

**Assessing Critical Thinking (Spring 2007)**  
**Office of the Provost/Vice President for Academic Affairs**  
**California State University, Fresno**

**COVER SHEET**

Title of Project Assessment of Critical Thinking in Undergraduate Nursing

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**Signatures:**

I have read and agree to the requirements of the Assessing Critical Thinking Proposal.

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Applicant \_\_\_\_\_ Date \_\_\_\_\_

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Applicant \_\_\_\_\_ Date \_\_\_\_\_

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Department Chair \_\_\_\_\_ Date \_\_\_\_\_

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Dean \_\_\_\_\_ Date \_\_\_\_\_

## Overview

The rapid changes in healthcare and growing complexity of nursing requires that students are proficient in critical thinking in order to ensure that they are able to provide safe, quality care for increasingly acute and complicated problems in a variety of settings. Nurses are frequently called upon to make immediate life and death decisions, and their ability to do so is dependent upon their ability to think critically and problem solve. Although these skills are called by various names in the profession, including “the nursing process” and “clinical reasoning”, they all modeled on the scientific method and entail goal directed thinking which uses judgments based on evidence (Frye, Alfred, & Campbell, 2000). Although the ability to solve problems and make decisions was identified by employers as the most important competency for beginning nurses, it was also the one that was least likely to be observed (King as cited in Shell, 1998).

It has been estimated that information doubles every two years (Nieto, 2000), and as the amount of information continues to increase exponentially, many faculty are feeling compelled to add more and more content to nursing curricula. However, programs are beginning to realize that much of what is being taught today will become obsolete within the students’ professional lives. Not only is this information only useful for a short period of time, but the memorization of endless facts does not result in knowledge retention. At the same time, the assumption that by teaching content, critical thinking skills are also being learned is being discredited. In addition, many of our assessment methods depend on the memorization of discrete facts, and do not evaluate or encourage critical thinking in our students. Research is needed to identify strategies to combine critical thinking development with content coverage.

The importance of addressing critical thinking by the development of conscious deliberate and sustained activity throughout a nursing program has been recognized by both national accrediting bodies for schools of nursing. The American Association of Colleges of Nursing mandates that critical thinking skills be a top priority for baccalaureate programs, and the National League of Nursing Accreditation Commission has made instruction in critical thinking an accreditation requirement (Shell, 2001). One of the student learning outcomes of our undergraduate nursing program is the development of critical thinking skills. Since we have had some outside suggestions that we need to improve the assessment of our student learning outcomes, including that for critical thinking, this project is designed to address that deficit.

However, it is difficult for many faculty to teach critical thinking, because it is an abstract, conceptual skill (Allen, Rubinfeld, & Scheffer, 2004; Shell, 2001; Weis & Guyton-Simmons, 1998). In addition, most faculty teach as they were taught, and most were taught in the traditional lecture format. The profession has been attempting to identify ways to impart these skills to students. However, this has become increasingly difficult due to the current severe national nursing shortage. Many of the accepted teaching strategies for the development of critical thinking skills require a large time commitment both on the part of faculty and also of class and clinical hours. Therefore, this study proposes to use computer-based clinical case studies to enhance critical thinking skills without

further exhausting our already severely exhausted faculty, using an inordinate amount of class time or clinical time, and putting a live patient in potential danger.

Student attitudes and expectations can also pose a barrier to some of the methods employed in active learning to develop critical thinking skills. Many are used to the lecture format and just want to be told the content that is on the test. Others have a less than optimal educational background that did not prepare them for even basic critical thinking. Therefore, we propose to use methods to teach critical thinking that students will find applicable to their future practice and that have been found to be enjoyable by students in the Family Nurse Practitioner Program. Although the case studies will not be the same for the undergraduate students as those used in the graduate program, the intent is the same: to motivate the students to construct knowledge by searching for, critically analyzing, and applying information to solve authentic problems. The case studies can also serve as a medium for faculty-student dialogue and to provide a bridge to experience and practical application by the student and increase the faculty's understanding of the student's knowledge and abilities. Such Problem Based Learning has been shown to be an effective strategy for teaching clinical reasoning (White, Amos, Kouzekanani, 1999).

There are several tools which have been used to measure critical thinking, such as the Watson-Glaser Critical Thinking Appraisal and the California Critical Thinking Disposition Inventory. We intend to use two different measures each applied twice in a select group of students. The first is the Assessment Technologies Institute Critical Thinking Examination, and the second are two web-based critical thinking problem-solving case studies developed by DxR Nursing. The use of the online cases will provide a standardized patient encounter that will allow for comparison of group and individual scores. The administration of these instruments at different points of time in the undergraduate nursing program will allow comparison of the results to determine if learning has occurred in the interim. This project will also provide information that can be used for thoughtful and informed evaluation of the program and curricula, as well as for the development of other measures of encouraging and evaluating critical thinking.

This study will address the following research questions:

1. Is there a significant difference between the critical thinking scores of nursing students as measured by the Assessment Technologies Institute Critical Thinking Examination when administered upon admission and during the last semester of the program?
2. Is there a correlation between critical thinking scores on the Assessment Technologies Institute Critical Thinking Examination and achievement on the RN Comprehensive Predictor Examination?

## **Methodologies/Procedures to Implement**

Because of the short timeframe of this proposal, only one cohort of students will have completed all the assessments prior to the deadline. However, subsequent cohorts will be in the pipeline at various points during the study. Assessment measures will be administered as per the timeline below, providing 4 evaluations of critical thinking throughout the program. These 4 measures will then be studied using statistical analysis to see how they correlate with the RN Comprehensive Predictor Examination.

### **I. ATI Critical Thinking Examinations**

Scores on the ATI Critical Thinking Entrance Examination will be compared with those of the Critical Thinking Exit Examination on an individual basis to assess growth in each student's ability to use the phases of the critical thinking process. In addition, the mean scores of the program on the various components of the test will be compared to the national means for BSN programs.

### **II. DxR Nursing Web-based Critical Thinking Cases**

Overall case performance scores and scores for each major critical thinking section and subsection for both cases will be reviewed. Individual student performance scores will be compared with group performance scores and scores from the first case will be compared with those of the second. Student selections in the framework clusters will be compared between students and between cases.

### **III. RN Comprehensive Predictor Examination**

Our previous research found a very strong positive correlation between National Council Licensure Examination (NCLEX) success and ATI RN Completion Test achievement. Therefore, since NCLEX scores will not be available before the end of the study, the RN Comprehensive Predictor Examination will serve as a proxy. Scores on the ATI Critical Thinking Exit Exam and the final DxR case will be compared with RN Comprehensive Predictor Exam achievement. If significant positive correlations are found between either of these assessment methods and RN Comprehensive Predictor Examination achievement, areas of weakness identified by these measures will be presented to the department evaluation committee, undergraduate curriculum committee, and faculty council for discussion and action.

## **Anticipated Use of Results**

Analyzing this data in a scientifically rigorous and thoughtful manner would allow the program:

- To determine if critical thinking skills have improved during the program using 2 different measures
- To discover which of these assessments, if either, is predictive of NCLEX performance
- To explore methods of teaching critical thinking and strengthen and retool the curriculum

- To evaluate this process of measuring critical thinking. If the DxR cases enhance and measure critical thinking, more cases can be obtained and integrated throughout the program.
- To offer early remediation in critical thinking for students with poor skills, if a positive correlation is found between NCLEX scores and achievement on either of the proposed measures
- To provide a program outcome measure of Critical Thinking

### **Potential impact of the program**

#### I. Ongoing benefits beyond the year developed

- Provide mechanism to measure critical thinking on entry to and exit from the program
- More appropriately use testing program to which we already have access
- Allow for development of program to improve critical thinking skills early in the program, e.g. Problem Based Learning, more DxR case studies, etc.

#### II. Improvements in curricula and teaching

- Help us assess whether we are actually teaching this very important skill
- Identify and evaluate strategies for teaching critical thinking
- Determine appropriate points in the program for evaluation of critical thinking

#### III. Contribution to the University Goal

- These results could help other departments think of ways they could use similar techniques to increase and measure critical thinking in their own disciplines.
- Increase communication within College about issues of critical thinking and discover commonalities between the different programs to develop ways of measuring critical thinking in students in the health professions
- Add to the body of knowledge

### **Revised Project timeline**

<u>Completed by</u>	<u>Major Activities</u>
Summer 2006	ATI Critical Thinking Entry Exam given
June 15, 2007	Administer DxR COPD Case
August 31, 2007	Preparation of second DxR case as above & revision based on results of first case. Entry and analysis of data to date
September 30, 2007	Administer of second DxR (DM) Case
December 1, 2007	Administer RN comprehensive Predictor and Critical Thinking Exit Examination
February 28, 2008	Entry and analysis of preliminary data.
April 30, 2008	Collection of NCLEX results
May 30, 2008	Entry and analysis of data including NCLEX. Preparation of report for Nursing Evaluation Committee and final project report.

## References

- Allen, G.D., Rubenfeld, M.G., & Scheffer, B.K. (2004). Reliability of assessment of critical thinking. *Journal of Professional Nursing, 20*(1), 15-22.
- Frye, B., Alfred, N., & Campbell, M. (2000). Use of the Watson-Glaser Critical Thinking Appraisal with BSN students. *Nursing and Health Care Perspectives, 20*(5), 253-255.
- King, M.S. *Entry level competencies needed by BSNs in acute healthcare agencies in Tennessee in the next ten years*. Unpublished doctoral dissertation, East Tennessee State University, Johnson City.
- Nieto, S. (2000). *Affirming diversity: The sociopolitical context of multicultural education*. (3<sup>rd</sup> ed.). New York City, NY: Addison Wesley Longman, Inc
- Shell, R. (2001). Perceived barriers to teaching for critical thinking by BSN nursing faculty. *Nursing and Health Care Perspectives, 22*(6), 286-291.
- Weis, P.A., & Guyton-Simmons, J. (1998). A computer simulation for teaching critical thinking skills. *Nurse Educator, 23*(2), 30-33.
- White, M.J., Amos, E., Kouzekanani, K. (1999). Problem-based learning: An outcomes study. *Nurse Educator, 24*(2), 33-36.

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**Budget**

Assessment of Critical Thinking in Undergraduate Nursing\*

June 2007-December 2007

<b>Supplies</b>	<b>Total Cost</b>
ATI testing (This is part of an already available package)	0
Principle Investigator, M. Barakzai, EdD (summer stipend)	2,500
Co-Principle Investigator, D. Fraser, MSN (summer stipend)	2,500
<b>Total</b>	<b>\$5,000</b>

\*Because of the sensitive and confidential aspects of the data being considered the work must be done by faculty rather than by graduate students. In addition, there is a complexity of variables that require depth of knowledge of the program and education outcomes. In addition, modification of the online critical thinking cases requires a significant degree of technological savvy and experience. However, both investigators have extensive experience in technology as well as in the evaluation of the relationships between standardized testing programs, entry to practice examination results, and curriculum.

## Expected and Actual Level of Achievement of Student Learning Outcomes

Required and Elective Outcomes Summary				
Required Outcomes	Expected Level of Achievement (Decision Rule for Action)	Actual Level of Achievement	Resulting Action Taken/To be Taken with Time Frame for Implementation	Time
Critical Thinking	Passing grades on care plans and case studies Passing grade on exams Passing grade on Senior Project Pass ATI Comprehensive Predictor (BSN) Pass Graduate Writing Requirement Pass Comprehensive Exam (MSN) Pass Thesis/Project Graduates feel prepared Employers of graduates are satisfied	100% passing for all assignments with a grade of "C" or above  Overall, graduates feel prepared Overall, employers are satisfied	Students who pass assignments progress to next level and eventually graduate. Students who do not pass assignments are retained until ready for progression.	Annual
Communication Skills	Passing grade on course papers Passing grade on class presentations Graduates feel prepared Employers of graduates are satisfied	Overall, graduates feel prepared Overall, employers are satisfied 100% passing for all assignments with a grade of "C" or above Overall, graduates feel prepared Overall, employers are satisfied	Students who pass assignments progress to next level and eventually graduate.	Annual
Capacity for Therapeutic Nursing Interventions	Satisfactory evaluation of students' clinical performance Clinical site evaluations Passing grades on care plans Graduates feel prepared Employers of graduates are satisfied	All students received satisfactory evaluations on clinical performance Clinical sites are diverse and appropriate 100% passing grades on care plans Overall, graduates feel prepared Overall, employers are satisfied	Students who pass assignments progress to next level and eventually graduate.	Annual
Performance on NCLEX-RN® and Certifying Examinations	85-95% first-time passing rate 80-90% first-time passing rate	83-91% first-time passing rate 50-80% first-time passing rate	Students receive their RN license or Certification if they pass exams	Annual
Employment Rates	90-100% employment upon graduation	100% employment upon graduation	Not applicable	Annual
<b>Elective Outcomes</b>				
Employer satisfaction with graduate	Employers indicate satisfaction with BSN and MSN graduates	Overall, employers are satisfied with graduates	Review curriculum if unsatisfied	Every third year
Graduation rates: BSN MSN	90-100% graduation 90-100% graduation	95-100% graduation 80-100% graduation	Review curriculum if more than 90% of students are not graduating	Annual



## Congruity among Mission, Philosophy, Goals, and Student Learning Outcomes of the Bachelor of Science in Nursing Program

Mission	Philosophy	Goals	Student Learning Outcomes
<p>"The mission of the Department of Nursing is to offer quality nursing education to undergraduate and graduate nursing students that prepares nurses with clinical decision-making skills based on theory and research." (General Catalog, p. 342)</p> <p>"The scope of nursing practice is changing significantly. The professional nurse uses theory and research-based knowledge to provide direct and indirect care to individuals, families, groups, and communities." (General Catalog, p. 342)</p>	<p>"The Department of Nursing philosophy ... is an expression of the commitment to excellence in professional education in meeting the health needs of the community." (Student Handbook, Baccalaureate, p. 8)</p> <p>"Faculty are responsible for the preparation of professional nurses who can assume current nursing roles and adapt to future health needs and evolving health care requirements." (Student Handbook, Baccalaureate, p. 8)</p> <p>"Professional nursing education requires a flexible curriculum that emphasizes a total person approach and is based on evolving nursing theory and knowledge from the sciences and other related disciplines." (Student Handbook, Baccalaureate, pp. 8-9)</p>	<p>1. The program provides the learner with a broad-based knowledge from the arts, natural and social sciences, and humanities to develop a foundation for nursing practice.</p>	<p>Students will attain a broad knowledge from the arts, natural and social sciences, and humanities by completing the prerequisite and additional course requirements.</p>

Mission	Philosophy	Goals	Student Learning Outcomes
<p>"The mission of the Department of Nursing is to offer quality nursing education to undergraduate and graduate nursing students that prepares nurses with clinical decision-making skills based on theory and research." (General Catalog, p. 342)</p>	<p>"The philosophy of the department is actualized through application of the Neuman Health Care Systems Model. Nursing is advancing into a new era of expanding roles, responsibilities and functions in primary, secondary, and tertiary preventions." (Student Handbook, Baccalaureate, p. 8)</p>	<p>2. The program provides the learner with knowledge of theories and practices of nursing based on professional values of care within the Neuman Health Care Systems Model framework.</p>	<p>Students will demonstrate the attainment of knowledge, skills, and abilities in nursing core courses in order to serve individual, family, and community needs.</p>
<p>"Nursing is directed toward reducing stress factors that influence or could influence the attainment of an optimum level of wellness by an individual, family, or community. This goal is achieved through the nursing process, a systematic, problem-solving technique used for implementing dependent, independent, and interdependent nursing actions. This process consists of assessing the person's actual and/or potential health problems, constructing a diagnostic statement, formulating goals and objectives with expected outcomes, implementing therapeutic interventions, and evaluating the effectiveness of these interventions/preventions." (Student Handbook, Baccalaureate, p. 8)</p>	<p>3. The program provides the learner with competencies of critical thinking, communication, assessment, and technical skills in the delivery of nursing care.</p>	<p>Students will demonstrate attainment of core competencies by passing the National Licensing Examination (NCLEX-RN) at or above the national norm for nursing graduates.</p>	

Mission	Philosophy	Goals	Student Learning Outcomes
<p>"As life-long learners graduates are prepared to deliver quality health care with increasingly diverse populations across environments." (General Catalog, p. 342)</p>	<p>"The faculty recognize the unique diversity of the Central Valley including cultural and ethnic backgrounds, language, beliefs and values, learning styles, and support systems. This diversity is viewed as an asset that is incorporated into curriculum development, implementation, and evaluation." (Student Handbook, Baccalaureate, p. 9)</p>	<p>4. The program provides the learner with opportunities to utilize the nursing process with individuals, families, groups, communities, and populations across a variety of settings.</p>	<p>Students will demonstrate professional values as evidenced by ratings of satisfactory or outstanding in the clinical evaluations.</p>
<p>"The scope of nursing practice is changing significantly. The professional nurse uses theory and research-based knowledge to provide direct and indirect care to individuals, families, groups, and communities." (General Catalog, p. 342)</p>	<p>"Learning is viewed as a life-long process involving the continuing development of personal, intellectual, and professional growth." (Student Handbook, Baccalaureate, p. 9)</p>		
	<p>"Nursing is directed toward reducing stress factors that influence or could influence the attainment of an optimum level of wellness by an individual, family, or community. This goal is achieved through the nursing process, a systematic, problem-solving technique used for implementing dependent, independent, and interdependent nursing actions." (Student Handbook, Baccalaureate, p. 8)</p>		

Mission	Philosophy	Goals	Student Learning Outcomes
<p>"In the role as designer, manager, and coordinator of care, nurses collaborate with patients and interdisciplinary care teams." (General Catalog, p. 342)</p>	<p>"Faculty are responsible for the preparation of professional nurses who can assume current nursing roles and adapt to future health needs and evolving health care requirements." (Student Handbook, Baccalaureate, p. 8)</p>	<p>5. The program provides the learner with knowledge and experiences that foster and develop leadership qualities, support collaborative practice, and encourage professional role development.</p>	<p>Students will demonstrate professional role development as care providers, designers, managers, and coordinators of care by attaining satisfactory or outstanding ratings in the clinical evaluations.</p>
<p>"Graduates will lead, supervise, delegate, manage, and evaluate care outcomes, as well as demonstrate the ability to act as consumer advocates in promoting wellness and facilitating change." (General Catalog, p. 342)</p>	<p>"The faculty believe that well developed leadership abilities are essential in professional practice." (Student Handbook, Baccalaureate, p. 9)</p>		
	<p>"As scholars, nurses, and citizens, faculty accept the responsibility for the development of the profession and improvement of health care through continuing practice, study, and research." (Student Handbook, Baccalaureate, p. 9)</p>		
	<p>"... faculty serve as role models and valuable resources in facilitating the advancement of nursing practice through leadership, research, and scientific inquiry. ... The learner is expected to exhibit self-direction, and a sense of responsibility and accountability in mastery of knowledge and skills consistent with professional practice." (Student Handbook, Baccalaureate, p. 9)</p>		

## Congruity among Mission, Philosophy, Goals, and Student Learning Outcomes in Nursing Program

Mission	Philosophy	Goals	Student Learning Outcomes
<p>"The mission of the Department of Nursing is to offer quality nursing education to undergraduate and graduate nursing students that prepares nurses with clinical decision-making skills based on theory and research. As life-long learners graduates are prepared to deliver quality health care with increasingly diverse populations across environments. Graduates will lead, supervise, delegate, manage, evaluate care outcomes, and demonstrate the ability to act as consumer advocates in promoting wellness and facilitating change." (General Catalog, p. 342)</p>	<p>"The Department of Nursing philosophy ... is an expression of the commitment to excellence in professional education in meeting the health needs of the community." (Graduate Student Handbook, p. 2)</p>	<p>1. Program graduates will be able to analyze nursing phenomena through the implementation of the research process and the application of conceptual models of nursing (systematic inquiry).</p>	<p>Completion of graduate nursing core requirements</p>
<p>"The scope of nursing practice is changing significantly. The professional nurse uses theory and research-based knowledge to provide direct and indirect care to individuals, families, groups, and communities." (General Catalog, p. 342)</p>	<p>"The philosophy of the department is actualized through application of the Neuman Health Care Systems Model. Nursing is advancing into a new era of expanding roles, responsibilities and functions in primary, secondary, and tertiary preventions." (Graduate Student Handbook, p. 2)</p>	<p>2. Program graduates will be able to demonstrate the application of advanced nursing practice concepts with individual, family, and community systems through implementation of the Neuman Health Care Systems Model (advanced practice).</p>	<p>Attainment of knowledge, skills, and abilities in advanced practice nursing core courses in order to serve individual, family, and community needs</p>

Mission	Philosophy	Goals	Student Learning Outcomes
<p>"Additionally, the department seeks to establish an academic foundation for Advanced Practice Nursing and Doctoral preparation." (Graduate Student Handbook, p. 1)</p>	<p>"The purpose of the Master of Science in Nursing program is to prepare nurses for advanced practice in the functional roles of primary care nurse practitioner, clinical nurse specialist, and nurse educator." (Graduate Student Handbook, p. 1)</p>	<p>3. Program graduates will be able to contribute to the advancement of nursing practice and research through analysis, synthesis, application, and extension of nursing conceptual models (systematic inquiry, advanced practice).</p>	<p>Attainment of knowledge, skills, and abilities in a clinical specialty area of practice</p>
<p>"Graduates will lead, supervise, delegate, manage, evaluate care outcomes, and demonstrate the ability to act as consumer advocates in promoting wellness and facilitating change." (General Catalog, p. 342)</p>	<p>"The program provides a foundation for doctoral study in nursing." (Graduate Student Handbook, p. 1)</p> <p>"The faculty believe that well developed leadership abilities are essential in professional practice. Nurses need to seek improved ways of service to clients through research and effective dissemination of knowledge." (Graduate Student Handbook, p. 3)</p>	<p>4. Program graduates will be able to advance professional role performance by implementing concepts of collaboration, consultancy, teaching, leadership, and research in advanced nursing practice (social organization).</p>	<p>Attainment of objectives for clinical and functional role courses</p>
<p>"Inherent in the teaching-learning process is the reciprocal responsibility of faculty and students in influencing the process of learning outcomes. In this relationship, faculty serve as role models and valuable resources in facilitating the advancement of nursing practice through leadership, research, and scientific inquiry." (Graduate Student Handbook, p. 3)</p>			