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Predicting NCLEX-RN Success Utilizing Standardized Testing

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Predicting NCLEX-RN Success Utilizing Standardized Testing

by

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A thesis submitted to the faculty of
Gardner-Webb University School of Nursing
in partial fulfillment of the requirements for the
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Abstract

The purpose of this quantitative study was to determine if Assessment Technologies Institute's (ATI) comprehensive predictor accurately predicts student results on the National Council Licensure Examination for Registered Nurses (NCLEX-RN) for graduates of an Associate Degree nurse program at a community college in the Northwestern part of North Carolina. The study was also used to determine the feasibility of the School of Nursing (SON) continuing to purchase the ATI standardized testing products for student use. This study evaluated the comprehensive predictor scores and first time pass/fail rates for graduates (N=285) from 2007 to 2011. All data was analyzed using IBM Statistical Package for the Social Sciences (SPSS) version 20 software, as well as a predictive accuracy spreadsheet provided by ATI to determine the overall predictive reliability. The mean on the predictor is significantly different for those who passed versus those who failed, which indicated that ATI's comprehensive predictor is predictive of success or failure on the NCLEX-RN for graduates of the Associate Degree Nurse program at the college ($p = 0.000 < \alpha = 0.05$). Further analysis with ATI's Predictive Accuracy spreadsheet demonstrated an overall predictive reliability of only 78% for the population of students served by the SON at the college, which is less than the 87.5% predictive reliability reported by ATI. While 78% accuracy is high, it may not justify the cost of purchasing ATI's standardized tests for this student population.

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Chapter I

Introduction

Standardized testing is experienced by students from third grade through college and is fraught with stress and anxiety for students and faculty alike. In a student's early experience with standardized testing, educators use the results to determine student learning at their current level and readiness to progress to the next level of educational learning. In nursing education programs, faculty members strive to prepare students for competent practice as well as for the National Council Licensure Examination (NCLEX) (Davenport, 2007). Assessment Technologies Institute (ATI) provides many standardized tests, which are course or concept specific and designed to prepare students for taking the (NCLEX) at the completion of their nursing education program. ATI also provides a comprehensive predictor that provides a wealth of information for students and faculty alike. For students, the ATI comprehensive predictor reveals areas they are weak in and need to study prior to taking their NCLEX; faculty are able to evaluate a student's readiness to test as well as identify areas of weakness and their probability of success on NCLEX (McKee, 2012). While students at a community college in the Northwestern part of North Carolina are required to participate in the comprehensive predictor, does the ATI comprehensive predictor accurately predict success on NCLEX-RN for students attending their Associate in Science Nursing Program?

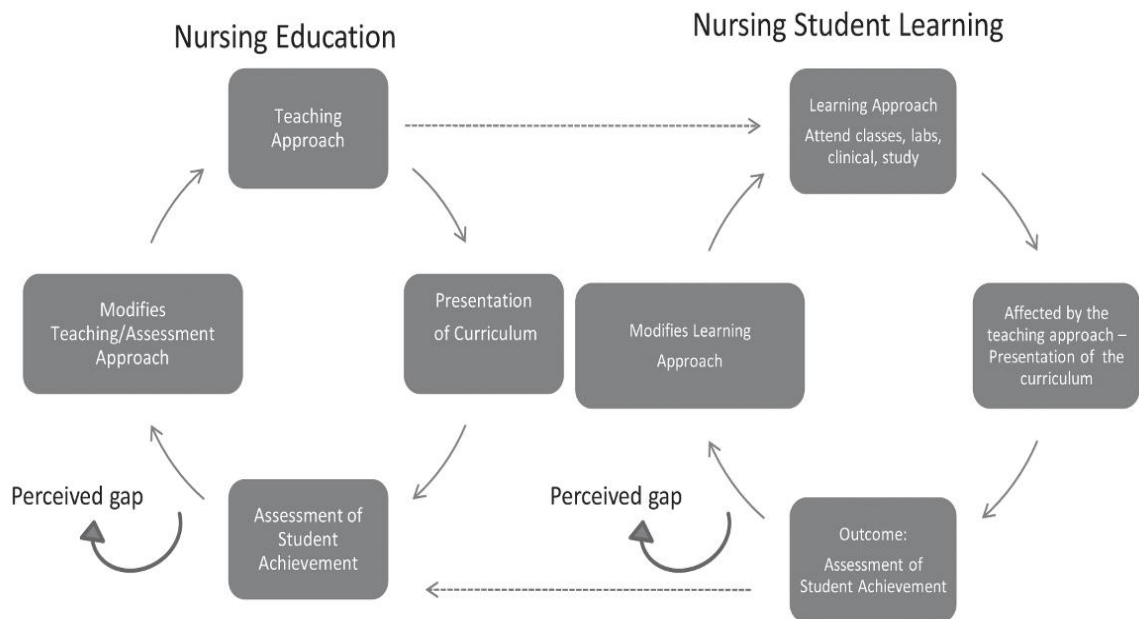
In 2011, this community college had a three year average pass rate of 93%, which is higher than the reported national pass rate of 88% and the North Carolina pass rate of 84% (North Carolina Board of Nursing (NCBON), 2011). While 2011 graduates of this Associate in Science Nursing Program had a pass rate of 96%, they are preceded by some

less than exemplary years (NCBON, 2011). In 2010, the NCBON reported a three year average pass rate for this program as 84%, well below the three year national average of 88%. In response to these pass rates, this Associate Degree Program was placed on probationary status by the NCBON, and underwent an internal curriculum review in an effort to strengthen the program and improve student success on NCLEX-RN. In Fall 2009, the North Carolina Curriculum Improvement Project was adopted as the primary curriculum in the Associate Degree Program, and greater emphasis was placed on student performance on end of program comprehensive testing provided by Assessment Technologies Institute (ATI).

The primary goal of this study was to determine if the comprehensive predictor administered by Assessment Technologies Institute (ATI) is accurately predictive of success or failure on NCLEX-RN. The specific objective was to determine if a correlation exists between success on the comprehensive predictor and success on NCLEX-RN for this program's population of students. General Systems Theory was utilized as a framework for thorough assessment of comprehensive predictor scores as they relate to the predicted probability of passing the NCLEX-RN. General Systems Theory "is regarded as a universal grand theory because of its unique relevancy and applicability" (Bielkiewicz, 2011). The guiding principles of General Systems Theory are based on the boundaries a system has, as well as communication and feedback mechanisms that allow exchange of information and resources into and out of the system that are essential for the system to function (Bielkiewicz, 2011). Any change in one part of the system produces a change in the entire system (Figure 1), but the system goal can be reached or achieved in different ways (Bielkiewicz, 2011, p. 254). Data from 2007-

2011 was obtained from Assessment Technologies Institute (ATI) and the North Carolina Board of Nursing and utilized to evaluate reliability of the currently used comprehensive predictor, and to guide future use of comprehensive predictor scores in remediation of at risk students.

Assessing a student's readiness for a life changing exam, such as the National Council Licensure Examination (NCLEX), is a challenge that can be met in numerous ways. Frequently used interventions include "academic referral, commercial reviews, social support referrals, and computerized reviews" (Davenport, 2007, p. 31). The challenge for faculty continues to be finding the best way to increase student learning as well as their probability of success on NCLEX-RN. Students and faculty each experience a degree of anxiety in relation to success or failure on NCLEX-RN, and feel the results reflect upon them or their program in a personal way. If it is reliable, using a comprehensive predictor should take some of the anxiety out of the licensure process for student and faculty.



"Note. Nursing Education and Nursing Student Learning are interdependent systems in which teaching and learning outcomes are affected by a complex set of variables. The two systems are parallel and linked by the student's achievement of the learning outcome and the nurse educator's impact on this outcome by the teaching approach" (Carrick, 2011, p. 79).

Figure 1: Systems Diagrams of the Nursing Education and the Nursing Student Learning Systems

Chapter II

Review of the Literature

A literature review of 18 articles obtained through EBSCO Host was conducted to determine current practices and trends to evaluate and enhance student achievement on the National Council Licensure Examination (NCLEX) for registered nurse applicants. The literature review examines ways nursing education programs assess student readiness for the NCLEX-RN, predict success on NCLEX-RN, as well as what interventions have been successfully implemented to increase their probability of passing. Use of computerized, adaptive testing programs, specifically Assessment Technologies Institute's (ATI) comprehensive predictor is evaluated for its probability of predicting NCLEX-RN success.

Using Systems Theory and the Student's Approach to Learning (SAL), Carrick (2011) analyzed the process of teaching and learning in nursing education programs. Nursing curriculum is designed to prepare students to successfully complete the NCLEX-RN exam and then assume an entry level position in the profession of nursing (Carrick, 2011). Assessing student learning is one of the most important areas in nursing education. Implementing solutions, which raise academic rigor to address substandard outcomes, is likely to be ineffective in the long term if students are not adequately prepared to meet the higher expectation (Carrick, 2011). In order to improve a student's performance on the NCLEX-RN, the researcher identifies a variety of products available to determine readiness or prepare for testing (Carrick, 2011). Review modules, practice questions, and proctored content tests are just a few of the multiple interventions that could be implemented to increase the probability of a student's success on the NCLEX-RN exam.

Success on the NCLEX-RN is the goal and measurement of achievement for the nursing student as well as the nurse educator and the program for which they teach. Davenport (2007) reports how one Associate of Science in Nursing Program in the Midwest addresses the issue of preparing students for safe and competent practice as well as success on the NCLEX-RN. Utilizing the Assessment Technologies Institute (ATI) Comprehensive Assessment and Remediation Package, the program is able to identify “areas for remediation and content review” (Davenport, 2007, p. 32). The researcher reports preliminary findings from 259 students taking the NCLEX-RN for the first time, who also participated in the ATI Comprehensive Predictor exam (Davenport, 2007). These findings suggest the ATI Comprehensive Predictor differentiates between students who are successful on the NCLEX-RN the first time testing and those who fail on their first attempt (Davenport, 2007). The researcher reports that the validity of this study is limited due to the fact that as many as 13 % of students who were successful on the NCLEX-RN the first time scored very low on the ATI Comprehensive Predictor exam (Davenport, 2007). The researcher concludes by emphasizing how important it is to begin working with students during the first semester of their nursing education and continuing throughout the program (Davenport, 2007).

Identifying and remediating students at risk of failing the NCLEX-RN using a commercially available end-of program exam is the focus of a study conducted at a state supported institution (Sifford & McDaniel, 2007). The prepared exam was administered to 87 potential study participants at the conclusion of the spring semester of their junior year and again near the conclusion of the fall semester of their senior year (Sifford & McDaniel, 2007). Of those 87 potential participants, 47 failed to score at or above 850,

and became participants in this study (Sifford & McDaniel, 2007). These students were required to take part in a remediation course, in the final semester of their senior year, which focused on test taking strategies to reduce anxiety and better manage time to help improve student success (Sifford & McDaniel, 2007). The researcher surmised that interventions focusing on these key areas had a positive impact on student scores on the end-of-program test as well as the NCLEX-RN (Sifford & McDaniel, 2007).

Oermann, Saewert, Charasika, and Yarbrough (2009) conducted a quantitative study evaluating the grading and assessment practices of faculty in pre-nursing courses. In Fall 2007, a 29-item web-based survey was “sent as an email blast to 21,719 members in the [National League for Nursing] [(NLN)] database,” and after excluding educators from practical nurse programs, the final sample size was 1,573 (Oermann et al., 2009, p. 275). The survey asked for demographic data from each participant, then using single-response, multiple-response, and open-ended questions, inquired about evaluation methods used to determine learning across the cognitive, affective, and psychomotor domains (Oermann et al., 2009). The surveys also assessed how faculties choose the evaluation method used for their particular course grades, and most base their decision on NCLEX-RN pass rates over other equally important factors (Oermann et al., 2009).

Young (2008) uses diverse methodologies to study five of the multiple theories that ground nursing education and practice. Declining annual pass rates on the National Council Licensure Examination (NCLEX) have led faculty in nursing education to research what measures other educational programs are implementing to increase their students’ success on the NCLEX-RN (Young, 2008). The researcher explores empiric-analytic research, interpretive phenomenology, critical social theory, feminist research,

and postmodern discourse as they apply to nursing education and practice (Young, 2008). Each approach has applications to nursing research, and it can be said that no one approach applies to every question or can be classified as more beneficial than another (Young, 2008). Young concludes that the research method selected depends on the question to be answered, and the research itself should be conducted in various locations with diverse populations.

In an effort to boost performance on the NCLEX-RN, many nursing programs have implemented interventions to support and assist their graduates on the exam (Herrman & Johnson, 2009). In years past, completion of a two- to four-year nursing program was rigorous enough to prepare students for success on the NCLEX-RN exam (Herrman & Johnson, 2009). Due to higher standards that became effective in April 2007, graduate nurses were expected to perform at a higher level of knowledge and skill than their predecessors (Herrman & Johnson, 2009). Since that time, there has been increasing need for intense review and study prior to the NCLEX-RN (Herrman & Johnson, 2009). One school responded with a senior level residency program that immersed students in the clinical environment, and also included two seminar courses with the sole purpose of preparing students for their true final exam (Herrman & Johnson, 2009). These seminar courses are titled the Boot Camp initiative, and focus on study skills, content review with rationales for incorrect responses, as well as personal preparation for test day including stress management, total wellness, and confidence for students (Herrman & Johnson, 2009). Passing the licensure exam on the first attempt is one of the goals for students, and launches the student into a professional career in nursing (Herrman & Johnson, 2009).

According to Johnson, the Boot Camp initiative is designed to be used in the seven days just prior to the NCLEX-RN, with the primary goal of instilling “confidence among new graduates by helping them develop exceptional test-taking skills while managing all aspects of their personal health” (Johnson, 2009, p. 328). New graduates select a trainer to hold them accountable during the course of the program (Johnson, 2009). Students are required to complete 500 NCLEX-style questions per day, but they also must work toward an emotional and spiritual balance that incorporates play and prayer into their preparation (Johnson, 2009). On the day of their scheduled exam, students should be ready to incorporate all the principles learned in Boot Camp during the exam, including contacting their trainer for a pep talk before, and again after the exam for final instructions. The confidence and tools gained in Boot Camp are carried with the new nurse as they begin their professional career (Johnson, 2009).

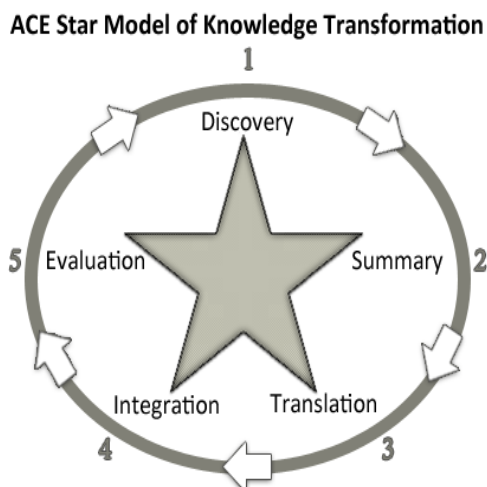
Standardized testing has quickly become the norm in many nursing education programs, and will continue as long as the practice yields successful results. Most programs begin by requiring students to take “one test per semester in the third semester and increase to two or more in the last three semesters” (Richards & Stone, 2008, p. 363). One baccalaureate program initially provided the program free of charge and as an option for their students, but due to minimal participation students in subsequent cohorts were required to purchase the testing books, and benchmarks were set for student performance (Richards & Stone, 2008). Students falling below the benchmark on their first attempt were offered remediation with a nonproctored test, while students scoring at or above the benchmark “earned 100 percent for [five] percent of the course grade” while students who chose not to participate at all received a grade of zero (Richards & Stone, 2008, p.

364). The researchers utilized a convenience sample of 663 students who took one of the computerized tests during the spring semester 2006 (Richards & Stone, 2008). Results of the surveys were summarized by semester and identified the most common barriers experienced by students, as well as their perceptions of the benefits of the testing program (Richards & Stone, 2008). After reviewing the results of the student surveys and NCLEX-RN pass rates, this school has determined that the testing program will continue, but is working to address the barriers identified by students (Richards & Stone, 2008).

Preparation for the NCLEX-RN begins when students enter a nursing education program, but intensifies dramatically in the capstone or senior courses with the use of computerized comprehensive final assessments, remediation plans, and one-on-one study planning (March & Ambrose, 2010). March and Ambrose (2010) examined the process undertaken by one nursing education program after experiencing declining NCLEX-RN pass rates. The program in question for preceding semesters had offered NCLEX-RN review courses for their graduates, but due to low enrollment and lack of interest, the courses had to be cancelled (March & Ambrose, 2010). After reviewing several products available in computerized testing, a committee charged with identifying ways to improve student success on the NCLEX-RN decided on a computerized examination program that had been well-reviewed and reported to effectively predict student success on NCLEX-RN (March & Ambrose, 2010). In addition to completion of the comprehensive predictor exam, students were required to formulate an individual study plan that identified their strengths and weaknesses, as well as possible barriers during NCLEX-RN preparation and ways to address and overcome those barriers (March & Ambrose, 2010). Since

implementation of this computerized predictor, the faculty of this program has discovered a need for some curriculum adaptations that better meet the identified needs of students in the program and continues to work toward improvement (March & Ambrose, 2010).

The ACE Star Model of Knowledge Transformation is an evidence-based project implemented in a Baccalaureate Nursing Program in Wisconsin (Bonis, Taft, & Wendler, 2007). This model describes how knowledge is transformed through a cyclical process from discovery through evaluation (See Figure 2) (Bonis et al., 2007). This process began by gathering information from individual studies and using that data to conduct research on current trends in nursing education (Bonis et al., 2007). Using current evidence-based educational practices, this knowledge guided implementation of new practices to impact outcomes and improve NCLEX-RN pass rates (Bonis et al., 2007). The researchers concluded by making recommendations for students and faculty to implement, which included development of an individual study plan, use of available review materials including practice questions, and integrating these strategies for success earlier in the program (Bonis et al., 2007).



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Figure 2: ACE Star Model

Using a convenience sample of 39 graduates of a North Carolina School of Nursing, Ukpabi, (2008) used discriminant analysis of adopted variables to determine which ones significantly predict success on the NCLEX-RN. The researcher found literature supporting a high grade point average (GPA), “success in nursing courses, and above average scores on standardized tests were predictors of success on the NCLEX-RN” (Ukpabi, 2008, p. 32). At the same time, the researcher found that while extensive research has been done, none has been able to determine one variable that efficiently predicts success on the NCLEX-RN (Ukpabi, 2008). After reviewing the data, Ukpabi (2008) concluded that while some standardized test scores were significant, the best predictor of NCLEX-RN success for graduates of this school of nursing was the grades obtained in curriculum courses.

Before a new graduate of a nursing education program can begin their professional career as a Registered Nurse, they must successfully pass the NCLEX-RN (Morris & Hancock, 2008). “The most public measure of an institution is the first time pass rate on the NCLEX-RN and while every nursing education program strives to prepare students for success, the methods for predicting that success vary” (Morris & Hancock, 2008, p. 20). One method that has shown a significant measure of reliability is the Evolve Reach Exit examination, which was formerly known as Health Education Systems Incorporated (HESI) (Morris & Hancock, 2008). Morris and Hancock (2008) evaluated data obtained from two groups of students in a large, urban university in the southeastern United States, to determine if a significant difference in exit examination results existed between the last cohort before curriculum revision and the first cohort after curriculum revision. Their findings did not reveal a significant difference between the two groups, but did determine a relationship between performance on the exit examination and first time pass rates on the NCLEX-RN (Morris & Hancock, 2008).

Assessment Technologies Institute (ATI) is another company that provides comprehensive end of program exams designed to predict success or failure on the NCLEX-RN, as well as guide remediation on the exam content that was missed (Kelley, 2009). For a sample of 1,771 students taking the 2007 version of the NCLEX-RN, ATI conducted a logistic regression procedure that revealed “a statistically significant relationship” between a student’s performance on the comprehensive exam and NCLEX-RN results (Kelley, 2009, p. 25).

In 2011, ATI reported that while evaluation of the comprehensive predictor is important, the overall predictive accuracy is of greater value in determining the

usefulness of any predictive tool (Assessment Technologies Institute, 2010). While ATI maintains statistics on their product, they report significant value in each school of nursing conducting their own studies to determine accuracy of the predictor (ATI, 2010). To that end, ATI provides the assessment tools needed for an accurate evaluation for those schools of nursing using their products (ATI, 2010). In addition to predicting NCLEX-RN success, ATI identifies remediation efforts as a secondary goal of their comprehensive predictor. To guide remediation a list of topics is provided that highlights missed items for both individual students and groups that will delineate areas of weakness allowing for more specific review (ATI, 2010). ATI also recommends that each program use the comprehensive predictor as an indication of a student's readiness to take the NCLEX-RN, rather than using it to determine if the student will pass or fail.

There are many nursing programs available across the United States, and all seek to meet the needs of the specific population they serve. The objectives of any program are to prepare their students to pass the NCLEX-RN on their first attempt, attain a position as a novice nurse, and provide safe care to individuals across the lifespan. How individual programs reach their objectives can be vastly different and should be based on the needs of the student population they serve.

Chapter III

Methodology

The purpose of this study is to determine if the comprehensive predictor administered by Assessment Technologies Institute (ATI) is accurately predictive of success or failure on the National Council Licensure Examination for Registered Nurses (NCLEX-RN). The NCLEX-RN serves as the final test to determine competence to be licensed and begin practice as a novice nurse. While there are many products available that provide comprehensive assessment and NCLEX-RN preparation, the College has utilized ATI's comprehensive predictor since 2005, and has traditionally purchased the product for each student enrolled in the school of nursing. Due to the expense associated with such a purchase and higher numbers of students being enrolled, this study will determine the validity of continuing to purchase these products to assess student readiness for such a comprehensive examination.

The framework for this quantitative study was based on General Systems Theory looking specifically at the relationship between ATI's comprehensive predictor and NCLEX-RN pass/fail results at an Associate Degree Nurse Program at a community college located in Northwest North Carolina. Prior to collecting data, the researcher obtained permission from the Institutional Review Board (IRB) of the College and Gardner-Webb University, as well as permission from the Associate Dean of the School of Nursing to access individual student data. Since individual data is maintained by the School of Nursing, individual student consent was not obtained; however, the School of Nursing was given the opportunity to review the purpose of this study, any risks and

benefits of the study, and withdraw permission to utilize the data at any time during the study by notifying the researcher at the contact numbers provided on the IRB application.

The data utilized for this study is maintained by the College and ATI testing, and focuses on scores obtained during the five year period from January 2007 through December 2011. Individual student results (N=285) on the comprehensive predictor were obtained and arranged on a spreadsheet and then paired with first-time NCLEX-RN pass/fail results. All student identifiers were then replaced with numeric identifiers using a random number generator and entered into IBM SPSS version 20 software for statistical analysis.

Research reported by ATI in 2010 indicated an overall predictive reliability of 87.5%. This study was comprised of a random sample of 960 associate degree nurse students from 67 schools of nursing. Based on their findings ATI recommends that each of their client institutions test the accuracy of the comprehensive predictor for themselves. By comparing student scores on the comprehensive predictor to NCLEX-RN first time pass/fail rates, the researcher determined the overall predictive reliability for students at the College. Determination of the overall predictive reliability will guide the need for remediation of at risk students, as well as determine the feasibility of the School of Nursing continuing to purchase the ATI set of products for their students.

Chapter IV

Results

The data sample for this study included graduates of an associate degree nursing program (N=285) from a School of Nursing at a community college in Northwestern North Carolina. Comprehensive predictor scores for each student were paired with NCLEX-RN pass/fail results from January 2007 through December 2011, with student identifiers replaced with numeric identifiers using a random number generator (Appendix A). In addition to individual data, the researcher also examined group data based on batch identification numbers as provided by ATI.

Utilizing SPSS statistical software, the researcher first looked at the histogram (Figure 3) to determine overall distribution of individual results. The distribution for this group of students follows the normal pattern with a limited number of data that fell outside the curve.

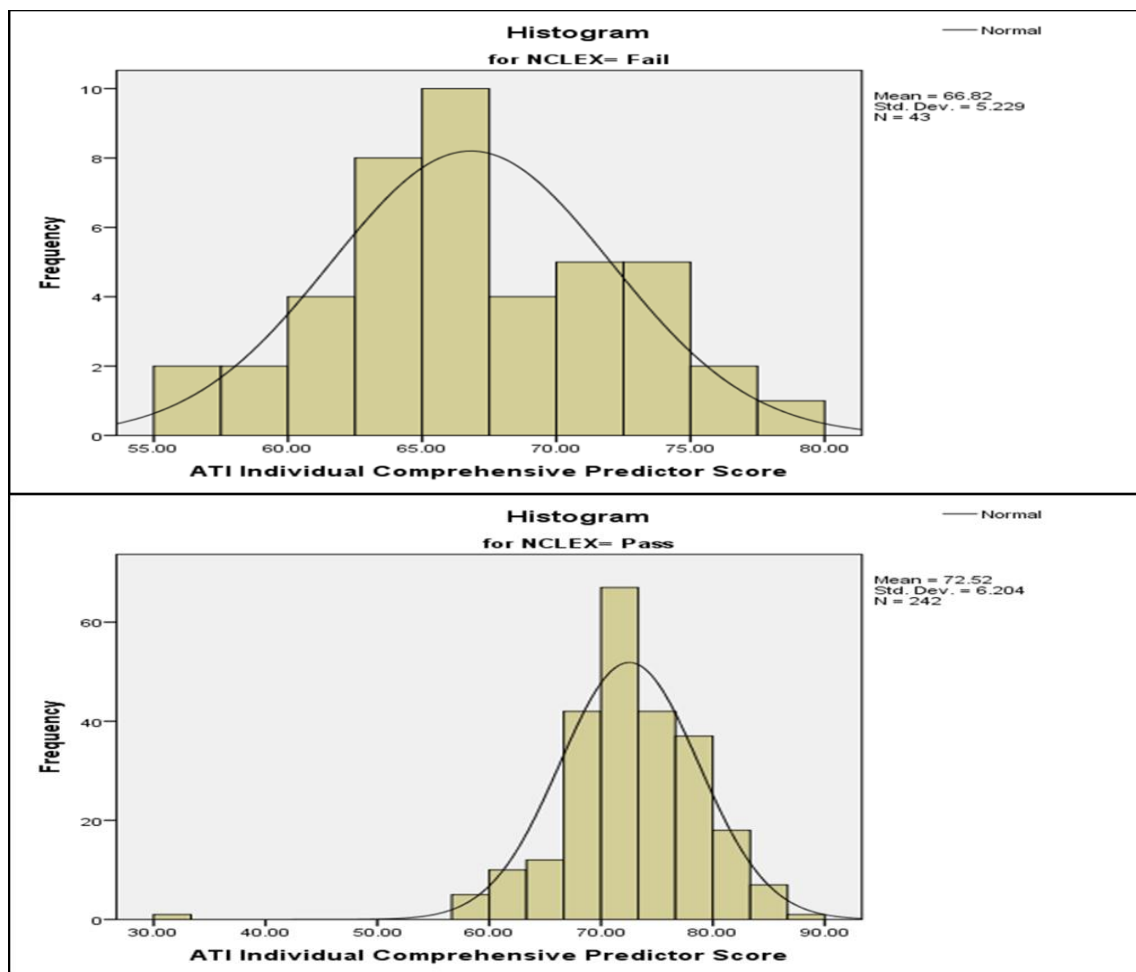


Figure 3: Distribution of Pass/Fail Results

Statistical significance was then determined using a t-test for Equality of Means (Table 1), which indicates a statistically significant difference in the mean, and suggests that ATI's comprehensive predictor is predictive of success or failure on the NCLEX-RN ($p = 0.000 < \alpha = 0.05$)

Table 1:

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
								Lower	Upper		
ATI Individual Comprehensive Predictor Score	Equal variances assumed	.563	.454	5.679	283	.000	5.70345	1.00438	3.72645	7.68045	
	Equal variances not assumed			6.397	64.927	.000	5.70345	.89159	3.92278	7.48412	

The objectives of this study were to assist the researcher in identifying overall predictive reliability of the comprehensive predictor produced by ATI, and to evaluate feasibility of the School of Nursing continuing to purchase the ATI standardized testing products for their student population. Utilizing the formula reported by ATI, a Probability of Passing NCLEX-RN Expectancy Table was created utilizing data obtained from ATI and the School of Nursing at the College (Table 2).

Table 2:

Probability of Passing NCLEX-RN Expectancy Table

Predicted and Actual NCLEX-RN Pass/Fail Outcomes				
	Predicted Fail	Predicted Pass	N	Predicted Percentage
Actual Fail	4	39	43	15%
Actual Pass	24	218	242	85%
N	28	257	285	
Correct Prediction Percentage	10%	90%		78%

The percentages in Table 2 were determined by using formulas that were defined by ATI for the express purpose of determining predictive reliability for any program using their comprehensive predictor. An overall predictive reliability for this population of students was determined by dividing the number of examinees predicted correctly by the number that actually passed or failed the NCLEX-RN or $222 \div 285 = 0.778$ or 78%.

Chapter V

Discussion

While initial statistical analysis of the data suggests the comprehensive predictor is an accurate assessment tool for this population of students, a closer look reveals 9.5% less accuracy than reported. While 78% accuracy sounds like a good number, it does not justify the cost of purchasing ATI's standardized test which has historically been incurred by the School of Nursing. The graph below (Figure 4) gives a visual representation of the calculations from Table 2 and dramatically emphasizes the difference in predicted versus actual NCLEX-RN results. If the School of Nursing realized an overall predictive accuracy of 87.5% or greater, the purchase of this product would be reasonable.

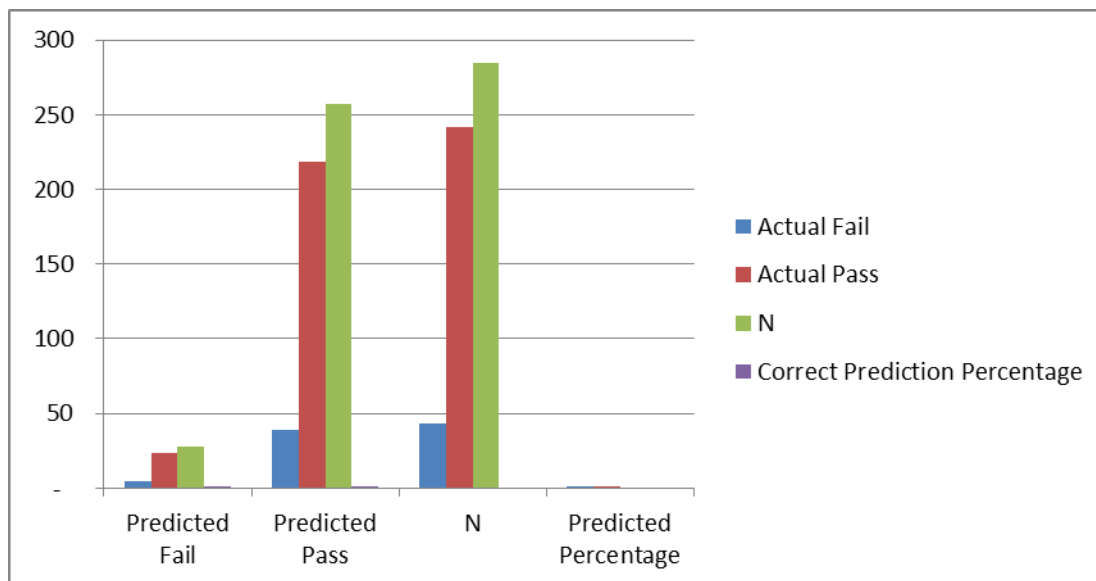


Figure 4: Probability of Passing NCLEX-RN Expectancy Graph

Utilization of predictive testing has become a common occurrence in nursing education, and there are many companies that offer standardized testing. Each institution must evaluate the needs of the student population they serve and select the product that will best meet those needs while continuing to be cost effective. After examination and consideration of the results of this study, faculty of this Associate Degree Nursing Program needs to explore other options available for standardized testing.

Assessment Technologies Institute (ATI) offers a wide variety of standardized testing products and outlines a plan of use for each of their standardized tests. The proposed testing plan coincides with the current curriculum being used in most schools of nursing in North Carolina. ATI also offers a comprehensive review based on the results of their comprehensive predictor that is individualized for each program. Further research is needed to determine if adherence to the plan outlined by ATI would increase overall predictive reliability for the student population in this study.

References

- Assessment Technologies Institute. (2010). *RN Comprehensive Predictor 2010 and NCLEX-RN readiness*. Stilwell, KS: ATI.
- Bielkiewicz, G. (2011). Theories from the sociologic sciences. In M. McEwen & E.M. Wills (Eds), *Theoretical Basis for Nursing (3rd ed., pp. 250-273)*. Philadelphia: Lippincott Williams & Wilkins.
- Bonis, S., Taft, L., & Wendler, C. (2007). Strategies to promote success on the NCLEX-RN: an evidence-based approach using the ace star model of knowledge transformation. *Nursing education perspectives*, 28(2), 82-87.
- Carrick, J. (2011). Student achievement and NCLEX-RN success: problems that persist. *Nursing education perspectives*, 32(2), 78-83.
- Davenport, N. (2007). A comprehensive approach to NCLEX-RN success. *Nursing education perspectives*, 28(1), 30-33.
- Herrman, J., & Johnson, A. (2009). From beta-blockers to boot camp: preparing students for the NCLEX-RN. *Nursing education perspectives*, 30(6), 384-388.
- Johnson, A. (2009). NCLEX-RN success with boot camp. *Nursing education perspectives*, 30 (5), 328-329.
- Kelley, J. (2009). Technical manual for the RN comprehensive predictor 2007: forms A and B. *Assessment technologies institute*, i-41.
- March, K., & Ambrose, J. (2010). NCLEX preparation Rx for NCLEX-RN success: reflections on development of an effective preparation process for senior baccalaureate students. *Nursing education perspectives*, 31(4), 230-232.

- McKee, J. (2012). Research brief: understanding the preparation needs of post-graduation and pre-NCLEX examinees. *ATI nursing education*.
- Morris, T., & Hancock, D. (2008). Program exit examinations in nursing education: using a value added assessment as a measure of the impact of a new curriculum. *Educational research quarterly*, 32(2), 19-29.
- North Carolina Board of Nursing. (2011). *3-Year Pass Rate RN-1.pdf*. Retrieved October 2012, from North Carolina Board of Nursing <http://www.ncbon.com/content.aspx?id=1090>
- Oermann, M., Saewert, K., Charasika, M., & Yarbrough, S. (2009). Assessment and grading practices in schools of nursing: national survey findings part I. *Nursing education perspectives*, 30(5), 274-278.
- Richards, E., & Stone, C. (2008). Student evaluation of a standardized comprehensive testing program. *Nursing education perspectives*, 29(6), 363-365.
- Sifford, S., & McDaniel, M. (2007). Results of a remediation program for students at risk for failure on the NCLEX exam. *Nursing education perspectives*, 28(1), 34-36.
- Ukpabi, C. (2008). Predictors of successful nursing education outcomes: a study of the North Carolina Central University's nursing program. *Educational research quarterly*, 32(2), 30-40.
- Young, P. (2008). Toward an inclusive science of nursing education: an examination of five approaches to nursing education research. *Nursing education perspectives*, 29(2), 94-99.

Appendix A

Student Data

Student Data**May 2007 ADN Individual Report: Batch 204469**

<u>Student Identifier</u>	<u>Predictor</u>	<u>NCLEX</u>	<u>Student Identifier</u>	<u>Predictor</u>	<u>NCLEX</u>
296357871	69.4	P	1529307772	67.2	F
188942600	61.7	P	1497964173	62.8	P
1347776550	59.4	P	341921770	66.1	F
1310236532	64.4	F	871587445	66.1	P
292890308	67.8	P	515141912	55	F
103592673	67.8	P	352590334	67.8	P
277596680	73.9	P	1545858616	73.9	P
486921357	68.3	P	537484952	63.3	P
181754019	66.7	P	142870257	77.8	P
339280132	58.9	F	584949781	31.1	P
2036387744	68.3	P	1968921062	62.8	F
1275175372	61.7	F	1095520820	69.4	P
1081024588	58.9	P	190964194	79.4	P
1995787127	59.4	F	440624904	71.1	P
1441549941	67.8	P	442914307	70.6	P
642377451	61.1	F	877651866	65.6	P
1873048980	63.9	P	526040561	71.7	P
58652447	63.3	P	414258936	70.6	P
159408306	65	F	432317	66.1	P
210280202	66.1	P	231619046	67.8	P
1651275783	69.4	P	1035667098	66.7	P
378140055	67.2	P	1519671636	70.6	P
1867730897	62.2	F	1808969704	85	P
877408961	65.6	P	2075223979	73.9	P

May 2008 Individual Report: Batch 3438751

<u>Student Identifier</u>	<u>Predictor</u>	<u>NCLEX</u>	<u>Student Identifier</u>	<u>Predictor</u>	<u>NCLEX</u>
343117894	74.7	P	431456925	71.3	P
270127227	81.3	P	146940627	62.7	P
820522254	73.3	P	1299485437	68.7	F
1335311419	76	F	249822150	72.7	F

5221252	66.7	F	580291891	77.3	P
406598164	66.7	F	345809562	71.3	P
204276249	74	P	2099611830	74	P
67495630	81.3	P	1075202927	71.3	P
1290924310	73.3	F	140637278	63.3	F
2000435896	65.3	F	788506969	71.3	P
1442452002	78.7	P	69184049	78	P
2089431378	75.3	P	943967317	74.7	P
411225885	68	P	1155188641	70	P
311921897	72	F	1625195278	56.7	P
973179471	70.7	P	1361213040	71.3	P
1047803284	62	P	2053348610	71.3	P
1814239295	68.7	F	986020079	77.3	P
717617756	56.7	F	232752762	74.7	P
1951112914	66.7	F	431306480	72.7	F
9550365	77.3	P	1645531716	80.7	P
1079369325	70	P	1334047004	63.3	F
1231194326	74.7	P	676921712	73.3	P
937344064	65.3	P	687573710	67.3	P
477426516	66.7	F	973858627	78	P
1534664240	65.3	P	1003950421	64.7	P
1423581132	76	P	310770908	69.3	P
420754546	76	P	62641189	72.7	F
1138977679	70.7	P	593680423	64.7	F
1209272909	71.3	F	572262934	74.7	P
2110811352	67.3	F	68968765	60	P
1411520073	73.3	P	187715141	70.7	P
1552532153	81.3	P	533605669	70.7	P
2057249893	79.3	P	2115401986	65.3	P
1064069294	71.3	P	1220218476	68	P
347272452	74.7	P	759106110	84	P
752790378	70	P	596283496	61.3	F
1938371730	68.7	P	1732424011	84.7	P
51846625	63.3	F	1903387558	70.7	F
1987273450	78.7	P	1011698726	71.3	P
54187137	60.7	P	998632075	72.7	P
1263689765	75.3	P	2037549097	67.3	P
1478829421	67.3	P	1186418053	70	P
484244132	70	P	264089169	71.3	P
1516079310	81.3	P			

May 2009 Individual Report: Batch 611132					
<u>Student Identifier</u>	<u>Predictor</u>	<u>NCLEX</u>	<u>Student Identifier</u>	<u>Predictor</u>	<u>NCLEX</u>
1059613974	70	P	1173146413	80	P
433694945	69.3	P	926363814	71.3	P
681790550	78	P	784990055	72.7	P
1345127747	79.3	P	2003609755	75.3	P
1880469679	66.7	P	340470983	84	P
1644406882	70	P	1985527637	78.7	P
2094387478	79.3	P	1789022894	71.3	P
1586021851	72	P	936560826	71.3	F
2109654896	68	P	1371915174	68.7	P
340671282	72.7	P	2118890677	74	P
1648536196	74	P	2061744573	70	P
2085156108	76.7	P	1905241681	74	P
1285947059	68	P	1814798308	72.7	P
735732533	74	P	388888446	67.3	P
846411281	74	P	13428626	73.3	P
15361338	80.7	P	366716088	71.3	P
973114935	81.3	P	1273017922	76.7	P
1114111570	69.3	P	1623661704	66.7	P
1847408226	71.3	P	776125455	64.7	F
772757281	76.7	P	257140287	78.7	P
1965336082	66	P	1951821893	71.3	P
227929835	76.7	P	63664998	70.7	P
693290511	82	P	2083922385	78.7	P
647453118	59.3	P	1430352952	69.3	P
1711812875	74	P	552330535	80.7	P
2100211940	73.3	P	1583513807	77.3	P
1137276717	76.7	P	312628035	81.3	P
May 2010 Individual Report: Batch 1287389					
<u>Student Identifier</u>	<u>Predictor</u>	<u>NCLEX</u>	<u>Student Identifier</u>	<u>Predictor</u>	<u>NCLEX</u>
177381294	69.3	P	644372431	73.3	F
53580446	68	P	2100891052	67.3	P
1554166289	71.3	P	848631025	62.7	F
247555148	80.7	P	42139045	76	P
839356248	73.3	P	1550242243	72.7	P
492338625	77.3	P	587767730	66.7	P
357602557	74.7	P	916183181	82	P
865504607	72	P	2065523027	78	P
1634989945	76	F	339827242	74	P
335449123	78	P	2052133379	66.7	P

230183253	80.7	P	132359398	70	F
450751578	68.7	F	937630242	74.7	P
882590843	75.3	P	1533291042	69.3	P
861658602	78.7	P	885104344	77.3	P
691895807	68	F	719358629	74.7	P
906789100	71.3	P	1094141837	75.3	P
791161975	71.3	P	130510493	76.7	P
87122422	72	P	735897425	74.7	P
86008680	78.7	P	776116911	71.3	P
1989383502	80	P	818448649	78	P
1286088233	84	P	1285616094	72	P
586461687	84	P	103731935	79.3	P
1427172949	79.3	P	257796682	68.7	P
237912514	78.7	P	1965077174	70.7	P
2075851426	71.3	P	1270275421	69.3	P
184364281	71.3	P	2097655343	79.3	P
1131881664	76	P	400431099	66	F
1695784187	84.7	P	639140589	63.3	P
779166317	74.7	P	1002081413	75.3	P
1450783550	75.3	P	1483619668	76	P
78154756	73.3	P			
May 2011 ADN Individual Report: Batch 1346432					
<u>Student Identifier</u>	<u>Predictor</u>	<u>NCLEX</u>	<u>Student Identifier</u>	<u>Predictor</u>	<u>NCLEX</u>
53458078	70	P	1569256281	73.3	P
1377238485	83.3	P	1853923645	72	P
505976715	86.7	P	1903542755	82.7	P
1571768990	74	P	2111420973	59.3	P
149002	77.3	P	1346881632	74	P
711797560	72	P	1790146901	76	P
1335768505	70	P			
May 2011 LPN/RN Individual Report: Batch 1345711					
<u>Student Identifier</u>	<u>Predictor</u>	<u>NCLEX</u>	<u>Student Identifier</u>	<u>Predictor</u>	<u>NCLEX</u>
1614322693	73.3	P	1944620752	74.7	P
1156131545	72.7	P	1969569685	66	P
1080957261	73.3	P	1546557726	68.7	P
510430488	78	F	223373353	71.3	P
1146964111	70	P	1988066240	76.7	P
1979122550	68	P	1129665712	80	P
435600332	72.7	P			
December 2011 Individual Report: Batch 2251114					

<u>Student Identifier</u>	<u>Predictor</u>	<u>NCLEX</u>	<u>Student Identifier</u>	<u>Predictor</u>	<u>NCLEX</u>
315046073	68.7	P	1035610883	67.3	P
594875892	75.3	P	1339731319	62.7	P
620468150	75.3	P	2009145497	71.3	P
460288313	68	P	749657504	76	P
208765727	78	P			