CRITICAL THINKING SKILLS AND THE PERFORMANCE ON NCLEX-RN

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A primary outcome measure in education is the National Council Licensure Examination for Registered Nurses (NCLEX-RN). Many nursing education programs incorporate critical thinking as a core competency within the curricula. The purpose of this study is to investigate the relationship between critical thinking skills and NCLEX-RN performance. This study is a partial replication of Giddens and Gloeckner’s (2005) study. The National League for Nursing Accrediting Commission criteria serves as the framework. The population will be drawn from nursing students at the University of Cincinnati in Cincinnati, Ohio who will enroll from 2009-2012. The projected sample will consist of approximately 175 graduates. The California Critical Thinking Skills Test
(CCTST) instrument will be utilized to measure critical thinking skills. All subjects’ NCLEX-RN results will be available. Permission will be obtained from the Institutional Review Board of Ball State University and the participating educational institution. This study is significant in providing nurse educators information regarding the effectiveness of curriculum development on critical thinking skills and the relationship to NCLEX-RN performance.
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Chapter I

Introduction

In today’s ever changing and increased complexity of the health care environment, nurses must be prepared to face many different challenges and manage highly complicated processes. Critical thinking and the utilization of critical thinking skills is essential in sound clinical judgment of registered nurses (Baxter & Rideout, 2006; Beckie, Lowry, & Barnett, 2001; Rogal & Young, 2008; Stewart & Dempsey, 2005; Tanner, 2006). Competence in critical thinking skills enables nurses to make effective clinical decisions in all situations. This is the reason why the National League of Nursing Accrediting Commission (NLNAC) 2008, includes in its criteria for accreditation that nursing students demonstrate critical thinking skills relevant to good nursing practice. This has led colleges and universities to make the development of critical thinking skills an explicit educational goal and to strive to introduce ways of incorporating critical thinking skills into their students (Walsh & Seldomridge, 2006).
Critical thinking has become a desired outcome of education and manifested in university goals and accreditation standards. In addition, it is the NCLEX-RN performance that also serves as an indicator within nursing education (Bonis, Taft, & Wendler, 2007; Crow, Handley, Morrison & Shelton, 2004; Giddens & Gloeckner, 2005; McDowell, 2008; Uyehara, Magnussen, Itano & Zhang, 2007; Washington & Perkel, 2001). Success for first-time takers of the NCLEX-RN has implications for the students, faculty, and nursing programs. For students, failure to pass the NCLEX-RN results in delayed employment as a RN, loss of income, and harm to self-esteem. For faculty, there is not only concern for the integrity of the nursing program, but also their own individual feelings as a responsible instructor. Tracking the development of critical thinking in students and this relationship to the NCLEX-RN performance presents challenges for nursing programs. Although critical thinking and NCLEX-RN performance are primary objectives within a nursing program, few research studies have specifically studied critical thinking as a variable of NCLEX-RN performance. Further study is needed to elaborate on this relationship.
Background and Significance

Critical thinking is frequently discussed within nursing education and literature and much has been written about the definition of critical thinking. However, researchers have yet to agree on a single definition of critical thinking that will be applicable to all disciplines. In this regard, several definitions have been postulated to describe various aspects of critical thinking within the profession of nursing in particular. Watson and Glaser (1980) define critical thinking as a composite of attitudes, knowledge, and skills. Scheffer and Rubenfeld (2000) believed that the habits of the mind of critical thinking in nursing include confidence, contextual perspective, creativity, flexibility, inquisitiveness, intellectual integrity, intuition, open-mindedness, perseverance, and reflection. Skills of critical thinking in nursing consist of analyzing, applying standards, discriminating, information seeking, logical reasoning, predicting and transforming knowledge (Morrison & Free, 2001). Another view by Morrison and Free (2001) state critical thinking can be defined in relation to the expected performance by an individual when faced with a situation in which a crucial decision must be made. Critical thinking for nurses is the ability of one to react rationally and make
sound judgment in a clinical environment. “Nurses must be able to provide stability in an unstable situation by utilizing intellectual skills through the process of critical thinking” (Morrison & Free, 2001, p.17).

Although there are multiple definitions and descriptions of what critical thinking is, students need to “develop and effectively apply critical thinking skills to their academic studies, to the complex problems that they will face, and to the critical choices they will be forced to make” (Oliver & Utermohlen, 1995, p.1).

Statement of Problem

The development of critical thinking skills in nursing students and the NCLEX-RN performance has repeatedly been a primary learning objective of all nursing programs. These objectives have been endorsed by the NLNAC. However, the development of critical thinking skills and its’ relationship to the NCLEX-RN performance remains unclear.

Purpose

The purpose of this study is to determine the relationship between critical thinking skills and NCLEX-RN performance.

Research Questions

1. Is there a relationship between student CCTST scores and the NCLEX-RN performance?
2. Does student performance on the CCTST change as students progress through the nursing curriculum?

Definition of Terms

*Critical Thinking and Critical Thinking Skills.* Scheffer and Rubenfeld (2000) believed that the habits of the mind of critical thinking in nursing include confidence, contextual perspective, creativity, flexibility, inquisitiveness, intellectual integrity, intuition, open-mindedness, perseverance, and reflection. Skills of critical thinking in nursing consist of analyzing, applying standards, discriminating, information seeking, logical reasoning, predicting and transforming knowledge (p.352). These skills are utilized when individuals are confronted with a problem and/or question with no immediate or obvious answer. Interpretation, analysis, and evaluation of data are performed and hence an informed decision made (Rogal & Young, 2008).

*NCLEX-RN Examination.* A licensure examination developed by the National Council of State Boards of Nursing to test the entry-level nursing competency of candidates for licensure as registered nurses. (National Council of State Boards of Nursing, 2008).

*National League for Nursing Accrediting Commission* (NLNAC). The NLNAC is the entity within the National League
for Nursing that is responsible for the accreditations of nursing education schools and programs (National League For Nursing, 2007).

California Critical Thinking Skills Test (CCTST). The CCTST is comprised of a standardized 34 item multiple choice test that generates 6 scores, a total score and then the 5 subscales scores of analysis, evaluation, inference, deductive reasoning, and inductive reasoning. (Beckie et al, 2001).

Limitations

Given a convenience sample from one baccalaureate nursing program was used, results may be limited by the geographic area and selected sample. There was also no one clearly acceptable definition of critical thinking.

Assumptions

Everyone thinks. It is our nature to do so. Critical thinking calls for an effort to examine knowledge. Paul and Heaslip (1995) report knowledge cannot be given, but students can be given information in order to aid in defining what is known about a particular case or questions and turn this information into knowledge.

Summary

Promoting critical thinking within nursing programs and acquiring critical thinking skills in students is a vital
component of successful nursing programs. Along with critical thinking, the NCLEX-RN pass rate is a significant indicator of a nursing program’s success. Critical thinking skills and NCLEX-RN performance not only affects the reputation of the nursing program, but these standards are also supported by the NLNAC. Given this, it is vital to further explore the relationship between critical thinking and NCLEX-RN performance.
Chapter II

Literature Review

Introduction
The purpose of this study is to investigate the relationship between critical thinking skills and National Council Licensure Examination for Registered Nurses (NCLEX-RN). This study is a partial replication of Giddens and Gloeckner’s (2005) study.

Statement of Organization of the Literature
The literature review is divided into the following four sections: a) Organizing Framework, b) Predictors and Strategies to Passing NCLEX-RN, c) Critical Thinking Skills and NCLEX-RN Performance: Student’s Critical Thinking Skills Progression, Critical Thinking and Decision Making, and Relationship between Critical Thinking and NCLEX-RN Performance, and d) Summary

Organizing Framework
The National League for Nursing Accrediting Commission (NLNAC) 2008 includes in its criteria for accreditation that
nursing students demonstrate critical thinking skills relevant to good nursing practice. This has led colleges and universities that offer associate, baccalaureate, and advanced degrees in nursing to make the development of critical thinking skills an explicit educational goal and to strive to introduce viable modes of assessing the critical thinking skills of students.

In an attempt to define critical thinking, Dickerson (2005) reported principles of critical thinking include “problem identification, formulation of statements of knowledge or belief, examination of the potential fallibility of each statement, use of deductive and inductive reasoning to move between unique features and generalizability of data, and exploration of how data can best be used in a particular case to facilitate goal achievement” (p.69). Critical thinking allows the opportunity to be proactive and anticipate what you might be doing as well as thinking back over what has happened for the purpose of growth and improvement. Competence in critical thinking skills enables nurses to gain understanding and make effective clinical judgments.
Another NLNAC (2008) key indicator and criteria is the performance on the NCLEX-RN exam. As a result, nursing programs strive to offer an educational experience that will prepare their graduates for success on the NCLEX-RN. Nursing programs are challenged to incorporate the critical thinking skills that are necessary to correctly answer the application and analysis level questions on the NCLEX-RN. It is the National League for Nursing Accrediting Commission (NLNAC) criteria that serves as the organizing framework for this study.

Predictors and Strategies to Passing the NCLEX-RN

A key indicator of the quality of a nursing program and ticket for entry in the field of nursing is the performance on the NCLEX-RN. As a result, nursing programs strive to offer an educational experience that will prepare their graduates for successful completion of the NCLEX-RN. Crow, Handley, Morrison, and Shelton (2004) conducted a correlational survey study of Bachelor of Science in Nursing (BSN) programs in the United States, to discover program similarities and patterns leading to the highest NCLEX-RN pass rates.
Crow et al. (2004, conducted a descriptive survey study to identify program requirements and educational interventions that might positively impact NCLEX-RN success and to determine NCLEX-RN success predictors. Research questions included the following areas: admission, progression, and graduation requirements used by BSN programs, NCLEX-RN success predictors, and educational interventions used to prepare graduates for NCLEX-RN success.

A 32 question survey was distributed to 513 BSN program deans throughout the United States. The survey included questions addressing admission criteria, progression criteria for determining graduates’ NCLEX readiness, program requirements, demographic information, and graduation/NCLEX pass rates. The survey instrument allowed both electronic and paper responses. Deans who did respond to either format were contacted in a follow-up message to request participation. A total of 160 deans submitted usable data for the analysis (n=160 or 31.2%). These 160 BSN program respondents represented 38 states and the District of Columbia. Demographic statistics found were: mean age 25.47, 91.34% female, 68% of 159 schools were in urban areas, 81% White,
10.70% African American, 5.28% Hispanic, 5.7% Asian, 2.11% Native American, and first time pass rate on the NCLEX-RN was 87.37% for this sample. The authors noted limitations for their study included difficulties associated with self-report and the distribution and processing of surveys (Crow et al., 2004).

With regards to question #1, the results revealed the predominant admission criteria were the college cumulative GPA (86.9%), ACT (38.13%), high school GPA (36.88%), SAT scores (32.59%), and letters of recommendation (28.13%). Criteria used for progression included course grades (98.10%), clinical performance (89.4%), and college cumulative GPA (66.30%) (Crow et al., 2004).

Requirements for graduation included a total number of credit hours that ranged from 120 to 144. Most programs also required a GPA of 2.0. Of the 160 programs, 59 or 36.9% required an exit examination, 46.3% required demonstration of clinical proficiency, and 26.9% required students to participate in an NCLEX review course. In order to predict NCLEX success, programs used a comprehensive examination (90%), cumulative GPA (29.4%), and or specific course grades
(36.3%) as a predictor of NCLEX success. The most frequently used interventions to assist in preparing graduates for success on the NCLEX-RN were academic referral (82.5%), commercial reviews (57.5%), social support referrals (56.7%), and computerized reviews (53.8%) (Crow et al., 2004). Study findings regarding admission, progression requirements, and other data predicting NCLEX-RN success revealed the use of a standardized entrance examination ($X^2[1,n=12]=11.11; P=.00$) and the SAT scores ($r = -0.4, P=.03, n=34$) were significantly correlated with passing the NCLEX-RN. The clinical proficiency ($X^2[1,n=74]=4.76, P=.03$) and the use of an exit examination ($X^2[1,n=59]=3.9, P=.05$) were also found to be significantly related. Ethnicity was the only demographic data significantly correlated to NCLEX-RN success, with White students being positively correlated ($r = .19, P= .02$) and Hispanic students negatively correlated ($r = -.25, P= .01$). The specific intervention that was found to be most influential on NCLEX-RN performance was the use of a commercial review course ($X^2[1,n=92]=3.79, P=.05$) (Crow et al., 2004).

The researchers drew several conclusions and recommendations from their study. The authors suggested
nursing programs utilize a standardized entrance examination as an admission criterion and the successful completion of specific content area examination as a progression requirement. The authors concluded that additional studies that look at individual student data in determining predictors and interventions that work best for their student population must be performed, as change in curricula, faculty, and students is always occurring (Crow et al., 2004).

In discussing strategies to promote NCLEX-RN success, Bonis, Taft, and Wendler (2007) used an evidenced-based approach to develop and implement educational strategies to improve NCLEX-RN scores in a baccalaureate program at the University of Wisconsin-Eau Claire. The ACE Star Model was used to guide this study to help understand the cyclical process of knowledge transformation. The ACE Star Model consists of 5 phases: discovery, summary, translation, integration, and evaluation. Bonis et al (2007), write “the model is used to convert knowledge from research findings to impact outcomes through evidence-based practices” (p.83).

In review of relevant literature, the discovery phase of the model revealed a decline in successful completion of the
NCLEX-RN during the same years as the National Council of State Boards of Nursing increased passing standards for the examination. This trend indicated a need to address instructional techniques within the curriculum to promote NCLEX-RN success (Bonis et al., 2007).

The literature review noted a variety of strategies that have been implemented to improve success on the NCLEX-RN. These included test-taking strategies, coaching, study groups, commercial comprehensive examinations, review courses, review books, self-assessment techniques, time-management techniques, anxiety-reducing techniques, and critical thinking methodologies (Bonis et al., 2007).

The summary phase identified that the actual evaluation of these strategies are limited. Bonis et al. (2007) found that several researchers noted a correlation between standardized examination scores and NCLEX-RN success. The translation phase of the model identified assessment testing, instruction in effective test-taking, student self-assessment, review courses and review books as the needs to be implemented within the integration phase.
The integration phase included the following strategies: 1) an RN assessment test was given at the end of the first semester of the senior year, 2) an independent study module that included assignments on test-taking tips in an NCLEX review book and also online practice quizzes was used in the second semester of the senior year, and 3) a simulated NCLEX exam administered within the last six weeks of the senior year. In addition, a faculty-developed survey was administered to 94 graduates over two semesters following the NCLEX exam. Only 59 participants returned the survey. The questionnaire addressed preparation strategies as well as demographic data (Bonis et al., 2007).

All data were obtained from records of graduates who took the NCLEX-RN between fall 2001 and fall 2004. Spring 2003 and fall 2003 students received partial implementation of strategies. Spring and fall 2004 students received total implementation of strategies. The NCLEX-RN scores between fall 2001 and fall 2002 (those who did not receive strategies) were compared to scores of students who experienced partial and total implementation of strategies (Bonis et al., 2007).
The results in the evaluation phase revealed an improved success on the NCLEX-RN after the implementation of strategies. First time pass rates from fall 2001 through fall 2002 were 87.76%, 84.09%, and 83.87%, respectively. After implementation of strategies in the spring and fall 2003, the pass rate increased to 89.74% and 91.11%, respectively. Following additional strategies that were implemented in fall 2003, the pass rate increased again to 94.81%. From fall 2003 through fall 2004, the first time pass rate averaged 93.44%. The increased pass rate was statistically significant (p<.01). The results indicated 98% of graduates reported feeling prepared for the exam. The researchers also concluded that the graduates recommended and supported the strategies that were implemented within the study (Bonis et al., 2007).

In conclusion the strategies that were implemented via the ACE Star Model of Knowledge Transformation were identified as valuable interventions to promote success on the NCLEX-RN. The implementation of simulated NCLEX exams, practice quizzes, test-taking tips, and RN assessment tests proved to be successful in increasing NCLEX-RN scores. The researchers identified that other curricular changes that occurred during
data collection or student differences may have also contributed to the increased pass rates as this may be an area for further research in identifying which strategies are most effective (Bonis et al., 2007).

In order to demonstrate effective student learning, Washington and Perkel (2001) investigated factors that contributed to success on the NCLEX-RN. The variables within the study included ethnicity, age, gender, language, transfer GPA, cumulative GPA, repeated science and nursing courses, and Arnett Pre-RN Readiness Examination test scores. The study examined their relationship with NCLEX-RN success.

Data were collected from a sample of 67 (47 basic option group and 20 accelerated option group) school of nursing students that completed graduation requirements in May 1998. Of the 67, 40% (n=26) White, 30%(n=20) Hispanic, 15%(n=10) Black, 8%(n=6) Haitians, and 7%(n=5) other. The mean ages were 27.8 years for basic option graduates and 33.5 years for accelerated option. Female students consisted of 88%(n=59) of the sample. Languages identified among graduates were English 49%(n=33), Spanish 30%(n=20), Creole 8%(n=6), and other 12%(n=8) (Washington & Perkel, 2001).
Ethnicity, language, age, and gender were cross tabulated with transfer GPA, cumulative GPA, repeated sciences, repeated nursing courses, Arnett test, and NCLEX-RN pass/fail for both groups. Significant findings were noted among the basic option graduates, ethnicity was significantly correlated with cumulative GPA (p=.012) and repeated sciences (p=.002). In addition, significant findings were seen among the accelerated option graduates in age and transfer GPA (p=.047) and language and transfer GPA (p=.049) (Washington & Perkel, 2001).

Using one-tailed and two-tailed tests, a correlation analysis was performed among transfer and cumulative GPA, repeated nursing and science courses, Arnett results, and NCLEX-RN results for both the basic and accelerated groups. Significant correlations at the .05 level in the accelerated option group were transfer GPA and Arnett test (p=.027) and cumulative GPA and Arnett (p=.010). Also in the basic group, transfer GPA and repeated sciences were significantly correlated (p=.014) and cumulative GPA and repeated sciences (p=.012). At the .01 level, in the basic group, repeated nursing and repeated sciences revealed significant correlation (p=.007). In performing analysis of variance (ANOVA),
significant correlations were found among transfer GPA and Arnett test (p=.027), cumulative GPA and Arnett test (p=.010), repeat sciences and NCLEX-RN (p=.055), and NCLEX-RN and Arnett test (p=.099) (Washington & Perkel, 2001).

This study revealed significant findings regarding the relationship among transfer GPA, cumulative GPA, and repeated science and nursing courses. The author contended there is a strong likelihood of students who experience difficulty in science courses will also find challenge within nursing courses which require critical thinking skills and application and/or analysis of comprehension. The researchers encouraged programs to continue to monitor GPA’s and admission and progression policies. Additionally, the authors encouraged further studies to “re-evaluate teaching methodologies to include inductive activity reflected in concept development, data interpretation, application of principles, and critical thinking abilities” (Washington & Perkel, 2001, p.16).

In another study that focused on predictors of NCLEX-RN performance as well as program success and withdrawal; Uyehara, Magnussen, Itano, and Zhang (2007) collected data over a 5 year period after a new curriculum was implemented at
the University of Hawaii at Manoa School of Nursing. After serious concerns about program and NLCEX-RN success in the previous curriculum, significant changes included a new 3 year (rather than 2 year) curriculum with progressive complex content, use of the pathophysiology course and the NLN Adult Health Comprehensive Test scores as risk factors for success. Adult health content was also increased from 8 to 10 credits and the second course was placed in the fifth semester. In addition, there were changes in the adult health course to decrease attrition and increase faculty support toward students, an NCLEX review elective course was encouraged, and a more caring and supportive environment was implemented. The new curriculum adopted a strategy to identify at risk students based upon their nursing course grades, NLN or ERI achievement test scores, Mosby Assess Test scores, and nursing GPA (Uyehara et al., 2007).

The population sample for this study consisted of 280 baccalaureate nursing students who were admitted to the 3 year baccalaureate curriculum over a 5 year period. From the 280 admitted students, data was completed on 224 graduates and 56 withdrawal students (Uyehara et al., 2007).
In analyzing program success, program withdrawal, and NCLEX-RN performance, independent variables of pre-admission, within program, and end of program predictors were studied. Pre-admission data included prerequisite GPA, cumulative GPA, NLN pre-nursing verbal, math, science, composite scores, and ethnicity. Within program data included several nursing course grades, NLN achievement test scores, and the Watson Glaser Critical Thinking Appraisal. The end of program data consisted of the Mosby Assess Test score and the nursing GPA at graduation (Uyehara et al., 2007).

Reported NCLEX-RN results for 218 of the students revealed 97.25% (212) passed on the first attempt. Significant correlations were identified between NCLEX-RN success and the Mosby Assess Test (r=.24, p=.0003), NLN Adult Health Comprehensive Test (r=.41, p<.0001), NLN Maternal Newborn Comprehensive Test (r=.16, p=.0179), NLN Pediatric Nursing Comprehensive Test (r=.20, p=.0025), nursing GPA (r=.186, p=.0059), and course grade in the Fundamentals course (r=.195, p=.0038) (Uyehara et al., 2007).

Results of program success revealed that of the 224 students who completed the program, 213 (95.09%) completed the
program within one semester of expected completion. Of the remaining 11, all completed the program by another two to three semesters and 10 of these students passed NCLEX on the first attempt. No significant correlations were made among the variables of this group and no significant predictors of program success and withdrawal and NCLEX-RN performance. In regards to program withdrawal, the only significance found was the grades from the pathophysiology course (N=271, p<.0001) (Uyehara et al., 2007).

From this study, the authors concluded the changes incorporated into the new curriculum were useful in promoting NCLEX-RN success, program success, and withdrawal decrease. Identifying predictors of student success within the nursing program and NCLEX-RN can assist curriculum development and teaching strategies. The authors also recognized a need to identify and intervene early with at risk students in order to facilitate program success throughout the academic continuum (Uyehara et al., 2007).

In looking further into predictors of NCLEX-RN success, Higgins (2005) completed a study to determine strategies to raise NCLEX-RN pass rates and lower attrition rates. This
study was performed due to the author’s institution’s increase in attrition rates and a decrease in NCLEX-RN pass rates (Higgins, 2005).

The study setting was a community college in northern Texas. The design of the study was implemented in three phases. Phase 1 study sample included all students enrolled in the program in fall 1999 (n=67), spring 2000 (n=69), and fall 2000 (n=77). The sample total consisted of 213 students. The data from these students were collected and the relationships between program completion and/or NCLEX-RN pass rate and the independent variables of prerequisite courses, preadmission test components, demographic variables, HESI Exit Examination scores, and nursing skills laboratory skills were examined (Higgins, 2005).

Phase 2 of the study consisted of telephone interviews from 45 of the 50 directors of ADN programs within the state of Texas. The directors were asked what strategies their program utilized to increase student retention and NCLEX-RN pass rate (Higgins, 2005).

Phase 3 included telephone interviews with 10 of the 30 full time faculty at the college and 30 of the 48 new
graduates that had taken the NCLEX-RN. These individuals were asked what suggestions they had about the curriculum that they believed would lower the attrition rate and/or raise the NCLEX-RN pass rate (Higgins, 2005).

In phase 1, statistically significant differences were found between Anatomy and Physiology II (r=0.152) and Microbiology (r=0.191) and completion of the nursing program. In addition, a significant difference was found between Anatomy and Physiology I (r=0.170) and passing the NCLEX-RN.

With regards to the components of the preadmission test; the correlation coefficient was significant only for reading (r=0.124), science (r=0.184), and math (r=0.129) and completion of the program, and also for science (r=0.413) and passing the NCLEX-RN.

There were no statistically significant findings between demographic variables and completion of the nursing program and passing the NCLEX-RN. There was significant correlations found between the HESI Exit Examination score (r=0.518) and the Nursing Skills Course (r=0.218) and passing the NCLEX-RN (Higgins, 2005).
Phase 2 revealed qualitative data that supported preadmission requirements, campus counselors, remediation, and faculty assistance towards achieving the goal of lowering attrition rates. In order to raise NCLEX-RN pass rates, data reported strategies of exit examinations, achievement testing throughout curriculum, remediation, and test questions reflective of NCLEX-RN questions (Higgins, 2005).

Phase 3 revealed data from faculty that supported prerequisites for program admission, mentorship for students and new faculty, and support and recognition for all faculty in an effort to lower attrition rates. Graduates reported that test-taking education, use of NCLEX-RN review books, test reviews, study groups, and faculty contact would assist in lowering attrition rates (Higgins, 2005).

Faculty responses for increasing NCLEX-RN pass rates included teaching strategies such as case studies, scenarios, critical thinking exercises, and application of theory in clinical. In addition, test-item writing and curriculum were explored. Student responses consisted of the use of NCLEX-RN style tests, expanding class content, use of review books, and review of course tests (Higgins, 2005).
Higgins (2005) drew several conclusions and recommendations from this study. The findings supported preadmission assessment of nursing school applicants as well as reassessment throughout the nursing program once admitted. It was the author’s position that admission policies should be developed with program completion and NCLEX-RN passing predictors a main focus. In identifying at risk students early, the author recognized the likelihood of students’ passing the NCLEX-RN. The author further contended that each student receive individual evaluation and advisement. Finally, the author suggested a mentorship and the incorporation of critical thinking, NCLEX-RN style tests, and test reviews within the program strategies (Higgins, 2005).

Student’s Critical Thinking Skills Progression

Critical thinking is an essential core competency in nursing as identified by the American Association of the Colleges of Nursing and the National League for Nursing Accrediting Commission (Beckie, Lowry, & Barnett, 2001). The purpose of the study by Beckie et al. (2001) was to evaluate students’ critical thinking skills acquired before and after a curriculum revision of a baccalaureate nursing program and to
assess a change in critical thinking skills from entry to exit. The curriculum revision incorporated learning activities such as reflection, learning groups, and case studies to facilitate critical thinking.

The study was conducted at a university in Florida, in the college of nursing. Subjects were baccalaureate nursing students entering the college in their junior year. Completion of the test booklet and demographic sheet indicated student approval. The sample consisted of 183 students: group 1 (n=55) students who participated before curriculum revision, group 2 (n=55) first group of students after curriculum revision, and group 3 (n=73) second group of students after curriculum revision (Beckie et al., 2001).

A control group was the last class that received the original baccalaureate curriculum before revision. The two experimental groups were the first two classes to have participated in the revised curriculum (Beckie et al., 2001).

The California Critical Thinking Skills Test (CCTST) was used to measure critical thinking skills at entry and exit of the nursing program. The CCTST is comprised of a standardized 34 item multiple choice test that generates 6 scores, a total
score and then the 5 subscales scores of analysis, evaluation, inference, deductive reasoning, and inductive reasoning. Internal consistency reliabilities of this instrument resulted in an alpha coefficient range of 0.55 to 0.83 (Beckie et al., 2001).

A repeated measure of variance (ANOVA) was utilized to test differences in critical thinking skills between original curriculum students and the revised curriculum students. Findings indicated that group 2 demonstrated statistically significant higher scores in comparison to group 1 on the CCTST total score ($F=18.58$, $p<.001$), inductive reasoning ($F=16.37$, $p<.001$), deductive reasoning ($F=12.48$, $p<.001$), inference ($F=12.98$, $p<.001$), and evaluation ($F=18.70$, $p<.001$). Group 3 did not score significantly higher than group 1 on any subscale (Beckie et al., 2001).

In conclusion, group 2 achieved significantly higher critical thinking scores than the baseline group or group 1. However, group 3 failed to demonstrate this same positive outcome. The researchers posed some possible explanations that were unique to group 3: these students were aware that they received no benefit in completing the CCTST assessments, found
the CCTST difficult, had major life transitions, and had difficulty with the late year time of testing. There were positive and significant outcomes after curriculum revision, however, the researchers recommended educators must continue the research on how best to instruct students and develop their critical thinking skills (Beckie et al., 2001).

Another study that investigated nurses’ progression of critical thinking skills was performed by Rogal and Young (2008). The purpose of this study was to determine if critical thinking skills of nurses enrolled in a postgraduate care course improved over time. The sample consisted of 31 registered nurses. The sample was comprised from the 2005 and 2006 students who completed a 12 month full-time critical care class in Australia.

The tool used for the survey was the well established CCTST. This study used a pretest posttest design and the normative scores for the CCTST were derived from a sample of 2,677 fourth year college students (Rogal et al., 2008).

The following results revealed the pretest group scores ranged from 5-29 and the posttest scores ranged form 7-32. All 5 subscales scores of the CCTST had increased at posttest, but
not significantly. At posttest, 16 participants demonstrated improvement in critical thinking skills, 7 participants showed decreased scores, and 5 retained the same score. Of the 16 whom did show an improvement, a statistically significant difference was observed between their pretest and posttest total scores ($z_{df=15}, -3.5; p=.000$). Although the 16 did reveal a significant difference, no significant difference was observed between pretest and posttest total scores of all the critical care nursing students ($t_{df=29}, -0.733; p=.466$). In comparison with the normative group, critical thinking scores were higher for the postgraduate nursing students than the fourth year college students (Rogal et al., 2008).

Overall, the nurses did demonstrate a slight improvement in mean critical thinking scores. Rogal et al. (2008), stated that course assessors observed an improvement in the development of critical thinking skills even though the CCTST did not reflect the same significant improvement. The researchers encouraged educators to include and develop methods to enhance critical thinking skills within their curricula (Rogal et al., 2008).
In looking further at the differences in critical thinking skills, Shin, Jung, Shin, and Kim (2006) investigated the critical thinking dispositions and skills of senior nursing students. Shin et al. (2006) addressed the following research questions in this study: what scores do the senior students enrolled in South Korean ADN, BSN, and RN-to-BSN programs achieve on the CCTDI and the CCTST, are there significant differences in CCTDI and CCTST scores among senior students in ADN, BSN, and RN-to-BSN programs, and is there a correlation between the CCTDI and CCTST scores of senior students enrolled in South Korean ADN, BSN and RN-to-BSN programs.

The sample consisted of senior students enrolled in associate (n=137), baccalaureate (n= 102), and RN-to-BSN (n=66). The convenience samples were drawn from ADN (n=137), BSN (n=102), and RN-to-BSN (n=66) programs in Korea, revealing one hundred percent participation (Shin et al., 2006).

Instruments used for data collection were the California Critical Thinking Disposition Inventory (CCTDI) and the CCTST. The CCTDI is comprised of 75 Likert-type items that are used to assess critical thinking attributes along seven dimensions and a critical thinking score. The seven aspects are truth-
seeking, open-mindedness, analyticity, systemacity, self-confidence, inquisitiveness, and maturity. The validity of these tools have been well tested, but since the tool was translated into Korean, the translation was tested by retranslating it into English from the Korean version to ensure accuracy (Shin et al., 2006).

The results of the study revealed nursing students' mean CCTDI and CCTST fell short of the established mean scores, revealing weakness in critical thinking disposition and skills. A comparison of the CCTDI scores for the three programs revealed that the BSN students scored 267.40, RN-to-BSN 261.15, and ADN 261.50, showing a significant difference (F= 4.159, p=0.017). These differences were significant in the areas of truth seeking (p=0.003), open-mindedness (p=0.038), critical thinking self-confidence (p=0.016), and maturity of judgment (p=0.000) (Shin et al., 2006).

The same comparison of the CCTST scores revealed BSN 13.33, RN-to-BSN 11.42, and ADN 9.87, showing a statistically significant difference (F= 24.205, p<0.0001). The BSN students scored the highest for every scale. This study also showed a
positive correlation (r=0.305, p=0.000) between CCTDI and CCTST scores (Shin et al., 2006).

The researchers pointed out that most classes in Korea are large making interaction and discussion among instructor and student limited. They also stated nursing students are taught to practice given situations, instead of allowing them to make decisions according to situations. The researchers speculated that this type of instruction limits decision making development. Conclusions were made that a significant difference in critical thinking dispositions and skills were evident among students in the different programs, and that further research into the academic curriculum and its relationship to critical thinking must be followed through (Shin et al., 2006).

Critical Thinking and Decision Making

In a study examining the relationship of critical thinking skills and clinical judgment skills, Bowles (2000) pointed out that in order for nursing programs to be accredited and or maintain accreditation by the National League for Nursing (NLN), critical thinking skills development needs to be evident in students throughout the program. The study was
conducted to evaluate the relationship of critical thinking, age, years in college, cumulative grade point average (GPA), and clinical judgment abilities in baccalaureate nursing students at the completion of their program.

A convenience sample of 65 nursing students from two baccalaureate nursing programs in northern California was obtained during their final semester. Subjects’ ages ranged from 22 to 50 years of age, cumulative GPA ranged from 2.8-4.0, and number of years in college ranged from 4-12 years (Bowles, 2000).

The CCTST was used to evaluate the attributes of a critical thinker. Bowles (2000) reported an internal consistency reliability for the CCTST estimated a Kuder Richardson range of .68 to .70. A desirable range for an instrument of this kind is between .65 and .75 (Bowles, 2000).

The Clinical Decision Making in Nursing Scale (CDMNS) was used to assess clinical judgment. This instrument is comprised of 40 Likert-type items that was used in this study to determine the perception of clinical decision making from the perspective of self-reported behavior of undergraduate students enrolled in a baccalaureate nursing program. Content
validity was established in previous research resulting in a Cronbach’s alpha of 0.83 (Bowles, 2000).

A 1-tail significance level, the Pearson Product Moment Correlation procedure was used for analyzing the relationship between the total score on the CCTST (critical thinking) and CDMNS (clinical judgment). Results indicated that there was a significantly positive relationship between these two variables ($r=.21, p<.05$). Further analysis of the CCTST subscale scores and CDMNS revealed that only inductive reasoning ($r=.27, p<.05$) and inference ($r=.29, p<.05$) were significant predictors of clinical judgment (Bowles, 2000).

The correlational studies did not demonstrate a significant relationship between the age of the student ($r=.09, p=.30$), number of years spent in college ($r=.15, p=.11$), or student’s GPA ($r=.08, p=.26$) on clinical judgment skills. There was a significant relationship found between the total score on the CCTST and the student’s GPA ($r=.55, p.00$).

The findings of this study supported the hypothesis that there is a significant relationship between critical thinking and clinical judgment. These results raised questions about course design and how best to facilitate and develop critical
thinking and clinical judgment skills. The researchers suggested further research was needed that addresses the teaching strategies of these skills in order to facilitate this process (Bowles, 2000).

Although there is evidence in supporting the relationship between critical thinking and decision making skills, developing these skills is poorly understood by many nursing education faculty and students face many challenges along the way while attempting to acquire these skills. Baxter and Rideout (2006) analyzed students’ decision making activities in a clinical setting. This qualitative study explored how second year students determined the need to make a clinical decision, how they responded to a pending decision, the types of decisions make in the clinical setting, and the factors that enhanced or impeded decision making (Baxter et al., 2006).

Purposeful sampling was utilized within this study. The sample consisted of 12 second-year basic nursing students enrolled in their first clinical rotation on either a 19 bed gynecological surgical unit or a 35 bed orthopedic surgical unit in a southwestern Ontario hospital. Under the supervision
of an instructor, the students provided direct patient care for 7 hours per week for a 12 week term. The two clinical instructors were also participants of the study. Data for the study were collected from the students and the instructors via journal entries and interviews. Inductive, comparative analysis was used to analyze the data (Baxter et al., 2006).

The study found a major challenge for nursing students was their ability to develop independent decision making skills. When students were faced with the need for a clinical decision, most responded in seeking assistance from staff or instructor as students feared making a wrong decision. Factors that influenced students’ decision making were students’ knowledge base, level of confidence, and fear (Baxter et al., 2006).

This study gives nursing educators the knowledge that many different issues affect students’ critical thinking and decision making abilities. The study reported that level of confidence and fear played a major factor. Recommendations from the study encourage curriculum developers to include real life scenarios of intimidation, fear, and the different roles of the nurse into the laboratory setting. The researchers
suggested this laboratory practice may better prepare students, and in return, increase their self-confidence for better critical thinking and decision making skills (Baxter et al., 2006).

Relationship between Critical Thinking and NCLEX-RN Performance

A study by Stewart and Dempsey (2005) posed the questions: is there a significant change in critical thinking dispositions of baccalaureate nursing students as they progress through their nursing curriculum, are there significant correlations between scores on critical thinking dispositions and Educational Resources Inc. (ERI) RN Assessment scores and also grade point average (GPA), and is there a relationship between the scores on critical thinking dispositions and the NCLEX-RN performance.

The sample for the study was a group of nursing students enrolled in a baccalaureate nursing program in the Midwest region of the United States. Data collection began during the students’ second semester of their sophomore year and finished after their graduation and receipt of NCLEX-RN results. The subject pool decreased in size due to attrition of students.
Second semester sophomores totaled 55, and of those 34 completed the second semester senior curriculum during the time of data collection. Of the 55 initial participants, the mean age was 22.96, the mean GPA was 3.0, and 44 were single, 7 were married, and 4 were divorced (Stewart et al., 2005).

The CCTDI was used to measure critical thinking dispositions of the participating students as they progressed through the program. Data was collected using this instrument during week 10 of each semester from Sophomore II to Senior II. Construct validity of this instrument was established in previous research resulting in an overall medial alpha coefficient of .90, and .60 to .78 in its’ seven subscales. From the data collected with the CCTDI over the duration of the study, Chronbach’s Alpha was performed and results ranged from .67 to .77 at the .05 level of significance (Stewart et al., 2005).

The next instrument of data collection used was the ERI RN Assessment, which utilized a mock NCLEX-RN examination which the participants took 5 to 6 weeks prior to graduation. The published reliability of this test is .90. The ERI RN provides a total score comprised of 32 subscales. In this study, the 5
subscales of interest included prioritizing and discriminating, inferential reasoning, main idea and predicting outcomes, application and knowledge, and evaluating predicted outcomes. Students’ GPA’s and NCLEX-RN results were collected from their records (Stewart et al., 2005).

In regards to question one, a one-way ANOVA was utilized to compare CCTDI subscale and composite scores among participants as they progressed through each semester. The results were significant for total CCTDI score and 5 of the seven subscales across the five observations. Those subscales that failed to show a significant difference were truth seeking and maturity.

A univariate analysis of variance showed significant differences in CCTDI total scores and 5 of its subscales, with the highest total scores being achieved by participants during the junior semesters. However, the participant scores the junior semesters were not significantly different from each other (Stewart et al., 2005).

The performance of the CCTDI subscales and GPA were significant but varied. At the Sophomore II and Junior II semesters, open-mindedness was positively correlated with GPA.
At the Junior I semester, total CCTDI and the maturity subscale were positively correlated with GPA. The systematicity subscale was positively correlated to GPA for the Junior II semester. There was a negative correlation between GPA and the confidence subscale for the Senior I semester. In the Senior II semester, inferential reasoning showed a relationship to GPA (Stewart et al., 2005).

In regards to question 3, no significant difference was noted between those subjects who passed the NCLEX-RN exam and those who did not and CCTDI scores. The authors reported the total CCTDI scores for those who passed was 265, and 276 for those who failed.

The authors recognized limitations of this study were the small sample size and attrition rate of students. CCTDI total and subscale scores did not increase as the students progressed through the curriculum. As previously mentioned, CCTDI scores showed no significant relationship to ERI RN scores and NCLEX performance. It was the authors’ position that these later two instruments assessed knowledge and not critical thinking skills. They further contended that with such an emphasis on critical thinking being taught in
curriculum and practicum, this emphasis should be reflected in the examination criteria for certification (Stewart et al., 2005).

As nursing programs struggle to implement a curriculum to facilitate critical thinking, their efforts are largely judged on the basis of the National Council Licensure Examination for Registered Nurses (NCLEX-RN) pass/fail rate (Giddens and Gloeckner, 2005). It is the Commission on Collegiate Nursing Education (CCNE) and the National League for Nursing Accrediting Commission (NLNAC) NCLEX-RN performance standards that served as the framework for this study by Giddens and Gloeckner (2005). These researchers investigated the relationship between students’ critical thinking skill and disposition and scores on the NCLEX-RN.

The study collected and analyzed existing data on 218 baccalaureate nursing students from a southwestern United States university who had completed the two critical thinking instruments: the CCTST and the California Critical Thinking Disposition Inventory (CCTDI) and whose NCLEX-RN scores were available. These students were enrolled between 1998 and 2001.
Of the 218 sample participants, 22 were men, 196 women, and the mean age was 30.3 years (Giddens et al., 2005).

Participants completed the CCTST and the CCTDI at the beginning and the last semester of the nursing program. The CCTST instrument was used to measure critical thinking skills. This instrument generates 6 scores, a total score and then the 5 subscale scores: analysis, evaluation, inference, inductive reasoning, and deductive reasoning (Giddens et al., 2005). As previously mentioned in an earlier study, the CCTDI measures the extent to which an individual may have the disposition of a critical thinker in seven categories or subscales. The article does not discuss the reliability and validity of the CCTST and CCTDI tools.

Differences in entry and exit CCTST and CCTDI scores between those who passed/failed were examined. An independent t-test was utilized to examine the scores between the two groups. On entry CCTST, the NCLEX-RN pass group was higher than the fail group. The significant scores were: total score (t=2.5, P=.015), analysis (t=2.4, P=.017), and deductive reasoning (t=3.0, P=.003). On the exit CCTST, the pass group had statistically significant higher scores on six categories:
total score (t=3.0, $P=.003$), analysis (t=2.2, $P=.026$), evaluation (t=2.2, $P=.030$), inference (t=2.6, $P=.011$), inductive reasoning (t=2.7, $P=.008$), deductive reasoning (t=2.1, $P=.035$). The entry CCTDI scores showed no differences between the pass and fail groups. On the exit CCTDI, the pass group had significantly higher scores on the total score (t=2.6, $P=.010$), truth seeking (t=2.7, $P=.007$), open-mindedness (t=2.4, $P=.015$), synthesis (t=2.2, $P=.030$), and maturity (t=3.6, $P<.001$) (Giddens et al., 2005).

Paired data for the entry and exit scores allowed for an evaluation of changes in critical thinking and disposition scores over time. The only significant changes were the CCTST deductive reasoning subscale (t=2.4, $P=.02$) and the CCTDI confidence subscale (t=3.5, $P=.001$) (Giddens et al., 2005).

Discriminant analysis was used to determine the ability to correctly classify students into a pass or group based on their CCTST and CCTDI total scores. Overall, 92% of the students were categorized correctly. Discriminant analysis did categorize 98% of the students who passed the NCLEX-RN correctly, it did incorrectly categorize 79% of students who failed. (Giddens et al. 2005).
These findings do support the theory of a correlation between critical thinking and NCLEX-RN performance. This study suggested that critical thinking is an important part of the NCLEX-RN and can serve as a useful predictor in the NCLEX-RN success rate. (Giddens et al., 2005).

Summary

The purpose of this study is to investigate the relationship between critical thinking skills and NCLEX-RN. The development of critical thinking skills in nursing students has been a primary learning objective in nursing programs. The NLNAC (2008) standards and criteria state nursing programs must demonstrate evidence of achievement in the performance on the licensure exam when evaluating outcomes.

In an effort to increase NCLEX-RN pass rates, a study by Higgins (2005), did support pre-admission assessment as predictors of NCLEX-RN performance. Crow, Handley, Morrison, & Shelton (2004) found that entrance examinations and SAT scores showed a relationship with NCLEX-RN performance. Washington & Perkel (2001) also investigated factors contributing to success on the NCLEX-RN and they found a significant
relationship among transfer GPA, cumulative GPA, and repeated science and nursing courses, courses which require application of critical thinking skills in scientific comprehension and analysis. Significant correlations between NCLEX-RN success and the Mosby Assess Test, NLN Comprehensive tests, and GPA were also seen in the study by Uyehara, Magnussen, Itano, & Zhang (2007).

Specific interventions that proved successful in increasing NCLEX-RN performance were reviewed. Higgins (2005) study supported the use of NCLEX-RN review books, study groups, teaching strategies that facilitate critical thinking and placing an emphasis on NCLEX-RN themes as prioritization and delegation within the curriculum. Bonis, Taft, & Wendler (2007) evaluated specific interventions in order to improve NCLEX-RN scores and they found simulated NCLEX exams, practice quizzes, test-taking tips, and assessment tests proved successful in increasing NCLEX-RN scores. Uyehara, Magnussen, Itano, & Zhang (2007) study found greater success after a curriculum change that included progressive complex content, increased support to students, NCLEX review course, and early identification of at risk students. In evaluating the
attainment of critical thinking skills of students, Beckie, Lowry, & Barnett (2001) found an increase in CCTST scores after a curriculum revision that incorporated critical thinking skills and strategies to achieve the development of clinical judgment.

In the studies that were reviewed, Higgins (2005) and Giddens & Gloeckner (2005) revealed no correlation between demographic variables and NCLEX-RN performance. Crow, Handley, Morrison, & Shelton (2004), found only ethnicity to be correlated to NCLEX-RN performance.

In addressing student’s critical thinking skills progression, as previously mentioned Beckie, Lowry, & Barnett (2001) did see an increase in CCTST scores after a curriculum change that incorporated critical thinking skills and strategies. Unfortunately, Rogal and Young (2008) did not see this same significant improvement in CCTST scores. Rogal and Young set out to determine in critical thinking skills of nurses enrolled in a post graduate care course improved. Only a slight improvement in mean critical thinking scores was noted, but not significant. The authors did recognize
maturation may have influenced the development of critical thinking.

Shin, Jung, Shin, & Kim (2006) investigated the critical thinking dispositions and skills of senior nursing students in associate, baccalaureate, and RN-to-BSN programs. A comparison of the CCTDI scores revealed a significant difference among the students enrolled in the different programs, as did the CCTST scores. The significant differences are thought to be the results of the variations in teaching methods used throughout the curriculum.

In a study examining the relationship of critical thinking skills and clinical judgment, Bowles (2000) supported the hypothesis there is a positive correlation between critical thinking and clinical judgment.

In addressing critical thinking and clinical judgment, Baxter & Rideout (2006) explored the decision making activities of BSN students in the 2nd year of a 4 year program. The researchers found level of confidence, fear, and knowledge base play a large role in student’s critical thinking and decision making abilities. The study also revealed that decision making is a complex problem for nursing students and
students often make a decision to seek help to ensure patient’s needs.

A study by Stewart & Dempsey (2005) investigated CCTDI scores as students progressed through the curriculum and their relationship with GPA, standardized testing, and NCLEX-RN performance. The researchers found the CCTDI scores did not significantly increase as students progressed through the curriculum. Also there was no relationship found between critical thinking disposition and NCLEX-RN performance, GPA, and standardized test scores (ERI RN Assessment).

Giddens & Gloeckner’s (2005) study investigated the relationship of critical thinking to performance on the NCLEX-RN. These researchers also reported the relationship between CCTDI scores and NCLEX-RN performance is unclear. The study findings do support the correlation between CCTST and NCLEX-RN performance.

In today’s changing health care and educational environment, students are faced with many challenges. Students need to be able to use critical thinking strategies to help solve problems related to critical health care issues with their patients and within an increasingly complex
organization. The search for variables associated with NCLEX-RN success continues to be a primary focus in nursing programs. The literature review does reflect the correlation between critical thinking and NCLEX-RN performance, yet further research is needed to determine how these critical thinking skills can best be taught and implemented within the curriculum.
Chapter III
Methodology

The purpose of this study is to determine the relationship between critical thinking skills and NCLEX-RN performance. This is a partial replication of Giddens and Gloeckner’s (2005) study. The National League for Nursing Accrediting Commission criteria serves as the framework. This chapter includes: the purpose, protection of human subjects, research design and procedures, reliability and validity of instrumentation and measures of data analysis.

Research Questions

1. Does student performance on the CCTST change as students progress through the nursing curriculum?
2. Is there a relationship between student CCTST scores and the NCLEX-RN performance?

Population, Sample, and Setting

The sample for this study includes all nursing students from one baccalaureate nursing program in Cincinnati, Ohio who will enroll between 2009-2012 and complete the critical
thinking instruments and whose NCLEX-RN results will be on file.

Protection of Human Subjects

Prior to data collection, written consent will be obtained from all participants, including consent to use the data for educational purposes. The identity of all participants will remain confidential and code numbers will be assigned. Participation within this study is not expected to result in any harmful effects. This study will provide nurse educators information regarding the effectiveness of curriculum development on critical thinking and the relationship to NCLEX-RN performance.

Research Design and Procedures

The design of this study is a longitudinal descriptive study which will examine the critical thinking skills of nursing students as they progress through the nursing curriculum and compare their skills with their performance on the NCLEX-RN.

Prior to data collection, approval for the project will be obtained from the Ball State University and University of Cincinnati Institutional Review Boards. Once approval is
obtained, the CCTST instrument will be distributed during the first quarter in the sophomore year in 2009 and again in 2010, as an indicator of the participant’s critical thinking ability. The CCTST will then be given again to these same students during the last quarter in the Senior year in 2011 and 2012, who will essentially have completed their program. Once students take the NCLEX-RN, their results will be placed on file.

A one-way ANOVA will be used to compare the CCTST subscale and total scores among the students at the Sophomore and Senior levels in order to reveal any significant differences. A Wilcoxon signed ranks test will be performed in order to reveal any significant differences between CCTST scores of students who passed the NCLEX-RN to those who did not.

Instrumentation

The California Critical Thinking Skills Test (CCTST) instrument will be used in this study. The CCTST is a 34-item discipline-neutral, multiple choice instrument. The instrument measures the participants’ skills in five core critical thinking skills (analysis, evaluation, inference, deductive reasoning, and inductive reasoning) according to three
sub scales (analysis, evaluation, and inference). Items are scored dichotomously (right or wrong), and scores are obtained by summing the number of correct answers for each subscale and for the entire scale. Because of the complexity of the critical thinking concept, the subscale scores should not be considered exact indicators of an individual’s ability but rather indicators of overall strengths and weaknesses (Beckie et al., 2001; Facione & Facione, 1998).

Validity and Reliability

The CCTST manual estimates the reliability to be at 0.78. Although this is less than .80 which is suggested for internal consistency on tests intended to measure a single ability, it should be noted that the CCTST assess numerous factors (Facione, et al., 1998).

The CCTST manual cites several studies involving the CCTST as the primary research tool which support that the test measures precisely what it purports to measure, thus supporting its case for construct validity. The issue of face validity is addressed by the nature of the questions asked, in that students must make judgments, draw inferences, evaluate reasoning, and justify their inferences and evaluations. In
terms of criterion validity, the CCTST has been found to correlate with college level grade point average, the Graduate Record Examination, and with SAT Verbal and Math scores (Facione, et al., 1998).

Summary

This chapter contained details of the methods and procedures to be used in exploring the relationship between critical thinking skills and performance on NCLEX-RN. Specifically, the design of this study is a longitudinal descriptive study which will examine the critical thinking skills of nursing students as they progress through the nursing curriculum via the CCTST and compare their scores with their performance on the NCLEX-RN. The anticipated sample is approximately 180 students from one baccalaureate degree nursing program.

This study will attempt to reveal similarities and/or differences between NCLEX-RN pass and fail individuals to their critical thinking skills. In addition, the study will provide information regarding changes in critical thinking skills during nursing curriculum progression. The study data
will further enhance the research base within critical thinking and its affect on nursing curricula.
References


