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The Effect of Classroom and Clinical Learning Approaches on Academic Achievement in Associate Degree Nursing Students

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THE EFFECT OF CLASSROOM AND CLINICAL LEARNING APPROACHES ON
ACADEMIC ACHIEVEMENT IN ASSOCIATE DEGREE NURSING STUDENTS

A Dissertation

Submitted to the School of Graduate Studies and Research

In Partial Fulfillment of the

Requirements for the Degree

Doctor of Education

Jo Anne Carrick

Indiana University of Pennsylvania

May 2010

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Abstract

Title: The Effect of Classroom and Clinical Learning Approaches on Academic Achievement in Associate Degree Nursing Students

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While many students compete aggressively to enter into nursing schools, those who succeed have no guarantee they will be successful in their nursing studies, graduating, and passing the National Council Licensing Exam for Registered Nurses (NCLEX-RN[®]). This study's objective was to gain a better understanding of how nursing students approach learning and to determine what characterizes the successful student. The study's design was based on the theoretical framework of the students' approach to learning, which ultimately impacts on the students' learning outcome.

This study followed a non-experimental causal-comparative study design using the Revised Approach to Studying Inventory – Short Version (RASI- SV) to measure the students' use of deep, strategic, and surface learning approaches in the classroom and a modified RASI-SV for clinical learning to assess learning in the direct patient care environment. Both learning inventories were given to Associate Degree nursing students enrolled in an adult health nursing course. The study also compared the impact of the students' learning approach on their adult health nursing course grade, nursing GPA, and clinical performance level. Further analysis included examining the influence of the

students' presage characteristics – gender, student type (adult or traditional age), and prior experience in a health care setting.

Results showed that Associate Degree Nursing students employ strategic learning in both the classroom and in the clinical environment as their predominant learning approach. However, when strategic learning is combined with a high level of deep learning; the students experienced more academic success. Results also showed a consistent negative correlation of surface learning with academic achievement.

In addition, the students' strategic and deep learning approaches scores were significantly higher ($p < .001$) in the clinical learning environment and the surface learning approach was lower in comparison to the learning approaches in the classroom. The deep clinical learning approach also had a positive impact on the students' course grades.

And finally, presage characteristics had limited impact on the students' learning outcomes. Adults had higher NGPA and students with prior experience in a patient care setting used less surface learning approaches and had higher clinical grades.

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The time has arrived to express gratitude to those who helped me along the way, yet a part of me feels unable to write one more word for this document. But with that said, it is because of the support I received from the faculty, friends, co-workers, and family that enabled me to reach this milestone in my professional career. Therefore, there are many people I would like to acknowledge.

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are very proud of the fact I am the first woman in our family to achieve this academic milestone.

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CHAPTER I
THE PROBLEM
Introduction

There is a continued concern for the demand for nurses to meet the future health care needs of our society. Reports from the Bureau of Labor Statistics (BLS) indicate that the, “employment of RNs is expected to grow 23 percent from 2006 to 2016, much faster than the average for all occupations (BLS, 2009). During this time, the health care system has projected a need for 587,000 RN’s to fill new positions along with replacing experienced nurses who will leave the occupation. But despite the current influx of new nurses into the workforce, without aggressive intervention it is projected that the RN workforce will fall 36 percent below requirements by the year 2020 (National League for Nursing [NLN], 2009).

To meet this demand, nursing educational programs continue to be uncompromising in their efforts to attract students into the nursing profession, increase enrollments, and offer quality programs that will provide graduates entering the nursing work force. This effort, coupled by the increasing financial support by the government and the current economic downtrend leaving many people unemployed, has resulted in a strong interest by both traditional aged and adult students choosing nursing as a profession (National Center of Education Statistics, [NCES], 2005).

Subsequently, this has increased the competitiveness for applicants to gain entry into nursing programs. Moreover, the competitiveness is compounded by enrollment limits due to a shortage of nursing faculty, clinical sites, classroom space, and budget constraints (American Association of Colleges of Nursing, [AACN], 2008). As a result, students with the highest academic potential are most likely to gain entry into nursing

programs. However, being successful in the admission process does not always guarantee that students will be successful in their nursing studies, graduating and passing the required National Council Licensing Exam for Registered Nurses (NCLEX-RN[®]).

Attrition rates in nursing programs can be as high as 25% or greater (Seago, Wong, Keane, & Grumbach, 2008). In addition, aggressive academic progression policies that “weed out” students at risk for failing the NCLEX-RN[®] exam contribute to an even greater number of students who do not complete their nursing education (Snelgrove & Slater, 2003). And when nursing graduates fail the NCLEX-RN[®] exam, they are immediately removed from the nursing workforce, considered unsafe to practice, and cannot re-enter until they successfully pass the exam. Compounding this devastating outcome for the new nurse graduate, the likelihood of passing on the second attempt is reduced an additional 25% and continues to diminish with each attempt (National Council of State Boards of Nursing, [NCSBN], 2008).

So, despite a strong academic profile upon entrance into a nursing program, traditional indicators such as prior grade point average and scores on achievement tests may no longer be adequate to predict academic success for the nursing student. Therefore, an imperative exists for nurse educators to identify factors that will foster student learning and academic achievement from the start of their first class, through to graduation, and include passing of the NCLEX-RN[®] on first attempt. But despite extensive research on predictors for academic success in the classroom and passing of the NCLEX-RN[®] exam, problems with nursing student learning and academic achievement continue to persist (DiBartolo, & Seldomridge, 2008).

Less explored in the nursing literature are aspects of the nursing students' learning approach and the effect of the student's approach to learning on academic achievement. The learning contexts for nursing include a combination of classroom instruction for theoretical content and clinical instruction to apply this theory in the direct care of patients. Therefore the intent of this study was to examine the approaches nursing students use to learn in both learning environments. This chapter will further identify the state of the problem, purpose of the study, theoretical framework, research questions, hypothesis, and significance of the study, assumptions, limitations, delimitations, and definition of terms.

Statement of the Problem

Student achievement and academic success in any selected course of study is complex in nature and related to multiple variables. Many studies have demonstrated that students who have weaknesses in learning and study strategies are less likely to be successful in college (Entwistle & Peterson, 2004; Hounsell, 2005; Prymachuk, Easton, & Littlewood, 2008) Also, academic expectations differ widely between high school and college settings. Students may not be expected to actively engage in learning nor acquire effective learning and study strategies that are essential to mastering and applying information at the college level. In addition, variations in faculty expertise, teaching approach, commitment to academic rigor and grading compound an already complex problem (Campbell & Dickson, 1996; Chacko & Huba, 1991; Jeffrey, 2001; Robbins et al., 2004; Wells, 2003; Wells, 2006).

Student achievement and academic success in nursing has been explored by nurse researchers over the past several decades. Many studies focused on determining relationships between admission criteria, course grades on various nursing and non-nursing subjects and the student's success on the NCLEX-RN[®] exam. But despite concerted efforts by nurse researchers, two aspects prevail; studies on learning are primarily focused on aspects of classroom and theory instruction excluding learning in the clinical environment, and no single indicator or group of indicators has definitively predicted academic success for nursing students (DiBartolo, & Seldomridge, 2008; Higgs, 1995; Schaefer, 2002; Wachs, 2005; Wold & Worth, 1990).

Compounding the problem further is the increased competency requirements for the graduate nurse entering practice at the basic level. This has ultimately contributed to the increased rigor in the content and the passing standards for the NCLEX-RN[®] exam (Wendt & Kenney, 2007). To meet this challenge, nurse educators have explored ways to help their students learn, develop these practice competencies and to pass the NCLEX-RN[®] exam. Most recently, nursing research on student achievement and NCLEX-RN[®] performance has supported a multifaceted approach citing strategies such as increasing academic admission requirements, raising the passing standard for nursing courses, use of external assessment testing and identifying ways to help students – at – risk for failure. Findings indicate that a comprehensive approach and using strategies such as counseling for anxiety and test taking skills have generated improvements in academic achievement, retention and NCLEX-RN[®] exam performance of their graduates (Firth, Sewell, & Clark, 2006).

But despite gains over the past decade, problems addressing the needs of the “risk for failure” student and predicting success on the NCLEX-RN[®] exam continue to persist (DiBartolo, & Seldomridge, 2008). In addition, in a recent editorial of the *Journal of Nursing Education*, Giddens (2008) poses a rhetorical question, “Is there really anything to celebrate when a nursing program with only 50% persistence to graduation rate boasts a 100% first-time NCLEX-RN pass rate?” (p. 124).

To understand the nature of this problem further, a limited number of studies on nursing student achievement, with many conducted in countries outside the United States, have explored the nursing students’ learning approach. Consistent with educational research outside of nursing, these studies represent a more contemporary direction of research on student learning (Brodersen, 2007). These studies investigated learning approaches and study tactics and found that a deeper approach to learning correlated with higher levels of academic performance (Brodersen, 2007; Snelgrove & Slater, 2003). In addition, other studies have shown that the learning environment can have a considerable impact on how the student chooses to learn which further impacts on the learning outcome (August-Brady, 2005; Brodersen, 2007; Entwistle, 2005; Hoveland, 2006; Meyer & Dunne, 1991; Rosander, 2009; Struyven, Dochy, Janssens, & Gielen, 2006).

In summary, the need for nurses in the workforce is unlikely to change and the academic requirements and skill competencies will continue to increase. While many are successful in their nursing studies, there still remains the students-at-risk and those who fail. Past research on the nature of this problem has not found a single or group of academic indicators for student success and now suggest a multifaceted approach to helping nursing students achieve. This presents a challenge for nursing program leaders

and nurse educators to gain a better understanding of the complexity of these problems and to identify new strategies to help students.

Recent findings on nursing student learning indicate a deep learning approach supports academic achievement. But this aspect of nursing student learning has been understudied especially in the U.S. in the last decade (Brodersen, 2007). Unanswered questions remain on what approaches nursing students use to learn and how the learning context and personal factors impact on their chosen approach and the students' academic achievement. For this reason, nursing research on student learning and relationships to achievement merits contemplation.

Purpose of the Study

The purpose of this study was to examine the Associate Degree nursing students' learning approach in both the clinical and classroom setting and to investigate whether the approach in either setting related to student achievement. Finally, the study explored the relationships between learning approaches and academic achievement to the students' gender, age, or prior experience in a patient care setting.

Theoretical Perspective

Over the past century, researchers have looked at multiple aspects of learning ranging from the neuro-physiological process of learning to a multifaceted array of social and psychological factors that influence the students' motivation, persistence and the impact of the environment for learning. Educational researchers began to move away from the teacher or researchers view of learning to the exploration of the student's view of how they learn and the learning experience (Entwistle, 2005). This resulted in studies that began to examine the associations between the students' perceptions of learning, and

the relationship of the learning contexts to academic achievement. This included the student's approach to learning and studying, personal factors such as work life responsibilities, motivation, preferred learning style, teaching environment, and the interactions between these constructs and their effect on the learning outcome.

A branch of learning style research, well established in higher education but less in nursing education, is the study of the student's approach to learning. This field describes learning approaches as, "a combination of the *intention* that the student had in starting the task and the *process* used to carry it out" (Entwistle, 2005, p. 18). Marton & Säljö (1976a) conducted qualitative phenomenological studies that described student learning as levels of processing information which led to the deep/surface approach learning dichotomy. Deep learning seeks to understand and extract meaning whereas surface learning is the memorization of information and tasks. This concept was further expanded to include a third approach defined as strategic which has the intention to achieve the highest possible grades. All three approaches are shaped by the student's intention for learning. Essentially students may fail to grasp a concept or simply not get the point because they were not looking for it. Therefore, the intention drove the level of processing information which was then described as the students' approach to learning (Entwistle, 2005). While some argued that students tend to adopt the same approaches to learning for different tasks, other researchers found that student approaches to learning respond to the learning environment. Biggs, Kember & Leung (2001) proposed a middle position that the learning approach can be modified by the student's personal factors, chosen study and learning approach, and also by the learning environment that fosters varying levels of superficial, strategic and deep learning.

Biggs, et al., (2001) conducted research on student learning and described student learning in their Presage – Process – Product model of student learning. Presage is identified as the student's personality, locus of control, ability, background, conceptions of learning, attitudes, general experience, and approach to studying. It also includes the teaching context, nature of the task, time pressures, teaching method, assessment, and perception of institutional requirements. Process – is the learning focused activities or ongoing approaches to learning. Together these factors affect the quality of the learning outcome, the product, through the chosen learning approach and the learning context.

Biggs, et al., (2001) quotes T. J. Schuell stating,

“If students are to learn desired outcomes in a reasonably effective manner, then the teacher's fundamental task is to get students to engage in learning activities that are likely to result in their achieving those outcomes. It is important to remember what the student does is more important than what the teacher does” (Schuell, 1986, p 429).

Thus a student's learning approach is dynamic and open to change by the teaching and learning environments rather than fixed (Cowman, 1998; Marton, 1983; Ramsdon, 1981; Ramsdon & Entwistle, 1981; Entwistle, 2005). This opens the door for considering interventions targeted at influencing the learners' approach to their studies and to changing the learning environment to support a deeper approach as both have shown to promote academic success over the surface approach (Brodersen, 2007; Leung, Mok., & Wong, 2008; Snelgrove, 2004).

As learning theory indicates, student success is multifaceted and related to factors both in the teaching and learning environment and their influence on the students' approach to learning. Therefore, this theory offers the perspective that the learning approach is an important factor on how students learn. It also supported the need to

explore the relationship of the learning contexts and student personal factors to better understand how they may influence the learning experience and the learning outcome.

Research Questions

This study answered the following research questions:

1. What is the predominant learning approach used by Associate Degree nursing students in the theory/classroom setting and the clinical/direct patient care setting and to what extent does the students' learning approaches differ in each setting?
2. What is the relationship of the Associate Degree nursing students' learning approaches and academic achievement within the theory/classroom setting and within the clinical/direct patient care setting?
3. To what extent do student category, gender, and prior experience in a health care setting influence these relationships?

Hypothesis

The literature on student learning and nursing student learning supported the hypotheses that:

1. Students in an Associate Degree program of study in nursing will choose a predominant strategic learning approach in the classroom setting and a predominant deep learning approach in the clinical setting.
2. Students who choose a predominant deep learning approach in either setting will achieve better learning outcomes.

3. Nursing student personal factors will impact on the students' learning approach and student learning outcomes.

Significance of the Study

The depth and breadth of the science and art of professional nursing is expansive and an overwhelming task for a new nursing student to learn. As students attempt to navigate through this learning experience, many find it difficult to differentiate between what is necessary to learn and what is less important. Furthermore, new nursing students often lack experience in nursing that could help them make sense of the information and discern appropriate applications. Students will often use prior learning strategies that in this new setting may no longer be effective thus finding they are at-risk for failure. Therefore it is critically important for nursing program administrators and nursing faculty to fully understand the nursing students' learning experience in the key learning environments of nursing education.

There is limited research on nursing student learning approaches. And in the last two decades only three studies on nursing student learning have been published on Associate Degree nursing students. To that end, the significance of this study was that it provided empirical evidence describing the predominant learning approaches used by associate degree nursing students in both the classroom and clinical learning environments. It also described the relationship to the students' chosen learning approach and other presage student characteristics that impacted on student achievement and success in the study of nursing.

Assumptions

1. It was assumed that each campus site used in the study administered the nursing curriculum of the program consistently.
2. It was assumed that some variation in program delivery and faculty interaction with students existed but this variation did not influence student learning approach or success differently between each campus site participating in the study.
3. It was assumed that the researcher would conduct the study without bias since the study included faculty and students in the program that the researcher worked directly with as part of her role of nursing program coordinator.
4. It was assumed that information collected in the students' academic records was complete and accurate.
5. It was assumed that students would complete the demographic survey and Revised Approach to Studying Inventory – Short Version (RASI–SV) questionnaires honestly.

Limitations of the Study

1. The study was limited by the fact that the researcher might hold a bias towards the institution and the associate degree in nursing program due to her role as the program coordinator of one of the campus sites included in the study.
2. The study was limited to utilizing one instrument to measure student learning approaches and may not encompass all aspects of the student learning experience.
3. The study was limited by the need to revise the RASI-SV instrument to provide learning approaches for the clinical learning environment.

4. The study was limited by the self report nature of the demographic survey and RASI-SV questionnaires.
5. The study was limited by the variation of academic outcomes, specifically student grades, based on the chosen assessment method of the instructor.

De-limitations of the Study

1. This study was limited to one university and 5 satellite campuses that offer the Associate Degree in nursing program.
2. Pre-licensed RN nursing programs students include not only Associate Degree programs but also Diploma and Baccalaureate programs. This study design was limited to only students in an Associate Degree of nursing program.
3. The study was limited to student approaches to learning for one adult health nursing course in the nursing major.
4. The study was limited to student approaches to learning for clinical experience in acute care settings of adult patients on medical and surgical patient care units.
5. The study was limited to the use of student academic outcomes that are indicators for achievement in the nursing curriculum.

Definition of Terms

Academic achievement - also called academic outcomes or success indicators are defined as the dependent variables for this study. They included cumulative nursing grade point average of all nursing courses (NGPA), final percentage grade in the adult health nursing course and clinical proficiency level at the end of the adult health nursing course.

Adult Student - an individual that may be 24 years of age or older; or a veteran of the armed services; or returning to school after four or more years of employment, homemaking, or other activity; or a person who assumes multiple adult roles such as parent, spouse/partner, employee, and student.

Approaches to studying – refers to learning strategies used that are dependent on the student’s intention to understand course content by seeking meaning, relating ideas, and using evidence or to reproduce in order to meet grade requirements on course content assessments. Approaches to studying are classified as Deep, Surface and Strategic (Entwistle, 2005). This term is used interchangeably with study approaches, learning approaches, and approaches to learning.

Assessment methods – teacher designed or standardized tests, exams, and other graded assignments that are used to assess the quality of the learning outcome.

Associate Nursing Degree (ADN) Programs - consist of two years of college-level courses in the supporting sciences and nursing curriculum. These programs qualify the graduate to sit for the national licensing exam to become a Registered Nurse (RN).

Classroom learning context – refers to the learning environment where students learn theoretical content in the studies of the nursing care of patients with adult health problems of a medical and surgical nature.

Clinical learning context– refers to the learning experience where nursing students provided direct patient care under the supervision of the nursing instructor. Care is provided in acute care settings to adult patients on medical and surgical non-critical patient care units.

Concepts of Learning – individual beliefs about what it means to learn: to understand and apply or to merely memorize facts (Entwistle & Peterson, 2004).

Cumulative Grade Point Average (GPA) – The cumulative GPA will be determined by first calculating the total grade points earned for the letter grade assigned by the course instructor. This letter grade is determined by the earned percentage score of the student on course assessments and consistently assigned to nursing students in the sample university according to the grade assignment policy of the nursing major. A letter grade of an “A” is assigned 4.0 grade points which are multiplied by the number of credits for the grade point average. Each subsequent letter grade is assigned lesser points that will range from 0.0 for a failing grade “F” to 4.0 for an “A”. All courses the student takes are added and then divided by the total course credits for the cumulative GPA value.

Nursing GPA (NGPA) - The cumulative N GPA will be determined in the following manner. All nursing course grade points will be added and divided by the total course credits for the cumulative NGPA value.

Deep approach – the motive is based on intrinsic motivation or curiosity; the strategy arising from curiosity to seek meaning (Marton & Säljö, 1976a).

Holistic strategy – a type of information processing in which students who intend to understand concepts will identify relationships between those concepts in order to achieve a comprehensive or broad understanding (Pask, 1976).

Learning context – refers to the teaching – learning environment. It is the nature of the course content and student’s interest in it, how student learning is measured or assessed, the teaching methods, and learning facilities and resources (e.g. library, learning lab, clinical patient care agencies). For the purpose of this study the learning context refers to

the teaching and assessment methods used for the required nursing theory classes and clinical patient care experiences of the Associate Degree nursing major.

Learning strategy – refers to the type of cognitive processing, holist or serialist, which students will use when learning is conceived as gaining understanding in order to produce meaningful learning (Pask, 1976).

National Council Licensure Examinations – Registered Nurse (NCLEX – RN®) – is the examination constructed and administered by the National Council of State Boards of Nursing. The purpose of the exam is to ensure public protection by requiring the candidate demonstrate they can perform safely and effectively as an entry-level nurse.

NCLEX-RN® success – is defined as a graduate nurse who passes the NCLEX-RN® on their first attempt. Nursing programs also define NCLEX-RN® success as the percentage of their nursing students who graduate and go on to pass on their first attempt.

Serialist strategy – a type of information processing in which students who intend to understand concepts will concentrate systematically on one concept at a time, while critically and cautiously considering each piece of evidence (Pask, 1976).

Strategic approach – refers to approaching studying used by students to “excel on assessed work” (Entwistle, 2005, p19)

Student type – Traditional age or adult student.

Surface approach – Refers to the intent to get the task out of the way with minimal trouble and appear to meet course requirements (Biggs & Tang, 2007).

Teaching methods – Refers to methods used for transmitting learning content, including but not limited to, delivering a lecture, making reading and writing assignments, organizing discussions and group activities, facilitating cooperative learning activities

and case studies, demonstration of psychomotor skills with student return demonstration, assigning students to create presentations or other multimedia work, clinical simulation scenario sessions, and so on.

Traditional Age Student – an individual who has entered college directly after graduating from high school.

Summary

In summary, this chapter has described the problem of the nursing shortage and the complex issues that challenge nursing education leaders and faculty. Central to these issues is the need for nurse educators to better understand factors that affect student learning and student achievement. But, despite research on student achievement, little is known specifically about how nursing students approach learning.

However, there is evidence from studies on student learning, that certain learning approaches can positively impact student learning outcomes. This evidence has also produced the Student's Approach to Learning (SAL) theory that was chosen as the theoretical framework for this study. Therefore, the purpose of this study was to identify the Associate Degree nursing students' learning approach in both the classroom/theory and clinical/patient care learning contexts and to examine presage characteristics of the student learner that may influence these relationships.

Included in this chapter are the research hypotheses that were formulated from evidence in the literature along with assumptions and limitations that could have impacted on the study outcomes and the ability to generalize findings to the study population. Lastly, important operational definitions were defined to provide clarity of terms used within this document and those relevant to the study context.

CHAPTER II

REVIEW OF RELATED LITERATURE

The focus of this study centered on examining the Associate Degree nursing students' learning approach in the two primary learning environments for nursing – the classroom and clinical setting. In this chapter the review of the literature explores several aspects of the student's potential to learn which include memory, cognition, intelligence, and meaningful learning. It further discusses research on student learning in higher education and the theoretical framework of the student's approach to learning (SAL) that will be used for this study.

When studying nursing students' learning, it was also necessary to describe the nature of the nursing education system as it provided an explanation of what nursing students need to learn and how the learning contexts and assessments may affect learning outcomes. Within this discussion a description of nursing education in the U.S. and other countries, and a discussion of studies on nursing students' learning and their learning environments are included. Finally the review is summarized to specifically identify gaps in our understanding of the nursing student learner and how these gaps supported the need for further inquiry.

Learning Potential

Memory, Cognition, Intelligence

From a neuro-physiological perspective, memory is a process for storing what was learned that results in chemical and structural changes in the brain (Widmaier, P., Raff, H., & Strang, K.T, 2003). While only minimally understood, the neurophysiology of learning begins with a sequence of events that occur simultaneously in multiple areas of the nervous system. Thoughts are initiated by sensory stimuli which are transformed

into an electrical impulse that is conducted along neurons with the aid of neurotransmitter chemicals. This stimulus is registered as a thought in short term memory. The thought remains for a brief moment until it either ceases to exist or it is transformed into a more sustainable memory (Widmaier, et al., 2003). As thoughts are transferred to a sustained level of memory, both chemical and structural changes occur to leave the pattern or tracing for future use. With regular recall of this new knowledge, relatively permanent changes in chemical and physical structures of the brain will occur that ensure continued access of that knowledge (Widmaier, et al., 2003).

Early research examined the concept of memory by studying what activities or variables affected how one would learn to perform a simple task in laboratory controlled environments. However, the concern for ecological validity led to research that generated an important change in thought concluding that memory was composed of many diverse aspects of the learning process of which all are not well understood (Entwistle, 2005).

Other studies on learning attempted to understand what comprised cognition and intelligence. By definition, cognition refers to, "... The mental processes and activities we use in perceiving, remembering, thinking, and the act of using those processes" (Hansen – Lemme, 2006, p.125). The contextual model conceives cognition as, "the result of a complex, reciprocal interaction between the individual's genetic nature and the various layers of the social, cultural, and historical environment" (Hansen – Lemme, 2006, p.125). Furthermore, over the course of an individual's lifetime, the multidimensional, multidirectional and multi-causal natures of cognitive development support the idea this is not a stagnant process.

Cattell (1963) and Horn (1982) developed a theory for intelligence as two levels that explained how it changes over time. The first level is defined as fluid intelligence or the mechanics and the second level is defined as crystallized intelligence or the pragmatics of thought. While the first level is considered the genetic potential for intelligence, the second tier reflects the individual's interaction with his/her environment.

Future studies described cognition as an object into itself, meaning that it has the ability to construct further layers. Described as reflective abstraction or meta-cognition, a third tier consists of higher mental functions that encompass the ability to critically think, to apply logical-mathematical structures and to employ strategies to solve problems (Perlmutter, 1988, chap.12). As an open tier which is internal and experientially based this aspect of cognition has the potential to develop further and may be relatively immune from deterioration that is associated with biological aging and declining health.

The study of cognition evolved from a single internal focus of mental activity and behavior to a much broader concept of cognition that encompasses multiple layers and characteristics with the capacity for growth and development over the course of a lifetime. These higher levels of cognitive functioning laid foundations for describing cognitive and intellectual processes and led to further study to understand the concept of intelligence and to define one's potential for learning.

Intelligence can be described as, "...a hypothetical construct – an inferred concept which can be used as a way of explaining the observed differences in intellectual performances" (Entwistle, 2005, p 8). This notion has grown out of early attempts to describe the individual differences observed when people complete certain tasks.

Research done by Spearman and Pearson and later by Binet in France gave birth

to the development of the IQ or intelligence quotient as a measure of intelligence. As a means to measure cognitive performance, one of the earliest tools, the IQ test was developed to measure cognitive or mental potential for instruction. Developed in the early 1900's and revised and re-standardized over several decades, the Stanford – Binet Intelligence Scale or IQ test migrated from a measure of school potential to a measure of intelligence (Kubiszyn and Borich, 2007, chap.19).

However, while the simplicity of identifying single tasks as a measure of intelligence and educational potential is appealing, others argued for a broader definition of human competencies. While relatively stable, the important fact is that intelligence can vary and can be affected by factors such as personality, motivation, and the social, home and educational environment (Entwistle, 2005). These aspects were further validated by psychological researchers such as Bandura's (1997) research and the development of social learning theory and the theory of self-efficacy, and Tinto's (1993) theory of persistence. Therefore, it would seem that intelligence is more global or the sum of various elements and skills that are modifiable within the limits of one's motivation and life experiences.

Thus it became evident that learning was more than the neuro-physiologic processes of memory cognition, or genetic intellectual potential. It now became widely accepted both by psychologists and educators that learning required an active process that included the construction of meaning (constructivism) from what is to be learned. Hence, learning was not merely affected by a stimulus or genetic organic potential but included the engagement, grappling, and seeking to make sense of things (Entwistle, 2005).

The idea that learning was multi-contextual seemed to link with earlier thoughts of learning as a process of personal development. In his book, *Freedom to Learn*, Carl Rogers described human learning from his experiences as a psychotherapist and university teacher. Entwistle (2005) described Roger's views on learning summarizing that,

“He came to believe that significant learning is possible only when the individual has self-confidence in his ability to learn and feels that the experience of learning will be personally rewarding and meaningful. Freedom of self-expression and the teacher's unqualified regard for the student were the linchpins of Roger's views on education... he wanted to set the learner free from the type of experiences which crush both curiosity and self-confidence” (p. 10).

Up to this point psychological research on learning was conducted in clinical or laboratory settings. Therefore, it became clear again that, research on learning needed to be moved to the settings which they were derived from. Two diverse forms of research methodologies – ways to select and predict academic performance (quantitative) and phenomenological studies (qualitative) that attempted to describe the student's experience of higher education emerged.

Selection and Prediction Studies

For over half a century, academic research on college admission processes focused mainly on the selection and prediction of how students would succeed in higher education. In the United States, the first Scholastic Aptitude Test (SAT) was administered to 8,040 students on June 23, 1926 by the College Examination Board (Lawrence, Rigol, Van Essen, Jackson, 2003). Since that time the test has been revised, tested, and validated to assess more specifically verbal and math reasoning with the most recent changes to include a writing component (College Board Tests, 2009). The research on the validity of the SAT scores for predicting college performance stems back

to several decades. A comprehensive meta-analysis of approximately 3,000 studies on test validity for over 1 million students found that the SAT was a valid indicator of first year GPA (Korbin and Michel, 2006). However recently, the SAT has borne criticism related to scoring errors and diminishing predictive value for admission decisions (Jaschik, 2007a).

Other researchers attempted to further predict future performance in courses for a degree major by attempting to identify what aspects of past performance on other college courses predicted how a student would do in their major (Entwistle, 2005). However, findings were inconsistent which led researchers to examine other aspects such as motivation (Entwistle & Wilson, 1977).

As educational researchers began to explore multiple aspects of the student characteristics, motivation, and academic performance it became clear that a shift in methodology was needed to consider the qualitative aspect of the learning experience. Up to this point a teacher would have described the students' lack of achievement simply as the unwillingness to get down to work. Then a teacher would also describe this as the learning paradox in that somewhere previously the students had been willing to work or they would not have achieved what they had so far academically. However, when students were asked, they did not see this as a paradox, they simply described being bored by uninspired teachers or disenchanted by badly taught material (Entwistle, 2005). This phenomenon raised questions about prior quantitative research which implied that poor academic performance lie solely to the students without asking the students how they came to lose their motivation and interest. Finally, it ignored the responsibility of the teacher or the learning institution for the outcomes of learning (Entwistle, 2005).

This led to the emergence of theories on how information was processed and factors that could lead to meaningful learning.

Cognitive Information Processing and Meaningful Learning

Cognitive information process theory (CIP) and its effect on retention and recall laid the foundation for other theories that describe the depth and level of meaningful learning (Entwistle & McCune, 2004). Ausubel (1968, 2000) was one of the early CIP theorists who described knowledge as a hierarchically organized theory of cognitive structure (CS) consisting of the learner's cumulative learning and experience. According to Ausubel's Assimilation Theory, learning occurs when learning is categorized under broad and general anchoring ideas already present in one's CS. Metaphorically speaking, these anchoring ideas serve as the "hooks upon which new learning is hung" (Rakow, 1992, p. 18). Stable and organized anchoring ideas are created by assimilation of potentially meaningful learning where by assimilation is the process for which new knowledge is integrated into one's cognitive structure. Thus as potentially meaningful material becomes the subject matter that is related "non-arbitrarily and non-verbatimly" to relevant anchors; it is more likely that meaningful learning will occur.

Ausubel's theory further describes the manner in which one assimilates knowledge as hierarchical in nature where learning material is either subsumed under broad, general, and abstract anchoring ideas already within the CS, or superordinately when the new concept is broader than the relevant anchoring idea in the CS. If the new concept is horizontal, meaning it is neither broader nor more specifically differentiated than its relevant anchoring idea, it is subsumed combinatorial. Furthermore, the

assimilation of knowledge is facilitated when learning is meaningful as it then becomes better integrated into our CS (Ausubel, 2000).

Not long after Ausubel presented his Assimilation Theory and ideas on meaningful learning, other researchers began to identify hierarchical levels of information processing (Craik & Lockart, 1972; Lockart & Craik, 1990) and different levels of processing based on the learner's intentions (Marton and Säljö, 1976a; Marton and Säljö, 1976b). Craik and Lockart (1972) described levels of CIP as deep and shallow whereupon shallow represented a superficial form of analysis or fleeting memory trace. In contrast, deep processing and analysis thought was found to produce more resilient memory. Marton and Säljö extended this concept of deep and superficial CIP by adding the dimension of intention. Specifically, the level of CIP was influenced by the motivation or students' intent when presented with the learning assignment. Students either memorized using a shallow or surface approach or had the intent to understand and therefore used a deep approach (Marton and Säljö, 1976a; Marton and Säljö, 1976b).

Similarly, Pask (1976) proposed CIP where students will attempt to learn in two different ways. Some will approach the learning from a holistic perspective with the intent to achieve a comprehensive understanding whereas others will choose a serialist approach, which is used by a student who concentrates on one concept at a time, while critically and cautiously considering evidence. Pask describes a versatile learner as one who uses both approaches to achieve understanding, and it was highly unlikely that one would exclusively rely on one approach.

In summary, CIP theories provide further understanding of how meaningful learning can occur. In addition, this research led to further interest and research on the

relevance of the students' approach and intention during the learning process. It gave recognition to the "complexity of interrelationships affecting different ways of studying" (Entwistle, & McCune, 2004, p.327) and laid the foundation for the development of a new theory on student learning.

Students' Approach to Learning (SAL) Theory

The emerging studies of the student as a learner and the manner which the student would process information shaped the "conceptual framework known generically as 'student's approach to learning' (SAL) theory" (Entwistle & McCune, 2004, p.134). SAL theory encompasses all aspects of the learning process and the learning environment. Early researchers, Marton & Säljö (1976a;1976b), began to explore student learning by conducting qualitative phenomenological studies that asked students to recount how they handled the learning task and how it appeared to them. They found that students described their approach to the learning task as levels of processing information.

Described as the deep/surface approach to learning dichotomy, these processes are used by students to achieve their academic goals. The deep approach seeks to transform what is to be learned and the surface approach seeks to reproduce. Subsequent research by Entwistle and Ramsden (1983) and Biggs (1987) expanded the theory to include a third approach that took into account the level of student effort and the influence of teacher assessments. This was defined as a strategic approach which sought to organize what was to be learned with the intent to achieve the highest possible grade.

Each approach recognizes that the students' intent for learning leads to the different ways of processing. There are three types of intentions: intent to understand information, the intent to cope with course requirements, and the intent to achieve the

highest possible grades (Entwistle, 2005). Furthermore, these intentions direct how information is processed and is based on Pask's (1976) theories of cognitive information processing. As students employ the deep approach, they will use activities directed for comprehension learning (holist strategy). If they employ the surface approach, they use learning activities directed to reproduce as in operation learning (serialist strategy) which is dependent on a narrower focus. Full understanding would often require a versatile approach that moves between both styles. Students using the strategic approach may employ both of Pask's methods for CIP depending on the student's intent to achieve. Marton (1995) explored the variation in approaches that gave light to how strategic learners may approach their studies achieving the passing grade and understanding of content. Perhaps culturally driven, students will first seek to understand using the deep approach then move to commit this understanding to memory using the surface approach. This was seen in his studies on cultural differences of Chinese students and consistent with studies conducted later by Entwistle on students in Britain (Entwistle, 2005).

Collectively the student's learning approach, intention and information processing formulated the key elements of SAL theory. Each approach now had specific study behaviors guided by the intent and study processes used for the learning task and are summarized in Table 1.

Table 1. *Approach to Learning and Intentions*

Deep Approach - Transforming

Intention – to understand ideas for yourself by

- Relating ideas to previous knowledge and experience
- Looking for patterns and underlying principles
- Checking evidence and relating it to conclusions
- Examining logic and argument cautiously and critically
- Becoming actively interested in course content

Surface Approach – *Reproducing*

Intention – to cope with course requirements by

- Studying without reflecting on either purpose or strategy
- Treating the course as unrelated bits of knowledge
- Memorizing facts and procedures routinely
- Finding difficulty making sense of new ideas presented
- Feeling undue pressure and worry about work

Strategic Approach – *Organizing*

Intention – to achieve the highest possible grades by

- Putting consistent effort into studying
 - Finding the right conditions and materials for studying
 - Managing time and effort effectively
 - Being alert to assessment requirements and criteria
 - Gearing work to the perceived preferences of lecturers
-

Entwistle, 2005, p.19

Two other elements complete SAL theory, the students' conceptions of learning and their preferences for different types of course and teaching. Conceptions of learning are described as the individual's belief about what it means to learn. Students enter a system of higher education with pre-conceived notions of what they need to learn. Some students conceive learning as an accumulation of facts that are needed to pass the exam while others conceive learning as understanding. For those students who seek to understand, "information is seen as having a purpose beyond acquisition: it also has to be applied" (Entwistle & Peterson, 2004, p.411). For students who adopt a reproductive learning conception, they will attribute academic success to acquiring facts and thus use unsophisticated surface strategies such as memorizing content. Therefore, the students'

concept of what learning is will influence how they approach the task of studying and how they contend with assignments (Entwistle, 2005).

The influence of learning conceptions on study approaches was further explored by Ferla, Valcke & Schuyten (2008) in their study of 473 freshman college students studying psychology, education, science or social work. The aim of this study was to determine if Vermunt's theory of self-regulated learning could be expanded to include academic self efficacy and attributions for academic success by determining the direct and/or indirect effects of these concepts on student cognitions and learning approaches. According to Vermunt, "a study strategy consists of a learning approach (cognitive strategy and a regulation strategy) which together form a meta-cognitive strategy" (Ferla, et al., 2008, p.271).

Regulation strategies describe how students monitor or gauge what they are doing and diagnosing causes for not achieving a learning goal. Students are either self regulated, externally regulated, or lack regulation. Academic self efficacy refers to ones' perceived capacity to perform their academic tasks and attributes for academic success. Academic self-efficacy, therefore, is how students describe the causes of their academic success or failure. Ability, effort, task difficulty, and luck are the most salient causes of academic success reported in the literature.

Furthermore, controllability or contributing academic success to things that can be controlled by the individual is related to a higher level of academic achievement (Ferla, et al., 2008). In this study students were asked to complete questionnaires that measured learning approach, self- efficacy, and attributes to academic success. Results of this study showed that students who possessed a constructive concept of learning were more likely

to attribute academic success to effort, felt more self-efficacious, and made greater use of internal and external regulation strategies. Their studying had direction and they were more likely to adopt a deep learning approach. On the converse students with a reproductive concept of learning attributed academic success to uncontrollable causes, felt less self-efficacious, and were likely to adopt a surface approach. Furthermore, this study validated that learning conceptions (constructive or reproductive) are fundamental student cognitions since they will directly and/or indirectly influence student's self-efficacy, attributions for academic success, and study strategies.

And finally, the last element of SAL theory is the student's preference for different types of teaching contexts. These include the learning activities, content delivered and assessment methods for measuring the learning outcomes (i.e. grades). Students who seek to understand will prefer teaching and assessment methods that support understanding. These methods put less emphasis on memorization of facts and more emphasis on demonstrating overall understanding and are thought to support a Deep Approach to studying. In contrast, teaching methods that are designed to deliver information which students are then required to reiterate in multiple choice exams are believed to support the Surface or Strategic Approach (Entwistle, 2005). The following definitions describe the difference between courses and teaching that support understanding or to transmit information.

Courses and Teaching that Support Understanding. Teachers who demonstrate to students their methods of thinking as well as encourage students to think for themselves are thought to facilitate student's pursuit and achievement of understanding. Exams that allow students to demonstrate how they have thought about the course material are also believed to support student understanding as it encourages students to read beyond the assigned text (Brodersen, 2007, p 28)

Courses and Teaching that transmit information. Teaching environments where teachers transmit information. Students want to be told exactly what to write in their notes during lecture and desire to be tested only on information that was presented in lecture. Certainly about the required reading and text that feature easily learned specific facts and information are also student preferences consistent with transmitting information (Brodersen, 2007, p 28).

The relationship between students' approaches to studying, concepts of learning and preferences for course and teaching are not static and lifelong traits. They are dynamic in nature and develop over time progressing from a less mature conception of memorizing facts to one which is linked with understanding (Entwistle & Peterson, 2004). However, these conceptions are grounded in the student's history of learning experiences and vulnerable to the influence of the learning environment. The recurrence of "similar situations may re-activate [less mature] conceptions, even when later ones have also been developed" (Entwistle & Peterson, 2004, p. 411) In other words any aspect of the teaching/learning context can influence what processes and approaches to studying the student will adopt to meet the learning tasks. Biggs, et.al (2001) captures the dynamic nature of SAL theory in their 3P model (Presage, Process, and Product) of the teaching/learning system. Presage is identified as the student's personality, locus of control, ability, background, conceptions of learning, attitudes, general experience, and approach to studying. It also includes the teaching context, nature of the task, time pressures, teaching method, assessment, and perception of institutional requirements. Process is the learning focused activities and ongoing approaches to learning. Together these factors affect the quality of the learning outcome, the product, through the chosen learning approach and the learning context (Biggs, et al., 2001; Brodersen, 2007; Chacko & Huba, 1991; Doll-Speck, 2007).

As presented in this discussion, SAL theory provides a comprehensive view of the multiple perspectives of the student's approach to learning. In review, the four key elements of this theory include (1) the student's concepts of learning that drives the learning intent, (2) the chosen learning approach; Deep, Surface or Strategic, (3) the student preferences for the learning context and (4) the presage characteristics of the student and the teaching/learning environment. It also provides a foundation for understanding the student learning experience and for exploration of the impact of the teaching and learning environments on student learning outcomes.

Nursing Education in the United States

Over 150 years ago Florence Nightingale started the first school of nursing at St. Thomas Hospital in London. This laid the ground work for the establishment of hospital-based schools of nursing throughout developed countries around the world including the United States (U.S.). Rooted initially within hospital environments as a 3 year vocational training that led to a diploma in nursing (DP), the education of nurses slowly began to migrate to institutions of higher education. The first 4 year baccalaureate nursing program (BS) was started in 1923 at Yale University and very shortly after that; others followed (Arenda, 2007). During the post World War II era the demand for nursing continued to grow giving rise to a third educational model, the two year Associate Degree nursing program (ADN) that was primarily, but not exclusively, based in community college settings. Today, ADN programs are the most numerous in the U.S. (U.S. Department of Labor – Bureau of Labor statistics [USDOL-BLS], 2006) and produce the greatest number of pre-licensure nursing graduates (USDHHS – HRSA, 2006). While originally proposed in 1965 by the American Nurses Association (ANA) and again

reaffirmed in 1995, nurse leaders and educators in the U. S. have attempted to mandate one entry level education, a baccalaureate degree for nursing, but without success (Lusk, Russell, Rodgers, Wilson-Barnett, 2001). Therefore, the three pathways for entry into the practice of nursing remain.

An individual who desires to become a registered nurse must reach three very important milestones. The first is competing among numerous other applicants for a seat into their school of choice. The second milestone is successfully completing the course of study in nursing through to graduation. This includes classroom instruction where theoretical content in nursing is presented, practice labs where students learn patient care skills, or participate in patient care scenarios with high fidelity human patient simulators that replicate experiences a student might face in the clinical patient care setting. The last form of instruction and learning is in the clinical setting providing direct care to patients under the supervision of their clinical instructor. Clinical experience allows the student to interact with patients and families for the purposes of acquiring critical thinking skills, clinical decision making, and psychomotor and affective skills. It is a rich learning environment where students have the opportunity to apply theory (DeYoung, 2007).

Academic achievement of theoretical content is predominantly assessed in the form of multiple choice exams with questions that mimic the types of test questions a student will face when taking the NCLEX-RN® exam (Giddins, 2009). Practice labs are typically ungraded and grading for learning in the clinical setting is most often a subjective evaluation and graded as pass or fail (Holaday & Buckley, 2008).

The third milestone is passing of a national competency exam administered by the National Council of State Boards of Nursing (NCSBN). While it would seem logical to

believe that achieving acceptance into a highly competitive degree would validate academic potential, students in nursing are known to find their learning experience to be difficult, stressful and with no guarantee of reaching graduation nor passing the licensing exam (Giddins, 2009). The National Council Licensing Exam (NCLEX-RN®) is intended to determine if the graduate meets the minimum competency to safely administer care to the general public and practice as a registered nurse. The successful graduates are then licensed by the authorizing state which they choose to practice (Seldomridge & Di Bartolo, 2004). Passing or failing the NCLEX-RN® has its largest impact if the student fails the test. Withdrawal of the permit to practice occurs immediately upon notification of failure in the NCLEX-RN® test prohibiting the nurse graduates to practice as nurses until they re-take the test and achieve a passing score. For many, this is a devastating experience that has both emotional and financial implications as many are terminated from their employment.

The NCLEX – RN ® test is developed by practicing clinical nurses, nurse educators, and nursing administrators and undergoes rigorous reliability and validity testing. As part of maintaining the validity of the NCLEX-RN®, the NCSBN updates and revises the test blueprint so that the test reflects current practice in nursing and trends in the health care industry. Test blueprints change every three years, and are slated to change again for tests taken in 2010 (National Council of State Boards of Nursing [NCSBN], 2009). Nationally, the pass rate of all graduates who took the exam in 2009 was 88.42% (NCSBN, 2009). The distribution of pass rates among the three educational programs are similar with the three program types (BS – 89.5%, ADN – 87.6%, DP – 90.5%) with the ADN pass rate the lowest by 1.9% of the three program types. In

addition, these pass rates reported in aggregate for all program types typically fall dramatically to approximately 50% (49.1% in 2007, 53.3% in 2008, and 55.9% in 2009) for those who attempt to take the exam again (NCSBN, 2010). Pass rates are monitored closely by individual state boards of nursing, and the programs that fall below the passing standard set by the respective state are at risk for losing their accreditation and can be prohibited from admitting students.

So clearly the NCLEX-RN® serves as the “high stakes” exam for both nurse graduates and their respective schools. Because of this, past attempts have been made by researchers in the nursing profession to identify what combination of variables might predict the academic success of nursing students in all levels of their nursing programs and with passing of the national licensing exam (Waterman and Beeman, 2003). A more recent priority in nursing education is identifying students at risk for academic failure during their course of study and failure of the licensing exam (Higgins, 2005). Higgins further recommends the use of ongoing assessments of student progress in key areas and determining ways to address individual nursing student learning needs.

Coupled with the continued pressures to maintain high pass rates on the NCLEX – RN® exam, are the demands placed on students and faculty with the staggering growth of content in the nursing curriculum. This growth is reflective of the advancements in the science of medicine and the emphasis of patient safety that have increased the competency requirements for the graduate nurse entering practice at the basic level. In 2003 the National League for Nursing (NLN) called for curriculum revision that focused on evidence based nursing education stating that many nurse educators continue to teach as they were taught (NLN, 2003).

The implications of a content-laden nursing curriculum have been well documented in the nursing literature for over two decades with limited evidence of significant change (Bevis, 1990; Diekelmann, 2002; Ironside, 2004; Belleck, 2005; Belleck 2008). Belleck (2008) in her call for student – driven learning designs states, “...nursing education is still ‘teaching heavy’ and ‘learning light’...we have given much lip service to active student learning but have done very little to engage the students in actually creating conditions for learning” (Belleck, 2008, p.439). As the literature indicates, it would appear long overdue for nurse educators to examine the teaching and learning environment and to identify ways to improve student learning.

Selection and Prediction Studies in Nursing

Consistent with the selection and prediction research historically conducted by educational researchers in higher education, so has the research in nursing education followed studying student nurses’ academic achievement with selection studies of admission criteria as they relate to the prediction of graduates passing the NCLEX-RN exam. One of the earliest studies by Hoban-Hopkins (1975) examined the relationship of SAT scores and personality variables to freshman nursing students academic performance finding both cognitive and non-cognitive traits contributed to student success. Over the years researchers continued to monitor NCLEX-RN® pass rates and examine the impact of academic variables on nurse graduates’ ability to pass NCLEX-RN® relying heavily on GPA and SAT/ACT scores (Crow et.al. 2004; McClelland,; Sayles et.al, 2003;Wold & Worth, 1990). And as researchers continued to study criteria to predict student success, a definitive predictive model could not be found (Alexander and Brophy, 1997; Campbell & Dickson; Frazor, 2004; Higgs, 1995; Shafer, 2002; Wescott, 1997).

While quantitative studies dominated the research literature on nursing student academic potential, a few studies looked at non-academic factors with the preponderance of qualitative studies that have been limited to post license RN's seeking admission to graduate programs. Reese (2002) conducted a qualitative study in an attempt to identify the perceived importance of what preadmission characteristics predicted success in nurse anesthesia graduates. This study challenged prior research and practice that focused on objective admission criteria, specifically GPA and standardized tests as the best criteria for admission. The participants in the study consisted of nurse anesthesia graduates, faculty, and program directors. The results of the study found that participants scored critical thinking as the most desired attribute for admission ranking this first of the ten attributes and ranking academic performance fourth in the ranking.

Critical thinking was not a new concept to nursing but emerged in the forefront as an important component to nursing education and practice. McEwen and Brown (2002) reported that it is the most prominent concept emphasized in nursing curriculum. It is also considered a key competency measured in the NCLEX-RN® and essential to succeed in passing the NCLEX-RN® (Kokinda, 1989; Giddens, & Gloeckner, 2005; Wacks, 2005).

While not predominant in the nursing literature, researchers have examined motivation, study practices, work hours, age, ethnicity, and anxiety as factors that affected student success (Salamonson, & Andrew, 2006; Williams, 2006). Additional studies of nursing student performance supported the theoretical framework of self-efficacy and persistence. Showalter (2003) found that minority nursing student success was grounded in the emotional support from family and friends and Tutor (2006)

identified that academic self-efficacy and self-regulation of learning contributed to the positive variance in achievement for Associate Degree nursing students.

Over the course of the last decade, more focus has been placed on identifying students at risk with the use of assessment tests to evaluate student mastery of nursing content and development of critical thinking skills necessary for synthesis of nursing theory and application to patient care situations. A variety of nursing content mastery tests are used to assess student learning and are designed as multiple choice tests that mirror the NCLEX-RN® exam format. However, the primary use by nursing programs and focus of research on their benefit has been predominantly on the predictive value at end of program testing for NCLEX-RN® readiness. Each vendor reports the reliability and validity of their product in predicting NCLEX-RN® passing and independent nursing research on the predictive value of these tests began to emerge in the nursing literature (Carl, 2008; Newton, 2007; Sayles, Shelton, & Powell, 2003).

While a number of research studies have documented the benefit of the RN predictor test correlating it with the passing of NCLEX-RN® and other academic variables, many of these studies differed in results (Nibert, Young, and Admanson, 2005; Streubert-Speziale & Jacobson 2005). Therefore, while some variables predict student success on the NCLEX-RN® a missing element that was surfacing as much harder to predict, was the student who would fail (Seldomridge, & DeBartolo, 2004).

Nursing Student Learning

Many of the studies on the nursing students' learning approach have been conducted outside of the U.S. and in countries in the United Kingdom (U.K.), Australia, China, Thailand and Iran. Nurse educators' interest in exploring the nursing students'

learning approach has been limited in the U. S. with greater interest centered on critical thinking and learning styles (Atkinson, & Williams, 1993 Brooks & Shepard, 1990; Haislett, Hughes,; Wells & Higgs, 1990). Perhaps the lack of interest relates to the inconsistency of findings in this area. Thompson & Crutchlow (1993) conducted a review of the literature of studies on learning styles and concluded that they were flawed by “methodological deficiencies including the lack of a clear and consistent definition of learning styles, the use of small study samples, and circumscribed research designs” (p. 34). The lack of a clear definition and the single dimensionality of learning styles had also led educational researchers in general to explore other avenues to study student learning (Entwistle, 2005). However, studies on nursing student learning approach and study skills began to surface in the nursing literature.

One of the first studies conducted on ADN students by Chacko & Huba (1991) described the multidimensionality of student learning identifying reading, language and math ability, life stress, and motivation related significantly ($p < .05$) to student academic achievement. The importance of this early study was that it was the first conducted on student learning and study approaches on ADN students and the first where the sample was predominantly (64%) adult students. Prior to this and for several years later, a majority of studies on nursing student learning had been done on BS nursing programs whose students predominantly entered immediately after high school. It was not until several years later that a study on student learning and study strategies was conducted on the ADN student population. In this study, Hoveland (2006) also found motivation and test taking strategies to correlate significant ($p < .05$) to academic achievement.

Studies outside of the U.S. began to emerge that looked at students' learning approach using instruments designed by educational researchers to measure Deep, Surface and Strategic approaches to learning. Different from learning style research, these studies identified differences in learning approaches that were consistent between the successful and unsuccessful student. Academic success and course grades were found to correlate negatively with the surface approach (Brodersen, 2007; Howard, Hayes, Solomonides, Swarnell, 2001; McGeever, 1994; Myer & Dunne, 1991; Lapeyre, 1992; Snelgrove & Slater, 2003; Steirnborg, Guy, & Tinker, 1997). Conversely, students with higher grades and GPA have demonstrated higher Strategic and Deep approaches to learning (Brodersen, 2007; Cantwell & Moore, 1998; Howard, Hayes, Solomonides, Swarnell, 2001; Mansouri, et. al., 2006; Snelgrove & Slater, 2003; Steirnborg, Guy, & Tinker, 1997).

The most recent studies on student learning done in the U. S. added two additional methodologies that had not been used previously. Doll-Speck (2007) conducted one of the first studies attempting to capture data from a large sample across 385 universities. The aim of this research was to examine study behaviors of BS nursing students with the focus on time spent and influence of other variables such as motivation, study environments, learning approach, age, gender, work hours, time management skills, and self-monitoring of progress. A survey was designed by the researcher that incorporated items from several learning approach and study skill instruments used by previous researchers. These included the revised study process questionnaire 2 factor (R-SPQ-2F) designed by Biggs, et al., (2001), the Learning Approach and Study Skill Inventory (LASSI) designed and subsequently revised in by Weinstein and Meyer (1991) and the

Approach to Studying and Study Skills Inventory (ASSIST) by Entwistle & McCune (2004). Students were asked to answer the questions relevant to how they approached their coursework over one semester in nursing. Of the 3530 questionnaires sent to junior and senior nursing students, 12% (407) questionnaires were returned. This small return did limit findings of the study along with the lack of diversity in the sample. Ninety-four percent were female with an ethnic mix of 81% Caucasian, 7% African – American, and 2.5% American Indian. The most compelling results from this study were that students who had the highest study score (total score of selected study behaviors reflecting the use of more study tactics) and highest self-regulating behaviors (having a quiet place, putting a lot of effort, setting aside a specific time for studying, good time management skills, sticking to the study plan, keeping track of their progress, and making studying a top priority) were most successful academically. The specific learning approach (Deep, Surface, or Strategic) was not described however; a study behavior that was found to correlate with high academic achievement was having an effective method for memorizing materials. While this finding may appear to support a surface approach to learning, an explanation may be that the students used a learning strategy where they applied deep learning approaches to fully understand a concept then used the surface learning approach to commit it to memory. This type of approach was seen in studies of Chinese and British students (Entwistle, 2005).

In another study, Brodersen (2007) examined the learning approach and study tactics of nursing students in three different courses: pathophysiology, anatomy and physiology, and adult health nursing. Following a mixed methodology, the ASSIST questionnaire was used to identify the students' learning approach, preferences for course

type and their relationship to the final course grade and overall GPA. Interviews were conducted to identify study tactics. Since the ASSIST questionnaire had never been used in studies with nursing students in the U. S., the researcher also completed a psychometric analysis of the ASSIST questionnaire to validate its usefulness for studies of nursing students in this country. Conducted at one university, 174 students completed the surveys. Findings from this study identify that a majority (55%) of students used the Strategic Approach to studying with Deep Approach at 26% and Surface approach at 19%. Hours students spent studying, grades, and GPA were positively correlated with both the Deep and Strategic Approach. Age was positively correlated only with a Deep Approach and the Strategic Approach was correlated only with hours worked. Brodersen also concluded that while 86% indicated they definitely liked or liked to some extent instructors who encouraged them to think, a majority (92.5%) liked instructors who told them exactly what to put in their notes. This was not an unusual finding given that the students also reported wanting exams that were taken directly from their notes (90.2%).

Brodersen (2007) also examined the psychometric reliability and validity of the ASSIST questionnaire. “Findings in this study demonstrated moderate to strong internal consistency reliability with the sample of nursing students in the study. With the exception of the Strategic Approach – Alertness to Assessment Demands subscale, the ASSIST demonstrated acceptable construct validity; however, small sample size may have affected the results of confirmatory factor analysis” (p. 184). This provides evidence that the ASSIST is a reasonably valid and reliable measure of approaches to studying and useful for future research.

Using interviews as the qualitative methodology, Brodersen explored students' study tactics and found that all students experienced lecture style and fact based assessments with the predominant in-class activity comprised of note taking. Only students choosing a deep approach desired course content and instructors who encouraged students to think independently. Students choosing other approaches desired content they were specifically required to deal with and did not want to search for that content. Likewise, students did not prefer group work and preferred to listen to lectures or lecture handouts. While this finding was consistent with a prior study on student preferences (Walker, et. al, 2006), it certainly is contrary to the movement on active learning. However, it is consistent with the concerns described by leaders in nursing education on the problem with content-laden curriculums that focus on fact based instruction and multiple choice tests as the primary mode of learning assessments (Bellock, 2008; Ironside, 2004). This also was consistent with Brodersen's conclusion that the type of assessments and learning environment may have influenced these findings.

In a later study conducted by Leung, Mok & Wong (2008) in China, students' learning approach and the relationship of assessments and workload at the start and end of their course of study was examined. Consistent with prior studies, academic achievement correlated positively with a Deep Approach and negatively with a Surface Approach. But the decrease in the Deep Approach over time was attributed to the excessive workload in their nursing studies and had no direct association with multiple-choice assessments.

A limited number of studies in the nursing literature found the factor of age, gender, work hours, and experience in patient care influenced the students' approach to learning and their learning outcomes. Salamonson & Andrew's study of baccalaureate nursing students in Australia found the amount of hours worked had a negative impact on student s' outcomes if it exceeded more than 16 hours. Learning from work experience was also dependent on the quality and structure of the work experience (2006).

Studies outside of nursing also supported the findings of age as a factor on student learning approach and student achievement. Edmunds, & Richardson (2009) examined the impact of concepts of learning, approaches to studying, and personal development on first year and final year university students exploring the relationship of these variables across disciplines and departments. Again age was positively correlated with academic achievement where older students adopted a deep approach to learning. This pattern was consistent with previous evidence in the literature where age correlated with academic performance (Holtram, 1996; Hoskins, Newstead, & Dennis, 1997; Ofiori, 2000; Richardson, 1994; Van Rossum & Taylor, 1987). The researchers also noted that gender was a factor where women obtained higher scores than men on all three concepts of learning (construction, intake, and use of knowledge). These conceptions influence the learning approach used and align with the use of deep approaches to learning. But this finding was "not consistent with prior studies," suggesting that the impact of gender on learning approaches may still be uncertain (p. 304).

While there is clear evidence that approaches to learning align with academic achievement, there is general agreement that the learning context impacts the students' chosen approach. There is also general agreement among nursing education researchers

that when students have real experiences that relate to course content, Deep learning approaches are promoted (Cowman, 1998; Gibbs, Lucas & Spouse, 1996; Mansouri, et.al., 2006; Meyer & Dunne, 1991; Snelgrove & Slater, 2003; Stiernborg, et.al., 1997). Other teaching environmental variables thought to impact the students' learning approach included heavy workloads and exam-style assessments fostering surface or strategic approach (August-Brady, 2005; Cowman, 1998; Hoveland, 2006), and large enrollment classroom settings (Gibbs, et.al., 1996).

Whether learning approaches change over time or more importantly what specifically influences that change is not certain. Stiernborg et.al., (1997) reported a movement towards Strategic Approach while others found students over time students would move to a Deep Approach (Howard, et al., 2001; Mansouri et al, 2006; Tiwari et al., 2006). An explanation may be that students become more interested in the content along with adapting to the learning environment. Nonetheless, the learning environment plays a key role (August-Brady, 2005; Brodersen, 2007; Hoveland, 2006).

Learning Environments for Nursing Education

The learning environment is influenced principally by the teaching methods chosen by the instructor. As described previously, the learning contexts in nursing comprise three forms of instruction; theory/classroom, skills practice and simulation labs, and clinical experience delivering direct patient care. This section of the literature review will explore studies on nursing student learning in these learning environments.

Theory/Classroom Instruction

Nurse leaders across the country have made public the need for creating evidenced-based nursing education practice, creating more student centered learning

environments, and approaching theory instruction using multiple modalities (NLN, 2003; Emerson & Records, 2008). But despite this call to change, limited progress has been made. Theory instruction has historically been rooted in lecture based formats (Belleck, 2008; de Tornyay, 1997) and content laden curriculums and faculty resistance continue to hold back progress (Belleck, 2008, de Tornyay, 1997; Ironside, 2004).

The magnitude of the problem is further evidenced in a study that examined teaching styles to determine if this impacted on the teacher's use of a student-centered or teacher-centered learning environment. Zygmunt and Schaefer (2003) state that, "The principles of adult learning and teaching styles used to improve critical thinking skills are consistent with student-centered learning" (p.239). In their study of teaching styles, 187 baccalaureate faculty randomly selected across the U. S. completed the Principles of Adult Learning scale (PALS) to measure teaching style. High scores on this scale indicate a more student – centered style. Results of this study revealed two significant findings. First, the longer the faculty member was teaching the lower the score for flexibility for developing student centered teaching ($p < 0.01$) and second, the total mean score of the PALS was lower than the norm for the instrument indicating all study participants were more teacher-centered than student centered.

Further studies on faculty styles or teaching approaches are sparse in the nursing literature. The National League of Nursing in 2006 initiated a study of nursing faculty with the intent to determine the degree to which faculty were adopting new teaching methods in the classroom and clinical setting. Two main questions were explored, "How innovative are we?" and "What is the nature of our innovation?" Eighteen hundred nursing faculty members in all program types (pre-licensure and post licensure)

completed the survey. Results of the survey showed that 75% of respondents view the design and implementation of their programs as innovative indicating a move toward new learning environments. However, 25% reported no innovation or willingness to change, and the preponderance of faculty reporting innovation was with post-license nursing students. The researchers' challenge of the assumption of who is responsible for change stating, "One way to think about these findings is to consider, ...which increasing numbers of faculty are challenging the assumption that innovation is something created by experts and imported into existing courses...therefore, are we moving towards innovation for innovation's sake and are we using evidence to thoughtfully improve our programs? These questions remain unanswered." (Ironsides & Vaglia, 2007, p 52).

Despite the lack of strong evidence of change globally and resistance to change from some faculty, some evidence is present in the literature with individual studies that have shown student centered learning approaches promote benefits in student learning. One area of interest has been Problem Based Learning (PBL). PBL is an, "instructional strategy that promotes active learning...and can be used as a framework for developing learning modules, courses, programs or curricula. The PBL method challenges students to *learn to learn* by working cooperatively in groups or individually to seek solutions to real-world problems." (Alexander, McDaniel, Baldwin, 2005, p. 109-110).

White, Amos & Kouzekanani, (1999) reported PBL as a teaching/learning methodology that injected a renewed enthusiasm in the classroom environment. Chan, (2002) reported benefits of the use of case studies, a form of PBL that promoted reflection and increased student-teacher dialogue.

Yet, others challenge the impact of PBL on critical thinking. Yuan, Williams, & Fan (2008) conducted a systematic review of the evidence on the benefits of PBL on nursing student's critical thinking. Reviewing the literature from 1990 -2006, the researchers found 273 English and 23 Chinese articles that discussed PBL. In those studies, only 10 measured differences in critical thinking and of those studies, results were mixed on the type of benefits. Positive benefits included an increase in self-directed learning, problem solving, active participation, as compared to lectures. The researchers concluded that the differences in outcomes could be attributed to the methodologies used to measure the chosen outcome. However, they felt the environment or learning context created by the faculty was a more relevant factor.

This notion was supported by a later study by Moore (2009). Twelve faculty were interviewed in this qualitative study to identify the lecturer's personal pedagogical values and beliefs and how these interact with the discourse and rhetoric on problem-based learning. Results from this study showed differences between interpretation and application of the facilitator role of faculty when using PBL and faculty use of PBL depended on their personal beliefs and values. This finding adds to the debate regarding faculty's ability to let go of teacher-centered teaching while at the same time espousing the use of student-centered learning strategies such as PBL.

The impact on retention of what was learned when using PBL was another area identified in a study conducted by Beers (2002). An experimental group of 54 BS nursing students divided into an experimental and control group were instructed on content in nursing care of patients with endocrinology problems using either lecture format or PBL format. Prior GPA scores were tested to establish equivalency of the two

groups. While immediate pre-test and post-test scores showed no significant difference, one year later a post-test was administered along with a standardized exam of the content that showed a significantly ($p < 0.05$) higher score for the PBL group. This evidence once again raised important questions of the benefits of PBL, and the impact of the learning environments, teaching methods, on long term retention and learning approach used by the student.

Another active learning methodology used in the classroom setting is concept mapping. Concept maps are diagrams that represent ideas as node-link assemblies. They are often used as “media for constructive learning activities and as communication aides in lectures, study materials, and collaborative learning” (Nesbit & Adesope, 2006, p. 413) To determine the benefits of concept mapping, Nesbit and Adesope conducted a meta-analysis of 55 studies involving 5,818 participants of students in learning domains that included science, psychology, statistics, and nursing. Findings from this research supported that, “across several instructional conditions, settings, and methodological features, the use of concept maps was associated with increased knowledge retention” (p.413). They further concluded that concept mapping can be an effective teaching approach for student learning.

The benefits of concept mapping specifically in nursing was documented by an earlier study done by August-Brady (2005) who specifically measured the student’s learning approach using Biggs 2F-SPQ-R instrument and strategic flexibility questionnaire developed by Cantwell & Moore. A convenience sample of 80 BS nursing students from four universities participated in the study. Thirty-five were in the treatment group and 45 were in the control group. The experimental group was required to develop

a concept map based on the disease conditions of the clients they had cared for in the clinical area. The control group did not complete this assignment. Conducting paired t-tests, results of this study showed that students who used concept mapping as a learning activity had an increase in deep approach to learning scores ($p = 0.04$) and self-regulation ($p = 0.009$) of that learning as compared to students who did not use concept maps. This study provided two levels of evidence. First it supports the position that concept maps are activities that students can construct their learning and utilize an approach to understand what they were required to learn and second it provided further evidence that learning approaches can change by the context of the learning environment and learning activity.

Additional teaching strategies are beginning to emerge in the nursing literature that gives attention to student-centered learning. These include the use of group or team learning, integrative learning and narrative pedagogy, reflective journaling, simulation and computer-based learning environments. The results of preliminary research show increases in student engagement (Clark, Thanh-Nguyen, & Bray, & Levine, 2008), and increase in self-confidence, satisfaction and consistencies with their learning style (Fournain & Alfred, 2009). However, evidence of the specific impact on the student's approach to learning with these types of teaching modalities is lacking.

Practice Labs

In the early part of a nursing students' education, on-campus practice skills labs are a form of teaching in nursing education that has been a long standing practice (Decker, Sportsman, Puetz, & Billings, 2008). As a non-graded learning activity, this is a student's first experience to replicate skills he/she will perform in an actual patient care setting. Research on the impact on student learning has only been addressed in recent

years, as these labs have changed with the addition of high fidelity simulation as an interactive learning modality.

This technology and its widespread use in nursing education has begun to expand but research on the benefits on learning are yet to be determined. A critical review of 126 studies was done by Letterie in 2003 finding that the majority of the studies were non-comparative (descriptive) providing no evidence of learning gains or effectiveness. Other studies are beginning to emerge indicating this active learning approach increases student satisfaction and self – confidence (Smith & Roehrs, 2009) and the student’s ability to synthesize critical content (Brannan, White, & Bezanson, 2008) . In a recent study, Fountain and Alfred (2009) explored the relationship of this learning modality and student learning styles but found that it did not correlate with any specific learning style. They concluded that it provided a variety of learning modalities that enhanced the student learning experience but no measures to support this conclusion were provided.

Decker, et al. (2008) described the evolution of simulation and the available research evidence of its contribution to promote learners’ clinical competency and critical thinking skills. The intent of this review was to determine if there was enough evidence to support using simulation as a means to assess student competencies. They examined surveys and studies that described the types of simulation technology used and the degree of curricular integration and faculty expertise. They concluded that simulation provided a unique method for teaching that had the potential for impacting student learning, however the potential use of simulation for assessing clinical competency is limited by educator skills in using this technology and that additional research is needed to support

the integration of simulation into competency testing as a method to assess student learning.

As the literature indicates, the integration of simulation and redesign of on campus practice labs teaching is in a state of change with wide variations among nursing programs. While early benefits of this new learning environment are realized, too little is known to make definitive conclusions on student learning.

Clinical /Direct Patient Care

The nursing students' clinical learning experience is the most active learning modality and supported in the literature as the students' learning environment of choice (Etheridge, 2007; Meehan-Andrews, 2009). There are multiple settings and models of clinical instruction as clinical experience is designed to align with the curricular content. The most traditional clinical experiences in nursing are designed in groups of 8 to 12 students with a clinical instructor in a hospital setting. Students will have clinical hours that range from 4-8 hours in a day. The amount of clinical hours and number of days will vary among programs, courses and clinical settings. The hospital setting is by and large the most frequently used environment for clinical experience. Other settings included community health agencies, care of patients in their home and nursing homes or long term care facilities.

A typical clinical experience often begins the day before the actual experience. Faculty assign patients to students and in the late afternoon or evening students go to the clinical agency to review their assignment, gather information on their patient and complete written assignments as they prepare to care for that patient the following day. These assignments may include researching their patient's disease, the type of drugs they

will have to administer, and other aspects of the patient's disorder that students will incorporate into their patient plan of care. Students may also go directly to the clinical setting the same day of their experience and complete the patient information review in real time and follow up later either that evening or the next day with written assignments and reflections of experiences (Billings & Halstead, 2005).

All written work associated with the clinical experience is reviewed and evaluated by the instructor but may not be graded with a score or letter grade. However, the quality of the written assignments is considered when evaluating if the students pass their clinical experience.

The clinical experience is often concluded towards the end of the clinical hours with a "clinical conference" guided by the instructor. The content of these post clinical conferences will vary depending on the events that may have occurred in clinical or may be more structured depending on the items a faculty member may want to discuss (Billings & Halstead, 2005, p. 336). Therefore, while there are common patterns of clinical experience for nursing students, wide variations in content and quality of the experience can occur depending on the size of the clinical group, the instructor's conceptions of clinical teaching, program policies, and clinical setting and clinical agencies.

Historically clinical experience required nursing students to provide a significant portion of patient care in a semi-employment format rather than to meet learning objectives in a classroom setting (DeYoung, 2009). Early studies of clinical learning described this and other misuses of the clinical setting when novice students were given too much responsibility generating high anxiety and when clinical faculty supervised too

closely rather than guide the learner (Infante, 1985; Wilson, 1994). The latter generates anxiety of being “constantly aware that the instructor was evaluating them.” Other problems existed with the traditional model of instructor/clinical group design depending on the size of the group. Faculty often report feeling guilty that they may only see a student once during the clinical day or on a very limited basis (De Young, p. 241).

In 2005, Norman, Buerhaus, Donelan, McCloskey, & Dittus conducted a national survey of 496 students to describe the characteristics of the student nurse population and to describe their satisfaction with their nursing education. A qualitative methodology was used to analyze the students’ comments to two open-ended questions which explored the students’ view of their education. Results of the study found that 88% were satisfied with their nursing education. Nearly 95% responded to the two open-ended questions that explored what the rewards were to being a nursing student and what were the difficulties. Collapsed into three major categories, the rewards were helping others, status, and job security. Problems that were reported also fell into three major categories: problems with balancing demands, quality of nursing education, and the admission process. The study further described that problems with the quality of nursing education center on too much “busy work” while others felt they were functioning as nursing assistants rather than as nurse. Finally, students described faculty as unconcerned about their progress, insensitive to their needs, and inadequate clinical instruction that led them to essentially be “on their own” during clinical time. The study also reported that several questioned the clinical knowledge of their professors who seemed “out of date with current hospital realities” (p.155).

On the converse, other researchers found that new graduates identified their clinical experience as the most helpful learning strategy that guided them on how to think like a nurse (Etheridge, 2007; Stockhausen & Sturt, 2004). The benefits of clinical are further described by Idczak (2007) who conducted a qualitative study of 28 nursing students who were asked to keep journals of their experiences in their first year of clinical courses in nursing. The students were asked to record their thoughts, feelings, and emotions related to their interactions with patients and how their clinical experience helped them during their nursing studies. Results of this study identified five themes that students experienced during clinical, “fear of interacting with patients; developing confidence; becoming self-aware; connecting with knowledge; and connecting with patients” (p.67).

But similar to the call for educational reform in the classroom, so has there been an awareness of the need to improve the quality in clinical teaching (NLN, 2003). The difficulty of a new graduate transitioning to the role of the RN has been well documented in the nursing literature (Ashcroft, 2004; Chung, Wong, & Cheung, 2008; Delaney, 2003; Harper, 2005; Tiffany, 1990). In a qualitative study, recent graduates described their transition would have been smoother had they not glided through during their undergraduate studies. “There was a sense of going through their degree course and not really taking on board what was happening...I look back at it now and wish I had studied a bit more ...clinically I don’t think I felt ready” These individuals felt they could get through the day but were unprepared for handling real patient problems (Newton & McKenna, 2007, p. 1234).

In response to this call, another qualitative study was conducted asking new graduates to describe educator attributes and aspects of the clinical experience that they felt best prepared them for the role of the R. N. Using grounded theory, six students participated in what were the desired attributes of the clinical instructor that they felt shaped the quality of their clinical experiences. Results of this study revealed that students felt a good clinical educator enhanced the clinical experience when the educator possessed knowledge of clinical practice, was professional, and had a supportive attitude and encouraging demeanor. The students felt when instructors provided assignments that supported learning rather than busy work, conducted quality post-clinical conferences, and asked challenging questions that made them think about the aspects of their patient that constituted a clinical experience that improved their learning (Hanson & Stenvig, 2008).

Newer models of clinical experience and clinical teaching have also surfaced which include students working one on one with an RN preceptor that mentors the student and supplements the clinical instruction (Billings & Halstead, 2005; DeYoung, 2009). The benefits of this teaching model were supported by studies that show an increase in knowledge, skills, confidence, socialization into the role of the nurse, and use of self-regulated learning strategies (Daley, Menke, Kirkpatrick, & Sheets, 2008; Kupier, 2005; Stockhausen, 2002). On the converse, Udulis (2008) conducted a review of the literature that further explored the evidence of the use of preceptors in undergraduate nursing education. A review of a 20 year period generated 317 articles with 150 research publications and 29 dissertations and theses. From these a total of 16 studies met the inclusion criteria of empirical studies in undergraduate nursing. Results of this study

found that while “56% of the studies supported the use of preceptor clinical experiences, no significant benefits of this model of clinical instruction over traditional clinical education models” (p. 20).

Other clinical teaching models and interventional strategies for clinical teaching in the literature report improvements in the quality of clinical instruction and student learning from the clinical experience. These include the use of reflective journaling (Nielson, 2009; Neilson, Stragnell, & Jester, 2007), inquiry-based learning (Holaday & Buckley, 2008), problem based learning (Lee & Brysiewicz, 2009) and interventions to decrease student anxiety in the clinical setting (Moscaritolo, 2009).

Summary

This review of the literature explored the progress made in understanding how individuals learn and the theories of learning were formulated. The next major focus in the review examined the multiple aspects of the nursing education system and evidence on nursing student learning within the learning contexts for nursing. The following is a summary of the major findings in this review.

Understanding how an individual learns has evolved from a narrow view of memory, cognition and intelligence to a broad concept that learning has multiple dimensions that are characteristic of the learner and are affected by the multi-contextual aspects of the learning environment. Therefore, to impact the students’ ability to learn and achieve a thorough understanding of the student learner and the impact the teaching context has on their learning approach is required. Studies in the field of educational psychology on student learners in higher education have also provided sound evidence on the value of assessing student conceptions of learning, how they approach learning and

studying and what they think and believe to be valuable in learning context. This research has also formulated The Student's Approach to Learning (SAL) Theory that comprehensively describes the influence of the student's learning approach and the importance student-centered learning environments can have on the learning outcome. Therefore it provides a sound theoretical framework for the design of this study.

Nursing education in the U.S. has evolved from hospital- based vocational programs to university programs that dominate the nursing education landscape. Coupled with the increasing complexity of health care, the demand for a competent and safe practitioner to enter the nursing workforce, challenges nurse educators to find better ways to educate nursing students. Nurse educators are further pressured to provide consistent results for their students to pass the national licensing exam on the first attempt. These pressures, to a large degree, have shaped the nursing education learning environments and the nature of research in nursing education.

Nursing education researchers have had a long standing history of conducting selection and prediction studies in an attempt to identify variables for student success on the NCLEX-RN® exam with no definitive model that can be generalized to the nursing student population. At the same time, changes in the profession by internal and external influences call for change in both curriculum design and delivery, and raising the quality of clinical instruction. A cry to focus on student centered learning has begun, but widespread implementation has not occurred and is thought to be related to variables more strongly related to the learning environments and the willingness of faculty to embrace new teaching modalities. Also, the impact of student centered learning

strategies has been meagerly measured in the nursing literature with individual studies and small scale efforts to validate their impact on learning outcome.

Studies on nursing students' learning approach have been conducted over the last two decades more so outside of the U.S.. Consequently, there is a dearth of studies that have been conducted in the United States on the nursing students' learning approach and only two studies conducted in 1991 and later in 2006 on student learning and study skills of the ADN student. In addition, no study has been conducted that explored the relationship to learning approach and student outcomes and compared their learning approach in both the classroom and clinical learning environments.

Concerns of the nursing community remain as important evidence on the nursing student learner is limited. First the Associate Degree nursing student is an under-represented student population in the nursing research literature yet the ADN student now comprises the largest population of graduates in this country (USBHP, 2004; NCSBN, 2008). The lack of attention in the nursing research literature on this student population who ultimately comprises a significant proportion of the nursing profession warrants further study.

Second, there is evidence in the nursing literature that classroom instruction is predominantly lecture based with content laden curriculums with pressures to maintain standards of high pass rates for the NCLEX-RN®, along with faculty teaching philosophies that may present barriers to supporting a student-centered learning environment. There is also evidence that these learning environments promote strategic learners who fashion their studies to meet the rigorous academic requirements and to “pass the test”. Conversely, there is evidence that nurse educators have embraced new

learning pedagogies that support critical thinking and a deeper approach to learning. And while limited in scope, these studies show promise of positively influencing the environments in nursing education and their impact on student outcomes.

In the clinical context, there is an array of conflicting evidence of the limitations and benefits of this learning context on the development of skills, knowledge, and clinical competencies for the student nurse. A majority of the studies are qualitative in nature and explore the development of students' higher level cognitions such as critical thinking, clinical judgment, self-regulation, and self-efficacy. However, no study has examined the types of learning approaches used according the SAL theory.

Finally, aspects of the students' learning approach and presage characteristics have varied and a need exists to better understand the nature of the nursing student learner. Studies on student learning in higher education and nursing student learning indicate that age is a relevant factor to student achievement and the student's chosen learning approach. Less certain is the impact of prior experience in a patient care setting and the differences between male and female students.

Emerson & Records (2008) state that research in nursing education should seek to consider the "student characteristics, preferences, and values when designing classes and learning activities" (p.362). Furthermore, they indicate that nurse researchers should direct their studies to identifying best ways to teach nursing and to promote learning. In a guest editorial of the *Journal of Nursing Education* Belleck (2008) further states, "It is time we tap more fully into our students' preferences for how they wish to learn and engage them in helping us design the ways learning is best delivered" (p.440). Clearly the evidence provided in this review of the literature supports the need for this study.

CHAPTER III

METHODOLOGY

The purpose of this study was to describe the relationships among student learning approaches in the classroom and clinical learning environments and the impact on academic outcomes. In this chapter the procedures for conducting the study are described. The chapter is divided into the following sections: (a) research design, (b) description of the setting, (c) description of the population and sample, (d) description of data sources, (e) instruments, (f) protection of human subjects, (g) data collection procedures, (h) and data analysis methods.

Research Design

This study followed a non-experimental causal-comparative study design. This approach was chosen because it allowed for an analysis of multiple variables at the same time and because random assignment of subjects was not possible (Slavin, 2007). A standardized self-report measure of approaches to studying, the Revised Approach to Study Skill Inventory for Students Short Version (RASI-SV) was administered to Associate Degree nursing students while they were enrolled in one of the adult health nursing courses. Additional demographic and personal factors were collected on the student population at that time.

The study was also designed to capture academic achievement data on participants' performance in the theory/classroom setting and their performance in the clinical/direct patient care setting. Nursing Course percentage grade, Nursing GPA, and clinical competency levels assigned by the students' clinical instructors were collected.

Each student received a Pass/Fail grade as well as a clinical performance level using Holaday's rating scale (Holaday & Buckley, 2008a).

Setting

The setting of the study included five satellite campus sites of a School of Nursing seated within the multi-campus system of The Pennsylvania State University. The School of Nursing at the University has offered the Associate in Science degree since 1992.

The admission processes for students across the campus sites followed a consistent admission to the degree procedure outlined by the University and the School of Nursing admission policies. As one school geographically dispersed, all campus sites were required to follow the same Associate Degree curriculum and semester schedule. This meant that each site offered the same nursing course during the same semester using the same course syllabus. While teaching methods may have varied among instructors across the campus sites, course objectives and content were the same.

The Associate Degree in nursing is the only pre-licensed R.N. nursing program offered except for one site that offers the accelerated baccalaureate program. Since the focus of the study was on Associate Degree nursing students, the students in this accelerated baccalaureate program were excluded from this study sample. However faculty who teach in both programs were permitted to participate in the study.

Population and Sample

The target population in this study was students admitted to Associate Degree in nursing programs. A sample of Associate Degree nursing students was obtained from the five satellite campus sites of the School of Nursing. The sample for the study was a

sample of convenience and included all students who were in the second level of the nursing program. At the time of the study, a total of 209 students were enrolled in the adult health nursing course in the second level Associate degree nursing program.

Description of Data Sources

According to Students Approach to Learning (SAL) Theory, four elements comprise the student's approach to learning. These include conceptions of learning, the nursing students' learning approach, the teaching/learning environment, and the presage characteristics of the student and teacher that may influence the students' learning approach and the leaning outcome (Entwistle, 2005). Based on this theory data were collected using research instruments that provided demographic data of the study sample, the students learning approaches and academic data to measure student achievement.

Demographic and Personal Factors Survey

These data included student type – traditional or adult – based on the University definitions, gender, and experience in a health care setting prior to the start of their nursing studies. A researcher-developed survey was used to collect this data (Appendix A). Students were also placed into one of two student types based on the operational derived from the University's statement of student type designation at the time a student applies for admission (Penn State University Admission [PSUA], 2009).

Student Type

Traditional Age Student – an individual who has entered college directly after graduating from high school.

Adult Student - an individual that may be 24 years of age or older; or a veteran of the armed services; or returning to school after four or more years of employment,

homemaking, or other activity; or a person who assumes multiple adult roles such as parent, spouse/partner, employee, and student.

Prior Experience in a Health Care Setting

Students were also asked whether or not they had prior experience in a health care setting. Because there are multiple roles within the health care setting, the categories that constituted experience were those roles that required a formalized program of study leading to a certificate, diploma, or degree in the health care field. These include the following: nurse aid/patient care assistant, licensed practical nurse, emergency medical technician, paramedic, radiology technician, laboratory technician, medical assistant, dietitian/nutritionist, behavioral health counselor, operating room scrub technician. Students will be categorized as having experience or not having experience prior to the start of the semester nursing courses that is used for the data collection period.

Students' Learning Approach

Study Skill Inventories

The Revised Approach to study skills inventory for students – short version (RASI-SV) instrument was used to provide the student's learning approach score for the three learning approaches: Deep, Strategic, or Surface. The learning approach with the highest score is considered the predominant approach. The RASI-SV instrument was used for the theory/classroom learning approach (Appendix B) and a modified RASI-SV for clinical learning (Appendix C) developed by the researcher was used to provide learning approach scores for the clinical/direct patient care experience.

Academic Achievement

Upon approval to conduct the study, three data sources were used to assess academic achievement. Final percentage grades for the adult health theory nursing course were obtained from the course instructors from each satellite campus site. Once grades were entered for the semester the University's integrated student information system (ISIS) database was used to obtain the participants' cumulative nursing grade point average (NGPA) for all nursing courses required for the major that were taken at the University.

A clinical pass or fail grade and the clinical performance level were assigned by the clinical instructor who was responsible for the clinical supervision of the student participant during the study period (fall semester). The Clinical Performance Level definitions were based on Holaday's Rating scale (Holaday & Buckley, 2008a). Students were rated performing at one of the five performance levels: Self-Directed, Supervised, Assisted, Novice, and Dependent. The clinical performance data were collected the final week of the semester which is the end point of the students' clinical experience.

Instruments

Three data collection instruments were used in this study. The following describes the development of the instrument along with reliability and validity values where appropriate.

Revised Approach to Study Skills Inventory Short Version for Theory/Classroom Learning Environment (RASI-SV/TH). (Appendix B)

This instrument was used to capture aspects of the student's learning approach and to generate mean scores of the three learning approach dimensions – Deep, Surface

and Strategic. The inventory is derived from the Approaches to Studying Inventory (ASI) that was originally developed in the late 1970's by Entwistle & Ramsden, (1983). The Approaches and Study Skills Inventory for Students (ASSIST) was developed by the Center for Research on Learning and Instruction in the University of Edinburgh in 1997. It was subsequently revised from a 52 item questionnaire to an 18 item shortened version RASI-SV (Entwistle, 2006).

This inventory of questions in the survey was developed from Marton and Saljo's (1976a, 1976b) studies on student approaches and was combined with Entwistle and Ramsden's work (1983) along with the work of Biggs (1976,1987). It identified students' tendencies towards adopting a deep, strategic or surface approach. Using a five-point Likert scale the student rated the extent of their agreement on a series of 18 items related to the learning approach constructs. Items are clustered according to the sub-scale for each learning approach. Students rated on a scale of one indicating that they disagree to five agreeing with the statement as it reflected how *they* approach their studies. Six items in the survey aligned respectively with each of the three learning approaches – deep, surface, and strategic. Once students scored each item the numbers are tallied for the total score of each learning approach. In the survey, items 2, 6, 10, 12, 15, and 17 were scored for the deep learning approach. Items 1, 4, 8, 14, 16, and 18 were scored for the surface learning approach and items 3, 5, 7, 9, 11, 13 were scored for the strategic learning approach. The ratings were added for each item in the cluster (6 for each cluster) to generate a score for Deep, Surface and Strategic approach.

While students will receive a score on each of the learning approaches, the students approach to learning is a multidimensional concept. During the development

of these instruments, it was found that relationships existed between the students' concept of and intent for learning along that shape their learning approach. These all contributed to the various components for effective studying. A concept map of the components of effective studying from the ASSIST is found in Figure 1. This depicts the relationships, building up a hierarchical pattern from the subscales of the ASSIST to a broader, idealized view of the successful student. It also indicates some other linkages identified in the factor analysis suggesting that the approach to studying was affected by both the student's conception of learning and by the type of teaching experienced" (Entwistle, McCune, & Tait, 2006)

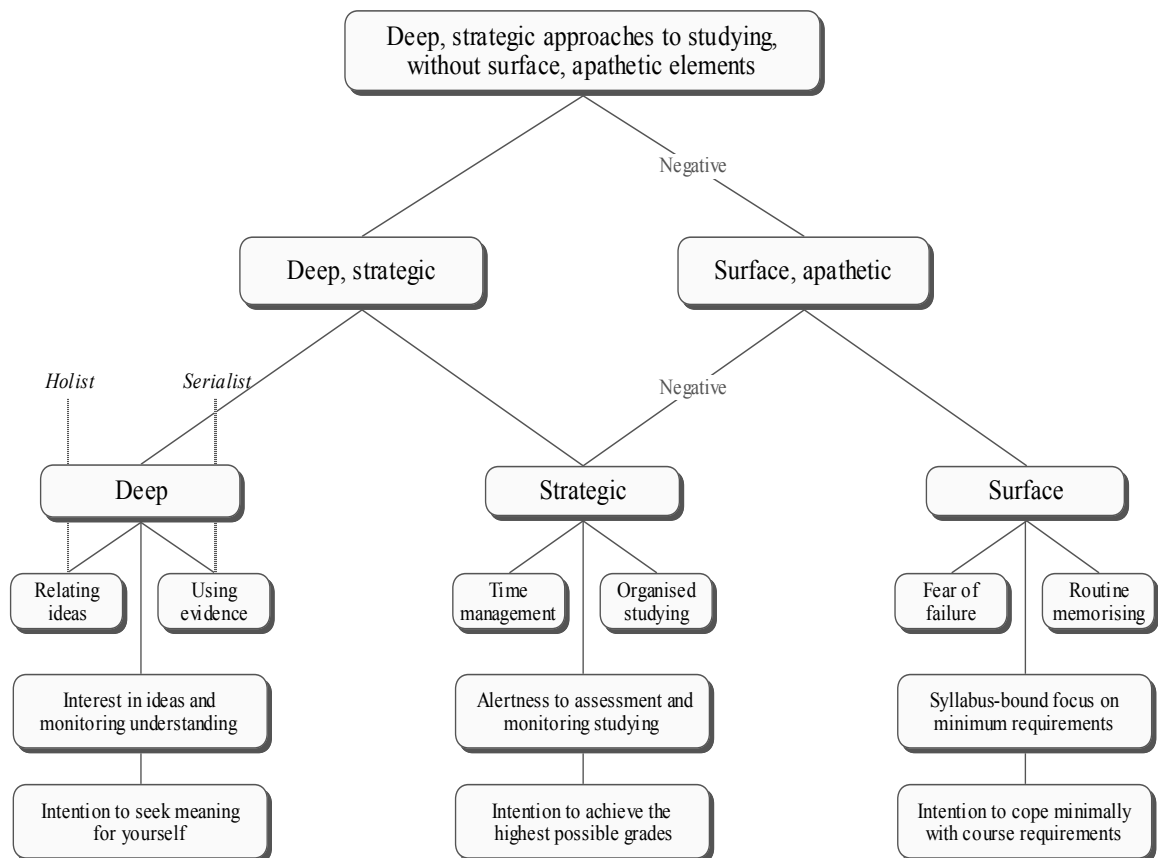


Figure 1. Concept Map of Subscales – ASSIST Instruments.

To determine the reliability of the RASI – SV instrument a Cronbach’s alpha coefficient indicating the internal consistency of items in measuring the same construct was analyzed on 4138 undergraduate students. This analysis found reliability acceptable for the three constructs measured in the instrument (Deep - .82; Surface - .65; and Strategic - .83) . Generally, with scales of this kind alpha values of greater than .70 would be considered good while those above .65 would be acceptable (Entwistle, McCune, & Tait, 2006).

The instrument uses a five-point Likert scale and provides a continuous variable for statistical analysis. Students rate on a scale of 1 indicating that they disagree to 5 agreeing with the statement as it reflects how *they* approach their studies. Six items in the survey align respectively with each of the three learning approaches – deep, surface, and strategic. Once students score each item the numbers are tallied for the total score of each learning dimension. In the survey, items 2, 6, 10, 12, 15, and 17 are scored for the deep learning approach. Items 1, 4, 8, 14, 16, and 18 are scored for the surface learning approach and items 3, 5, 7, 9, 11, 13 are scored for the strategic learning approach. The scoring of items are the same for determining the learning approaches for both the RASI-SV-Theory/Classroom and for the RASI-SV – Clinical/Direct Patient Care. Then based on this scoring methodology, the students’ scores were entered into an excel spreadsheet and then imported into SPSS 17.0 for analysis.

A Cronbach’s alpha coefficient was also calculated on the RASI-SV instrument after use with this study’s sample. This analysis generated somewhat different results. A comparison to the original reliability statistics for the RASI-SV and the study sample are summarized in Table 2.

Table 2. Comparison of the Study Sample Cronbach's Alpha RASI-SV Theory/Classroom

Learning Approach	Original RASI –SV Instrument (n = 4138)	Study Sample RASI – SV Theory/Classroom (n = 155)
Deep	.82	.59
Surface	.65	.78
Strategic	.83	.86

The Cronbach's alpha coefficients indicate the internal consistency of items in measuring the same construct. Hair, Black, Babin & Anderson state that, "The generally agreed lower limit for Cronbach's alpha is .70, although it may decrease to .60 in exploratory research" (2010, p.125). The reliability analysis of the RASI-SV for Theory/Classroom indicates internal consistency is within acceptable range and slightly better than the original instrument for surface and strategic learning. However, the internal consistency of items measuring deep learning approach is lower than the original instrument. A review of the inter-item correlation matrix did show item #15 – "Ideas in course books or articles often set me off on long chains of thought on my own" showed the lowest correlation (.020 - .338) with the other five deep learning approach items in the instrument. When this item is removed and a Cronbach's alpha is recalculated, the reliability statistic changes to a .61. The item was not removed for data analysis of the learning approaches since the variability of the reliability measure does fall within acceptable ranges of reliability for this type of exploratory research (Hair, et. al, 2010).

Revised Approach to Study Skills Inventory Short Version for Clinical/Direct Patient Care Learning Environment (RASI-SV/CL). (Appendix C)

The RASI-SV instrument was initially developed for measuring the student's learning approach in a typical lecture-format classroom environment. To assure applicability of the RASI-SV instrument as a measure of the students' learning approach for the clinical environment, changes to the survey items were required. For example, a question may use the word "article or book" that is appropriate for a classroom setting. However, in the clinical environment a student may be reading a patient record that is synonymous with these words with regard to the intent of the item. To reduce confusion for the study participant and to strengthen the appropriateness of the instrument to measure learning approaches in the clinical learning environment, key words in the RASI-SV/TH instrument were modified by the researcher to reflect the clinical learning environment.

To establish further content validity of the now modified RASI-SV, the researcher conducted an instrument validation review of the revised RASI-SV with two content expert groups and the original developer of the RASI-SV instrument. This review was completed during the three months preceding the administration of the RASI-SV/CL survey to student participants.

The first content expert group included nursing faculty who were members of the nursing faculty of the five satellite campuses within the study sample. Forty faculty were requested to participate of which eight faculty returned the survey. All faculty that participated had Master's degrees in nursing, had an average of 10.5 years of experience

in teaching nursing, were all teaching in the clinical environment, and had an average of 16.9 years of experience as registered nurses.

The second content expert group was Associate degree nursing students who had completed their nursing studies in May 2009 from the satellite campus site of the researcher. Twenty-nine students were requested to complete the review and seven graduates participated. All of the graduates were employed in acute care settings for a period of four months and all had successfully passed the NCLEX exam as licensed RN's.

The third content expert was the original developer of the ASSIST instrument and the RASI-SV instrument, Dr. Noel Entwistle. Dr. Entwistle was asked to complete the review of in the final stages of revision after the first two content expert groups had submitted their recommendations.

The two nursing groups of content experts were given the original RASI-SV for classroom/theory and the modified RASI-SV instrument for clinical learning aligned in a grid format. Each participant was asked to review the original RASI-SV statement and then the revised RASI-SV statement for clinical learning. Using a five-point Likert scale both faculty and recent student graduates were asked to rate the degree to which the revisions assessed clinical learning approach and second, the degree to which the new statement maintained the intent of the original RASI question. A score of one indicated the individual item did not reflect clinical learning approach nor did it keep the original intent of the RASI question. Not all items were changed but participants were asked to score all items. Participants were also requested to mark any statement that they felt needed to be changed and to provide any recommendations.

The scores for each item were tallied, and items were revised based on the recommendations of the faculty and student participants. The scores and revised statements are presented in Appendix D. Four items (1, 4, 8 and 15) in the questionnaire scored lower than 4.0 by students indicating the item may not be appropriate for clinical learning. Although none of these items were scored below 4.0 by faculty reviewers. Three of the items (1, 4 and 8) were surface learning approach items and only item fifteen was a deep learning approach item. The lowest scored item for reflecting clinical learning by students was item four , “There’s not much work I do in clinical is interesting or relevant to me”, with an average score of 2.57 as compared to the faculty average score of 4.75. A possible explanation for the students’ low rating may be that they scored the item interpreting this from their own personal learning experience and not from a general perspective that would consider someone possibly feeling this way about their clinical learning experience.

All other items in the questionnaire were scored by both faculty and students a 4.0 or greater indicating a high level of appropriateness for clinical learning. And every item in the questionnaire was rated above 4.0 by faculty and students indicating that the new statements kept the original intent of the survey question.

These results were then sent to Dr. Entwistle for his review and comments. Dr. Entwistle provided specific comments for each item recommending simplifying items to reflect the more colloquial statements that students would make about their learning and to not change any strategic items as they have general applicability. Dr Entwistle agreed with the changes made to twelve items (2,3,5,6,7,8,9,10,11,14,16, and 18). Both item twelve and thirteen were simplified and item one was revised based on the specific

recommendation by Dr. Entwistle. Items one, four, and fifteen were further revised by the researcher based on his recommendations to simplify and return the question to a closer rendition of the original item (Dr. N. Entwistle, personal communication, November 15, 2009).

All changes were made from this final expert review and represented the final survey instrument, RASI- SV Clinical/Direct Patient Care survey (Appendix C), used for the study. Once administered to study participants, a Cronbach’s alpha coefficient was calculated for the RASI-SV Clinical/Direct Patient Care survey to determine internal consistency from the study sample of 127 participants. Results of this analysis and its comparison to the original RASI instrument are presented in Table 3.

Table 3. *Comparison of the Study Sample Cronbach’s RASI – SV Clinical/Direct Patient Care*

Learning Approach	Original RASI Instrument (n = 4138)	Study Sample RASI – SV Clinical/Direct Patient Care (n = 127)
Deep	.82	.57
Surface	.65	.71
Strategic	.83	.74

The reliability analysis of the RASI-SV for Clinical/Direct Patient Care again indicated internal consistency was within acceptable range and comparable to the original instrument for surface and strategic learning. However, the internal consistency of items measuring deep learning approach is lower than the original instrument. This may be due to two factors.

The first factor may be related to the reduction in items for the various learning approaches from the original instrument. In the original ASSIST, 52 items were used to

measure the learning approaches. In the ASSIST instrument, the deep learning approach had 20 items in comparison to 16 each for the strategic and surface approach. When comparing this to the current RASI-SV, each learning approach is now measured by six items. It is known that an increase in the number of items, even with the same degree of inter-correlation will increase the reliability value (Hair, et.al, 2010). Therefore, it is possible that the reduction of items in the deep learning approach category for the RASI-SV may have affected the reliability in this student population. A review also of the inter-item correlation matrix for the deep learning approach for the RASI-SV Clinical/Direct (Table 4) revealed that item 12, “Often I find myself questioning things I hear about, find inpatient charts, or discuss in post clinical conferences”, had the lowest with the other clustered items measuring the deep learning approach.

Table 4. *Inter-item Correlation Matrix RASI-SV/CL- Deep Learning Approach*

Deep Learning Approach							
Items	RASI-SV CL 2	RASI-SV CL 6	RASI-SV CL 10	RASI-SV CL 12	RASI-SV CL 15	RASI-SV CL 17	
RASI-SV CL 2	1.000	.190	.240	.001	.192	.300	
RASI-SV CL 6	.190	1.000	.471	-.011	.165	.478	
RASI-SV CL 10	.240	.471	1.000	.120	.204	.479	
RASI-SV CL 12	.001	-.011	.120	1.000	.278	-.025	
RASI-SV CL 15	.192	.165	.204	.278	1.000	.266	
RASI-SV CL 17	.300	.478	.479	-.025	.266	1.000	

To further illustrate the effect of an individual item, a Cronbach’s alpha was calculated for the deep learning approach for the RASI-SV Clinical/Direct Patient Care

eliminating item twelve. This analysis generated a Cronbach's alpha coefficient of .63 which falls now within the acceptable range. Perhaps the second factor is related to the use of the word "questioning" what they hear. The definition of questioning in the English language has multiple meanings. In one sense it can mean to bring a subject out for further inquiry or understanding while on the other hand, it can mean to disagree or cast doubt (Morris, 1969). In the clinical setting an inexperienced nursing student is less likely to question or disagree with what is said as they may feel less confident to "question" someone in the clinical setting. While this item did not generate concern from the content experts, it does warrant further development to improve the instruments reliability. However, like the RASI-SV for Theory/Classroom the modified RASI-SV for clinical/direct patient care fell within acceptable range of reliability for this type of exploratory research (Hair, et. al, 2010). Therefore, it was also decided to keep all items in the instrument for data analysis of the Clinical/Direct patient care learning approaches.

Clinical Performance Rating Scale (Appendix E)

Students received a pass or fail grade dependent on their success in meeting the clinical objectives required for the course. A single dichotomous variable does not provide much discriminating ability among the students. Therefore, faculty were asked to assign a clinical performance level score using Holaday's (2008a) Clinical Performance Rating Scale. The scale was adapted from Bondy's (1983) criterion referenced matrix of clinical competencies. The scale provides five levels of clinical performance descriptors based on quality indicators. These indicators are a measure of level of the quality of a student's performance with respect to meeting the essential competency and outcome objectives for the clinical experience. Modifications were

made by Holaday to Bondy's original criterion label descriptors with faculty experts and faculty and student workgroups to establish content validity (Holaday & Buckley, 2008).

Protection of Human Subjects

Permission to conduct the study was obtained through the Office of Research Protections at the Pennsylvania State University Institutional Review Board (PSU-IRB) and the Institutional Review Board for the Protection of Human Subjects of Indiana University of Pennsylvania (IUP-IRB). As part of the PSU- IRB process, department heads must provide permission to researchers who are their direct reports to conduct their study. Therefore, the Dean of the School of Nursing at University Park was approached and signed the IRB application to conduct the study according to the study procedures outlined in the IRB. The study design and data collection procedures met the requirements for an expedited review at both academic institutions. Letters of approval by the PSU-IRB and IUP-IRB are found in Appendix E.

A research assistant (RA) was used to collect the informed consent, identifying information, learning approach surveys and the academic data. The RA established the master list of survey codes to match the corresponding student data. This was done to further protect the confidentiality of student data and improve the student's willingness to participate in the study.

Permission was requested and granted to use the integrated student information system (ISIS) at the University. This database houses admission records and student transcripts and includes the student's grade point averages, and transcripts of courses taken within the University system.

During the data collection procedures, the researcher provided students and faculty with a description of the study, procedures, risks, benefits, duration, aspects of protection of information and confidentiality, rights as a participant and the voluntary nature of participating. Informed consents for both students and faculty are found in Appendix F.

Once all data were collected and entered into the data spreadsheet for analysis, any student identifying information (name, student university student number, and email user id) was secured in a locked cabinet by the RA. This data will be kept for a period of three years and then destroyed by the research assistant. During the data analysis, only the survey codes were used to identify the student data. However, the researcher as the principle investigator was given permission to access the identifying data if necessary, to assist the RA in the resolution of problems with data entry and integrity of all research data procedures.

Finally, student participants were given the opportunity to receive their scores on the RASI-SV inventories. If they made this request, the email user id was used by the RA in order to send students their study results. Students also received general guidelines on the interpretation of results that were developed by the researcher. In addition, if requested, any participant was sent a summary report of the study results also prepared by the researcher. All student results and final summary of the study were sent to the students by the research assistant.

Data Collection Procedures

Upon approval to conduct the study, the researcher coordinated the schedule for data collection with each campus nursing program coordinator at the five campus sites.

Following approved procedures, course instructors were contacted by the researcher, explained the purpose of the study and informed consent to participate in the study was obtained. All five satellite campus faculty teaching the adult health nursing course agreed to participate in the study. The researcher then coordinated directly with the course faculty to schedule visits to each campus to complete the data collection.

Data was collected at two intervals. The first data collection was conducted during the 12th week of the semester. This time period was selected in order to provide students sufficient experience in the nursing course that would best reflect their approaches to learning and studying. Informed consent to participate was obtained and surveys were distributed to the student participants.

On the first page of the survey, students were asked to provide their name, university student number, or email user id. This was the only part of the data collection forms that had identifying information. A survey code was created and marked by the research assistant on the identifier page and all other pages of the surveys and instruments used. This individual survey code was then assigned to the student for any subsequent data that was collected. The research assistant created the master identifier file with the participant code and completed all the data entry. As outlined in the procedures for protection of human subjects, the researcher had access to the master file if necessary to assure integrity of the data.

During this first data collection period, participants completed the demographic survey and the RASI-SV to assess their learning approach for the theory/classroom setting. At the same time the adult health course instructors were given the clinical faculty survey envelope for assigning clinical performance levels for students to

distribute to the clinical instructor. Procedures for completing the clinical performance level survey were explained in the coversheet provided by the researcher and informed consent was obtained simultaneously when the instructor completed the clinical performance level score. All research materials and consents were placed in a double sealed envelope and returned to the course instructor. During the 15th week of the semester and final week of classes, the researcher and research assistant returned to the five campus sites and conducted a second data collection administering the RASI-SV-CL to assess their learning approach in the clinical/patient care environment. The envelopes with the clinical performance ratings and faculty consents were also collected at that time. While twenty-four clinical faculty were approached to complete the clinical performance rating only twenty-two faculty agreed to participate.

At the end of the semester, course faculty provided the research assistant with the study participants' final course percentage grade. At the end of the semester, the students' Nursing GPA was accessed from the ISIS data warehouse. An excel spreadsheet with the coded data was completed by the research assistant and provided to the researcher for data analysis.

Data Analysis Approach

Both descriptive and inferential statistical procedures, using Statistical Package for Social Sciences (SPSS – 17.0) software was used to answer the research questions. This program is efficient and useful for both descriptive and multivariate analysis necessary to meet the goals of this research study.

Descriptive statistics were used to summarize characteristics of the defined demographic groups specifically looking at distribution in terms of frequency,

percentages, and mean values. Paired t-tests, correlations, multivariate analysis of variance (*MANOVA*), and univariate and stepwise multiple regression analyses were used to assess and explore relationships between the dependent and independent variables (Corty, 2007; Hair, et.al, 2010; Slavin, 2007). The following outlines the approach that was used to answer the research questions.

Research Questions

1. What is the predominant learning approach used by Associate Degree nursing students in the theory/classroom setting and the clinical/direct patient care setting and to what extent does the students' learning approaches differ in each setting?

This research question is exploratory in nature with the intent that once the predominant learning approach was identified, the extent to which they differed, if at all would be described. Based on the review of the literature, the research hypothesis for question one was – Students in an Associate Degree program of study in nursing will choose a predominant strategic learning approach in the classroom setting and predominant deep learning approach in the clinical setting.

Data Analysis Approach: To answer the first question, descriptive statistics were used to describe the distribution of participants along the learning dimensions of the RASI-SV instruments. Each learning approach score was tallied for the individual participants and a mean score for the study sample was calculated. To determine the significance of the learning approach scores at the 95% confidence level, paired t-tests were used to compare the students' scores on deep vs. strategic, deep vs. surface and strategic vs. surface for each of the two learning environments. This method demonstrated which of the three

learning approaches significantly differed from the others. Paired t-tests were repeated to further describe the differences and similarities between the learning approaches and the two learning environments.

2. What is the relationship of the Associate Degree nursing students' learning approaches and academic achievement within the theory/classroom setting and within the clinical/direct patient care setting?

This research question was to determine what relationship existed and whether these relationships were significant in nature. Based on the review of the literature, the research hypothesis for question three was – Students who choose a predominant deep learning approach in either setting will achieve better learning outcomes.

Data Analysis Approach: Once student learning approaches were identified, a Pearson product-moment correlation coefficient r value was used as it is a common method of choice for describing relationships between two continuous measures (Slavin, 2007). Through the correlation analysis a determination can be made if there is a positive or negative relationship between the dependent (NGPA, percentage course grades, clinical performance level) and the independent variable (mean scores of the study samples' learning approaches).

Next, a stepwise multiple linear regression was performed to determine to what degree each learning approach contributed to the cumulative impact on predicting the learning outcomes and which learning approaches best predicted the students' academic success.

3. To what extent do student category, gender, and prior experience in a health care setting influence these relationships?

This research question explored the impact of multiple variables to determine if any relationships existed individually or in combination to the students learning approach and academic success. The review of the literature supported the hypothesis that - Nursing student personal factors will impact on the students' theory/classroom learning approach and student learning outcomes.

Data Analysis Approach: To answer the last research question and test the hypothesis independent t-tests were conducted to identify the differences between the dependent variables and student characteristics. Based on the results from the data the relationships were limited indicating no further discriminatory statistical analysis was necessary.

Summary

This study used a non-experimental causal comparative study design to investigate learning approaches of the Associate Degree nursing student in both the classroom and clinical learning environments. The proposed setting and population offered a large and accessible sample to study to conduct a comprehensive quantitative analysis to answer the research questions. The study used reliable and valid instruments and data sources to support the quality of the study outcomes and data analysis. Steps were also taken to establish content validity and reliability of the modified RASI-SV instrument for clinical/direct patient care learning approach.

To improve the rate of participation from the student sample the researcher traveled to all five satellite campus sites to collect data. Since the collection of student academic data could have presented a risk to confidentiality and the students' willingness to participate, the use of a research assistant was employed along with strict adherence to guidelines for protection of human subjects as outlined by two university's institutional review boards granting approval to conduct the study.

Following these guidelines, the researcher and research assistant completed the data collection at the campus sites on two separate intervals during the later part of the fall semester. Academic data was collected at the end of the semester, and data was analyzed using a variety of statistical tests to appropriately answer the research questions.

CHAPTER IV

RESULTS AND ANALYSIS OF DATA

This chapter presents the results of the data analyses employed to answer the research questions and to test the specific hypotheses. This study had three primary purposes. The first purpose was to identify the learning approaches used by Associate Degree nursing students in the classroom and clinical learning environments, and to determine how they differed in each setting. The second purpose was to determine if a relationship existed between the students' learning approaches in both learning environments and academic achievement. Lastly, the third purpose was to determine to what extent the presage characteristics of the student (gender, age, and prior experience in a health care setting) influenced these relationships.

Description of Participants

The sample was derived from one multi-campus University system in Pennsylvania. Within this system, there are five satellite campuses that offered the Associate Degree nursing program. All five satellite campuses agreed to participate in the study. Two hundred and nine students were enrolled in the adult health nursing course during the study period and represented the total number of students who could participate in the study. However, during both data collection sessions, students were either not present or did not agree to participate in the study. Thus, the total number of participants in the study was less than those enrolled.

During the first data collection period, the RASI-SV Theory/Classroom survey was administered. One hundred fifty-five students completed the survey. This

represented 74% of the students enrolled in the adult health nursing course that agreed to participate in the study. At one of the satellite campus sites, students were absent for sanctioned travel to a professional meeting. The remaining reduction was attributed to students who decided not to participate in the study.

During the second data collection period 127 students, 61% of total enrolled, completed the RASI-SV Clinical/Direct patient care survey. This was a reduction in the original number of participants by 18% and was attributed to absence from class. During the second data collection period, a number of students were absent from class due to inclement weather conditions.

It is important to note that during the second data collection period students who were not present during the first session asked to participate in the study and complete the surveys. Unfortunately, the timing of the survey administration was relevant to the data results and the data collected from these students could not be used in the study. However, since students had the opportunity to receive their learning approach scores which could possibly prove beneficial to the students, those that requested were permitted to complete both surveys. This included sixteen additional students from the various campus sites. Given this level of interest and that no study participant expressed concerns during the data collection period, the study procedures did not appear to have impact on student participation.

Table 5 represents the distribution of study participants from each satellite campus site and the attrition experienced between the two days for data collection. Site F had the largest percentage of participation with site C the smallest. The largest attrition

on the second day of data collection occurred at site B whereas little to no change occurred at the other sites.

Table 5. *Distribution of Study Participant Attrition by Satellite Campus Site*

Satellite Campus Site	Participants Completing RASI-SV Theory/Classroom (N = 155)	Percent of Study Sample Data collection #1	Participants Completing RASI-SV Clinical/Direct Patient Care (N = 127)	Student attrition (n = 23)	Percent of Study Sample Data collection #2
A	37	23.9%	34	3	27.0%
B	27	17.4%	15	12	11.8%
C	17	11.0%	13	4	10.2%
D	34	21.9%	28	6	22.0%
F	40	25.8%	37	3	29.0%
Total	155	100%	127	28	100%

Changes in the distribution of student participation for the second day of data occurred with increases at both site A and site F. However, for both days of data collection, the hierarchy of participation (largest to smallest) did not change. Site F represented the largest participation and site C represented the smallest participation. The rank order of the number of study participants by satellite campus site is represented in Table 6.

Table 6. Rank Order of the Number of Study Participants by Satellite Campus Site

Satellite Campus Site	Participants Completing RASI-SV Theory/Classroom (N = 155)	Percent of Study Sample	Participants Completing RASI-SV Clinical/Direct Patient Care (N = 127)	Percent of Study Sample
F	40	25.8%	37	29.0%
A	37	23.9%	34	27.0%
D	34	21.9%	28	22.0%
B	27	17.4%	15	11.8%
C	17	11.0%	13	10.2%
Total	155	100%	127	100%

Demographic data were also collected to identify the presage characteristics which included student category – traditional aged student and adult student, and gender. The study sample included 138 (89%) female and 17(11%) male participants. The predominant student type in the sample was the adult female. Ninety-four adults (60.6%) completed the RASI-SV Theory/Classroom survey and 61(39.4%) were traditional age students. As stated previously, on the second data collection day there was a loss of 38 study participants. However, the distribution of adult and traditional age along with male and female did not differ widely between the two groups. This data is summarized in Table 7.

Table 7. *Distribution of Study Participants by Student Type, Gender, and Completion of RASI-SV Learning Approach Survey Instruments*

	Student Type		Gender	
	Traditional Age	Adult	Male	Female
RASI-SV- Theory/Classroom (n = 155)	61 39.4%	94 60.6%	17 11%	138 89%
RASI-SV- Clinical/Direct Patient Care (n = 127)	49 39%	78 61%	15 11.8%	112 88.2%

The distribution of student type and gender in the study sample is consistent with the profile of Associate Degree nursing students in the United States (NLN, 2009b).

The adult population in the study sample was slightly higher (61%) than the average of 52% adults that was reported by the NLN in 2009. An explanation for this difference is that the NLN categorize an adult as a student over thirty years of age. The increase of adults in this study sample may be related to the methodology used to define an adult student. The operational definition for an adult followed the University definition as an individual who is 24 years or older. Therefore, students age 24-29 were placed in the adult category.

With regard to gender, the distribution of men within the sample was more representative of the Associate Degree nursing student population. The percentage of

male students nationwide is 12% and the in the study sample size men constituted 11-11.8% of the student participants.

The next presage characteristic that was collected with the demographic data determined if the student had prior experience in a health care setting. The nurse aide/patient care assistant (NA/PCA) was the most frequent position (29 students) with the licensed practical nurse (LPN) the second most frequent position (11 students). Less frequent were positions which included the behavioral health direct care provider (9 students), medical assistant (8 students), emergency medical technician (6 students) and nutritionist/dietitian (4 students). A range of one to two students in the entire study sample held positions as nursing unit secretary, paramedic, operating room technician, laboratory technician, and a variety of positions that students wrote in the other category. Examples of these were positions as a childbirth dula, dietary aide, chiropractic assistant, central supply aide, electrology sales, environmental care aide, and lifeguard.

Given the variety of responses, students were grouped into two categories; one having experience in a patient care setting (1-3 types), and the second having no experience. Thus, the number of students who held one to three positions were 58 (37.4%) and those who had no experience was 92 (62.6%). The study sample frequency of prior experience in a health care setting is consistent with other Associate Degree nursing student populations studied (Leung, Mok & Wong , 2008; Meinert, 2009).

Research Question 1

The first research question asked, “What is the predominant learning approach used by Associate Degree nursing students in the Theory/Classroom setting and in the Clinical/Direct patient care setting and to what extent do they differ in each setting?” This question was answered by first using descriptive statistics to calculate the study sample’s mean learning approach scores and standard deviation for both learning environments. The maximum score for each learning approach is thirty. The results of this analysis are summarized in Table 8.

Table 8. *Mean Scores and Standard Deviation of Learning Approach Scores – Theory/Classroom and Clinical/Direct Patient Care Setting*

Learning Approach	Theory/Classroom n=155	Clinical/Direct Patient Care n = 127
Strategic	Mean 23.85	Mean 25.32
	SD 5.21	SD3.66
Deep	Mean 22.26	Mean 24.35
	SD 3.63	SD 2.85
Surface	Mean 15.18	Mean 12.18
	SD5.09	SD 4.16

This analysis shows, the strategic learning approach had the highest value indicating it was the predominant learning approach used by students. This was followed by deep learning approaches then surface learning. This pattern was present in both learning environments.

Next, paired t-tests were used to determine the extent to which each leaning approach differed in each setting. The first test compared the scores within each setting. The results of this analysis showed that learning approaches in the Theory/Classroom score all differed significantly ($p < .001$) from each other within in that setting. Table 9 summarizes the results of this analysis.

Table 9. *Paired t-test Within Learning Approaches - Theory/Classroom Setting*

	Learning Approach	Mean	t	df	Sig. (2-tailed)
Pair 1	Theory/Classroom Deep –	22.26	-3.847	154	<.001
	Theory/Classroom Strategic	23.85			
Pair 2	Theory/Classroom Deep –	22.26	12.925	154	<.001
	Theory/Classroom Surface	15.18			
Pair 3	Theory/Classroom Strategic –	23.85	12.809	154	<.001
	Theory/Classroom Surface	15.18			

Paired t-tests were repeated for the Clinical/Direct Patient Care setting, and again learning approaches differed from the deep and surface learning scores and the strategic and surface scores within the clinical setting significantly ($p < .001$). Only, the deep and strategic surface learning approach scores differed within each other in the clinical setting at $p < .002$. These results are summarized in Table 10.

Table 10. *Paired t-test Within Learning Approaches - Clinical/Direct Patient Care*

	Learning Approach	Mean	t	df	Sig. (2-tailed)
Pair 4	Clinical/Direct Patient Care Deep –	24.35	-3.116	127	.002
	Clinical/Direct Patient Care Strategic	25.31			
Pair 5	Clinical/Direct Patient Care Deep –	24.35	24.155	127	<.001
	Clinical/Direct Patient Care Surface	12.18			
Pair 6	Clinical/Direct Patient Care Strategic –	25.31	23.078	127	<.001
	Clinical/Direct Patient Care Surface	12.18			

Next, each leaning approach score was compared between the same learning approaches in the two different settings. These results also showed that scores differed significantly ($p < .001$) between each setting. These results are summarized in Tables 11.

Table 11. *Paired t-test Between Learning Approaches and Learning Environments*

	Learning Approach	Mean	t	df	Sig. (2-tailed)
Pair 1	Theory/Classroom Deep -	22.49	-6.830	126	<.001
	Clinical/Direct Patient Care Deep	24.35			
Pair 2	Theory/Classroom Strategic -	24.08	-3.819	126	<.001
	Clinical/Direct Patient Care Strategic	25.32			
Pair 3	Theory/Classroom Surface -	14.91	6.984	126	<.001
	Clinical/Direct Patient Care Surface	12.18			

Also, the mean learning approaches in the Theory/Classroom setting differed in this analysis from the paired t-test in the same setting. The differences in the Theory/Classroom mean learning approach scores are summarized below in Table 12.

This change is attributed to the reduction in participants between the two data collection periods – 155 in the first data session and 127 in the second. However, the pattern of predominant to least used learning approach remained the same.

Table 12. *Mean Learning Approach Scores – Theory/Classroom for the Two Data Collection Sessions*

Learning Approach	Session One Theory/Classroom n=155	Session Two Theory/Classroom n = 127
Strategic	23.85 SD 5.21	24.08 SD 5.01
Deep	22.26 SD 3.63	24.08 SD 3.43
Surface	15.18 SD5.09	14.91 SD 4.11

Thus, the analysis of learning approaches between the learning settings indicate that each learning approach score is distinctly different and the pattern of approaches used by students (strategic, deep, surface – highest to lowest score) was the same for both settings. Consequently, the study results partially support the hypothesis which stated the predominant learning approach by Associate Degree nursing students in the Theory/Classroom setting would be strategic learning. The findings, however, do not support the hypothesis that stated the predominant learning approach in the Clinical/Direct patient care environment would be a deep learning approach.

Research Question 2

The second research question asked, “What is the relationship of the Associate Degree nursing students’ learning approach to academic achievement in the Theory/classroom setting and the Clinical/Direct patient care setting?” It was hypothesized that students who choose a predominant deep learning approach in either setting would achieve better learning outcomes.

To test this hypothesis a Pearson product-moment correlation (r) was first used to determine the relationship among the Theory/Classroom and Clinical/Direct Patient Care learning approaches (strategic, deep, and surface) scores and the student’s percentage score in the adult health nursing course. Participants’ mean percentage course grade for the course was 84.1%. Results of this analysis are found in Table 13.

Table 13. *Correlation Analysis of Learning Approach Scores and Adult Health Nursing Course Grade*

Learning Approach	TH/Classroom N = 155	CL/Direct Patient Care N - 127
Deep	.347***	.328***
Strategic	.392***	.204*
Surface	-.458***	-.191*

***Correlation is significant at 0.001 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

The results of this analysis indicate that the surface learning approach in both learning environments negatively correlated with this learning outcome. In the Theory/Classroom setting the surface learning approach had a moderate negative correlation that was statistically significant ($r = -.458, p < .001$) to the students’ adult health course grade. The correlation of the surface learning approach in the

Clinical/Direct patient care environment was also statistically significant, but weak ($r = .191, p < .05\%$). This means that the higher the students' surface learning approach score, the lower the adult health nursing course grade.

Positive correlations existed between both the strategic and deep learning approaches and the adult health nursing course grade. However, the strategic learning approach Theory/Classroom learning approach score showed a moderate relationship ($r = .392, p < .001$) whereas the relationship was weak between the strategic learning approach ($r = .204, p < .05$) in the clinical/direct patient care. Last, the deep learning approach in both environments had a moderate level of correlation with the students' adult health nursing grade ($r = .347, p < .001$) and the Clinical/Direct patient care deep learning approach score correlation to the students' adult health nursing course grade was $r = .328, (p < .001)$.

The next step in the analysis was to examine the impact of the learning approaches on the students' mean cumulative NGPA. Descriptive statistics again identified the mean cumulative NGPA for the study sample was 2.99 on a 4.0 scale. The Pearson product-moment correlation analysis (r) for Theory/Classroom learning approach scores and the cumulative NGPA was conducted and results of this analysis are presented in Table 14.

Table 14. *Correlation Analysis of Learning Approach Scores and Cumulative NGPA*

Learning Approach	TH/Classroom N = 155	CL/Direct Patient Care N - 127
Deep	.295***	.219*
Strategic	.364***	.157
Surface	-.445***	-.124

***Correlation is significant at 0.001 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

As with the students' adult health nursing course grade, the same relationship between surface learning existed for the cumulative NGPA but at a lower level of significance ($r = -.445$, $p < .01$). On the other hand, the correlation between clinical surface learning and the NGPA while still negative was not significant ($p < .165$).

Similarly, correlations between the strategic learning approach in the two learning environments and this academic outcome provided a variation from the correlation seen with the adult health nursing course. Strategic learning in the classroom had a moderate correlation to the cumulative NGPA ($r = .364$, $p < .001$) which was similar to the adult health nursing course but a weak and non significant correlation ($r = .157$, $p < .78$) existed with strategic learning approach used in the clinical setting.

However, deep learning approaches in both learning environments, while weak, correlated to the student's cumulative NGPA. It is also important to note is that the deep learning approach in the clinical/direct patient care environment was the only learning approach that related significantly ($r = .219$, $p < .05$) to the students cumulative NGPA.

A comparison of the correlations of the learning approaches in both learning environments to both learning outcomes is summarized in Table 15.

Table 15. *Comparison of Learning Approaches, Learning Environments and Academic Outcomes*

Learning Approach	Adult Health Nursing Percentage Course Grade		Cumulative NGPA	
	TH/Classroom N = 155	CL/Direct Patient Care N=127	TH/Classroom N = 155	CL/Direct Patient Care N=127
Deep	.347***	.328***	.295***	.219*
Strategic	.392***	.204*	.364***	.157
Surface	-.458***	-.191*	-.445***	-.124

***Correlation is significant at 0.001 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

A distinctive pattern exists in the relationship between the learning approaches and learning outcomes in each learning environment. First surface learning approaches in both learning environments correlate negatively to the learning outcomes with correlations stronger to learning approaches used in the Theory/Classroom environment. Next strategic learning approaches in the Theory/Classroom environment was the strongest positive correlation to both learning outcomes but weak and non-significant relationships existed to the strategic learning approach used Clinical/Direct patient care environment. And last, the deep learning approach in both learning environments was the only learning approach that was significantly related to both learning outcomes.

It is important to note that students do not employ learning approaches independently. They can and do use all three approaches at the same time. Therefore, all three learning approaches represent a multi-dimensional variable that warrants a multi-variate analysis. Consequently, the collective impact of all three learning approaches needed to be evaluated before accepting or rejecting the hypothesis.

For this reason, a stepwise linear regression was conducted following the Pearson product-moment correlation analysis. This method can be used to determine which independent variable is most useful and can identify what variable is not useful in discriminating between groups of variables (Hair, et. al, p. 257). This analysis provided a correlation value that represents the collective impact of all three learning approaches together and then a discrimination of what each learning approach contributed to that relationship. As anticipated, the results of this analysis confirmed the pattern of impact that appeared initially with the individual learning approach correlations.

The first stepwise regression was conducted with the Theory/Classroom learning approaches and course grade. The data from this analysis are presented in Table 16. The R value was .555 ($p < .000$) showing a moderate level of correlation between the adult health nursing course grade to the students' learning approaches. The predictive pattern showed that surface had the strongest impact, with deep learning approach next and last, strategic learning.

Table 16. *Stepwise Regression Analysis of Theory/Classroom Learning Approaches and Adult Health Nursing Course Grade*

Model	R	Std. Error of the Estimate	Sig.
1	.458 ^a	5.58137	<.001
2	.528 ^b	5.34856	.006
3	.555 ^c	5.25482	.012

a. Predictors: (Constant), Classroom, Surface

b. Predictors: (Constant), Classroom, Surface, Classroom, Deep

c. Predictors: (Constant), Classroom, Surface, Classroom, Deep, Classroom, Strategic

This analysis was repeated for the Theory/Classroom and cumulative NGPA and is summarized in Table 17. The correlation for this set of variables and this academic outcome was similar to the course percentage grade ($R = .519, p < .001$). Again the

predictive pattern showed that surface learning had the largest impact, however strategic learning was next and deep learning last.

Table 17. *Stepwise Regression Analysis of Theory/Classroom Learning Approaches and Cumulative NGPA*

Model	R	Std. Error of the Estimate	Sig.
1	.445 ^a	.44361	<.000
2	.499 ^b	.43055	.017
3	.519 ^c	.42598	.040

a. Predictors: (Constant), Classroom Surface

b. Predictors: (Constant), Classroom Surface, Classroom Strategic

c. Predictors: (Constant), Classroom Surface, Classroom Strategic, Classroom Deep

Again, a stepwise regression analysis was done for the Clinical/Direct patient care learning approaches and adult health nursing course grade. The correlation R value was .328 ($p < .001$) and the predictive pattern showed that only the clinical deep learning approach impacted on the course grade. Furthermore, a stepwise regression analysis was not necessary for analyzing the clinical learning approaches and the students' cumulative NGPA because the deep clinical learning approach alone correlated with the NGPA.

To complete the analysis of relationships between the learning approaches in both learning environments to academic outcomes, it was necessary to apply the same statistical tests for the students' learning approaches and the clinical performance grade. In this study sample, students were given a pass/fail grade for their clinical performance which showed that all students who participated in the study completing both surveys received a passing clinical performance grade. In addition, clinical instructors were asked to assign a clinical performance level as a measure to quantify the learning outcome for the student's clinical performance. Students were assigned one of the clinical performance levels – dependent, novice, assisted, supervised, and self-directed –

based on the descriptions from Holaday’s clinical rating scale. A numerical value (one to five) was assigned to each level with the self-directed level assigned a score of five. Descriptive statistics were performed to determine the frequency of the clinical performance levels assigned to students by the instructors. Only 141 students were assigned a clinical performance level as some instructors did not agree to participate in this part of the study. The distribution of the teacher provided clinical performance grade is summarized in Table 18. The clinical level performance grade students received showed no predominant performance level. Students clinical performance seemed to evenly cluster in three levels – assisted (n= 43, 27.7%), supervised (n= 44, 28.4%), and self-directed (n=45, 29%).

Table 18. *Distribution of Clinical Performance Level Grade*

Performance Level	Grade Assigned	Frequency N = 141	Percentage of Sample
Dependent	1	0	0
Novice	2	9	14.9
Assisted	3	43	27.7
Supervised	4	44	28.4
Self-Directed	5	45	29
Total		141	100%

The Clinical performance level grade was then computed for each student based on the numerical scoring methodology. Descriptive statistics were performed to describe the study sample’s clinical performance scores and a Pearson product-moment correlation (r) to determine a relationship between this academic outcome, clinical performance, and the learning approaches in both learning environments. The mean teacher provided grade for the study sample was 3.89 for the students who were assigned a clinical performance

level. However, the sample size was reduced further to 118 students for the correlation analysis because of the loss of students who didn't complete the RASI-SV Clinical/Direct Patient Care learning approach instrument. For that student sample, the mean clinical performance grade was 3.94.

The Pearson product-moment correlation analysis (r) was calculated for the clinical grade to the Clinical/Direct patient care learning approaches and the classroom learning approaches. The results of this analysis showed a consistent pattern of negative correlations between the students learning approaches in both learning environments and the clinical grade. These correlations are summarized in Table 19.

Table 19. *Correlation Analysis of Both Learning Approaches and Clinical Grade*

Learning Approach	TH/Classroom N = 141	Sig.	CL/Direct Patient Care N - 118	Sig.
Deep	-.165	.051	-.227	.013
Strategic	-.144	.176	-.097	.296
Surface	-.240	.004	-.274	.003

Again surface learning approach produced a negative correlation to the students' academic outcome – Theory/Classroom surface learning approach ($r = -.240$, $p < .003$) and Clinical/Direct patient care surface learning approach ($r = -.274$, $p < .003$) to the clinical grade. A very low and non-significant correlation to Theory/Classroom strategic learning was present for the clinical grade ($r = -.097$, $p < .296$). No significant relationship existed between Theory/Classroom strategic learning approach ($r = -.114$, $p < .176$) or the Theory/Classroom deep learning approach ($r = -.165$, $p < .051$). And finally the Clinical/Direct patient care deep learning approach produced weak negative correlations to the clinical grade.

To summarize, the data demonstrated that surface learning approaches both in the classroom and the clinical learning environments had a negative impact on learning outcomes (course grade, cumulative NGPA, clinical performance). Unlike the surface learning approach, deep and strategic learning in the classroom correlated positively to the adult health nursing course grade and the cumulative NGPA. Correlation values individually were slightly higher for strategic learning in both learning environments than the deep learning approach. However, from the stepwise regression analysis, the deep learning approach had a stronger impact on the course grade than strategic learning. But a reverse pattern (strategic stronger than deep) was present for the students' cumulative NGPA.

Clinical learning approaches showed a different pattern of relationships. From the analysis of the clinical learning approaches to academic outcomes, the deep learning correlated significantly to the students' course grade (moderately positive) and to the cumulative NGPA (weak positive). Strategic and surface clinical learning approaches had a weak correlation to the courses grade but did not correlate with the NGPA. Finally, both classroom and clinical learning approaches were not related or weak negative correlates to the clinical performance grade.

The research hypothesis for question two states that students who choose a predominant deep learning approach in either setting will achieve better learning outcomes. From this analysis, the impact of choosing deep learning approaches on learning outcomes showed varied relationships. The data show deep learning approaches in both the classroom and in the clinical environment related positively to the adult health nursing course grade. However, strategic theory/classroom learning showed a stronger

relationship to the students' NGPA whereas strategic learning in the clinical/direct showed no relationship. Last, the deep learning approach correlated negatively to the clinical grade. Thus, the research hypothesis is partially accepted as the deep learning approach did show a relationship to the academic outcomes but that relationship was not consistent for all of the academic outcomes for this study.

Research Question 3

The third research question asked, "To what extent does student category, gender, and prior experience in a patient care setting influence these relationships?" It was hypothesized that nursing student personal factors or presage characteristics would impact on the students' learning approach and student learning outcomes. To answer the research question each personal factor was analyzed to determine if these student presage characteristics influenced both the learning approaches and the academic success indicators.

Independent t-tests were performed to calculate learning outcome mean scores and to determine the extent to which these scores differed based on the student characteristics and learning approaches in both learning environments. This analysis was conducted first for the student characteristics and the three learning outcomes. Based on this analysis, significant differences existed between the cumulative NGPA for the adult (3.06, $p < .05$) than the traditional students (2.88, $p < .05$). In addition, the student's clinical grade was significantly higher for those with health care experience (4.14, $p < .05$) than those without health care experience (3.74, $p < .05$). There was also no significant difference between the learning outcomes and the students' gender. The results of this analysis are summarized Table 20.

Table 20. Mean Score and Standard Deviation - Learning Outcomes by Student Characteristics

	Adult Health Course Grade	Cumulative NGPA	Clinical Grade
Adult	Mean 84.51 SD 6.69 n = 93	Mean 3.06* SD .503 n = 94	Mean 3.95 SD .963 n = 87
Traditional	Mean 83.49 SD 5.55 n = 61	Mean 2.88* SD .463 n = 61	Mean 3.78 SD .883 n = 54
Male	Mean 83.81 SD 7.13 n = 17	Mean 2.88 SD .53 n = 17	Mean 3.82 SD .88 n = 17
Female	Mean 84.14 SD 6.16 n = 137	Mean 3.00 SD .49 n = 138	Mean 3.90 SD .94 n = 124
No Health Care Experience	Mean 84.34 SD 5.74 n = 96	Mean 2.99 SD .47 n = 97	Mean 3.74* SD .97 n = 90
Health Care Experience	Mean 83.71 SD 7.06 n = 58	Mean 2.98 SD .54 n = 58	Mean 4.14* SD .83 n = 58

*Significant at the 0.05 level (2-tailed)

Next this analysis was repeated to analyze the student characteristics their Theory/Classroom learning approach scores. This analysis showed no significant

difference between the students' learning approach scores and student characteristics. A summary of these results are presented in Table 21.

Table 21. *Mean Score and Standard Deviation –Classroom Learning Approach Scores by Student Characteristics*

	Deep	Strategic	Surface
Adult n = 94	22.33 SD 3.68	23.38 SD 5.61	15.05 SD 5.37
Traditional n = 61	22.16 SD 3.58	24.57 SD 4.45	15.38 SD 4.67
Male n = 17	21.24 SD 3.99	23.35 SD 6.32	13.48 SD 4.84
Female n = 138	22.39 SD 3.59	23.91 SD 5.08	15.39 SD 5.10
No Health Care Experience n = 97	22.47 SD 3.41	24.24 SD 4.31	15.31 SD 5.23
Health Care Experience n = 58	21.91 SD 3.98	23.21 SD 6.42	14.97 SD 4.89

Once again this analysis was repeated to determine the extent to which student characteristics influenced the Clinical/Direct patient care learning approach scores. While learning approaches varied among the student characteristics, a significant difference ($p < .015$) existed only among students with or without prior health care experience and the students' surface learning approach scores. Students with health care

experience surface learning approach scores were significantly less (10.98, $p < .05$) than those who had no health care experience prior to entering their nursing program (12.84, $p < .05$). The clinical/direct patient care learning approach scores by student characteristic are summarized in Table 22.

Table 22. *Mean Score and Standard Deviation –Clinical Learning Approach Scores by Student Characteristics*

	Deep	Strategic	Surface
Adult n = 75	24.31 SD 2.65	24.96 SD 3.85	11.99 SD 4.16
Traditional n = 52	24.42 SD 3.15	25.83 SD 3.34	12.46 SD 4.16
Male n = 15	24.00 SD 3.63	26.40 SD 3.29	10.87 SD 3.48
Female n = 112	24.40 SD 2.75	25.17 SD 3.69	12.38 SD 4.21
No Health Care Experience n = 82	24.32 SD 2.97	25.34 SD 3.44	12.84* SD 4.15
Health Care Experience n = 45	24.42 SD 2.66	25.26 SD 4.07	10.98* SD 3.91

*Significant at the 0.05 level (2-tailed)

The research hypothesis stated that student characteristics would influence these relationships. Based on the analysis of the study sample characteristics, learning approaches and academic outcome, this hypothesis was supported. Although, it is important to note that the relationships are limited in nature.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Despite the current influx of new nurses into the workforce, without aggressive intervention it is projected that the RN workforce will fall 36 percent below requirements by the year 2020 (National League for Nursing [NLN], 2009). But while many students compete aggressively to enter into nursing schools, those who succeed have no guarantee that they will be successful in their nursing studies, graduating and passing the required National Council Licensing Exam for Registered Nurses (NCLEX-RN[®]). Therefore, an imperative exists for nurse educators to identify factors that will foster student learning and academic achievement. Thus, this study's objective was to gain a better understanding of how nursing students approach their learning and to determine what characterizes successful students.

The study's design was based on the theoretical framework of the student's approach to learning, which states that student characteristics and teaching environments impact on the students learning approach. This chapter will discuss the findings of this study and the conclusions that can be made from the study results. It will also discuss provide recommendations for future research and implications for practice.

Discussion of Findings

The Associate Degree nursing student population comprises the largest number of students entering into the nursing workforce each year in the United States (NCSBN, 2009). However, only a small number of studies on student learning approaches on this population of nursing students exist. For that reason, the target population for the study was Associate Degree nursing students and the study sample of Associate Degree nursing

students was drawn from one multisite University system in Pennsylvania. Demographic characteristics of the sample reflected the typical distribution of adult, traditional age, male and female students consistent with the demographic profile of the Associate Degree student population in the United States (NLN, 2009b). Thus, the study sample was representative of the Associate Degree nursing student and sufficient in size for the statistical analysis needed to answer the research questions.

The study was designed to administer two learning approach inventories at two different data collection sessions. One was during the theory classroom instruction and the second was at the end of the semester to assess student learning in the clinical environment. This produced a challenge to sustain the same level of participation between the two data collection sessions. However, study participation was high (61%) and no one campus dominated the sample size.

Three research questions were addressed. The intent of the first research question was to identify the predominant learning approach used by nursing students in the two learning environments. The first analysis explored the learning approaches students used in theory/classroom environment of an adult health nursing course. Past research on student learning in the classroom setting describes the nursing student as a strategic learner who focuses on passing the course and getting good grades (Hoveland, 2006; Broderson, 2007; Doll-Speck, 2007). It is also widely accepted that the nursing students' classroom learning environment is content laden and lecture based delivery with multiple choice tests as the primary mode to assess learning. In addition to assure student success on the NCLEX-RN exam, programs have established stringent academic progression policies where students will be expelled from their nursing program if they do not achieve

high enough grades (Bevis, 1990; Diekelmann, 2002; Ironside, 2004; Belleck, 2005; Belleck 2008; Giddins, 2009) Therefore, as anticipated and consistent with prior research, the results of this study found that the nursing students chose strategic learning as their predominant learning approach.

Their next highest learning approach score indicated that students also used deep learning approaches with surface learning used least often. This pattern again was consistent with Broderson's study (2007) that found BS nursing students also used strategic learning as their predominant learning approach followed by the same pattern of deep learning then surface learning.

The nursing students' clinical learning experience is the most active learning modality and supported in the literature as the students' learning environment of choice (Etheridge, 2007; Meehan-Andrews, 2009). Prior research on nursing students' experience in the clinical learning environment generated predominantly from qualitative studies where students described the clinical learning environment as the setting where they had many opportunities to learn and make connections from what was taught in the classroom (Etheridge, 2007; Stockhausen & Sturt, 2004). Students further described how important the clinical experience was to their conceptualization of being a nurse (Idczak, 2007). Therefore, it was thought that the deep learning approach would dominate the students learning dimensions. However, students in the study reported using strategic learning as their predominant learning approach in the clinical learning environment. This was followed by deep learning and last surface learning that mirror the pattern of learning approaches found in the classroom environment. These findings were not anticipated.

Nevertheless, several things may be considered to explain the study results. First, past research on the students' clinical experience has generated inconsistent findings on the quality of clinical instruction. Norman, et.al, (2005) studied nursing education in the U. S. and found that while 88% were satisfied with their nursing education, however, problems did exist. These included students' difficulty balancing the demands of school and clinical hours and the quality of nursing education. Students described being given too much "busy work" while others felt they were functioning as nursing assistants rather than as nurse. Finally, students described faculty as unconcerned about their progress and insensitive to their needs, and that inadequate clinical instruction led them to essentially be "on their own" during clinical time. The study also reported that several questioned the clinical knowledge of their professors who seemed "out of date with current hospital realities" (p.155). These findings would suggest that the students' clinical learning experience was less than positive and dependent on the clinical instructor. Thus a student may chose strategic learning as it measures the students' intent to succeed despite the lack of quality clinical instruction.

A second and perhaps more plausible explanation is one that is consistent with other research on how the nursing student conceptualizes their role of being a nurse. Students describe the clinical environment as a place where they gain the rewards of "helping others" (Norman, et.al, 2005). Likewise, newer models of clinical experience and clinical teaching will place students with RN's who mentor the student and supplement the clinical instruction. This form of clinical instruction is common among nursing programs and is encouraged (Billings & Halstead, 2005; DeYoung, 2009). Furthermore, studies on this teaching approach indicate that students show an increase in

knowledge, skills, confidence, socialization into the role of the nurse, and use of self-regulated learning strategies (Daley, et al., 2008; Kupier, 2005; Stockhausen, 2002). The characteristics shown by students closely align with the strategic learning approach items students were asked to score on the clinical learning inventory. The items in the clinical RASI-SV specifically focus on assessing the students' organization skills, motivation to perform well, and getting down to their work when needed. Therefore, it is likely that the students in this study were influenced by the experiences in their clinical environment and likely to use strategic approaches to do well as they practice the role of being a nurse.

In addition, the reliability studies of the RASI-SV for clinical/direct patient care raise the question of internal consistency of the instrument specifically in the measure of the deep learning approach. The Cronbach's alpha coefficient for strategic learning showed the strongest internal consistency (.74, $p < .001$) whereas the deep learning approach showed a lower level of consistency at (.57, $p < .001$). In addition, the inter-item correlation analysis indicated an item in the deep learning approach dimension may be problematic. Given these findings, the results from the study also suggest that the Clinical RASI – SV was a better measure of strategic learning approaches than the deep learning approach.

One final observation was made from the study results. In the initial analysis, all learning approach scores in both learning environments were significantly different from each other in the same learning environment and between each other across the different learning environments. The data also presented the same hierarchical pattern – strategic, deep, and surface; however, the deep learning approach mean score in the clinical environment was significantly higher than both the strategic and deep learning approach

score in the classroom. In addition, the use of the surface learning approach was significantly less in the clinical environment than it was in the classroom environment. Thus, when comparing the impact of the two learning environments on student learning the notion that the clinical environment fosters deep learning more so than the classroom learning environment is supported. From this perspective, the study results partially support the research hypothesis that the students would use deep learning approaches more since these scores were significantly higher than they were for the deep learning approach scores in classroom setting. They are also consistent with prior research that describes clinical experience as one of the richest learning environments for nursing students (Etheridge, 2007; Meehan-Andrews, 2009).

The next objective of the study was to determine if a relationship existed between the learning approaches in either environment and student achievement. Prior research had found that students who chose a surface learning approach were less likely to succeed in their academic studies. Conversely, students who use a deep approach are more likely to succeed in their studies. In addition, the strategic learning approach coupled with the deep learning approach can further support academic success. The strategic learner is organized and motivated to do well. However, even when strategic learning is coupled with the surface learning approach, the student is less likely to achieve academic success (Biggs, 2001; Biggs & Tang, 2006; Cowman, 1998; Entwistle, 2005; Marton, 1983; Marton & Säljö, 1976a; Ramsdon, 1981; Ramsdon & Entwistle, 1981).

The results of this study are consistent with this research by also demonstrating that surface learning approaches in both learning environments correlated negatively to both learning outcomes – adult health nursing course grade and cumulative NGPA.

However, the surface learning in the classroom environment had the strongest impact on student achievement in that setting. Surface learning in the clinical environment had a weak but significant impact to the course grade and had no significant impact on the NGPA. The study results also concur with nursing research that found nursing student learning approaches followed a similar pattern of influence. (Brodersen, 2007; Doll-Speck, 2007; Hoveland, 2006; Leung, Mok., & Wong, 2008; Snelgrove, 2004).

Next, positive correlations existed between the strategic and deep learning approaches in both learning environments; however there were some interesting findings. Consistent with prior studies on nursing student learning, better academic outcomes – course grade and NGPA – were found in students who had higher strategic and deep learning approach scores (Broderon, 2007; Doll-Speck, 2007). These studies were limited to the classroom setting whereas this study sought to examine both the classroom and clinical learning environments.

In this study, the correlation analysis for clinical learning approaches indicated that strategic learning in the clinical environment had little impact on classroom academic outcomes. On the other hand, the deep learning approaches in the clinical/direct patient care environment related significantly to both classroom academic outcomes. It is important to also note that only the deep approach correlated positively to the cumulative NGPA. These results now provide evidence from what was anecdotally reported by nursing faculty and confirm the value of the clinical experience to student learning and to academic achievement.

As stated previously, students utilize all three learning approaches thus generating a multi-dimensional variable. The stepwise regression analysis of the three classroom

learning approaches indicated a moderately strong relationship of the combined learning approach profile of the students to both academic outcomes in classroom settings. This was largely due to the impact of surface learning which had a negative correlation. However, in the regression analysis deep learning impacted more to the course grade and strategic learning impacted more with the student's cumulative NGPA.

An explanation for this finding is that students can also be influenced by teaching strategies that may foster any of the three learning approaches. Thus, a student's learning approach is dynamic and open to change by the teaching and learning environments rather than fixed (Cowman, 1998; Marton, 1983; Ramsdon, 1981; Ramsdon & Entwistle, 1981; Entwistle, 2005). It is likely that faculty teaching this adult health nursing course sought to foster a deeper learning approach by the students in their course. It is also possible that variation in faculty teaching approaches existed across the campus sites and among the different nursing courses. Thus student learning approaches are likely to vary in these different learning environments. Perhaps the student who uses strategic learning deals with the variation in teacher approaches by "figuring out what the teacher wants you to learn" and can, over a period of time, achieve better academic outcomes. Broderson (2007) observed this phenomenon from interviews with students who described a desire for certainty in the content they were required to deal with and for exams that covered only material that was taught in class. Doll-Speck (2007) also found that organized study behaviors – putting effort to studying, specific time for studying, and good management skills related to higher college GPA and nursing GPA.

The clinical grade was also examined as a measurement of academic achievement because it is thought to represent how the student applies what was learned in the

classroom setting. However, the results demonstrated a weak and negative relationship between both the classroom and clinical learning approaches to the clinical grade. Two explanations for these findings may be considered.

Holaday's clinical performance scale was designed to provide the student with a clinical level performance grade that was based on specific behaviors faculty would observe in the clinical environment. Holaday recommends assigning a performance level based on the students' achievement against eleven outcome objectives and defined competencies adapted from a clinical evaluation tool developed and tested by Krichbaum, Rowan, Duckett, Ryden, and Savik (1994). In addition, Holaday cautions that if faculty either do not observe the student consistently or evaluate learning outcomes based on varied criteria, then the reliability of the measure may be affected (Holaday & Buckley, 2008a). For this study, it was assumed that faculty would be consistent in their assessment of the students' clinical competencies and that these competencies were consistent with those recommended by Holaday. Thus, the lack of correlation of learning approaches to clinical grade may have been a result of faculty interpretation the rating scale, the specific competencies they had observed, and the variation that often exists among faculty grade assignments.

Another factor to consider is that the students' clinical performance itself may not necessarily be an endpoint to which an outcome can be quantitatively measured. In other words, a student's clinical performance can be thought of as a reflection of the process of learning and not a specific endpoint or outcome. This notion is supported first by the fact that 85% of the student clinical performance levels fell evenly between three levels – assisted, supervised, and self-directed. Next, clinical grades are made by observations

and faculty and subjective in nature. Faculty may give the student the benefit of the doubt scoring them higher if they show progress towards meeting the learning outcomes. These processes lend to the halo effect, specifically the error of leniency which can overall contribute to variation in the student's clinical grade (Holaday & Buckley, p. 127). Thus the lack of strong correlation with the clinical grade and the student's learning approaches support the concern in the literature by nurse educators that evaluating clinical performance is a daunting and complex task. It also supports the need for nurse educators to work towards the development of a clinical evaluation process that aligns the measure of clinical performance consistently with clinical outcomes (Holaday & Buckley, p 123).

The final aspect of student learning determined if specific student presage characteristics influenced any of these relationships. Specifically gender (male/female), student type (traditional age/adult) and whether or not a student had experience in a health care setting were explored. The data showed that limited relationships existed between these student characteristics, the use of the three learning approaches in both learning environments and the learning outcomes – course grade, cumulative NGPA and clinical grade.

No differences existed between the any of the student characteristics and their choice of learning approaches in the classroom. This finding was not anticipated or consistent with other studies where adult students were more likely to use the deep learning approach (Broderson, 2007; Howard, et al., 2001). However, adults were found to have higher cumulative NGPA. This finding is consistent with other studies that found adults had higher grade point averages than the traditional age student. This was

attributed to research that found adults are more likely to develop deep learning approaches over time (Howard, et al., 2001) and that adults have better time management skills and more appropriate study behaviors (Doll-Speck, 2007).

The last student characteristic that showed a significant relationship to the learning approaches and academic outcomes existed in students who had experiences in a patient care setting prior to start of their nursing studies. These students first used less surface learning approaches in the clinical environment and their overall clinical performance grade was higher than those without experience.

It would seem plausible that students who had experience in a patient care setting would be more comfortable with the clinical learning environment and more likely able to perform better. Students with prior patient care experience are often described by faculty as possessing more organizational skills and demonstrating a higher level of comfort within the clinical learning environment. It is also not uncommon for faculty to encourage students to seek employment as nurse aides to gain more confidence in basic nursing skills and improve their time management.

This viewpoint is also supported by research on cognitive information processing (CIP) which describes knowledge as a hierarchically organized theory of cognitive structures consisting of the individuals' cumulative learning experience. Within one's cognitive structure anchoring ideas exist upon which new learning can be hung and assimilated within one's cognitive structure. These anchoring ideas exist to take on new learning and are formed from prior experiences (Ausabel, 1968, 2000). The presence of anchoring ideas facilitates learning and learning is better integrated when learning is meaningful through deep approaches (Marton and Säljö, 1976a, 1976b). Therefore, a

nursing student with prior patient care experience has anchoring ideas upon which they are then more likely to integrate their clinical experience into an already developed cognitive structure.

Some studies in nursing explored the relationship to cognitive structuring, student learning, and the impact on work experience. The findings of these studies show varied results. In a recent study, Meinert (2008) examined the relationship of previous life experience on cognitive structures and knowledge acquisition of nursing theory and clinical skills in non-traditional student. Meinert found that prior experience did not correlate with the course grade; but when adult students were open to new information, they did not experience conflict with existing cognitive structures and were more likely to be successful in nursing. However, Meinert's study was limited to addressing relationships only to classroom learning.

In another study work experience had no relationship to academic achievement (Morris, 1999) where an earlier study by Tessler (1991) found that licensed practical nurses did have significantly ($p < .05$) higher cumulative grade point averages, higher clinical grades than those without prior experience. No difference was seen in the pass rates for NCLEX-RN exam.

Therefore, this study adds to research on student clinical learning but caution must be exercised when making conclusions about the results. First, the concerns of validity of the clinical grade limit the strength of this relationship. And second, the small number of studies and inconsistent findings offer limited comparisons to support the study results.

Conclusions

This study offers new and significant evidence on the Associate Degree nursing students learning approaches and their impact on academic achievement. Based on the results of this study, Associate Degree nursing students employ strategic learning in both the classroom and in the clinical environment with the intent to get good grades and do well in the practice of nursing. And when strategic learning is combined with a high level of deep learning, the students' will experience more success in their nursing studies.

One of the most important findings from this study is the consistent negative correlation of surface learning with academic achievement. Not only in nursing but also in numerous studies conducted on student learning that generated the Student's Approach to Learning theory. Surface learning is not an effective study skill or learning approach. Even when surface learning is combined with a strong strategic intent to do well, surface learning will not produce successful outcomes. The findings also explain how a student can be observed to putting a concerted effort to their nursing studies but still end up with less than desirable outcomes.

Another relevant finding from the study was that students' strategic and deep learning approaches scores were significantly higher in the clinical learning environment and the surface learning approach was lower. In addition, a deep clinical learning approach had a positive impact on the students' course grades. Therefore, the clinical learning environment provides one of the best settings for students to learn and to apply what is taught in the classroom as they develop their skills in the practice of nursing.

Finally, presage characteristics had limited impact on the students' learning outcomes. Adults had higher NGPA and students with prior experience in a patient care

setting used less surface learning approaches and received higher clinical grades. However, definitive conclusions cannot be made by these findings since the relationships were weak in nature.

Recommendations for Future Research

This study was the first to specifically examine the Associate Degree nursing students' approaches to learning in both the classroom and clinical environment. However, there is more than one course of study a student can use to become a nurse. While a number of studies examined learning approaches of baccalaureate nursing students, there is a dearth of studies on the student in the diploma nursing program. Likewise, there are no studies that explore learning approaches for both the clinical and classroom settings. Therefore, additional research is needed to compare these findings with all student populations and to continue to examine nursing student learning approaches in both learning environments.

In addition, this study on Associate Degree Nursing students was conducted in one University multi-campus setting. While this provided a sufficient sample of the Associate Degree nursing student population, larger multi-site studies are warranted to generalize the findings to this student population.

The adaptation of the RASI-SV to apply to the Clinical/Direct patient care learning environment offered a unique understanding of how students approach learning in that setting. While a rigorous effort was made to establish the validity and reliability of this instrument, further studies are needed to improve the reliability scores specifically for the deep learning dimension.

Likewise, the Clinical/Direct patient care RASI-SV inventory has relevance to clinical learning in other patient care related professions. Research using the Clinical/Direct patient care RASI-SV with other student populations may offer further insight into how students, not just nursing, learn in patient care settings.

This study found that the clinical performance level assigned to students was subject to weak correlations and limited relationships to the students' learning approach or student characteristics. This finding confirms the challenges nursing faculty face when providing feedback to students on their clinical performance. Therefore, further research will be necessary to find enhanced ways to assess clinical performance outcomes.

Finally, two important opportunities arise for further research on nursing students' learning approaches. From the outset, this study sought to gain a better understanding of what nursing students can do to be successful learning the theory and clinical practice of nursing. Since limited research was conducted on nursing student learning, this study focused mostly on describing the student's learning approach in the learning environments as they currently exist. But the students' learning approaches can be affected by not only by their presage characteristics and motivation to learn but also the learning environment. And as indicated by the tenets of the Student's Approach to Learning theory, students' learning approaches can be modified; therefore, two compelling questions warrant further study. First, what is the impact on students' learning approaches when changes are made in the learning environment? Next, what is the impact if students were coached or instructed on how to best use the learning dimensions that foster academic success?

Implications for Practice

The results of this study hold important implications for students, nursing faculty, and administrators of nursing education programs. The consistent deleterious effect of surface learning to student achievement is clearly evident. Therefore, faculty and students need to be keenly aware that despite concerted efforts, use of surface learning will not support academic success. It is important for students to be open to change and for faculty to guide students through this change process.

Often faculty will accuse the student of not doing the work and account this as the reason for academic failure. However, this study supports the notion that the student *is* working hard but not working “smart”. A unique opportunity exists for faculty to seek out the struggling student and take on a different attitude about their ability to succeed. Students need guidance and help when they do not succeed. This study confirms that the student is a dedicated learner who wants to do well. When struggling, they will find it very difficult to cope with the learning requirements and may resort to learning approaches that further compound their problems.

Students need to also be aware of what they do that supports or deters from their goals to be successful in their nursing studies. Focusing only on knowing what they need to know for the test rather than seeking to understand – deep approach – will not lead to success. When they find themselves overwhelmed, they need to seek help to learn better ways of studying and learning.

Nursing faculty and administrators of nursing education programs must also examine what can be done in both learning environments to support deep learning

approaches over surface learning. This will require a closer look at content laden curriculums that create an overwhelming experience for the nursing student.

This research also supports the imperative to explore ways to modify the learning environment to keep students interested, to help them relate ideas and clarify complex concepts, and to guide them in seeking their own meaning to what is to be learned. Faculty must also make the most of the clinical learning environment as this setting supports deep learning and helps the student apply what is learned in the classroom.

In conclusion, this study provides unique insights into the Associate Degree Nursing students' learning and offers nurse educators new methods to assess student learning in both learning environments. Opportunities now exist to further examine the nursing students' learning approach and to explore aspects of the learning environment that may impact on the students' academic achievement and their retention. This alone can ultimately have an even larger impact by decreasing attrition, increasing the number of nurse graduates who go on to practice nursing, and satisfying the demand for nurses to meet the future health care needs of our society.

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APPENDICIES

Data Collection # 1

Instrument Cover Sheet

Student Information

Name _____

PSU ID number _____ OR

PSU email user ID (i.e. xxx 123) _____

You have the opportunity to receive your individual survey results and a guide for interpretation. You also have the opportunity to receive a summary report of the study results upon its completion.

Your individual results will be available approximately 1 month from the time of the data collection. Study results will be available approximately 3 months from the completion of the study. Please indicate below if you would like either report.

_____ I would like my individual survey results

_____ I would like a summary report of the research study

Thank you for agreeing to participate in this study

Jo Anne Carrick

Student Demographic Survey

1. Please check student category that applies to you according to the following definition:

Traditional Age Student – an individual who has been a full time student on a continuous basis and who had entered college directly after graduating from high school.

Adult Student - an individual that may be 24 years of age or older; or a veteran of the armed services; or returning to school after four or more years of employment, homemaking, or other activity; or a person who assumes multiple adult roles such as parent, spouse/partner, employee, and student.

_____ Traditional Age Student

_____ Adult student

2. Gender – Please circle Male Female
3. Please check if you have been **employed for at least six months** in any of the following positions **prior** to the start of your nursing studies. Check all that apply

___ Nurse aide/patient care assistant

___ Licensed practical nurse

___ Emergency Medical Technician

___ Medical Assistant

___ Paramedic

___ OR scrub technician

___ Laboratory technologist/technician

___ Radiology technologist/technician

___ Nutritionist/Dietician

___ Behavioral Health counselor or direct care provider

___ Other, Please specify _____

Appendix B

**RASI - Short Version Approaches and Study Skills Inventory for
Students
*Theory/Classroom***

This questionnaire has been designed to allow you to describe, in a systematic way, how you go about learning and studying. The technique involves asking you a substantial number of questions which overlap to some extent to provide good overall coverage of different ways of studying. Most of the items are based on comments made by other students. Please respond truthfully, so that your answers accurately describe your actual ways of studying, and learning. Work your way through the questionnaire quite quickly making sure that you give a response to **every item**. Circle the number directly on the survey.

	Agree	Agree somewhat	Unsure	Disagree somewhat	Disagree
1. I often have trouble in making sense of the things I have to remember.	5	4	3	2	1
2. When I'm reading an article or book , I try to find out for myself exactly what the author means.	5	4	3	2	1
3. I organize my study time carefully to make the best use of it.	5	4	3	2	1
4. There's not much of the work here that I find interesting or relevant.	5	4	3	2	1
5. I work steadily through the term or semester , rather than leave it all until the last minute.	5	4	3	2	1
6. Before tackling a problem or assignment, I first try to work out what lies behind it.	5	4	3	2	1
7. I'm pretty good at getting down to work whenever I need to.	5	4	3	2	1
8. Much of what I'm studying makes little sense: it's like unrelated bits and pieces.	5	4	3	2	1
9. I put a lot of effort into studying because I'm determined to do well.	5	4	3	2	1

	Agree	Agree somewhat	Unsure	Disagree somewhat	Disagree
10. When I'm working on a new topic , I try to see in my own mind how all the ideas fit together.	5	4	3	2	1
11. I don't find it at all difficult to motivate myself.	5	4	3	2	1
12. Often I find myself questioning things I hear in lectures or read in books .	5	4	3	2	1
13. I think I'm quite systematic and organized when it comes to reviewing for exams .	5	4	3	2	1
14. Often I feel I'm drowning in the sheer amount of material we have to cope with.	5	4	3	2	1
15. Ideas in course books or articles often set me off on long chains of thought of my own.	5	4	3	2	1
16. I'm not really sure what's important in lectures , so I try to get down all I can.	5	4	3	2	1
17. When I read, I examine the details carefully to see how they fit in with what's being said.	5	4	3	2	1
18. I often worry about whether I'll ever be able to cope with the work properly.	5	4	3	2	1

Thank you very much for spending time completing this questionnaire: it is much appreciated.

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ASSIST short version - amended, March, 2006

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Appendix C
**RASI - Short Version Approaches and Study Skills Inventory for
 Students**
Clinical/Patient Care Environment

This questionnaire has been designed to allow you to describe, in a systematic way, how you go about learning and studying. The technique involves asking you a substantial number of questions which overlap to some extent to provide good overall coverage of different ways of studying.

Most of the items are based on comments made by other students. Please respond truthfully, so that your answers accurately describe your actual ways of studying, and learning.

Work your way through the questionnaire quite quickly making sure that you give a response to **every item**. Circle the number directly on the survey.

	Agree	Agree somewhat	Unsure	Disagree somewhat	Disagree
1. I often have trouble making sense of the information I have to remember for clinical.	5	4	3	2	1
2. When I'm reading a patient chart / clinical reference material, I try to find out for myself exactly what they mean.	5	4	3	2	1
3. I organize my time carefully when preparing for my clinical assignments to make the best use of it.	5	4	3	2	1
4. Very little of the work I do in clinical is interesting or relevant to me.	5	4	3	2	1
5. I work steadily through the term, rather than leave it all until the last minute.	5	4	3	2	1
6. Before tackling a patient problem or assignment, I first try to figure out what lies behind it.	5	4	3	2	1
7. I'm pretty good at getting down to work whenever I need to.	5	4	3	2	1
8. Much of what I'm studying for my clinical experience makes little sense: it's like unrelated bits and pieces.	5	4	3	2	1
9. I put a lot of effort into reading and reviewing aspects of patient care for clinical because I'm determined to do well.	5	4	3	2	1

	Agree	Agree somewhat	Unsure	Disagree somewhat	Disagree
10. When I'm working on a new clinical assignment or new aspect of patient care, I try to see in my own mind how all the ideas fit together.	5	4	3	2	1
11. I don't find it at all difficult to motivate myself.	5	4	3	2	1
12. Often I find myself questioning things I hear about, find in patient charts, or discuss in post clinical conferences.	5	4	3	2	1
13. I think I'm quite systematic and organized when reviewing patient information before meeting with my clinical instructor.	5	4	3	2	1
14. Often I feel I'm drowning in the sheer amount of information in the clinical setting that we have to cope with.	5	4	3	2	1
15. Information in clinical reference material and the patient's chart often set me off on long chains of thought of my own.	5	4	3	2	1
16. I'm not really sure what's important in shift report of unit patients and in patient charts, so I try to write down all I can.	5	4	3	2	1
17. I examine the details carefully of what I read about my patient or see and hear in the clinical setting to see how they fit together.	5	4	3	2	1
18. I often worry about whether I'll ever be able to cope with the work for my clinical experiences properly.	5	4	3	2	1

Thank you very much for spending time completing this questionnaire: it is much appreciated.

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ASSIST short version - amended, March, 2006

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Modified for Clinical Learning Environment, November 2009

Appendix D

RASI-SV Clinical/Direct Patient Care Instrument Validation

Instructions to Participants:

RASI Short Version Approaches and Study Skills Inventory for Students

The attached instrument will be given to nursing students to assess their approach to learning in the clinical/patient care experiences during the fall semester in their Nurs 212 class. Originally the instrument was developed for college students to assess their learning and study approach in the classroom.

To use of this instrument for clinical leaning some of the words have been changed to be more appropriate for assessing the clinical learning environment. To assist with the instrument validation, I would like you to review the 18 questions in the instrument and do the following:

1. First complete the demographic data listed below
2. On the next page are the 18 original classroom learning statements and then below each statement is the revision for clinical learning. Using the Likert scales
 - a. Rate the level that you believe the clinical learning statement is appropriate to clinical learning
 - b. Rate the degree that you feel the new statement keeps the intent of the original question
3. Mark any statement or word you feel needs to be changed with your recommendation.
4. Return this completed review to Jo Anne Carrick

NOTE: not all items are modified but still rate them for appropriateness to assess clinical learning approach.

It is entirely voluntary to participate in this activity. It should take you about 20 minutes to complete the review of the instrument. Your completion of the instrument review will serve as your implied consent to participate.

Upon completion submit this document to Jo Anne Carrick at jam39@psu.edu

Thank you for your willingness to participate.

Instrument Validation Demographic Survey

Position/Title _____

Highest level of education _____ Masters _____

Years of experience as a nurse educator _____ 10.5 _____

Years of experience in nursing _____ 16.9 yrs _____

Course you teach in the AS program _____ 5 second level, 2 first level only, 1 both

Students – 7 recent graduates (May 2009) < 6 months experience as RN's

RASI - Short Version - Approaches and Study Skills Inventory for Students

Theory/Classroom –

This questionnaire has been designed to allow you to describe, in a systematic way, how you go about learning and studying. The technique involves asking you a substantial number of questions which overlap to some extent to provide good overall coverage of different ways of studying. Most of the items are based on comments made by other students. Please respond truthfully, so that your answers accurately describe your actual ways of studying, and work your way through the questionnaire quite quickly, making sure that you give a response to every item.

Original Instrument for Classroom Learning approach	Revision of Instrument for Clinical Learning approach Any word that is “bold” is what was changed in the statement	Rate on scale of 1-5 degree that you feel the revision assesses clinical learning approach 1 - does not reflect clinical learning approach 5 Accurately reflects clinical learning approach Instructors n=8 <u>Underlined : Recent student graduate n=7</u>	Rate the degree that you feel the new statement keeps the intent of the original question 1 – does not keep the intent of the original question 5 – Keeps the intent of the original question
1. I often have trouble in making sense of the things I have to remember. Surface	1. I often have trouble making sense of the theory I have to remember for clinical.	1 2 3 4 5 4.25 <u>3.86</u>	1 2 3 4 5 4.75 <u>4.86</u>
2. When I’m reading an article or book, I try to find out for myself exactly what the author means. Deep	2. When I’m reading a patient chart / clinical reference material , I try to find out for myself exactly what the author means.	1 2 3 4 5 4.0 <u>4.29</u>	1 2 3 4 5 4.75 <u>4.57</u>

3. I organize my study time carefully to make the best use of it. Strategic	3. I organize my time for clinical preparation, clinical assignments and review of patient information carefully to make the best use of it.	1 2 3 4 5 4.63 <u>4.86</u>	1 2 3 4 5 4.71 <u>4.71</u>
4. There's not much of the work here that I find interesting or relevant. Surface	4. There's not much of the work I do in clinical that I find interesting or relevant to me.	1 2 3 4 5 4.75 <u>2.57</u>	1 2 3 4 5 4.75 <u>4.29</u>
5. I work steadily through the term or semester, rather than leave it all until the last minute. Strategic	5. I work steadily through the term completing my pre - clinical prep and post clinical assignments, rather than leave it all until the last minute.	1 2 3 4 5 4.88 <u>4.86</u>	1 2 3 4 5 4.88 <u>4.71</u>
6. Before tackling a problem or assignment, I first try to work out what lies behind it. Deep	6. Before tackling a patient problem or assignment, I first try to figure out what lies behind it.	1 2 3 4 5 4.0 <u>4.43</u>	1 2 3 4 5 4.38 <u>4.14</u>
7. I'm pretty good at getting down to work whenever I need to. Strategic	7. I'm pretty good at getting down to work for my clinical prep and post clinical assignments whenever I need to.	1 2 3 4 5 4.5 <u>4.29</u>	1 2 3 4 5 5.0 <u>4.29</u>
8. Much of what I'm studying makes little sense: it's like unrelated bits and pieces. Surface	8. Much of what I'm studying or reviewing for my clinical experience makes little sense: it's like unrelated bits and pieces.	1 2 3 4 5 4.5 <u>3.43</u>	1 2 3 4 5 4.5 <u>4.71</u>

9. I put a lot of effort into studying because I'm determined to do well. Strategic	9. I put a lot of effort into reading and reviewing on aspects of patient care for clinical because I'm determined to do well.	1 2 3 4 5 4.88 <u>5.0</u>	1 2 3 4 5 4.88 <u>4.86</u>
10. When I'm working on a new topic, I try to see in my own mind how all the ideas fit together. Deep	10. When I'm working on a new clinical assignment or new aspect of patient care , I try to see in my own mind how all the ideas fit together.	1 2 3 4 5 4.75 <u>4.57</u>	1 2 3 4 5 4.75 <u>4.71</u>
11. I don't find it at all difficult to motivate myself. Strategic	11. I don't find it at all difficult to motivate myself.	1 2 3 4 5 4.63 <u>4.86</u>	1 2 3 4 5 4.88 <u>4.86</u>
12. Often I find myself questioning things I hear in lectures or read in books. Deep	12. Often I find myself questioning things I hear in shift report, read in patient charts, or what we discuss in post clinical conferences.	1 2 3 4 5 4.63 <u>4.43</u>	1 2 3 4 5 4.88 <u>4.86</u>
13. I think I'm quite systematic and organized when it comes to reviewing for exams. Strategic	13. I think I'm quite systematic and organized when it comes to reviewing information related to my patient that my clinical instructor may question me on during my clinical day.	1 2 3 4 5 4.63 <u>4.0</u>	1 2 3 4 5 4.75 <u>4.14</u>

14. Often I feel I'm drowning in the sheer amount of material we have to cope with. Surface	14. Often I feel I'm drowning in the sheer amount of information in the clinical setting that we have to cope with.	1 2 3 4 5 4.5 <u>4.57</u>	1 2 3 4 5 4.63 <u>4.0</u>
15. Ideas in course books or articles often set me off on long chains of thought of my own. Deep	15. Ideas in clinical reference material and the patient's chart often set me off on long chains of thought of my own.	1 2 3 4 5 4.25 <u>3.86</u>	1 2 3 4 5 4.75 <u>4.29</u>
16. I'm not really sure what's important in lectures, so I try to get down all I can. Surface	16. I'm not really sure what's important in shift report of unit patients and patient charts , so I try to write down all I can.	1 2 3 4 5 4.5 <u>4.14</u>	1 2 3 4 5 4.88 <u>4.29</u>
17. When I read, I examine the details carefully to see how they fit in with what's being said. Deep	17. When I read about my patient assignment, or what I see and hear people say in the clinical setting , I examine the details carefully to see how they fit in with what's being said.	1 2 3 4 5 4.38 <u>4.14</u>	1 2 3 4 5 4.75 <u>4.57</u>
18. I often worry about whether I'll ever be able to cope with the work properly. Surface	18. I often worry about whether I'll ever be able to cope with the work for my clinical experiences properly.	1 2 3 4 5 4.63 <u>4.71</u>	1 2 3 4 5 4.0 <u>4.71</u>

Thank you very much for spending time completing this questionnaire: it is much appreciated.

Appendix E

Clinical Competency Proficiency Level Definitions

Directions: Please assign each student a competency level of performance that best reflects their accomplishment of the clinical objectives at the end of the semester.

Self Directed

Almost never requires (<10% of the time)

- Direction
- Guidance
- Monitoring
- Support

Almost always exhibits (>90% of the time)

- A focus on the client or systems
- Accuracy, safety & skillfulness
- Assertiveness and initiative
- Efficiency and organization
- An eagerness to learn

Supervised

Occasionally requires (<25% of the time)

- Direction
- Guidance
- Monitoring
- Support

Very often exhibits (>75% of the time)

- A focus on the client or systems
- Accuracy, safety & skillfulness
- Assertiveness and initiative
- Efficiency and organization

Assisted

Often requires (<50% of the time)

- Direction
- Guidance
- Monitoring
- Support

Often exhibits (>50% of the time)

- A focus on the client or systems
- Accuracy, safety & skillfulness
- Assertiveness and initiative
- Efficiency and organization
- An eagerness to learn

Novice

Very Often (<75% of the time)

- Direction
- Guidance
- Monitoring
- Support

Occasionally (>25% of the time)

- A focus on the client or systems
- Accuracy, safety & skillfulness
- Assertiveness and initiative
- Efficiency and organization
- An eagerness to learn

Dependent

Almost Always (<90% of the time)

- Direction
- Guidance
- Monitoring
- Support

Almost Never Exhibits (>10% of the time)

- A focus on the client or systems
- Accuracy, safety & skillfulness
- Assertiveness and initiative
- Efficiency and organization
- An eagerness to learn

Adapted from Holaday's Standardized Clinical Evaluation Tool-Kit
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Appendix F

Student Participant Consent Form

ORP OFFICE USE ONLY
DO NOT REMOVE OR MODIFY
IRB#32021 Doc. #1
The Pennsylvania State University
Institutional Review Board
Office for Research Protections
Approval Date: 10-02-09 LSY
Expiration Date: 09-25-10 LSY

Title of Project: THE EFFECT OF CLASSROOM AND CLINICAL LEARNING APPROACHES ON ACADEMIC ACHIEVEMENT IN ASSOCIATE DEGREE NURSING STUDENTS

Principal Investigator: Jo Anne Carrick, MSN, CEN
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Advisor: Dissertation Advisor
Dr. Mark Staszkiwicz
Professor
Department of Educational and School Psychology
Indiana University of Pennsylvania
Indiana, Pennsylvania
(724) 357-2299
mjstat@iup.edu

1. Purpose of the Study:

The purpose of this study is to examine the Associate Degree nursing students' learning approach in both the clinical and classroom setting and to investigate whether the approach in either the clinical or the classroom setting is related to student achievement in that setting. Finally, this study will explore any relationship between learning approach and achievement is related to the student's gender, age, or prior experience in a patient care setting. Also, this study is being conducted for research purposes only.

2. Procedures to be followed: If you consent to participate in the study you will be agreeing to complete surveys and to allow the course and clinical instructors to provide the following data:

- a. Data Collection Period #1 – Both surveys completed by the student
 - i. Student information and demographic survey
 - ii. RASI Learning approach survey – Classroom/Theory
- b. Data Collection Period # 2 – Approximately the last week of regular classes
 - i. RASI Learning approach survey – Clinical/Direct patient care – completed by the student
 - ii. Faculty assigned clinical performance level and clinical grade (Pass or Fail) – completed by the clinical faculty
- c. Data Collection Period # 3 – After final course grades are entered in eLion the course instructor will provide the research assistant your
 - i. End of semester final percentage score for Nurs 212
 - ii. Cumulative overall GPA
 - iii. Cumulative nursing GPA

You will first be asked to complete a student information form that asks for name, PSU ID and email address. The purpose of this information sheet is two-fold. First it will allow the researcher to match your final course grades, overall cumulative grade point average, cumulative nursing grade point average, and faculty assigned clinical performance level and grade (pass/fail) to your learning survey results. Without this information, the study will have limited benefits as an analysis of any relationship of learning approaches and academic achievement will not be possible. The second purpose is to give you an opportunity to receive your individual results of the learning survey and a report of the study results. However, it is recognized that protection of your personal information is of utmost concern of the researcher and is addressed in the statement of confidentiality.

You will also complete a general information sheet that asks for your age, gender and work hours and an 18 question learning approach survey. This instrument is designed to assess your approach to learning in theory/classroom setting.

On the second data collection period during the last week of classes you will be asked to complete the same learning approach survey again but this time it will be how you approached learning in the clinical/direct patient care setting.

At the same time your clinical instructor will be asked to provide the researcher your clinical performance level (self-directed, supervised, assisted, novice or dependent). This performance level is assigned based on Holaday's clinical performance rating scale definitions. It is for study purposes only and will not be factored in any way to your course grade.

Once the semester is completed and again with your permission, the researcher will obtain your final course percentage grade from your course instructor. Your cumulative GPA and cumulative Nursing GPA will be obtained from your transcript records.

3. **Discomforts and Risks:** There are no risks in participating in this research beyond those experienced in everyday life. Also, your grades will not be affected by data collected on the surveys or clinical performance data that is provided for the purposes of this research study.
4. **Benefits:** All participants will have the opportunity to receive their individual results of both learning approach surveys and an explanation on how to interpret those results. This information may benefit you by helping you to understand the approach you use to learn and achieve along with providing you an opportunity to consider new strategies for learning you may want to apply to your nursing studies.

This study will also benefit nurse educators because it can provide valuable information on how students approach the tasks of learning nursing. Research has shown that a student's learning approach can be impacted by several things including the teaching environment. As we learn more about you as a student learner, we can apply this information to improve the way we teach.

5. **Duration/Time:** The study begins with your consent to participate. It will take approximately 15 minutes to complete the information sheet and the learning approach survey for each data collection session. The second data collection periods will be completed during the last two weeks of the fall semester. The third and final data collection will be completed end of the fall 2009 semester after your final grade has been entered by your

instructor. Your participation will end at the conclusion of the fall 2009 semester.

6. **Statement of Confidentiality:** Your participation in this research is confidential. The following procedure will be used to handle the data:
 - a. At the time of all data collection periods, the hard copy surveys will be placed in an envelope. Ms. Jamie Learn, research assistant at Penn State Erie, The Behrend College will establish a reference list and numeric code for each participant in the study. Ms. Learn will maintain the reference list with student identifying information matching and the surveys in a locked cabinet until the study is completed. The coded data will be stored in this same secure location for a period of 3 years after the study is completed. At the end of that time, all study data will be destroyed.
 - b. With your permission to obtain information on your academic performance, the RA will use this coding system, to match the survey data with your course theory grade, cumulative grade point average nursing grade point average, and faculty assigned clinical performance level. This data will be entered into a spreadsheet by the research assistant at the Penn State Behrend College. Only the numeric code identifier will be used from that point and no other personal identifying information will be used. Course and clinical faculty will not have access to this data.
 - c. The research assistant will prepare the report for students who wish to receive their personal learning approach survey results. The researcher will prepare the result interpretation information sheet and provide that to the research assistant. The research assistant then will send the completed results and interpretation sheet you. It is anticipated that these results will be available to you within two months after all data is collected. The final study report will be available within 6 months from completion of the data collection.
 - d. Course and clinical faculty will not have access to any of this data and will not be present during data collection.
 - e. Faculty will receive the same summary report of the study that you will receive. However, you may want to share your results with the faculty and discuss your learning approaches if you so choose.

Penn State's Office for Research Protections, Institutional Review Board and the Office for Human Research Protections in the Department of Health and Human Services may review records related to this research study. In the event of a publication or presentation resulting from the research, no personally identifiable information will be shared.

7. **Right to Ask Questions:** Please contact Jo Anne Carrick at (814) 898-7583 or jam39@psu.edu with questions, complaints or concerns about this research. You can also call this number if you feel this study has harmed you. If you have any questions, concerns, problems about your rights as a research participant or would like to offer input, please contact Penn State University's Office for Research Protections (ORP) at (814) 865-1775. The ORP cannot answer questions about research procedures. Questions about research procedures can be answered by the research team.
8. **Voluntary Participation:** Your decision to be in this research is voluntary. You can stop at any time. You do not have to answer any questions you do not want to answer. Refusal to

take part in or withdrawing from this study will involve no penalty or loss of benefits you would receive otherwise.

You must be 18 years of age or older to consent to take part in this research study.

Please indicate by a checkmark in the appropriate box(s) what you will agree to participate in for this study.

8 A.

- I agree to complete the demographic data and learning approach surveys
- I DO NOT agree to complete the demographic data and learning approach surveys

8 B.

- I agree to allow my class percentage grade from Nurs 212, faculty assigned clinical performance level and clinical pass/fail grade, cumulative grade point average, and nursing cumulative grade point average to be released to the principal investigator and the research team of this study for the purposes of analyzing the relationship to the learning approach survey and student academic achievement.
- I DO NOT agree to allow my class percentage grade from Nurs 212, faculty assigned clinical performance level and clinical pass/fail grade, cumulative grade point average, and nursing cumulative grade point average to be released to the principal investigator and the research team of this study for the purposes of protecting the confidentiality of those students who participate in the study and complete the survey.

Finally, please sign your name and indicate the date below. You will be given a copy of this consent form for your records.

Participant Signature

Date

Person Obtaining Consent

Date



ORP OFFICE USE ONLY
DO NOT REMOVE OR MODIFY
IRB#32021 Doc. #2
The Pennsylvania State University
Institutional Review Board
Office for Research Protections
Approval Date: 10-02-09 LSY
Expiration Date: 09-25-10 LSY

Faculty Participant Consent Form

Title of Project: THE EFFECT OF CLASSROOM AND CLINICAL LEARNING APPROACHES ON ACADEMIC ACHIEVEMENT IN ASSOCIATE DEGREE NURSING STUDENTS

Principal Investigator: Jo Anne Carrick, MSN, CEN
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814-898-7583
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Advisor: Dissertation Advisor
Dr. Mark Staszkievicz
Professor
Department of Educational and School Psychology
Indiana University of Pennsylvania
Indiana, Pennsylvania
(724) 357-2299
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1. **Purpose of the Study:**
The purpose of this study is to examine the Associate Degree nursing students' learning approach in both the clinical and classroom setting and to investigate whether the approach in either the clinical or the classroom setting is related to student achievement in that setting. Finally, this study will explore any relationship between learning approach and achievement is related to the student's gender, age, or prior experience in a patient care setting. Also, this study is being conducted for research purposes only.
2. **Procedures to be followed:** With the students' permission indicated by their signed consent, the following data will be collected:
 - a. Data Collection Period #1
 - i. Student information and demographic survey
 - ii. RASI Learning approach survey – Classroom/Theory
 - b. Data Collection Period # 2 – Last week of regular classes
 - i. RASI Learning approach survey – Clinical/Direct patient care
 - ii. Faculty assigned clinical performance level and clinical grade (Pass or Fail)
 - c. Data Collection Period # 3 – After final course grades are entered in eLion
 - i. End of semester final percentage score for Nurs 212
 - ii. Cumulative overall GPA
 - iii. Cumulative nursing GPA

As course or clinical faculty, you will be asked to participate in the following data collection Procedures:

Course faculty

- a. Allow the researcher to come to your class on two occasions to obtain student participation in the study and to administer study instruments
- b. For only those students whom prior written consent has been obtained, provide the researcher the students' final percentage grade for the course after the official final grades have been entered in eLion.

Clinical faculty

- a. Assign a clinical performance level (self-directed, supervised, assisted, novice or dependent) for students. This performance level is for study purposes only and will not be factored in any way to the course or clinical grade.
- b. For only those students whom prior written consent has been obtained, provide the research assistant the clinical performance level and clinical pass/fail grade.

3. **Discomforts and Risks:** There are no risks in participating in this research beyond those experienced in everyday life. Data will be coded and reported in aggregate so that individual faculty will not be identified in the study results.
4. **Benefits:** This study will benefit nurse educators because it can provide valuable information on how students approach the tasks of learning nursing. Research has shown that a student's learning approach can be impacted by several things including the teaching environment. As we learn more about you as a student learner, we can apply this information to improve the way we teach.
5. **Duration/Time:** The study begins with your consent to participate. It will take approximately 15 minutes to complete the clinical performance level instrument and to provide the researcher with the final course percentage grades. All data will be collected by the end of the fall 2009 semester. Your participation will end at the conclusion of the fall 2009 semester.
6. **Statement of Confidentiality:** Your participation in this research is confidential. The following procedures will be used to handle the data:
 - a. At the time of all student data collection periods, the hard copy surveys will be placed in an envelope. Ms. Jamie Learn, research assistant at Penn State Erie, The Behrend College will establish a reference list and numeric code for each participant in the study. Ms. Learn will maintain the reference list with student identifying information matching and the surveys in a locked cabinet until the study is completed. The coded data will be stored in this same secure location for a period of 3 years after the study is completed. At the end of that time, all study data will be destroyed.
 - b. For students who consent to release their course and grade data for the purpose of this study, the RA will use this coding system to match survey data with the final percentage theory grade, cumulative grade point average, nursing grade point average, and faculty assigned clinical performance level and enter it into a spreadsheet. Only the numeric code identifier will be used from that point and no other personal identifying information

will be used. Study participants and course faculty will not have access to this data.

- c. The research assistant will prepare the report for students who wish to receive their personal learning approach survey results. The researcher will prepare the result interpretation information sheet and provide that to the research assistant. The research assistant then will send the completed results and interpretation sheet to students. It is anticipated that these results will be available to students within two months after all data is collected. The final study report will be available within 6 months from completion of the data collection.
- d. Course and clinical faculty will not have access to any student data. Students will only receive their learning approach survey results and not have access to clinical performance level assigned by the faculty. Students may choose to share their learning approach results with the faculty and faculty may also choose to share the clinical performance level they assign to students.

Penn State's Office for Research Protections, the Institutional Review Board and the Office for Human Research Protections in the Department of Health and Human Services may review records related to this research study. In the event of a publication or presentation resulting from the research, no personally identifiable information will be shared.

- 7. **Right to Ask Questions:** Please contact Jo Anne Carrick at (814) 898-7583 or jam39@psu.edu with questions, complaints or concerns about this research. You can also call this number if you feel this study has harmed you. If you have any questions, concerns, problems about your rights as a research participant or would like to offer input, please contact Penn State University's Office for Research Protections (ORP) at (814) 865-1775. The ORP cannot answer questions about research procedures. Questions about research procedures can be answered by the research team.
- 8. **Voluntary Participation:** Your decision to be in this research is voluntary. You can stop at any time. You do not have to answer any questions you do not want to answer. Refusal to take part in or withdrawing from this study will involve no penalty or loss of benefits you would receive otherwise.

If you agree to take part in this research study and the information outlined above, please sign your name and indicate the date below. You will be given a copy of this consent form for your records.



Participant Signature

Date

Person Obtaining Consent

Date

Appendix H

From ["Noel Entwistle" <noel_entwistle@education.ed.ac.uk>](mailto:Noel.Entwistle@education.ed.ac.uk) 
To JO ANNE CARRICK <jam39@psu.edu> 
Subject Re: Use of ASSIST survey - Dissertation
Date Mon, Jun 15, 2009 06:00 AM
On [\[Turn Off\]](#) [What is "Safe View"?](#)
Safe View

Dear Jo Anne,

I'm back from holiday now, so I am sending you the details I have on ASSIST. I think you have probably got the most recent version, but it would be worth checking. There is a slightly different short version which has been used alongside scales asking students about their experiences of teaching which is being published in my forthcoming (August?) book from palgrave Macmillan - *Teaching for Understanding at University*. I attach that too in case it is of interest. Please feel free to use either instrument.

I am retired, but still academically alive!

Best wishes,

Noel

Noel Entwistle

Professor Emeritus, University of Edinburgh,
School of Education, Moray House,
Holyrood Road, Edinburgh EH8 8AQ
Home tel: 01875-340729



The University of Edinburgh is a charitable body, registered in Scotland, with registration number SC005336.

Part of this e-mail is in application/rtf format
[ASSIST manual 3.rtf](#)

Part of this e-mail is in application/msword format



[D Appendix B.doc](#)

From [Stephanie Holaday <HoladayS@Trinitydc.edu>](mailto:HoladayS@Trinitydc.edu) 
To [JO ANNE CARRICK <jam39@psu.edu>](mailto:jam39@psu.edu) 
Subject RE: Use of Clinical Evaluation Rating Scale
Date Mon, Jul 27, 2009 09:44 PM
On [\[Turn Off\]](#) [What is "Safe View"?](#)

Safe View

Dear JoAnne,

I enjoyed discussing the progress you have made on your dissertation research today. Your study is quite exciting and I look forward to your results. I am happy for you to use the clinical evaluation rating scale for which I hold the copyright. Please keep me informed on your progress and let me know if you have questions or need further guidance as you are completing your study.

Sincerely,
Stephanie

Dr. Stephanie Holaday, DrPH, MSN, CNE

Director, Nursing Program

Trinity (Washington) University

*125 Michigan Avenue, N.E.
Washington, DC 20017
202-884-9245
holadays@trinitydc.edu*

From: JO ANNE CARRICK [jam39@psu.edu]
Sent: Monday, July 27, 2009 1:47 PM
To: Stephanie Holaday
Subject: Use of Clinical Evaluation Rating Scale

Dear Dr. Holaday,

It was a pleasure speaking with you today and discussing how I plan to use the Clinical Evaluation rating scale you have modified based on Bondy's criterion-referenced matrix. This rating scale provides a mechanism to evaluate the quality of the nursing student's clinical performance with respect to achieving essential clinical competencies and outcome objectives. As noted in your publication, this is a copyrighted scale that you are the owner of these rights.

As we discussed, I would like permission to use this scale for my dissertation research. I will be using it as an instrument to measure a categorical level of clinical performance and examining the relationship to this level of the student's clinical performance with their learning approach. I have agreed to pay you \$250 for the use of the scale and to appropriately reference your work and copyright ownership of the rating scale. I also agree to provide you with a summary report of the study upon its completion.

I appreciate your attention to my request and look forward to your reply.

Kind regards,

Jo Anne Carrick

Jo Anne Carrick, RN, MSN, CEN
Senior Lecturer
Campus Coordinator for Nursing Programs
Penn State Erie, The Behrend College
140 OBS
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Erie, Pennsylvania 16563
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Appendix I

Date: October 2, 2009

From: Laura S. Young, Compliance Coordinator

To: Jo Anne Carrick

Subject: Results of Review of Proposal - Expedited (IRB #32021)
Approval Expiration Date: September 25, 2010
“The Effect of Classroom and Clinical Learning Approaches on Academic Achievement in Associate Degree Nursing Students”

The Social Science Institutional Review Board (IRB) has reviewed and approved your proposal for use of human participants in your research. By accepting this decision, you agree to obtain prior approval from the IRB for any changes to your study. Unanticipated participant events that are encountered during the conduct of this research must be reported in a timely fashion.

Attached are the dated, IRB-approved informed consent forms to be used when recruiting participants for this research. Participants must receive a copy of the approved informed consent form to keep for their records.

If signed consent is obtained, the principal investigator is expected to maintain the original signed consent forms along with the IRB research records for this research at least three (3) years after termination of IRB approval. For projects that involve protected health information (PHI) and are regulated by HIPAA, records are to be maintained for six (6) years. The principal investigator must determine and adhere to additional requirements established by the FDA and any outside sponsors.

If this study will extend beyond the above noted approval expiration date, the principal investigator must submit a completed Continuing Progress Report to the Office for Research Protections (ORP) to request renewed approval for this research.

On behalf of the IRB and the University, thank you for your efforts to conduct your research in compliance with the federal regulations that have been established for the protection of human participants.

Please Note: The ORP encourages you to subscribe to the ORP listserv for protocol and research-related information. Send a blank email to: L-ORP-Research-L-subscribe-request@lists.psu.edu

LSY/lcy

Attachment

cc: Mark Staszkiwicz

From John Mills
To Jo Anne Carrick
Subject IRB Protocol #09-222
Date Mon, Oct 26, 2009 04:54 PM

Ms. Carrick:

I am writing in follow-up of my expedited review of the above-captioned protocol.

I am approving the research as submitted. You will receive a formal letter of approval from the Board, upon receipt of which you may proceed with your project.

Best wishes for your research.

Dr. Mills

--

John A. Mills, Ph.D., ABPP
Professor of Psychology
Uhler Hall 104
Chair, IRB
Indiana University of Pennsylvania
Indiana PA 15705
voice: 724.357.4520
on the web at <http://www.iup.edu/page.aspx?id=14227>