previous studies, three-fourths of the conference discourse was spent engaged in low cognitive levels. Clinical faculty was found to utilize slightly higher cognitive levels in discourse, indicating the importance of the faculty role in monitoring and challenging student thinking (Rossingol, 2000).

Active student participation, while supporting a student-centered educational model, may not alone be the answer to greater student learning. It is important to carefully monitor cognitive levels in order to raise the level of thinking and discourse to promote student thought. Clinical faculty is urged to prompt students toward specific cognitive pathways to promote critical thinking in clinical conferences. Teachers must engage techniques to coach for cognition including asking high cognitive questions. Although student reports can be utilized, clinical faculty must modify the discourse and raise the level of thinking. Faculty must ensure that all students are actively participating in order to assess and foster higher cognitive thinking (Rossingol, 2000).

Tools to Promote Critical Thinking in Nursing Students

Kennison (2006) discussed that critical thinking and use of reflection are inextricably linked in the practice of nursing. While both ideas have been studied separately, there has been little research regarding the relationship between reflective writing about significant practice experiences and critical thinking. The purpose of this study was to establish interrater reliability of the Critical Thinking Scale (CTS). For this study, a nonexperimental, descriptive, correlational design was used.
A convenience sample (n=57) consisted of nursing students in the last week of the final semester of a baccalaureate nursing program from a small liberal arts college in the northeastern United States (Kennison, 2006).

Students completed written descriptions of their thoughts, feelings, and experiences during a significant practice event. At the same time the students completed the California Critical Thinking Skills Test (CCTST). Three independent raters, all having expertise in the field of critical thinking, independently utilized the CTS to evaluate the student’s reflective writing for evidence of critical thinking. The CCTST measures the cognitive skills of interpretation, analysis, evaluation, inference, and explanation. Construct validity for the CCTST was assessed by detecting the range of mean improvement in scores of college students completing general education critical thinking courses. Comparing pretest and posttest scores indicated an improvement of +1.90 and +0.98 ($p<0.000$) with the CCTST reliability coefficient of 0.69 on the pretest and 0.68 on the posttest. Interrater reliability of the reflective writing samples using two-tailed Pearson product-moment correlation indicated a statistically significant range ($r=0.407$ to 0.702) (Kennison, 2006).

The study found a significant positive relationship between total critical thinking based on the CCTST and CTS mean ratings of reflective writings using a one-tailed Pearson product-moment correlation ($r=0.233$, $p<0.05$). There was a significant relationship between GPA and CCTST. No significant relationship was found between age, CCTST, and CTS mean teacher rating. This study supports the hypothesis that there needs to be ongoing development to improve the interrater reliability of the CTS (Kennison, 2006).
This study provides additional reliability and validity data for the use of CTS as a tool for instructors to analyze the link between student’s reflective writing about clinical practice experiences and critical thinking. If students are to engage in reflective writing, there must be a fair and consistent evaluation tool. Critical thinking and reflective writing have an elusive relationship that can be difficult to describe and measure. The CTS has the possibility to be the tool for instructors to utilize to evaluate critical thinking via reflective writing throughout the nursing student’s program (Kennison, 2006).

Abel and Freeze (2006) discussed that nursing education is moving away from memorization and toward meaningful learning that fosters connections between new information and past learning. An educational shift from learning to thinking is occurring and this must include a change in how nursing is currently taught. The purpose of this study by was to evaluate concept mapping as a clinical learning activity that reflects critical thinking by promoting identification of nonlinear relationships between facets of the nursing process. For the study a nonexperimental design was used (Abel & Freeze, 2006).

The sample (n=28) for this study was obtained from a group of 30 students involved in an associate degree nursing program. All participants were part of one graduating class. All students in the study completed one concept map in both the second and fourth semesters, and two concept maps in fifth semester (Abel & Freeze, 2006).

Concept maps were scored using the criteria set by Daley, et al. (1999) (Abel & Freeze, 2006). Components of the map had to be meaningful, valid, and significant to receive a score. Scores were set for propositions (1 point each), hierarchy (5 points for each level), cross-links (10 points each), and examples (1 point each). Independent score
agreement was 85% and Interrater reliability was 97% and 94% (Abel & Freeze, 2006).

The study found that the nursing process steps of assessment; analysis; nursing diagnosis; planning outcomes and interventions; implementation; and evaluation were present in the concept maps. Total map mean scores increased as the students progressed though the semesters. The study found that there was an increase in use of cross-links, which identified relationship identification, as students progressed through the program. The study found that concept maps done on patients on differing units had no effect on mean total scores. As traditional nursing care promotes linear thinking, concept mapping allows students a nonlinear thinking path (Abel & Freeze, 2006).

The researches discussed that students were challenged to think on their own, rather than copying a nursing care plan out of a book. The use of concept mapping, a relatively unstructured process, allowed students a specific focus, without hampering the critical thinking process. The maps reflected a holistic perspective for the patients and helped foster a meaningful relationship in client care. Concept mapping makes it easier for instructors to gain insight into the student’s though-processes and understanding of the total client. This allows the faculty member to provide instruction to promote critical thinking, and for misunderstandings and lack of knowledge to be quickly identified and corrected (Abel & Freeze, 2006).

This study supported the idea that concept mapping should be introduced early into the nursing program, and is a beneficial tool to foster critical thinking ability in nursing students over time. Concept mapping, with the help of the results in this study, can be effectively used as an evidence-based nursing education strategy. The authors
discuss the need for further research on the topic to assess the most effective ways to implement concept mapping in clinical nursing education (Abel & Freeze, 2006).

The Use of Questioning in Clinical Conferences

Clinical instructors have classically used questioning techniques to incorporate and develop critical thinking skills to prepare their students for future practice. The purpose of Sellappah et al.’s (1998) comparative descriptive study was to identify clinical instructor’s utilization of low-level questions versus high-level questions, and variations of the use of questioning as a teaching strategy. Craig and Page’s (1981) conceptual framework based on Bloom’s taxonomy of the cognitive domain was utilized for the study (Sellappah et al.).

The study was performed at an Australian University that had a 3 year undergraduate nursing program. A convenience sample of clinical teachers (N=26), whom conducted clinical teaching in semesters 4, 5, and 6 of the 3 year program participated in the study (Sellappah et al., 1998).

Craig and Page’s (1981) framework was used to categorize the questions into low-level and high-level questions. For the study, low-level question included knowledge, information, comprehension and application, and high-level questions included analysis, synthesis, and evaluation. Raters achieved an 85% interrater reliability in categorization of questions (Sellappah et al., 1998).

The research results found that the clinical instructors asked more low-level questions than high-level, with low-level questions accounting for 906 or 92%, and high-level questions accounting for 43 or 4 percent. The number of low-level questions was the same regardless of clinical rotation. There were a greater number of questions asked
in the final clinical rotation. There was a significant difference in the number of low-level questions from the first clinical conference to the final clinical conference. There was not a significant difference in the number of high-level questions in both rotations. The types and levels of questions did not indicate any patterns, such as moving from a low-level to a high-level of questioning during discussion. There was no significant difference for high-level questions and total number of questions asked (Sellappah et al., 1998).

A Mann-Whitney U-test was performed to see if education of faculty affected the level of questions asked and no significance was found. There was, however, significance between years of faculty clinical experience and levels of questions asked. There was no significance between years of clinical teaching experience and levels of questions asked. There was not a significant difference in levels of questions asked and instructors that taught both theory and clinical versus clinical alone (Sellappah et al., 1998).

Sellappah et al. (1998) resolved that clinical teachers did not increase the difficulty of questioning as students cared for increasingly complex patients. The researchers recommended that the study be replicated using a larger sample, and needs to be performed at more than one school of nursing. Further research in the area of education level and level of questions is also recommended.

Phillips and Duke (2001) discussed that it is an acknowledged fact that questioning is a primary approach to facilitate the development of knowledge application and critical thinking skills in the clinical setting. Critical thinking is an integral part of nursing as no two patients are the same, therefore nurses must apply knowledge and think
critically to make appropriate clinical decisions. The purpose of this study is to explore, describe, and compare the level of questions asked by clinical teachers and preceptors. A quantitative approach using a comparative design was used for the study utilizing Craig and Page’s (1981) framework (Phillips & Duke).

The participants (n=28) in the study consisted of clinical teachers (n=14) from three Melbourne universities and preceptors (n=14) from two major Melbourne metropolitan hospitals. The clinical teachers worked with first, second, or third year nursing students, with a clinical to nurse student ratio of one to eight. The preceptors worked with one third year student at a time in their acute care clinical experience. The population of clinical teachers was 156 and the population of preceptors was 50. A simple random sampling design was utilized to chose the participants in the study, but due to a low response rate, six preceptors and two clinical instructors were chosen by a convince sample (Phillips & Duke, 2001).

Phillips and Duke (2001) utilized a questionnaire to collect data, which included a demographic information section and a presentation of three scenarios utilized to identify the level of questioning by the participants. All three of the scenarios represented clinical situations in which a nursing student may be assigned to care for while in the acute care clinical rotation. All of the scenarios referred specifically to third year students to reduce confusion regarding level of questioning versus clinical level. The results from the questionnaire were then classified utilizing Craig and Page’s (1981) framework as low-level (knowledge and comprehension) and high-level (application, analysis, synthesis, and evaluation) questions. Two raters then independently coded 10 randomly selected
questionnaires with an agreement at 94.19%. One rater coded the remaining questionnaires due to the establishment of high interrater agreement (Phillips & Duke).

The study found that clinical teachers asked a greater amount of questions \((n=324)\) than did preceptors \((n=261)\) with the difference in number and level of questions being statistically significant \((x^2=38.15, \text{d.f.}=1, P<0.001)\). The researcher also reported that it was statistically significant that the two groups differed in the number of high-level questions asked \((x^2=11.36, \text{d.f.}=3, P=<0.01)\). Both groups did identify the importance of asking high-level questions to the nursing students. The clinical teachers did ask a greater number of high-level questions as compared to the preceptors (Phillips & Duke, 2001).

The researcher determined from the study that even though clinical teachers did ask a larger number of high-levels questions, both groups need to increase the number of high-level questions used with nursing students in the clinical setting. Although the preceptors did ask a lower number of high-level questions, both groups did realize the importance of high-level questions in order to develop critical thinking skills in students. The study reports the need for the clinical instructors and preceptor to be trained to ask high-level questions (Phillips & Duke, 2001).

Hsu (2007) discussed that clinical postconferences give students the opportunity to share knowledge gained through transformative learning and provide a forum for discussion and critical thinking. Faculty members must be able to guide students to effectively participate in discussions, foster development of problem solving skills, and be able to express feelings and attitudes in the clinical conference setting. The purpose of this study was to explore nurse educators’ perceptions of clinical post conferences.
Additionally this study sought to explore the interaction between nursing students and faculty in clinical post conferences. The transformative learning theory provided the framework for this qualitative research study.

The setting for this study was a two-year nursing program located in Tao-Yuan, Taiwan. The sample for this study consisted of 10 nurse educators with master degrees. The nurse educators each taught 10 students in the first of 3 total clinical rotations (Hsu, 2007).

Field notes and transcripts were read and content analysis was performed. The Non-Numerical Unstructured Data Indexing Searching and Theory-building (NUDIST) qualitative software program was used for data analysis. The NUDIST program is designed to store, code, analyze, and retrieve text and accommodates and indexing system of nodes (categories of related text units). The NUDIST program codes text and allows each item coded to connect to a number of nodes in order to identify patterns of data. Interrater reliability was calculated at 85-93% agreement upon comparison of raw data, data reduction products, and process notes (Hsu, 2007).

The study found that seven of the nurse educators believed that effective learning and discussion of a topic of the day were imperative for an ideal clinical conference. The faculty recognized patient characteristics, student learning goals, and student needs as matters of importance when planning, evaluating, and revising clinical conferences. The study also found that the nurse educators tended to emphasize discussion of clinical experiences and student’s assignments. Questioning was the most frequent tool utilized by the clinical instructors and was at a low level (Hsu, 2007).
In order for a nurse educator to help students attain meaningful learning during clinical postconferences, the nurse educator must foster critically reflective thinking; pose appropriate clinical problems; and support discourse that is learner-centered, participatory, and interactive. The clinical postconference is the ideal place for students to link theory to clinical practice. This study found that nurse educators did not ask pertinent and practical questions, rather theoretical ones. Only a few nurses in the study were able to apply clinical post conference discussion to applied practice. It is imperative that educators close the gap between theory and practice (Hsu, 2007).

Clinical conferences, which are designed to be small group discussions scheduled at the end of the clinical day, have been found to include cognitive, affective, and behavioral learning. Clinical instructor must allow students time for critical reflection, expression of feelings, and development of support systems during the clinical conference. The postconference is an excellent time for the clinical instructor to assess critical thinking abilities as well as the student’s skill for analyzing significant events in the clinical practice setting (Hsu, 2007).

Summary

The overall importance of critical thinking skills in the nursing field has been repeatedly confirmed. It is necessary for modern professional nurses to demonstrate and utilize critical thinking skills on a daily basis. The cognitive demands of the nursing field are ever increasing, which is leading to a generation of nurses that must think and act quickly in many situations. It is imperative to start the critical thinking development process within the first stages of nursing education.
Nursing education curricula must be geared toward fostering the development of critical thinking skills in nursing students. Nursing students may demonstrate differing critical thinking dispositions and therefore require multiple methods to promote critical thinking abilities. Nursing programs must seek out new and unique ways to challenge students, promote critical thinking skills, and prepare the students for future nursing practice. Current nursing education practice must be enhanced to further the development of critical thinking skills through faculty education and curricula development. Clinical nursing instructors must be educated as to the methods to promote critical thinking in the clinical setting.
Chapter III

Methodology

Introduction

Critical thinking skills have been repeatedly reported as important to nursing programs, and as an indicator of higher learning achievement. The clinical environment is an excellent place for critical thinking development to take place as it is the environment where the didactic portion of the nursing education is utilized, synthesized, and evaluated. It is one of the major functions of the nursing clinical instructor to help promote and foster critical thinking in the clinical setting. Critical thinking abilities can be promoted while performing nursing procedures and duties, brief discussions, and in the post-clinical conference setting. Nursing clinical instructors must be able to ask questions to effectively promote critical thinking skill development. The purpose of this comparative-descriptive study is to analyze and categorize teaching techniques utilized by clinical nursing instructors in clinical conferences. This study is a partial replication of the study performed by Sellappah, et al. (1998). The following chapter includes: research questions; population, sample, and setting; protection of rights; procedures; research design; instrumentation; reliability; and validity.
Research Questions

1. What are the primary tools used by clinical instructors to promote critical thinking in the clinical conference setting?

2. What types and levels of questions are clinical instructors utilizing during clinical conferences?

3. Does overall instructor clinical experience have an effect on the level of questions asked?

4. Does overall instructor clinical teaching experience influence the type of questions asked?

5. Does the level of education of the clinical instructor affect the levels or types of questions asked?

Population, Sample, and Setting

The population of the study will be the nursing instructors teaching in clinical rotations at Ball State University for the baccalaureate nursing program. All clinical nursing instructors from the second through the final clinical semester will be asked to participate in the study. The goal for the study will be a minimum of 10 clinical nursing instructors.

Protection of Human Rights

The study will be submitted to the Ball State University Institutional Review Board. To protect the human rights of the participants, participation in the study will be on a voluntary basis. All data collection will be anonymous by assigning participants numbers. The study will be presented through a mailed and e-mailed demographic questionnaire, with an explanation of the study and what participation in the study
requires. Consent to participate will be return of the demographic questionnaire. No risks have been identified in order to complete this study. The benefit of this study is to gain information about the clinical conference tools utilized by clinical instructors, clinical instructor questioning levels, and if clinical experience and education affect the types of questions asked to nursing students.

Procedures

After approval from the Ball State University Institutional Review Board, a meeting will be arranged with the Director of the School of Nursing at Ball State University to explain the purpose of the study, obtain consent to complete the study within the School of Nursing, and acquire a list of clinical instructors within the program. A demographic questionnaire, with instructions of how to participate and requirements for the study, will be mailed and e-mailed to all clinical instructors in the baccalaureate nursing program at Ball State University. Participants in this study will complete the demographic questionnaire detailing level of education, degree held, years of clinical experience, and years of clinical teaching experience. The participants will tape record two clinical conferences, the first between weeks 2 and 6 of the clinical rotation, the second between weeks 7 and 11 of the clinical rotation. The researcher will then collect the tapes and transcribe them.

Research Design

The study will utilize a comparative-descriptive design. This type of design compares and describes two or more groups of participants (Burns and Grove, 2005). This type of design allows the researcher to identify the demographic variables and
examine the relationship among these variables and clinical nursing instructor’s questioning types or levels.

Instrumentation, Reliability, and Validity

Instrumentation

The questioning techniques will be classified according to Craig and Page’s (1981) framework based on Bloom’s (1956) taxonomy of cognitive domain. Two raters will independently categorize the questions from the transcription. Any additional questions not fitting into the framework will be further defined, categorized, and added to the types of questions as done by Sellappah et al. (1998).

Reliability

Interrater reliability will be determined by comparing the individual independently classified questions.

Validity

For all results analysis, an alpha level will be set at 0.05 as concurrent with the study performed by Sellappah et al. (1998).

Summary

It is imperative for nurses to use critical thinking in daily practice. Clinical nursing instructors are presented with an ideal medium to advance the development of critical thinking skills of nursing students. The purpose of this comparative-descriptive study is to analyze and categorize teaching techniques utilized by clinical nursing instructors teaching with the baccalaureate nursing program at Ball State University in clinical conferences, and determine if education and experience plays a role in the questioning techniques.
An anticipated sample of a minimum of 10 clinical instructors will complete a demographic questionnaire detailing level of education, degree held, years of clinical experience, and years of clinical teaching experience, and tape record two mid-semester clinical conferences, to determine levels of questioning being utilized, and the affect of education and experience on the types of questions that are asked. This study will be able to further current research regarding the use of high-level questioning in clinical conference, which promotes critical thinking in nursing students.
References


