# ABSTRACT

## CRITICAL THINKING: STUDENT DISPOSITIONS

By Fay L. Fritsch

The American Association of Colleges of Nursing (AACN) has identified critical thinking as an essential element of baccalaureate nursing framework and curriculum (2008). The expectation of baccalaureate-prepared nurses is a competency of inquiry, analysis, critical thinking, and communication within a variety of methods including written and oral communication.

The purpose of this study was (a) to identify the critical thinking disposition of baccalaureate degree nursing students, (b) to compare the critical thinking disposition of first semester baccalaureate degree nursing students with final semester baccalaureate degree nursing students, and (c) to correlate student critical thinking disposition with selected demographic variables. Benner's Novice to Expert theory provided the theoretical framework for this descriptive, comparative study. The California Critical Thinking Disposition Inventory measured the criterion variable of critical thinking and the seven subscales: truth-seeking, open-mindedness, analyticity, systematicity, critical thinking self-confidence, inquisitiveness, and maturity.

The research design for this study was a descriptive, comparative design. The descriptive design was used to describe the critical thinking disposition of first and final semester baccalaureate degree nursing students. The comparative design was utilized to compare the critical thinking disposition of first semester to final semester baccalaureate degree nursing students.

The sample consisted of 64 students (34 Sophomore II students and 30 Senior II students) in the nursing program. Results indicate that there is not a statistically significant difference in critical thinking disposition between Sophomore II and Senior II students ($t[62]=1.96$, ns; $d=.50$). However, there was an increase in the mean disposition between the Sophomore II students ($M=311.15$) and the Senior II students ($M=325.03$).

There are serious implications for patients' well-being, as well as significant legal liability for nurses who fail to master critical thinking. Nurses must manage risk, as well as safe practice, for themselves and their patients. The rapidly changing world of healthcare increasingly demands nurses to be proficient in managing complex information, technology, and compounding patient disease states. Nursing students must rise to this challenge.

# CRITICAL THINKING: STUDENT DISPOSITIONS

by

Fay L. Fritsch

A Thesis Submitted
In Partial Fulfillment of the Requirements
For the Degree of

Master of Science in Nursing

Family Nurse Practitioner

at

University of Wisconsin Oshkosh
Oshkosh, Wisconsin 54901-8621

May 2009

APPROVAL

_____ Advisor

April 29 2009 Date Approved

_____ Member

April 29, 2009 Date Approved

_____ Member

4-29-09 Date Approved

INTERIM PROVOST
AND VICE CHANCELLOR

_____

5/12/2009
Date Approved

FORMAT APPROVAL

_____

4/30/2009 Date Approved

I would like to dedicate this work to my family.

To Tom – You have been there through it all, the good days and the bad. You have supported me on those long nights that I lay awake or up doing homework. The time away from school work – the beer and Brewers nights. It has been a long road, but we have done it. I love you.

To Kari – You have been an inspiration to me. When I was having a bad day, you were there to pick me up - the tears and the laughs. We have worked on homework side-by-side being frustrated with computers and losing documents, comparing grades and difficulty of classes. As we celebrate our accomplishments together, we will always remember our graduation. I love you.

To Cody – You were my inspiration to become a nurse. You brighten my day with your love of life. I wish you could talk and tell me all about yourself and what you think; your infectious laugh and love of Disney. I love you.

To Bill and Betty – For your support and words of kindness, you are now the strength of the family. I love you.

To my friends and family – Thank you for understanding when I just needed someone to listen, and when I wasn't able to join you in your celebrations because I was working or in school.

ACKNOWLEDGMENTS

I would like to thank Dr. Suzanne Marnocha for her support. Without it, I would have never gotten done with my thesis. Your encouragement and hugs always brightened my day. This has been a long road and without your advice to narrow down my topic and then to narrow it down again, I would never have gotten this done for graduation.

I would like to thank Dr. Stewart and Dr. Dempsey for their excellent study. When I came across it in my review of literature, it gave me a special bond between my work and the college. Thank you for agreeing to be on my thesis committee.

Thank you to Dr. Tomasz Miaskowski and Dr. Vogel-Schwartz for your continued encouragement throughout my clinicals. You continued to take me to the next level of practice.

Thank you to my classmates. We have gotten there together – through the laughs and the tears; we have done it.

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

LIST OF TABLES

LIST OF FIGURES

# CHAPTER I

# INTRODUCTION

Critical thinking, what does it mean and how do we know when we are doing it? Nursing is a delicate relationship between the known and the unknown. How does a student nurse move from the unknown to the known? Is it critical thinking, experience, or both? What role do nurse educators play in this important concept?

## Significance of Critical Thinking to Nursing and Nursing Education

The rapidly changing world of healthcare increasingly demands nurses to be proficient in managing complex information, technology, and compounding patient disease states. Nursing students must rise to this challenge. The American Association of Colleges of Nursing (AACN) has identified critical thinking as an essential element of Baccalaureate Nursing framework and curriculum (2008). The expectation of baccalaureate prepared nurses is a competency of inquiry, analysis, critical thinking, and communication within a variety of methods, including written and oral communication.

The National League of Nursing (NLN) Excellence Model indicates that Baccalaureate Nursing program curricula should be designed to develop students' critical thinking skills (2006). Core competencies for nurse educators include modeling critical and reflective thinking, "creating opportunities for learners to develop their critical thinking and critical reasoning skills" (NLN, 2005, p. 1). Core competencies for accreditation indicates that students should "demonstrate critical thinking, reflection, and problem-solving skills" which are essential to nursing education (National League for Nursing Accrediting Commission [NLNAC], 2006, p. 84).

The American Philosophical Association (APA) came together from February 1988 to November 1989 to establish an expert consensus of critical thinking for the purposes of education assessment and instruction (Facione, 1990). The result of six rounds of thoughtful, detailed questions and responses was The Delphi Report from which the following attributes of critical thinking became formal recommendations for nursing education.

> The ideal critical thinker is habitually inquisitive, well-informed, trustful of reason, open-minded, flexible, fair-minded in evaluation, honest in facing personal biases, prudent in making judgments, willing to reconsider, clear about issues, orderly in complex matters, diligent in seeking relevant information, reasonable in the selection of criteria, focused in inquiry, and persistent in seeking results which are as precise as the subject and the circumstances of inquiry permit (Facione, 1990, p. 2).

This consensus definition will assist nursing institutions of higher learning with identifying key characteristics in nursing students. Facione, Facione, and Sanchez (1994, p. 345)) call this "the critical spirit—a style, a set of attitudes that define a personal disposition to prize and to use critical thinking in one's personal, professional, and civic affairs." Furthermore, it is recommended that a complete approach to developing good critical thinkers is the nurturing of disposition towards the achievement of critical thinking.

There are serious implications for patients' well being, as well as significant legal liability for nurses who fail to master critical thinking. Nurses must manage risk, as well as safe practice for themselves and their patients. In a study conducted by Hoffman and Elwin (2004), 83 new graduate nurses' critical thinking was assessed with the Watson

and Glaser Critical Thinking Assessment Tool. Their confidence in decision-making was assessed with the Confidence in Decision Making in Nursing Scale. Results determined that nurses who had higher scores in critical thinking had decreased scores on the confidence in decision-making, indicating that those with higher critical thinking ability had less confidence in decision-making. The authors suggest that "those who think more critically are more hesitant in clinical decision-making and would also seem to suggest that those with higher scores on critical thinking ability would be more inclined to spend time searching for answers to clinical problems" (Hoffman & Elwin, 2004, p. 11). Additionally, the authors stress that "being overconfident or prejudging in clinical decision-making may in fact be detrimental as it can lead to poorer clinical outcomes due to increased error in clinical decision-making" (p. 11).

## Purpose

The purpose of this study was to: (a) identify the critical thinking disposition of baccalaureate degree nursing students, (b) compare the critical thinking disposition of first semester baccalaureate degree nursing students with final semester baccalaureate degree nursing students, and (c) to correlate student critical thinking disposition with selected demographic variables.

## Research Questions

1. What are the differences in the critical thinking disposition between first semester in comparison to final semester baccalaureate degree nursing students?

2. Does a relationship exist between critical thinking disposition of nursing students and selected demographic variables, i.e., grade point average (GPA), age, academic level, and previous higher education?

## Definitions of Terms

### *Conceptual Definitions*

*Critical thinking:* A composite of inquisitiveness, open-mindedness, systematicity, analyticity, truth-seeking, critical thinking self-confidence, and maturity (Facioine, Facione, & Gainen, 1995).

*Student:* A student in the baccalaureate of science in nursing program.

*Educational program:* The designated nursing framework for the course of study that is designed to achieve the institution's specific educational goals.

*Grade point average:* Grade point average (GPA) is the computation of a "mean" grade from all course grades.

*Age:* Age refers to the chronological age in years of participant.

*Academic level:* Class standing or progression through an institution of higher learning.

*Previous higher education:* Previous education indicates education in an institution of higher learning beyond high school.

### *Operational Definitions*

*Critical thinking:* Critical thinking disposition is determined by the raw score achieved on the California Critical Thinking Disposition Inventory (Facione & Facione, 1992).

*Student:* Student is determined by acceptance into the baccalaureate nursing degree program.

*Educational program:* Educational program is an eight semester, 4-year baccalaureate degree nursing program in the northern Midwest accredited by the AACN. Completion allows graduates to write the National Council Licensing Examination (NCLEX) for licensure.

*Grade point average (GPA):* Defined as the student report of grade from courses completed.

*Age:* Defined as the student report of chronological age.

*Academic level:* Defined as the student report of academic level. Participants were currently enrolled in either the first or final semester of their program.

*Previous higher education:* Defined as the student report of previous education in an institution of higher learning beyond high school.

## Assumptions

1. Critical thinking is essential to nursing practice.
2. Life experiences influence an individual's ability to think critically.
3. Critical thinking can be measured.
4. Critical thinking can be taught or enhanced through the nursing curriculum.
5. Critical thinking occurs through an ordinal progression of skill attainment.
6. Students were exposed to the same curriculums.

## Summary

This chapter has discussed critical thinking as an essential component of nursing education. The proposed statement of the problem, its purpose, and research questions are outlined in detail. Conceptual and operational definitions, variables, and assumptions were presented.

# CHAPTER II

# THEORETICAL FRAMEWORK AND LITERATURE REVIEW

## Theoretical Framework

A review of the literature on the concept of critical thinking, Benner's Novice to Expert model is explained and applied as the theoretical framework for this study. Critical thinking, what does it mean and how do we know when we are doing it? Nursing is a delicate relationship between the known and the unknown. How does a student nurse move from the unknown to the known? Is it critical thinking, experience, or both? What role do nurse educators play in this important concept? This thesis attempts to describe how critical we are of critical thinking.

Benner's (1984) novice-to-expert theory provided the conceptual framework for the acquisition of critical thinking skills in this thesis. Benner utilized the work of Dreyfus and Dreyfus' (1980) skill acquisition model to develop the novice-to-expert theory of nursing. This skill acquisition model is one of a situational model rather than a trait or talent model. Benner's (1984) acquisition of skills in the nursing profession occurs in "five levels of proficiency: novice, advanced beginner, competent, proficient, and expert" (p. 13) and skill attainment is an ordinal progression through these five stages.

The first stage, novice, has no experience in the nursing profession. The nursing curriculum exposes students to situations that will allow them to gain experiences necessary for skill development. Benner (1984) explains that nursing students are taught objective measurable parameters of a patient's condition. Benner exemplifies that the "rule-governed behavior typical of the novice is extremely limited and inflexible.

The heart of the difficulty lies in the fact that since novices have no experience of the situation they face, they must be given rules to guide their performance" (p. 21).

The second stage, advanced beginner, is a nursing student who can "demonstrate marginally acceptable performance" (Benner, 1984, p. 22) and have little experience from which to draw conclusions. Benner describes these meaningful components as "aspects" which include "overall global characteristics that can be identified only through prior experience" (Benner, p. 22). Advance beginner nurses continue to need support and resources to provide safe care to patients. "Novices and advanced beginners can take in little of the situation: It is too new, too strange and besides, they have to concentrate on remembering the rules they have been taught" (Benner, p. 24).

The third stage, competent, is obtained by a nurse who begins to see the big picture or long-term goals and is consciously aware. The competent nurse begins to look at a situation with a "conscious, abstract, analytic contemplation of the problem" (Benner, 1984, p. 26). A nurse who has moved into this stage of knowledge acquisition may not have the speed and flexibility, but "has a feeling of mastery and the ability to cope with and mange the many contingencies" (Benner, p. 27) of nursing.

The fourth stage, proficient, "nurses understand a situation as a whole because they perceive its meaning in terms of long-term goals" (Benner, 1984, p. 27). Conclusions are drawn from their experience and their perception of the situation at hand. "The proficient nurse learns from experience what typical events to expect in a given situation and how plans need to be modified in response to these events" (Benner, p. 28). Additionally, the proficient nurse utilizes maxims as a guide, which "reflect what would appear to the competent or novice performer as unintelligible nuances of the

situation; they can mean one thing at one time and quite another thing later" (Benner, p. 29).

The fifth and final stage, expert, "no longer relies on an analytic principle rule, guideline, maxim to connect her or his understanding of the situation to an appropriate action" (Benner, 1984 p. 31). The nurse has an "intuitive grasp on each situation and zeroes in on the accurate region of the problem without wasteful consideration (Benner, p. 32) of unimportant variables. These experts begin to have intuition of a situation that is based on their experiences. This expert may not be able to verbalize their decisions because of "perceptual acuity" or recognitional ability" (Benner, p. 33). The acquisition of skills is not a step-by-step process; it is an evolution of continual growth. Benner's work has illustrated that developing expertise is based on the nurse's involved, engaged actions in his or her practice.

## Case Study Application

A new nursing student, Krissy, comes into a baccalaureate nursing program. She is apprehensive and nervous as she feels that she does not know the first thing about nursing. She studies the skills needed for her first clinical. She takes care of her first patient, thinking about what she learned in her skills lab. She performs her tasks in a step-by-step process, careful not to forget anything. She is able to measure her patient's pulse, temperature, and blood pressure. She knows the parameters for the normal assessment.

As Krissy starts the beginning of her second year as a nursing student, she returns to her clinical practicum with increased confidence. She is familiar with the

necessary tasks she needs to perform. She begins to think about her patient and how the tasks she performs correspond to her patient's condition.

As she completes her nursing education and obtains her baccalaureate nursing degree, she realizes that she may feel like she is competent in her role as a nursing student. She has just begun her lifelong journey as a nurse. She passes the National Council Licensing Examination (NCLEX) and obtains a job as a nurse. Krissy completes her orientation and works closely with her preceptor as she moves into the advanced beginner stages. Throughout her first 2 years as a nurse, Krissy begins to have more understanding of how her nursing actions affect her patients. Krissy starts to think about how she performs her role and how every action has both positive and negative consequences. She has finally moved into the competent stage.

Krissy has now been in her role for 3 years and looks at her patient care assignments as a whole. She begins to think about each patient's diagnoses and condition, how to anticipate any adverse conditions and prepare them. Krissy is asked to be a preceptor for a new nurse who has just graduated. She begins to take an active role during critical situations, and tells her student that it is just intuition that told her what to do to help her patient.

Critical thinking is the seed that is planted within the first semester of the curriculum. It continues to develop roots and evolve. The nurse does not realize how far she has progressed until, in turn, serves in a mentor or training role. Faculty serve as a critical component to assist in developing critical thinking in students. They help the student to make choices, plan care, question their decision, and take action. Faculty are energized when engaging in teaching and coaching critical thinking in students. After all, they are nurturing the development of the next generation of nurses.

## Review of Literature

A literature search of CINAHL under the terms *critical thinking* and *nursing* resulted in 1,539 documents. Clearly, critical thinking in nursing is a current topic of interest. The definition of critical is "relating to, or being at a turning point or especially important juncture, relating to or being the stage of a disease at which an abrupt change for better or worse may be expected" (*Merriam-Webster Online Dictionary*, 2007) Thinking is defined as "to form or have in the mind, to have as an intention, to have as an opinion, to regard as, to reflect on, to determine by reflecting, to call to mind, to devise by, to have as an expectation, to center one's thoughts on, to form a mental picture of, to subject to the processes of logical thought, to exercise the powers of judgment, conception, or inference, to have in the mind or call to mind a thought, to have the mind engaged in reflection, to consider the suitability, to have a view or opinion, to have concern, and to consider something likely."

Given the variables of the definition, how can one form a conclusion? Nursing cannot agree on the definition of critical thinking, much less the concept. The concept of reflection is also likened to that of critical thinking and is defined as an "often obscure or indirect criticism" of a set of circumstances (*Merriam-Webster Online Dictionary*, 2007). Associated words, such as knowledge, reasoning, intuition, analyze, identification, evaluate, and examine also contribute to the concept of critical thinking. "Critical thinking is simply putting structure to your thoughts. That means to expand your thinking in a thorough and systematic way so that it is possible to consider all aspects of a problem" (Beistle, Smith, & Nagel, 2006, p.75). When synthesizing all the meanings, the definition of critical thinking is the slow, deliberate, and careful reasoning before forming an opinion, reaching a conclusion or decision.

## *Measuring Critical Thinking*

Critical thinking is often a purposeful action in which nurses regularly engage. In fact, critical thinking influenced Florence Nightingale when she used her observations to make changes to her nursing practice. Based on the lack of a concrete definition and measurability, Riddell (2007) questions how nurse educators can defend their assumption that students can learn critical thinking.

Measuring critical thinking is a task that many nursing instructors find challenging. Several tools have been developed to assist in this task, but research has shown that many instructors have difficulty finding evidence of critical thinking when evaluating student writing. In a preliminary study of the Critical Thinking Scale conducted by Kennison (2006), it was found that inter-rater reliability of the assessment of student writing was inconsistent.

Based on initial results, a follow-up study was performed utilizing a non-experimental descriptive, correlational design. The variables of critical thinking and instructor rating were explored by utilizing the Critical Thinking Scale. The Critical Thinking Scale utilizes a Likert scale of one to five to evaluate a student's interpretations, meanings, ideas of self and others, suggestions, and critical reflection, to name a few.

Kennison (2006) utilized the Index of Content Validity to quantify the extent of agreement among the faculty members with expertise in critical thinking. Instructor raters reviewed the reflective writings of 57 graduates. The writing samples were from students enrolled in a traditional 4-year baccalaureate nursing program with a mean age of 25 years and a mean grade point average of 3.34. Results indicated that extensive training was necessary in the evaluation of critical thinking within reflective writing samples. Results also indicated variability between instructors with practice experience

and those who did not have any practice experience. It was also felt that on-going development of the Critical Thinking Scale was needed to improve the inter-rater reliability. However, this tool does have the potential to be a valuable tool for nursing faculty.

There are several tools available that utilize the Likert Scale with forced-choice items, such as the California Critical Thinking Disposition Inventory (CCTDI) and the Watson Glaser Critical Thinking Appraisal (WGCTA) and have been utilized within current nursing literature. Walsh and Seldomridge (2006b) conducted a longitudinal study utilizing these two instruments. Research was conducted over an 8-year period of a baccalaureate program and designed to measure critical thinking. The definition of critical thinking utilized in their nursing program was “knowing what to believe or do” (Walsh & Seldomridge, 2006b, p. 160).

Findings from the pre- to the post-test on the CCTDI of 163 students graduating from 1997 to 2002 resulted in no consistent patterns. Utilization of the WGCTA for 93 students in 2001 to 2002 resulted in a small decline in the mean scores. Walsh and Seldomridge (2006b) caution that this data represented only two cohorts, and that the WGCTA emphasized several critical thinking skills that were not promoted within the classroom or clinical settings. The researchers emphasize that instructors must balance their class time between fact feeding, teaching critical thinking, and developing novice critical thinking skills into general clinical settings. They also identify the need to structure critical thinking levels at increasing complexity throughout programs.

Cise, Wilson and Thie (2004) believed quantitative measures were not meeting the needs of faculty for evaluating critical thinking. This was based on their use of the California Critical Thinking Skills Test and the California Critical Thinking Disposition

Inventory. As a result, they developed the Critical Thinking Self-Reflection Tool. The tool was constructed and compared to Facione's (1990) definition of critical thinking. The developers identified six competencies of critical thinking that Facione addressed: interpretation, analysis, evaluation, inference, explanation, and self-regulation. A comparison of the instrument to the competency requirements determined the validity of a sound qualitative instrument. The instrument was reliable due to the 79% rating established by inter-rater reliability. Utilization of the new tool indicated a 66% success rate in 200 level students and a 100% success rate of 400 level students. Responses from students and faculty indicated that the instrument was valuable for self-reflection. Students progressed in their critical thinking by questioning their assumptions and identifying alternative understandings as they progressed through the program. Instructors also identified that this instrument "provided structure for depth of thinking" (Cise, Wilson, & Thie, 2004, p. 151). Instructors observed one obstacle to utilizing the tool as an increased workload to read and score the assignments.

### *Enhancing and Improving Critical Thinking Through Curriculum*

Nurse educators realize the importance of critical thinking within the curriculum design. Banning (2006) describes several key characteristics of a critical thinker as being open-minded, inquisitive, truth seeking, analytical, systematic, and self-confident. While these concepts are linked with critical thinking, can they be taught within the curriculum? Banning (2006) identified a significant barrier to critical thinking in educators use of "inappropriate teaching methods, and teach too much over a short period of time. Teaching and learning attitudes towards developing critical thinking skills in student may be related to teachers' barriers to critical thinking" (p. 460).

Nursing education is adopting new strategies to address student needs. It is crucial that nursing curriculum continues to implement a critical thinking progression. With the emerging accelerated bachelor's degree in nursing programs, it is imperative that programs have strategies to challenge critical thinking behaviors. These fast-paced programs are designed for students who already hold a non-nursing baccalaureate degree.

A study of 38 graduates by DeSimone (2006) indicates positive student outcomes in a curriculum that has critical thinking processes integrated throughout. Students were tested at the beginning and the end of the nursing curriculum utilizing the Critical Thinking Process Test Form A. This 50-question test evaluates students on four aspects of critical thinking: listening, writing, speaking, and reading. Also tested, are five levels of abstract thinking: prioritizing, inferential reasoning, goal setting, application of knowledge, and evaluation of predicted outcomes. The findings of this study indicated an increase of critical thinking between the pre- and post-testing.

Once nursing faculty have an understanding of how to assess critical thinking and its importance within the curriculum, how do they improve upon it? Research has been conducted on multiple teaching methods. Is one method better than another or do combinations of several methods enhance critical thinking? A study conducted by Gross Forneris and Peden-McAlpine (2007) of six student/preceptor dyads found that contextual learning intervention assisted in the development of critical thinking within the context of practice. The qualitative instrumental case study was implemented over a 6-month period and evaluated through journals and small group components. The researchers describe the contextual learning interventions of narrative reflective journaling, individual interviews, preceptor coaching, and leader-facilitated discussion

groups as four interrelated components that incorporate the attributes of critical thinking. “The learner is coached to reflect on and organize thinking around context to gain an understanding of critical thinking in practice and develop critical thinking skills” (Gross Forneris & Peden-McAlpine, p. 413). Researchers found that the contextual learning intervention can be utilized to develop critical thinking to change nursing practice. Students achieved an understanding within the context of care by utilizing critical thinking and reflective practice intervention. The authors feel that the contextual learning intervention can increase the development of critical thinking and be utilized in both nursing education as well as professional development programs.

Ellermann, Kataoka-Yahiro and Wong (2006) evaluated the effects of critical thinking by teaching logical reasoning. The effects of teaching logical reasoning to support critical thinking was evaluated by a questionnaire completed by 33 students. The questionnaire focused on students’ perception of their level of critical thinking at the beginning of the program and again at the end of the program. Additionally, they were asked to what degree logical thinking contributed to their learning of critical thinking. The authors identified that logical thinking models are useful to conceptualize actions and explain essential nursing elements. In addition to the nursing process, students were taught concept mapping, concept papers, conceptual linking, and substruction.

Concept maps were introduced to students in their clinical process as schematic diagrams illustrating relationships. Nursing concept papers “provide a foundation for building advanced reasoning skills and applying sound nursing judgment. The goals are to develop a specific knowledge base, provide experience, develop critical thinking competencies, and stimulate opportunities to reflect” (Ellermann, Kataoka-Yohiro, & Wong, 2006, p. 223). This foundation or substruction promotes conceptual linking that

allows students to demonstrate integrating multiple levels of influences while planning interventions. Substruction is utilized as students' evaluation of research-based articles to abstractly connect their elements. Results of the survey were positive with nearly half of the students selecting logic models as a method of decision making in addition to the nursing process.

An interpretive phenomenological study was conducted by Scheckel and Ironside (2006), with 48 instructors and 11 students. The researchers found that narrative pedagogy extended students critical thinking ability. Scheckel and Ironside state that "critical thinking is necessary, but not sufficient" (p. 159) and instructors should utilize narrative pedagogy to move beyond critical thinking to interpretative thinking. Participants were audiotaped in a non-structured interview by telephone or in person.

Nurse researchers with experience in Heideggerian hermeneutics and interpretative phenomenology interpreted the data. Heideggerian hermeneutics identifies themes that are recurring within narrative data. Results of the study identified small changes in existing assignments, to include narrative pedagogy, increased students interpretative thinking by assisting them to think about situations from multiple perspectives. Scheckel and Ironside stress that "interpretive thinking includes analytic thinking, predominant in the critical thinking movement, as well as thinking that is reflective, embodied, and pluralistic" (Scheckel & Ironside, 2006, p. 163).

### *Critical Thinking of Students*

A longitudinal descriptive study conducted by Stewart and Dempsey (2005) identified that students disposition toward critical thinking did not significantly increase as students progressed between the first semester and final semester of a baccalaureate curriculum. A total of 34 participants completed the study. Dispositions of critical

thinking were identified utilizing the California Critical Thinking Disposition Inventory (Facione & Facione, 1992), and the ERI-RN assessment. Several limitations were cited, including attrition from the sophomore to the senior levels and administration of the California Critical Thinking Disposition Inventory (CCTDI) prior to the final senior course. The findings were the impetus for this study.

A longitudinal, descriptive study conducted by Thompson and Rebeschi (1999) evaluated 38 students with the California Critical Thinking Disposition Inventory (CCTDI) and the California Critical Thinking Skills Test (CCTST) and revealed an increase in critical thinking. Students in an urban university in the Northeast were measured at entry into the baccalaureate nursing program and again two weeks prior to graduation. The CCTST measures five subscales: analysis, evaluation, inference, deductive reasoning, and inductive reasoning with a range of internal reliability between .68 and .70.

Data analysis of the CCTST revealed a significant increase between the two groups with the entry mean of 15.97 to an exit mean of 17.68 ($p$=.006). Thompson and Rebeschi (1999) found that all the scores from the five subscales had increased from entry to exit with a significant increase in inductive reasoning ($p$=.054). Data analysis of the CCTDI also revealed an increase from entry to exit with students scoring well above 280 at program entry and exit (323.9 vs. 332.5). The mean scores showed a significant increase ($p$=.015) (Thompson & Rebeschi, 1999).

Suliman (2006) studied the effects of various teaching methods and the critical thinking disposition and learning styles of conventional and accelerated nursing students. The convenience sample consisted of 130 participants - 80 participants from a conventional nursing program and 50 participants from an accelerated nursing program. The researcher utilized the Kolb Learning Style Inventory (LSI) and the California Critical

Thinking Disposition Inventory (CCTDI). Results of the study indicated that both groups of students preferred active experimentation to reflection. Accelerated students predominantly learned by thinking and doing with strengths in abstract conceptualization and active experimentation. Suliman (2006) suggests:

> Those who learn by thinking rely more on seeking the best knowledge; are inclined to use reason and evidence; are orderly and preserving in solving problems; trust their own reasoning processes; and are prudent in making, suspending or revising judgment. And those who learn by doing tend to be eager to acquire knowledge, even if the knowledge is not readily apparent (p. 77).

Conventional students were found to have the opposite learning strengths of the accelerated students. They learned by feeling and watching. Their strengths were concrete experience and reflective observation resulting in the form of an opinion rather than seeking and evaluating new information and evidence. Suliman (2006) describes their "approach to situations is to observe rather than think and take action" and they "are emotional, sensitive to feelings and thus people-oriented" (p. 77). Suliman attributes some of the differences between the two groups of students to correlate with age. Students in the conventional program were younger and high school graduates, while the students in the accelerated program entered at an older age and had previous academic experience as independent learners.

### *Critical Thinking of Faculty*

Riddell (2007) emphasizes that nurse educators should question their own experience, curriculum, and evaluation of critical thinking. She found that faculty had differing views of how students engaged in critical thinking. Riddell ascertains that this

might be due in part because faculty may not have a clear understanding of critical thinking themselves.

Zygmont and Schaefer (2006) conducted a descriptive correlation design study of 37 faculty from a randomized sample. Their purpose was to determine critical thinking skills of faculty and if a relationship between epistemological position and critical thinking of nurse faculty existed. Participants completed the California Critical Thinking Skills Test (CCTST) and the Learning Environment Preference. Data were triangulated through quantitative and qualitative methods to strengthen the findings. A comparison between the mean scores of faculty with that of a group of 4-year college nursing students and a group of graduate nursing students resulted in some interesting conclusions.

Results of faculty data indicated some variability in critical thinking ability, but the mean score of the CCTST indicated that most faculty were more skilled in critical thinking than the 4-year college senior. In comparison with graduate students, faculty scores were similar. The researchers conclude that this could be because critical thinking "is a process that occurs over time and may only be begun in undergraduate education" (Zygmont & Moore Schaefer, 2006, p. 26). As well, they identify that faculty who are not skilled in critical thinking may be an impediment to student learning of critical thinking.

### *Critical Thinking Barriers and Recommendations*

In an article by Walsh and Seldomridge (2006a), barriers to critical thinking and recommendations for faculty were explored. One significant barrier facing faculty is limited class time and increased class size. A result of the limited time factor is few discussions relating to material because it inhibits covering all the material. Material not

covered may not be fully understood by students and must be mastered independently. Instructors find it unrealistic to assess critical thinking through written assignments because of the large class size. Multiple-choice exams focus on recall, and short answer becomes overwhelming due to class size. A second barrier identified was classroom technology that doesn't provide students with critical thinking skills because of the passive role of student participation.

The authors questioned whether critical thinking would be more evident in a clinical setting or if nursing students are "becoming savvy about nursing procedures and culture" (Walsh & Seldomridge, 2006a, p. 215). They identify that activities such as care plans that had previously given some insight into students' critical thinking ability have now gone to standardized care plans. Walsh and Seldomridge (2006a) identify that faculty look for independence in students at the same time they remind them that they are guests of their clinical institution. They caution that "it may be possible for students to successfully complete a clinical course by not acting independently, by following directions, and by not rocking the boat" (Walsh & Seldomridge, 2006a, p. 216).

Walsh and Seldomridge (2006a) have found that standardized instruments utilized to measure critical thinking and education strategies to increase critical thinking have very little basis. They recommend fostering problem solving, decision making, and diagnostic reasoning within nursing students. They recommend that instructors teach by principles through role modeling and challenging students to use complex reasoning by applying the principles. The result is student engagement in higher-level thinking.

### *Critical Thinking in Practice*

In a study conducted by Eisenhauer, Hurley, and Dolan (2007), nurses were shown to utilize thinking while administering medications. Participants were 40 nurses

practicing in various inpatient settings. Through semi-structured interview and real-time tape recordings they documented their thinking processes. Findings of the study indicated that nurses utilized critical thinking for 10 different categories. First, they analyzed situations and sought validation or a solution while communicating with a pharmacist or physician. Secondly, nurses integrated their knowledge of patient's lab values and patient responses with their experience to determine changes in drug dosages or timing.

A third finding revealed that "checking was a distinctive part of nurses thinking before, during and after medication administration" (Eisenhauer et al., 2007, p. 84), including correctness and validity of the orders. Additional findings indicated that critical thinking in nurses included assessment, evaluation, teaching, side effects, drug administration, working around hospital protocols in emergency situations, and anticipatory problem solving. Eisenhauer et al. conclude that this research illustrates "highly complex thinking and application of knowledge used by nurses" (p. 86).

According to Erickson-Owens and Powell Kennedy (2001), evidence-based practice (EBP) is a shift in healthcare that involves blending the current best evidence with clinical expertise. Healthcare is utilizing evidence-based practice as a way of meeting quality patient outcomes. Fineout-Overhold, Melnyk, and Schultz (2005) suggest that in order for baccalaureate nursing programs to rapidly accelerate the EBP paradigm shift, there must be a change in the teaching methods. They offered several suggestions, such as teaching research and clinical courses that emphasize EBP knowledge and skills and developing testing and actualization of EBP implementation models. Finally, baccalaureate nursing programs must use EBP mentors within clinical settings. Burns and Foley (2005) conducted some initial research that identified the

essential characteristics of evidence-based practice and implemented them into the freshman-level curriculum. They found this to be successful in teaching basic concepts of evidence-based practice, but additional research is needed.

According to Youngblut and Brooten (2001), in order for nurse educators to teach evidenced-based practice, they cannot rely on textbooks for their content and assignments. It is important for educators to incorporate current research into their readings. Youngblut and Brooten emphasize that "preparing students for evidence-based practice also requires educators to foster a spirit of inquiry, critical thinking, and a philosophy of lifelong learning" (p. 474).

## Summary

In this chapter Benner's model of Novice to Expert and its application to this study were presented. Also, current literature including definitions, attributes, enhancing critical thinking of students through faculty, and barriers and recommendations were explored. Scheckel and Ironside (2006) point out, "researchers have not provided consistent evidence for ways to conceptualize, teach, measure or evaluate critical thinking" (p. 159). Critical thinking can be explored through interaction and dialogue within group sharing. By reflecting upon and sharing experiences, nursing students can move from knowledge of nursing to being able to think critically when confronted with a clinical problem. Instructors are teaching critical thinking, but are students learning? Do students even identify with the concept?

# CHAPTER III

# METHODOLOGY

## Introduction

In this chapter study design, a description of the sampling plan, the data collection instrument, the data collection procedures, and data analysis strategies will be described. The purpose of this study was to identify the critical thinking disposition of baccalaureate degree nursing students. The critical thinking disposition of first semester baccalaureate degree nursing students to final semester baccalaureate degree nursing students is compared to determine if there is an acquisition of critical thinking skills. Selected demographic variables are compared to determine if a correlational advantage exists.

## Research Design

The research design for this study was a descriptive, comparative design. The descriptive design was used to describe the critical thinking disposition of first and final semester baccalaureate degree nursing students. The comparative design was utilized to compare the critical thinking disposition of first semester to final semester baccalaureate degree nursing students.

## Population, Sample and Setting

The target population for this study was nursing students enrolled in bachelor of science in nursing (BSN) programs in the Midwest. The nursing program will graduate nursing students who will be eligible to write the National Council Licensure Examination

(NCLEX). The convenience sample consisted of first semester baccalaureate degree nursing students and final semester baccalaureate degree nursing students.

## Data Collection Instrument

A demographic tool (Appendix B) was administered to obtain data concerning selected variables, such as grade point average (GPA), age, educational program, academic level, and previous higher education. The collection of this information resulted in an effort to correlate variables such as GPA, age, educational program, academic level, and previous higher education with critical thinking characteristics. The purpose was to determine if independent variables have an effect on students' critical thinking disposition.

The California Critical Thinking Disposition Inventory (CCTDI) was used to analyze the critical thinking disposition of the students in the sample. It was selected because of the comprehensive analysis of characteristics crucial to critical thinking.

> The CCTDI contains 75 Likert-style items and reports eight scores—scores on inquisitiveness, open-mindedness, systematicity, analyticity, truth-seeking, critical thinking self-confidence and maturity, and then an overall score of critical thinking disposition that is derived from mathematically equal contributions from each scale. A score of 30 and below on any of the scales indicates consistent opposition or weakness in relation to the given attribute or characteristic, a score of 40 indicates minimal endorsement on average, and scores above 50 indicate consistent endorsement or strength of the given characteristic (Facione, Facione, & Gainen, 1995, p. 4).

The seven subscales of the CCTDI are discipline neutral and can easily be interpreted individually. The inquisitiveness subscale measures the intellectual curiosity and desire for learning even though the application of knowledge is not easily apparent. "A deficit in inquisitiveness would signal a fundamental limitation of one's potential to develop expert knowledge and clinical practice ability" (Facione et al., 1994, p. 346).

Systematicity measures the tendency for organized, systematic, attentive, and diligent inquiry. "Organized approaches are an indispensable part of competent clinical practice and deficits in systematicity might particularly predispose a nurse to the possibility of negligence in practice" (Facione et al., 1994, p. 346). The analyticity subscale concentrates on the application of reasoning and use of evidence for problem solving with anticipation of difficulties and being aware of the need for intervention. This analyticity allows the nurse to link the clinical picture with the theory foundations of practice.

The truth-seeking subscale focuses on the disposition of seeking the best knowledge in a given context, question asking, and objective inquiry without preconceived opinions. Open-mindedness is the ability to be tolerant of divergent views while being sensitive to one's own bias. The self-confidence subscale is a measurement of the trust one places in one's own processes of reasoning and judgments, and maturity can be described as one with judicious decision-making. Maturity can be described as a nurse "who approaches problems, inquiry and decision making with a sense that some problems are necessarily ill-structured, some situations admit more than one plausible option, and many times judgments must be made based on standards, contexts, and evidence that preclude certainty" (Facione et al., 1994, p. 346-7). This component has significant attributes of ethical decision-making.

Critical thinking disposition of students was evaluated using the California Critical Thinking Disposition Inventory (CCTDI). Demographic information about the participants was obtained in an effort to correlate data such as age, grade point average, educational program, academic level and previous higher education.

## Reliability and Validity

The reliability and validity of the CCTDI has been well established. In a recent study conducted by Walsh, Seldomridge, and Badros (2007) the CCTDI indicated a Cronbach's alpha of .91 was achieved with results consistent with Facione (1994) coefficient alpha of .90 and .91.

## Data Collection Procedures

This study took place at a Midwestern institution of higher learning. Written permission was obtained from the College of Nursing and each participant in this study. Students were contacted through the College of Nursing. The investigator approached the clinical instructors from the College of Nursing to explain the study and obtain permission to approach students at the institution. The sample selection was a matter of convenience in the school of the author of this study. All students within each cohort roster were included in the study.

Students were provided with the Demographic Profile Data Sheet) and the California Critical Thinking Disposition Inventory (CCTDI). Completion of the CCTDI was at their convenience, and students returned the completed packets to the researcher during a follow-up visit to the class session or to a designated drop-off point

in the College of Nursing. Participants were assured that their responses would be treated in the strictest of confidence and analyzed in aggregate form.

## Protection of Human Participants

This researcher received approval to conduct the study by the University of Wisconsin Oshkosh Institutional Review Board (IRB) (Appendix C) and the approval of the College of Nursing prior to data collection. Student participation in the study was voluntary. An informational cover letter (Appendix D) was distributed to each participant, explaining the study. At the time of administration of the tool, each participant was asked to sign an informed consent form (Appendix E) agreeing to participate in the study. All findings in the study were summarized and reported so that no one individual could be identified and all information has been kept confidential with only the investigator having access to the forms.

## Study Limitations

1. This study took place in a Midwestern school of nursing and generalizations were limited due to the geographic location.
2. The reliance on a small sample, relative to the total population, from one educational institution.
3. The sample is predominantly White American and female. The lack of a gender and culturally diverse group limits the generalization of findings to the target population.
4. Students' perceptions of critical thinking are highly personal opinions.
5. Two distinctly different groups were analyzed.

## Data Analysis

Data answer sheets were mailed to Insight Assessment at The California Academic Press in Millbrae, California for statistical processing of the CCTDI. This provided the researcher with means scores on each of the seven scales: inquisitiveness, open-mindedness, systematicity, analyticity, truth-seeking, critical thinking self-confidence and maturity and then an overall composite score of critical thinking disposition that is derived from mathematically equal contributions from each scale. The second part of the statistical analysis involved entering the mean scores from the seven subscales, the comprehensive score of the CCTDI, and data from the Demographic Profile Data Sheet into the Statistical Package for the Social Sciences (SPSS) for statistical processing.

The quantitative data were analyzed with SPSS using descriptive statistics. An independent *t*-test was used to compare the mean scores on the CCTDI between the two groups. Statistical significance was set at the $p < .05$ levels. The relationship between selected demographic characteristics of the students was analyzed with a linear regression analysis for possible correlation of a positive disposition toward critical thinking.

## Summary

In this chapter the descriptive, comparative research design selected for this study, a description of the target population, sample, sampling plan, and setting were presented. The data collection instruments, reliability and validity, method of data collection, and limitations were also presented. Finally, a brief explanation of the plan for the protection of human rights and anonymity of participants was provided.

# CHAPTER IV

# FINDINGS AND DISCUSSION

This study examined the critical thinking disposition of baccalaureate degree nursing (BSN) students utilizing a descriptive, comparative design. Selected demographic variables were correlated with findings from the California Critical Thinking Disposition Inventory (CCTDI). A descriptive profile of the demographic data, a characterization of the sample, and relationships among study variables is presented followed by a presentation of the findings and discussion related to the research questions.

The sample consisted of 64 students (34 Sophomore II students and 30 Senior II students) in the nursing program. Of the possible 69 Senior II baccalaureate degree nursing students, 43.5% participated (*n*=30). Of the 74 Sophomore II baccalaureate degree nursing students, 46% participated (*n*=34).

## Demographic Characteristics of the Sample

Table 1 summarizes the demographic data concerning the age of the participants. The majority of the students were White (93.8%) and ranged in age from 19-48 with a mean age for both groups of 22 (Sophomore II *M* = 20.97, Senior II *M* = 23.16). Students under age 21 (75.7%) comprised the majority of the Sophomore II group and the majority of the Senior II group was between the ages of 22-24 (75%).

Table 1

*Age*

| *n* = 64 | Sophomore II | | Senior II | |
|---|---|---|---|---|
| Age | Frequency | Percent | Frequency | Percent |
| 19 | 8 | 24.2% | | |
| 20 | 8 | 24.2% | | |
| 21 | 9 | 27.3% | 1 | 3.6% |
| 22 | | | 9 | 32.1% |
| 23 | 1 | 3.0% | 5 | 17.9% |
| 24 | | | 7 | 25.0% |
| 25 | 3 | 9.0% | | |
| 26 | 1 | 3.0% | | |
| 27 | | | 1 | 3.6% |
| 28 | 1 | 3.0% | 2 | 7.1% |
| 29 | | | 1 | 3.6% |
| 30 | 2 | 6.0% | | |
| 33 | | | 1 | 3.6% |
| 48 | | | 1 | 3.6% |
| Missing | 1 | 3.0% | 2 | 7.1% |

Student grade point average (GPA) ranged from 3.0 – 4.0 with an overall mean of 3.53 (Sophomore II *M* = 3.56, Senior II *M* = 3.5). Refer to Appendix A for the College of Nursing GPA Calculation. There was little variability between the GPA of the two groups, with all students above a 3.0. Of the 64 participants in this study, 47 had no previous college or university education. Table 2 shows that of the 34 Sophomore II

students, 18.1% had a Bachelors degree prior to entering the BSN program compared to 10.7% of the Senior II students. The Senior II students had 14.3% with an Associate degree and 3.6% with another nursing degree prior to entering the BSN program.

Five participants indicated no previous experience in the health care field. Forty participants were currently employed as certified nursing assistants. Many students had some prior experiences in the health care field, such as emergency medical technician, anesthesia technician, optician, military hospital corpsman, home health aide, operating room technician, and therapy assistant. Nine students had some experience as a volunteer in a hospital or nursing home setting. There were no licensed practical nurses.

Table 2

*Years of Prior Higher Education*

| *n* = 64 | Sophomore II | | Senior II | |
|---|---|---|---|---|
| Additional Education | Frequency | Percent | Frequency | Percent |
| Bachelors | 6 | 18.1% | 3 | 10.7% |
| Other Nursing | | | 1 | 3.6% |
| Other – Associates Degree | | | 4 | 14.3% |
| Missing | 1 | | 2 | |

On an interesting note, the majority of students plan on pursuing additional education after the completion of their baccalaureate nursing degree (Sophomore II - 51.5%, Senior II – 60.7%). Another interesting point is that very few have indicated no plans to pursue additional education (Sophomore II—9.1%, Senior II—7.1%) and some

remain undecided (Sophomore II—39.4%, Senior II—32.1%). As seen in Table 3, intentions between the two groups are very similar.

Table 3

*Intention to Pursue Additional Education*

| *n* = 64 | Sophomore II | | Senior II | |
|---|---|---|---|---|
| Intention to Pursue Additional Education | Frequency | Percentage | Frequency | Percentage |
| Yes | 17 | 51.5% | 17 | 60.7% |
| No | 3 | 9.1% | 2 | 7.1% |
| Perhaps | 13 | 39.4% | 9 | 32.1% |
| Missing Data | 1 | 3.0% | 2 | 7.1% |

All participants in this study indicate that they are familiar with the concept of critical thinking. Table 4 shows that nearly all of the Sophomore II students (93.9%) and all of the Senior II students (100%) have recognized critical thinking concepts within faculty discussion in the classroom or clinical site. Interestingly, not all of the Sophomore II students (93.9%) feel that they are yet practicing critical thinking in the classroom or clinical site, but 100% Senior II students who are ready to exit the program feel that they actively practice critical thinking in the classroom and clinical site.

Table 4

*Critical Thinking Concepts*

| *n* = 64 | Sophomore II | | Senior II | |
|---|---|---|---|---|
| Critical Thinking | Frequency | Percent | Frequency | Percent |
| Faculty Discussion | | | | |
| Yes | 31 | 93.9% | 28 | 100% |
| No | 2 | 6.0% | | |
| Personal Knowledge | | | | |
| Yes | 33 | 100% | 28 | 100% |
| No | | | | |
| Practice in Classroom or Clinical | | | | |
| Yes | 31 | 93.9% | 28 | 100% |
| No | 2 | 6.0% | | |
| Missing Data | 1 | 3.0% | 2 | 7.1% |

## Descriptive Statistics for Instrument

The instrument utilized in this study was the California Critical Thinking Disposition Inventory (CCTDI), which gives a measurement of seven individual characteristics and an overall composite score. Results show an increase in the mean disposition of the overall composite score between the Sophomore II students ($M$ = 311.15) and Senior II students ($M$ = 325.03). As seen in Table 5, there was also an increase in mean scores from Sophomore II to Senior II of each individual subscale. However, $t$-test results in Table 6 indicate that there is not a statistically significant difference in the critical thinking disposition between Sophomore II students and Senior II students $t(62)=1.96$, *ns*, $d=.50$.

Table 5

*Descriptive Statistics: CCTDI by Group*

| Variable | *n* | Mean | Median | TrMean | StDev | SE Mean | Minimum | Maximum |
|---|---|---|---|---|---|---|---|---|
| Truth-seeking | | | | | | | | |
| Sophomore II | 34 | 40.529 | 40.50 | 40.200 | 5.690 | 0.976 | 32 | 54 |
| Senior II | 30 | 41.670 | 42.50 | 42.000 | 5.900 | 1.080 | 36 | 50 |
| Open-mindedness | | | | | | | | |
| Sophomore II | 34 | 44.940 | 46.50 | 45.000 | 6.070 | 1.040 | 33 | 57 |
| Senior II | 30 | 46.070 | 47.00 | 46.380 | 5.850 | 1.070 | 27 | 56 |
| Analyticity | | | | | | | | |
| Sophomore II | 34 | 44.294 | 45.00 | 44.400 | 5.627 | 0.965 | 28 | 58 |
| Senior II | 30 | 45.367 | 45.00 | 45.346 | 4.398 | 0.803 | 35 | 56 |
| Systematicity | | | | | | | | |
| Sophomore II | 34 | 44.030 | 44.00 | 44.430 | 6.350 | 1.090 | 26 | 53 |
| Senior II | 30 | 46.530 | 45.50 | 46.380 | 5.590 | 1.020 | 37 | 60 |
| Confidence | | | | | | | | |
| Sophomore II | 34 | 43.790 | 43.50 | 43.970 | 5.950 | 1.020 | 30 | 54 |
| Senior II | 30 | 47.400 | 48.00 | 47.346 | 4.538 | 0.829 | 39 | 57 |
| Inquisitiveness | | | | | | | | |
| Sophomore II | 34 | 47.971 | 49.00 | 48.367 | 5.507 | 0.945 | 34 | 56 |
| Senior II | 30 | 50.933 | 52.00 | 51.231 | 4.975 | 0.908 | 37 | 58 |
| Maturity | | | | | | | | |
| Sophomore II | 34 | 47.971 | 49.00 | 48.367 | 5.507 | 1.150 | 31 | 56 |
| Senior II | 30 | 50.933 | 52.00 | 51.231 | 4.975 | 0.838 | 37 | 56 |
| Composite | | | | | | | | |
| Sophomore II | 34 | 311.150 | 312.00 | 312.200 | 29.650 | 5.090 | 239 | 363 |
| Senior II | 30 | 325.300 | 327.00 | 324.920 | 26.800 | 4.890 | 273 | 379 |

Table 6

*T-test for Equality of Means*

| | *t* | *df* | Sig. (2-tailed) | Mean Difference | *d* = |
|---|---|---|---|---|---|
| Truth-seeking | 0.649 | 62 | .519 | 0.937 | |
| Open-mindedness | 0.972 | 62 | .355 | 1.450 | |
| Analyticity | 0.893 | 62 | .375 | 1.139 | |
| Systematicity | 1.330 | 62 | .184 | 2.003 | |
| CT Confidence | 2.742 | 62 | .008 | 3.672 | .70 |
| Inquisitiveness | 2.228 | 62 | .029 | 2.929 | .57 |
| Maturity | 1.198 | 62 | .235 | 1.745 | |
| Composite | 1.990 | 62 | .055 | 13.886 | .50 |

Results of the critical thinking self-confidence and inquisitiveness subscales in Table 6 indicated a significant difference between the Sophomore II and Senior II students. The critical thinking self-confidence subscale indicated a mean difference of 3.67, $t(62)=2.74$, $p<.05$, $d=.70$. The inquisitiveness subscale indicated a mean difference of 2.93, $t(62)=2.23$, $p<.05$, $d=.57$. Despite the inability of the CCTDI to show a significant statistical increase in disposition toward critical thinking, there were some significant statistical increases in two of the individual subscales important to critical thinking.

In determining the relationship between critical thinking disposition of nursing students and selected demographic variables, i.e., GPA, age, and previous years of higher education, a linear regression analysis was used. No relationship could be found between the critical thinking disposition of nursing students and the selected

demographics with the exception of age. Age was found to significantly predict a positive disposition towards critical thinking $R^2$ = .07, $F(1,59) = 4.13$, $p<.05$, with an effect size of $b = 6.53$, $F(60) = 2.03$, $p<.05$.

Due to the proprietarily nature of the selected instrument (CCTDI), the researcher was unable to perform item analysis on specific subscales. Rather, the researcher sought to determine whether there were any differences between the Sophomore II and Senior II students specific to questions on the CCTDI instrument. A *t*-test of individual questions was run to determine the likelihood of certain qualities in a statement. Results between the Sophomore II and Senior II students varied little with the exception of several specific questions, which had significant statistical increases. When students were asked if "Others admire my intellectual curiosity and inquisitiveness" (Facione & Facione, 1992, p. 4), results indicated a significant difference between Sophomore II and Senior II students ($t[62]=4.14$, $p<.05$, $d=1.05$). Senior II students felt more strongly that "Open-mindedness has limits when it comes to right and wrong" (Facione & Facione, p. 4), $t(62)=2.02$, $p<.05$, $d=..51$. Many identified with "Being inquisitive is one of my strong points" (Facione & Facione, p. 5), but Senior II students had a stronger identification with this concept $t(62)=2.02$, $p<.05$, $d=.51$. Senior II students had a significant strength when asked, "I really enjoy trying to figure out how things work" (Facione & Facione, p. 6) ($t[62]=2.42$, $p<.05$, $d=.61$). Many Senior II students had significant strengths in organization, as expressed by: "I am known for approaching complex problems in an orderly way" (Facione & Facione, p. 6) ($t[62]=2.09$, $p<.05$, $d=.53$).

## Summary

This chapter presented the results of a study undertaken to determine the critical thinking disposition of baccalaureate degree nursing students in the first and final semester of their program. The findings showed that there is no significant statistical difference in the critical thinking disposition between the two groups of nursing students who participated in this study. However, there was an increase in the mean disposition between the Sophomore II and Senior II students. As well, apart from age, this researcher could not correlate the critical thinking disposition with the selected demographic variables chosen for this study. The following chapter will be a discussion on these findings and the recommendations for further studies.

# CHAPTER V

# SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

## Conclusions and Recommendations

The demonstration of critical thinking is a universally expected ability of nurses entering the workforce. (National League for Nursing, 2005, National League for Nursing Accrediting Commission, 2006, American Association of Colleges of Nursing, 2008). Therefore, nursing education has attempted to utilize multiple classroom strategies to address the issue of the development of critical thinking (Anderson & Tredway, 2009; Fopma-Loy & Ulrich, 1999; Hoffman, 2008; Toofany, 2008; Vacek, 2009; Walsh & Seldomridge, 2006a). Research is divided as to whether there is an increase in critical thinking from program entry to exit, (Thompson & Rebeschi, 1999) or no consistent statistical results indicating an overall increase in critical thinking dispositions throughout the nursing program (Stewart & Dempsey, 2005). The challenge nurse educators face is whether current curriculums fail to teach critical thinking, or do the instruments that are currently available for measuring critical thinking provide an accurate evaluation of the nursing educational process?

The purpose of this study was to identify the critical thinking disposition of baccalaureate degree nursing students. Also, this study sought to compare the disposition of first semester baccalaureate degree nursing students with final semester baccalaureate degree nursing students and to correlate student critical thinking disposition with selected demographic variables. This chapter discusses the findings of the study, conclusions drawn from these findings and finally, recommendations for further study.

## Research Findings

### *Research Question One*

What are the differences in the critical thinking disposition between first semester in comparison to final semester baccalaureate degree nursing students? As seen in Figure 1, overall the Senior II students had a slightly higher critical thinking disposition than the Sophomore II students in each of the seven subscales. Scores ranging between 30 down to 10 indicate an increasingly negative disposition toward critical thinking. Scores ranging between 40 up to 60 indicate an increasingly positive disposition toward critical thinking. Finally, scores between 30 and 40 indicate ambivalence toward the disposition of critical thinking, meaning there is no clear expression of a positive or negative disposition (*Insight Assessment*, 1992).

Figure 2 shows the overall composite score of critical thinking disposition. The composite score is a total of the combined subscale scores. The results of the overall composite score indicates that the Senior II students scored higher than the Sophomore II students, just as expected from the subscale results. Similarly to the individual results of a score, less than 40 indicates a weakness in critical thinking, an overall CCTDI score of less than 280 indicates an overall deficiency in the disposition toward critical thinking. Conversely, an overall score of 350 or more represents a general indication of across the board strength in the disposition toward critical thinking (*Insight Assessment*, 1992).

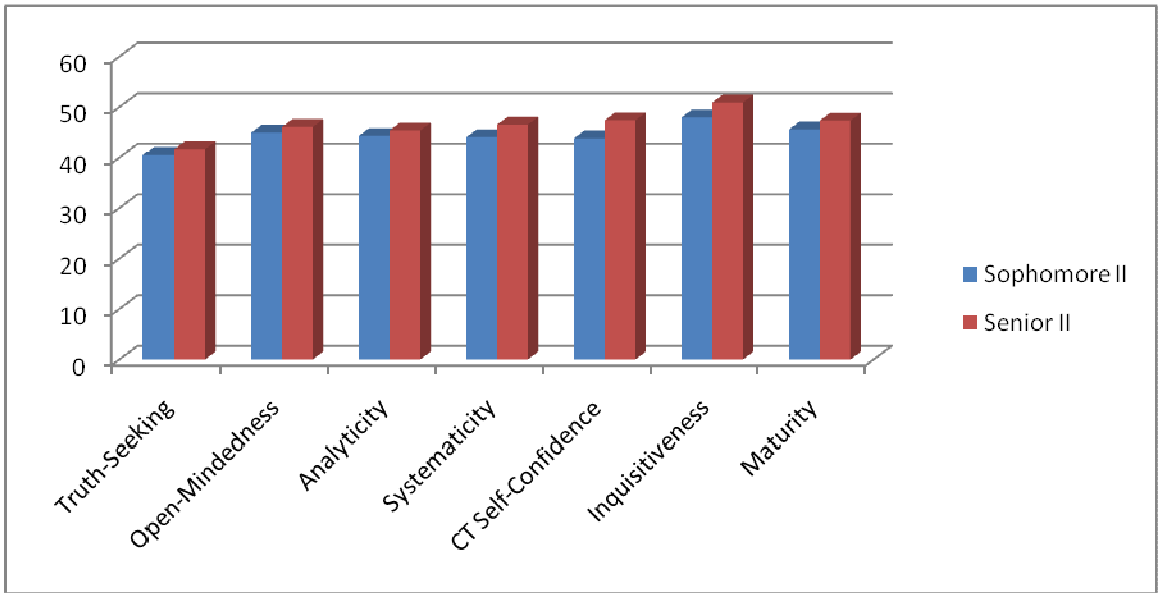


*Figure 1.* Subscale critical thinking disposition.

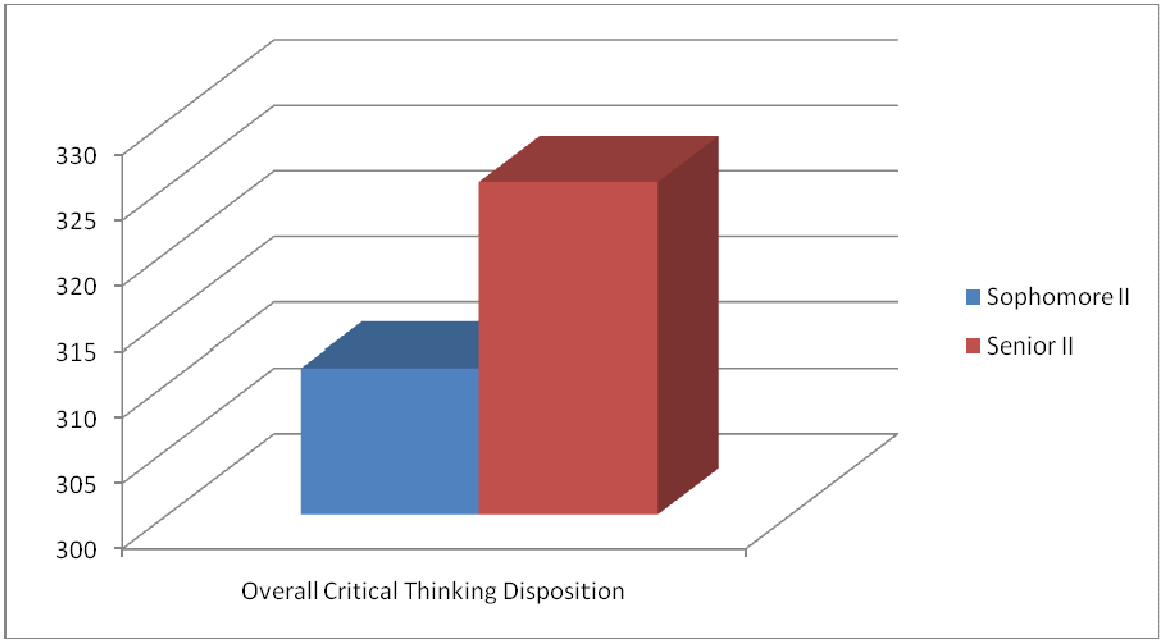


*Figure 2.* Overall critical thinking disposition.

Based on comparisons from *Insight Assessment* (1992), the scores from this sample are slightly above the international average. The international sample, from students across the U.S. and Canada (*n*=276), of CCTDI results indicated an overall mean score of 304, with 22% falling below 280. As seen in Figure 3, the Senior II students are above the international average.

Also, as seen in Figure 4, the individual subscale scores from this study are also slightly above the international average for both the Sophomore II and Senior II students. The percentages of the international sample below 40 are: Truth-seeking 60%, Open-mindedness 15%, Analyticity 23%, Systematicity 44%, CT Self-confidence 25%, Inquisitiveness 14%, and Maturity 17% (Insight Assessment, 1992).

*Research Question Two*

Does a relationship exist between critical thinking disposition of nursing students and selected demographic variables, i.e., GPA, age, academic level, and previous higher education?

No significant differences were found to correlate GPA with critical thinking disposition. In this study, the student grade point average (GPA) ranged from 3.0 – 4.0 with a mean of 3.53 The Sophomore II students reported a minimally higher GPA (*M* = 3.56) than did the Senior II students (*M* = 3.5). There was little variability between the GPA frequencies of the two groups with all students above a 3.0. Refer to Appendix A for the College of Nursing GPA Calculation.

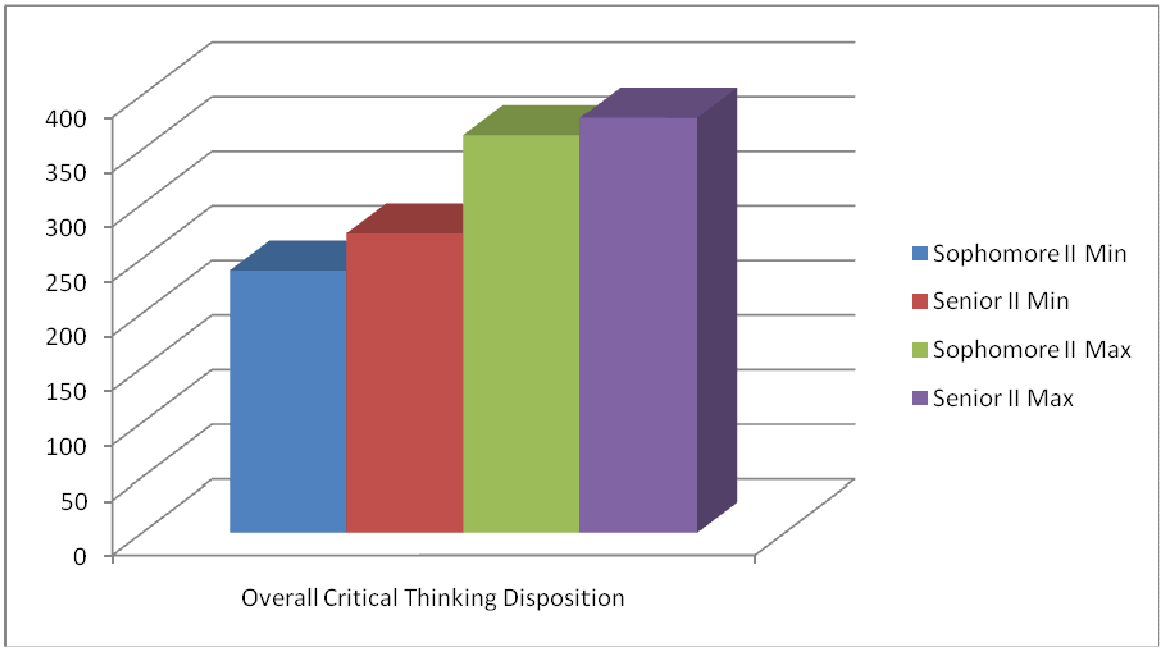


*Figure 3.* Student minimum and maximum scores on CCTDI overall disposition.

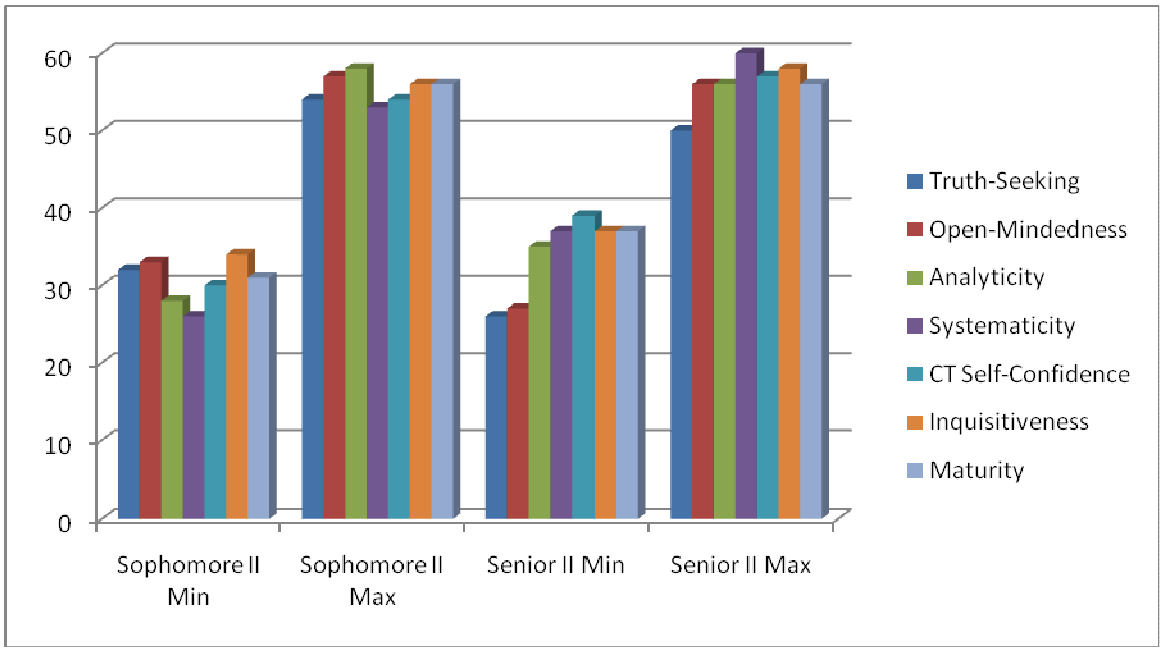


*Figure 4.* Student minimum and maximum scores on CCTDI subscales.

Age was the only variable found to have significant correlation with a positive disposition toward critical thinking. With college students who are older, many have obtained formal education beyond high school and/or are retraining for a career change. The accumulation of life experience may increase the complexity of thoughts. Some interesting questions arise; do older nursing students bring pre-existing qualities or attributes that lend a positive disposition toward critical thinking? Could the younger nursing student be actively taught these characteristics throughout the nursing curriculum to advance their skills? There were no findings in the literature regarding relationship between age and critical thinking characteristics.

Upon initiation of this study, it was assumed that prior higher education would yield a positive disposition toward critical thinking, but results indicated otherwise. Results of the current study indicated no increase in positive disposition. Fourteen students who had previous higher education participated in this study, but did not show a positive disposition over those who did not. As well, those with experience within the healthcare field also showed no positive disposition toward critical thinking than those with no healthcare experience.

As seen in Figure 5, a nurse moves through the five stages from novice to expert, based on Benner's theory. As a result of this study, nursing theory can be inferred that the student nurse is just beginning to develop the attributes of critical thinking. It is the theory of this researcher that nursing students will begin as a novice and progress to the advanced beginner stage. They accomplish this through nursing faculty and exposure to nursing theory. Nursing students will show little to no improvement in critical thinking skills in the timeframe of their nursing education. It is the theory of this researcher that once students have graduated and are employed as a

nurse they begin to have clinical experiences that shape and mature their thinking. This theory prophesizes that the progression of critical thinking to the competent stage begins to develop when the nurse has been practicing for one year, progression to the proficient stage at three years and five years to the expert stage. Figure 5 describes the elements nurses utilize to develop critical thinking in their practice. Nursing education provides the foundation of nursing practice that fosters the disposition towards critical thinking.

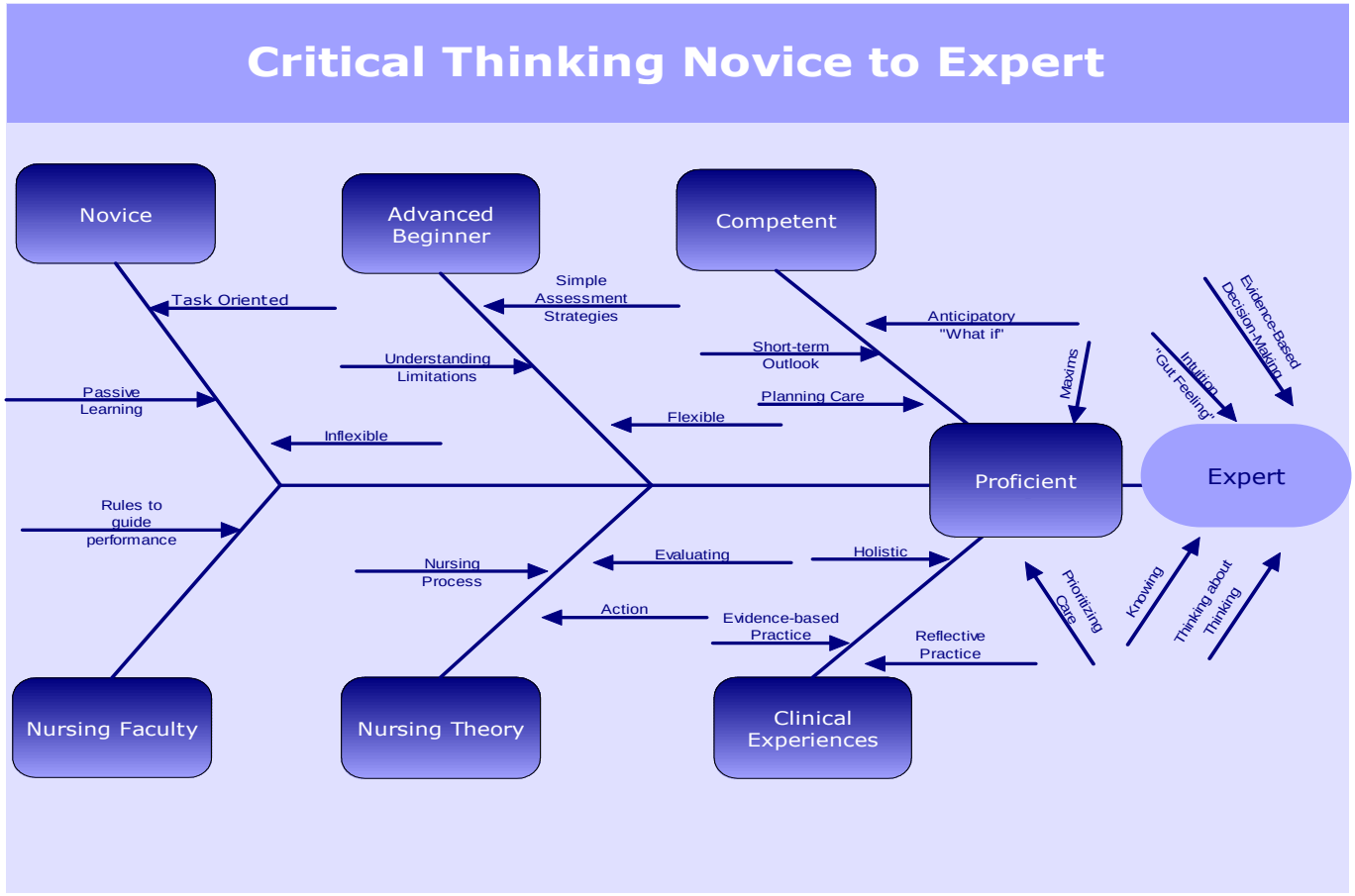


*Figure 5.* Critical thinking novice to expert.

## Conclusions

Critical thinking remains an important outcome of the nursing curriculum that nursing education must not only find a way to teach, but also measure and evaluate. In the evaluation of competence of nurses entering the workforce, employers not only require the nurse's ability to perform technical skills, but also felt that the quality of a nurse's ability to think critically is vitally important (Facione et al., 1995). As healthcare strives to implement evidence-based outcomes, nursing students must master critical thinking. According to Profetto-McGrath (2005), the development of evidence-based nursing practice has one vital element, critical thinking. "The ability to think critically builds the foundation for clinical decision making and assists students and nurses in thinking beyond routines and protocols" (Profetto-McGrath, p. 366).

With critical thinking such an important attribute necessary to nursing, implementation of various teaching methods fostering the development of critical thinking is a necessary part of a student's classroom and clinical experiences. Myrick and Yonge (2002a), found several preceptor behaviors that are integral to promoting critical thinking in students. They found that role modeling provides the opportunity for the student to transform theoretical knowledge into learning both intellectual and psychomotor disposition important to competent care. A second attribute in the student preceptor relationship is facilitation. This allows a student to find his or her own strengths as they develop. Facilitators guide and assist rather than direct the student's actions. A final characteristic that is necessary for students to master is prioritization. Preceptors must help a student to organize their tasks and critical situations that arise in practice in order for the student nurse to accomplish the necessary tasks while providing safe care.

In a study conducted by Myrick and Yonge (2002b), it was found that preceptor questioning is a fundamental attribute to student learning. They established that the "practice setting is an environment rich in opportunity for enabling critical thinking through the use of questions" (Myrick & Yonge, p. 176). During clinical practice, preceptors are in a "prime position to challenge the way preceptees think, encourage them to justify or clarify their assertions, promote the generation of original ideas, explanations, or solutions to patient problems, provide mental and emotional tools to help solve dilemmas" (Myrick & Yonge, p. 176).

There are many barriers to the facilitation of critical thinking within nursing education, such as time constraints (Shell, 2001, Mangena & Chabeli, 2005). Overcoming these barriers is worth the effort. With critical thinking such an importation expectation in nursing, it is critical that nursing education overcome these barriers and find a way to teach, measure, and evaluate critical thinking in nursing students.

Nursing educators have a valuable resource available to assist with the development of baccalaureate prepared nurses to provide safe, quality care. An organization, the Quality and Safety Education for Nurses (QSEN) was founded in 2005 and is funded by the Robert Wood Johnson Foundation. The organization is focused on developing nurses who "have the knowledge, skills and attitudes necessary to continuously improve the quality and safety of the healthcare systems within which they work" (Quality and Safety Education for Nurses [QSEN], 2009).

Baccalaureate programs who partner with QSEN develop nursing graduates who have "competencies in patient-centered care, teamwork and collaboration, evidence-based practice, quality improvement, safety, and informatics" (QSEN, 2009). Fergesen and Day (2005) explored the concept of evidence-based nursing education and denote

that nurse educators assume nursing education itself is evidence based. "Nursing education has a body of knowledge on which nurse educator's base teaching, educational strategies, and curricular designs, but most of this knowledge is tacit, experiential, and based on practice" (Fergesen & Day, 2005, p. 107). Fergesen and Day recommend additional research to demonstrate the effectiveness of teaching approaches and strategies to add to the inferred knowledge foundation of nursing education strategies. Fergesen and Day feel that until this research is complete, only then will nursing education be research based.

## Recommendations

1. Nursing must integrate critical thinking into the nursing curriculum and clinical experiences.
2. Nursing must find effective methods to measure and evaluate nursing students' critical thinking.
3. Baccalaureate degree nursing education should utilize the quality and safety in education competencies as a foundation in the undergraduate nursing curriculum.
4. It would be valuable to conduct a longitudinal evaluation from the Sophomore II students in this study to evaluate changes in critical thinking skills.
5. It would be valuable to conduct a longitudinal evaluation of the students in this study at incremental years after graduation to evaluate changes in critical thinking skills once graduates are exposed to the practice environment.

## Summary

This study identified the critical thinking disposition of nursing students entering the nursing program and about to enter the profession of nursing. It was the hope of this investigator that there would be a statistically significant difference in the critical thinking disposition of graduates from students entering the nursing program, although this did not occur. On a brighter note, this study did prove that overall students did have an increase in their critical thinking disposition as evidenced by the increase in their mean scores. Further research is needed to explore critical thinking and the ability of nursing curriculums to teach, measure, and evaluate this complex concept.

# APPENDIX A

## College of Nursing Grade Point Calculation

Basic Grading Scale **Per credit**

| | | |
|---|---|---|
| A | = | 4.00 |
| A - | = | 3.67 |
| AB | = | 3.50 |
| B + | = | 3.33 |
| B | = | 3.00 |
| B - | = | 2.67 |
| BC | = | 2.50 |
| C + | = | 2.33 |
| C | = | 2.00 |
| C - | = | 1.67 |
| CD | = | 1.50 |
| D + | = | 1.33 |
| D | = | 2.00 |
| D - | = | 0.67 |

# APPENDIX B

## Critical Thinking Student Demographic Questionnaire

Critical Thinking Student Demographic Sheet

Complete the following demographic questions by filling in the blank that best represents you. Remember there are no right or wrong answers.

Information about yourself

1. What is your current age? _____

2. Sex
   a. _____ Male
   b. _____ Female

3. Marital Status:
   a. _____ Single
   b. _____ Married
   c. _____ Divorced
   d. _____ Separated
   e. _____ Widowed

4. Children
   a. _____ 0
   b. _____ 1
   c. _____ 2
   d. _____ 3 or more

5. What is your highest educational level prior to entering this baccalaureate degree-nursing program?
   a. _____ G.E.D. General Educational Development
   b. _____ High School Graduate
   c. _____ Bachelor's Degree
   d. _____ Student in another nursing program
   e. _____ Other (Please Indicate)_____

6. What is your educational level now?
   a. _____ First Semester
   b. _____ Final Semester

7. Prior health related occupation:
   a. _____ C.N.A. Certified Nursing Assistant
   b. _____ L.P.N. Licensed Practical Nurse
   c. _____ Preceptor program, internship, externship
   d. _____ Operating Room Technician
   e. _____ E.M.T. Emergency Medical Technician
   f. _____ Volunteer in a Hospital or Nursing Home
   g. _____ Lab, X-Ray, Dietary, Kitchen, Cleaning or Transport
   h. _____ Other (Please Indicate)_____

8. What is your current Nursing grade point average?
    a. _____ 1.00 – 1.99
    b. _____ 2.00 – 2.99
    c. _____ 3.00 – 3.99
    d. _____ 4.00

9. What is your current Non-Nursing grade point average?
    a. _____ 1.00 – 1.99
    b. _____ 2.00 – 2.99
    c. _____ 3.00 – 3.99
    d. _____ 4.00

10. How many hours are you employed per week while you are going to school?
    a. _____ 0
    b. _____ 1-10
    c. _____ 10 – 20
    d. _____ 20 – 30
    e. _____ 30 – 40
    f. _____ 40 or more

11. If working, where do you work?
    a. _____ Hospital
    b. _____ Long-term Care
    c. _____ Clinic
    d. _____ Other (Please State) _____

12. How many hours do you spend on schoolwork per week?
    a. _____ 0
    b. _____ 1-10
    c. _____ 10 – 20
    d. _____ 20 – 30
    e. _____ 30 – 40
    f. _____ 40 or more

13. Have you repeated a clinical practicum or theory course?
    a. _____ Yes
    b. _____ No

14. What type of employment do you anticipate after graduation:
    a. _____ Hospital
    b. _____ Long-term Care
    c. _____ Public Health
    d. _____ Home Health
    e. _____ Clinic
    f. _____ Other (Please State) _____
    g. _____ Undecided

15. When you complete your present educational program, do you plan to pursue another degree in nursing?
    a. _____ Yes
    b. _____ No
    c. _____ Perhaps
    d. _____ Only if required to do so

16. Faculty actively discuss critical thinking within the classroom or clinical site:
    a. _____ Yes
    b. _____ No

17. I know what critical thinking means:
    a. _____ Yes
    b. _____ No

18. I practice critical thinking within the classroom or clinical site:
    a. _____ Yes
    b. _____ No

Thank you for your time and cooperation in completing these questionnaires. If you would like the results of this study, you may contact:

Fay L. Fritsch
Candidate for Master's Degree
College of Nursing
University of Wisconsin, Oshkosh
Oshkosh, WI 54901

# APPENDIX C

University of Wisconsin Oshkosh IRB Permission Letter

October 27, 2008

Ms. Fay Fritsch
6138 Arabian Way
Two Rivers, WI 54241

Dear Ms. Fritsch:

On behalf of the UW Oshkosh Institutional Review Board for Protection of Human Participants (IRB), I am pleased to inform you that your application has been approved for the following research: Critical Thinking: Student Dispositions.

Your research has been categorized as EXEMPT. This means you will not be required to obtain signed consent. However, unless your research involves **only** the collection or study of existing data, documents, or records, you must provide each participant with a summary of your research that contains all of the elements of an Informed Consent document, as described in the IRB application material. Permitting the participant, or parent/legal representative, to make a fully informed decision to participate in a research activity avoids potentially inequitable or coercive conditions of human participation and assures the voluntary nature of participant involvement.

Please note that it is the principal investigator's responsibility to promptly report to the IRB Committee any changes in the research project, whether these changes occur prior to undertaking, or during the research. In addition, if harm or discomfort to anyone becomes apparent during the research, the principal investigator must contact the IRB Committee Chairperson. Harm or discomfort includes, but is not limited to, adverse reactions to psychology experiments, biologics, radioisotopes, labeled drugs, or to medical or other devices used. Please contact me if you have any questions (PH# 920/424-7172 or e-mail:rauscher@uwosh.edu).

Sincerely,

Dr. Frances Rauscher
IRB Chair

cc: Suzanne Marnocha
1450

INSTITUTIONAL REVIEW BOARD
UNIVERSITY OF WISCONSIN OSHKOSH • 800 ALGOMA BLVD • OSHKOSH WI 54901
(920) 424-3215 • FAX (920) 424-3221
An Equal Opportunity/Affirmative Action Institution • http://www.uwosh.edu/

APPENDIX D

Informational Cover Letter

November 8, 2008

Dear Participant,

Fay L. Fritsch, R.N., B.S.N, Master's Candidate at the University of Wisconsin College of Nursing is studying "Critical Thinking." This research study will identify the critical thinking abilities of first and final semester Baccalaureate Nursing students. It is hoped that this information will provide further understanding in the development of critical thinking through the nursing curriculum.

The questionnaires will take approximately one hour. The questionnaires will include a demographic questionnaire and the 75-item California Critical Thinking Disposition Inventory. Directions are at the top of each page and this researcher will be available to assist with questions by phone at 920-860-1702.

Your participation is voluntary, and all information is guaranteed to be anonymous. No names will be used on these questionnaires to ensure your privacy and anonymity. PLEASE DO NOT PLACE YOUR NAME OR IDENTIFICATION NUMBER ON ANY PORTION OF THE FORMS.

All findings in the study will be summarized and reported so that no one person can be identified. All information will be kept confidential with only the investigator having access to the forms. The findings of the study will be provided to the College of Nursing, but individual scores will not be divulged.

Completing these questionnaires indicates that you grant permission for your responses to be used in this study. You are under no obligation to participate in this study. Participation in this study is completely voluntary. Participants may withdraw from the study at any time. Participation or non-participation in the study will have no affect on participant's grades, your relationship to the school or with faculty members.

The results of this study will be made available to those participating. If you would like a summary of the results, please contact this researcher. Any questions or concerns regarding this study should be directed to:

Fay L. Fritsch, R.N., B.S.N., Master's Candidate
College of Nursing
University of Wisconsin, Oshkosh
Oshkosh, WI 54901

# APPENDIX E

## Informed Consent Form

# Informed Consent Form

The purpose of this study is to identify the Critical Thinking abilities of first and final semester Baccalaureate Degree Nursing Students.

I have read the attached information sheet and I fully understand the testing procedure. I hereby voluntarily agree to participate in this study.

| | |
|---|---|
| Volunteer's Signature | Date |
| Signature of Researcher | Date |
| Signature | Date |

# REFERENCES

American Association of Colleges of Nursing (2008,). *Executive summary: The essentials of baccalaureate education for professional nursing practice* [White paper]. Retrieved from AACN: http://www.aacn.nche.edu/

Anderson, G. L., & Tredway, C. A. (2009). Transforming the nursing curriculum to promote critical thinking online. *Journal of Nursing Education*, *48*(2), 111-115.

Banning, M. (2006). Nursing research: Perspectives on critical thinking. *British Journal of Nursing, 15*(8), 458-461.

Beistle, K. S., Smith, D. A., & Nagel, G. (2006). Critical thinking underlies evidence-based decision making. *RDH, 26*(6), 74-75.

Benner, P. (1984). *From novice to expert: Excellence and power in clinical nursing practice*. Menlo Park, CA: Addison-Wesley Publishing.

Burns, H. K., & Foley, S. M. (2005). Building a foundation for an evidence-based approach to practice: Teaching basic concepts to undergraduate freshman students. *Journal of Professional Nursing*, *21*(6), 351-357.

Cise, J. S., Wilson, C. S., & Thie, M. J. (2004). A qualitative tool for critical thinking skill development. *Nurse Educator, 29*(4), 147-151.

DeSimone, B. B. (2006). Curriculum design to promote the critical thinking of accelerated bachelor's degree nursing students. *Nurse Educator, 31*(5), 213-217.

Dreyfus, S. E., & Dreyfus, H. L. (1980). A five-stage model of the mental activities involved in directed skill acquisition. Unpublished report, University of California, Berkeley.

Eisenhauer, L. A., Hurley, A. C., & Dolan, N. (2007). Nurses' reported thinking during medication administration. *Journal of Nursing Scholarship, 39*(1), 82-87.

Ellermann, C. R., Kataoka-Yohiro, M. R., & Wong, L. C. (2006). Logic models used to enhance critical thinking. *Journal of Nursing Education*, *45*(6), 220-227.

Erickson-Owens, D. A., & Powell Kennedy, H. (2001). Fostering evidence-based care in clinical teaching. *Journal of Midwifery & Women's Health*, *46*(3), 137-145.

Facione, N. C., Facione, P. A., & Sanchez, C. A. (1994). Critical thinking disposition as a measure of competent clinical judgment: The development of the California critical thinking disposition inventory. *Journal of Nursing Education*, *33*(8), 345-350.

Facione, P. A. (1990). *Critical thinking: A statement of expert consensus for purposes of educational assessment and instruction* [Brochure]. Millbrae, CA: California Academic Press.

Facione, P. A., & Facione, N. C. (1992). *The CCTDI: A disposition inventory*. Millbrae, CA: The California Academic Press.

Facione, P. A., Facione, N. C., & Gainen, J. (1995). The disposition toward critical thinking. *Journal of General Education*, *44*(1), 1-25.

Fergesen, L., & Day, R. A. (2005). Evidenced-based nursing education: Myth or reality? *Journal of Nursing Education*, *44*(3), 107-115.

Fineout-Overhold, E., Melnyk, B. M., & Schultz, A. (2005). Transforming health care from the inside out: Advancing evidence-based practice in the 21st century. *Journal of Professional Nursing*, *21*(6), 335-344.

Fopma-Loy, J., & Ulrich, D. (1999). Seventeen ways to transform reading assignments into critical-thinking experiences. *Nurse Educator*, *24*(5), 11-13.

Gross Forneris, S., & Peden-McAlpine, C. (2007). Evaluation of a reflective learning intervention to improve critical thinking in novice nurses. *Journal of Advanced Nursing, 57*(4), 410-421.

Hoffman, J. J. (2008). Teaching strategies to facilitate nursing students' critical thinking. In *Annual Review of Nursing Education* (pp. 225-236). New York: Springer Publishing.

Hoffman, K., & Elwin, C. (2004). The relationship between critical thinking and confidence in decision-making. *Australian Journal of Advanced Nursing, 22*(1), 8-12.

Insight Assessment. (1992). *CCTDI score interpretation document* (ed.) [Brochure]. Millbrae, CA: Author.

Kennison, M. M. (2006). The evaluation of students' reflective writing for evidence of critical thinking. *Nursing Education Perspectives, 27*(5), 269-273.

Mangena, A., & Chabeli, M. M. (2005). Strategies to overcome obstacles in the facilitation of critical thinking in nursing education. *Nurse Education Today*, *25*, 291-298.

Merriam-Webster (2007). *Merriam-Webster online dictionary.* Retrieved April 28, 2007, from http://www.m-w.com/dictionary

Myrick, F., & Yonge, O. (2002a). Preceptor behaviors integral to the promotion of student critical thinking. *Journal for Nurses in Staff Development*, *18*(3), 127-133.

Myrick, F., & Yonge, O. (2002b). Preceptor questioning and student critical thinking. *Journal of Professional Nursing*, *18*(3), 176-181.

National League for Nursing (2006). *Excellence in nursing education model*: New York: Author.

National League for Nursing Accrediting Commission. (2006). *Accreditation manual with interpretive guidelines by program type for post-secondary and higher degree programs in nursing*. New York: Author.

National League for Nursing. (2005). *Core competencies of nurse educators with task statements*. New York: Author.

Profetto-McGrath, J. (2005). Critical thinking and evidence-based practice. *Journal of Professional Nursing*, *21*(6), 364.

Quality and Safety Education for Nurses (2009). *About QSEN*. Retrieved April 10, 2009, from http://www.qsen.org/about_qsen.php

Riddell, T. (2007). Critical assumptions: Thinking critically about critical thinking. *Journal of Nursing Education, 46*(3), 121-126.

Scheckel, M. M., & Ironside, P. M. (2006). Cultivating interpretive thinking through enacting narrative pedagogy. *Nursing Outlook, 54*(3), 159-165.

Shell, R. (2001). Perceived barriers to teaching for critical thinking by BSN nursing faculty. *Nursing & Health Care Perspectives*, *22*(6), 286-291.

Stewart, S., & Dempsey, L. F. (2005). A longitudinal study of baccalaureate nursing students' critical thinking dispositions. *Journal of Nursing Education*, *44*(2), 81-84.

Suliman, W. A. (2006). Critical thinking and learning styles of students in conventional and accelerated programmes. *International Nursing Review, 53*(1), 73-79.

Thompson, C., & Rebeschi, L. M. (1999). Critical thinking skills of baccalaureate nursing students at program entry and exit. *Nursing & Health Care Perspectives*, *20*(5), 248-252.

Toofany, S. (2008). Critical thinking among nurses. *Nursing Management*, *14*(9), 28-31.

Vacek, J. E. (2009). Using a conceptual approach with concept mapping to promote critical thinking. *Journal of Nursing Education*, *48*(1), 45-48.

Walsh, C. M., & Seldomridge, L. A. (2006a). Critical thinking: Back to square two. *Journal of Nursing Education*, *45*(6), 212-219.

Walsh, C. M., & Seldomridge, L. A. (2006b). Measuring critical thinking: One step forward, one step back. *Nurse Educator, 31*(4), 159-162.

Walsh, C. M., Seldomridge, L. A., & Badros, K. K. (2007). California critical thinking disposition inventory: Further factor analytic examination. *Perceptual and Motor Skills, 104,* 141-151.

Youngblut, J. M., & Brooten, D. (2001). Evidence-based nursing practice: Why is it important? *AACN Clinical Issues*, *12*(4), 468-476.

Zygmont, D. M., & Schaefer, K. M. (2006). Assessing the critical thinking skills of faculty: What do the findings mean for nursing education? *Nursing Education Perspectives, 27*(5), 260-268.