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# The Impact of Hesi Case Studies on the Hesi Exit Examination Scores for Nursing Students Preparing for the National Council Licensure Examination for Registered Nurses

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Running Head: The Impact of HESI Case Studies

THE IMPACT OF HESI CASE STUDIES ON THE HESI EXIT  
EXAMINATION SCORES FOR NURSING STUDENTS  
PREPARING FOR THE NATIONAL COUNCIL LICENSURE  
EXAMINATION FOR REGISTERED NURSES

BY

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Seton Hall University

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## ABSTRACT

NCLEX passing rates are an issue of great importance for nursing faculty and administrators. They affect accreditation of nursing programs as well as a school's reputation, having ramifications for its ability to attract students and faculty. Success on the licensure exam also impacts graduates who are not permitted to work in the role they have arduously prepared for until they successfully pass the exam. Compounding this problem is the fact that the exam has become more difficult to pass. The purpose of this study was twofold. First, to determine if the utilization of standardized case studies, specifically those offered to schools of nursing by the HESI (Health Education Systems, Inc.) company, are effective in improving scores on the HESI Exit Examination. This study further sought to determine if the length of time a school of nursing used the case studies had any impact on the HESI Exit Examination results. Since the performance on the HESI Exit Exam is predictive of success on the NCLEX-RN examination, such information will be invaluable to nursing educators as they continue to struggle with not only educating their students, but also ensuring their success on the licensing examination. An ex-post facto research design was employed using a convenience non-probability sample. The sample was taken from the population of 378 member schools of nursing with RN programs who were clients of HESI, Inc. in 2004. These schools represented 22,785 nursing students.

Statistical analysis suggested that case study usage increased individual student scores on the HESI Exit Exam. The results were inconclusive when aggregate school data was correlated with case study usage.



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## CHAPTER I: INTRODUCTION

### Background

The practice of Nursing is regulated by state licensure. Every graduate of a school of nursing is required to pass a national licensure examination called the NCLEX-RN, which is overseen by the National Council of State Boards of Nursing. Nationally, 38 state boards of nursing use the outcome of passing rates on the NCLEX-RN, the nationally standardized licensure examination for Registered Nurses, as a criterion for accreditation of nursing programs (Yocum, 1998, as cited in Newman, Britt, & Lauchner, 2000). Also, the National League for Nursing Accreditation Commission (NLNAC) stipulates NCLEX pass rates as one of the required outcome measures for accreditation of nursing programs (NLNAC, 1999).

Many have voiced concern that the pass rates on this nursing licensure examination have been declining (Crow, Handley, Morrison, & Shelton, 2004; DiBartolmolo & Seldomridge, 2005; Morrison, Free, & Newman, 2002; Newman et al., 2000; Nibert, Young, & Adamson, 2001). In fact, the passing rate for first time test takers educated in the US decreased from 90.3% in 1994 to 85.3% in 2004 (National Council of State Boards of Nursing [NCSBN], 2004).

Compounding this problem is the fact that the exam has become more difficult to pass. In April 2004, the National Council of State Boards of Nursing voted to raise the passing standard for the NCLEX-RN examination. They determined that "safe and effective entry level RN practice requires a greater level of knowledge,

skills, and abilities” than was previously required (“NCLEX-RN Passing Standard,” 2004, p. 9). This increased difficulty was reflected in the drop in pass rates from 87.0% in 2003 to 85.3% in 2004 (NCSBN, 2004). It becomes an institutional imperative that schools of nursing develop ways of maximizing their students’ performance on this licensing examination.

NCLEX pass rates affect a school’s reputation, thereby having consequences for nursing faculties and administrators (Morrison et al., 2002). The public’s view of a school can affect its ability to recruit new nursing program students. Aggregate passing rates for specific schools are available to the public, as is accreditation status. Currently, two agencies have the responsibility for the accreditation of nursing programs.

The Commission on Collegiate Nursing Education (CCNE) monitors and accredits baccalaureate nursing programs and the National League for Nursing Accreditation Commission (NLNAC) has this responsibility for nursing programs leading to an associate degree or diploma, as well as some baccalaureate programs. Both agencies use pass rate data on the NCLEX-RN as a standard to evaluate the schools they accredit. As Nibert and Young (2001) suggest, “A consistent pattern of low NCLEX pass rates can potentially place a nursing program’s accreditation or state approval at risk” (p. 173). Beeson and Kissling (2001) further support this premise that “schools failing to meet standards run the risk of losing accreditation or being unable to attract qualified students” (p. 121).

The New Jersey Board of Nursing, for example, requires that a school demonstrate a 75% pass rate among its first time test takers each year. If a

school fails to achieve this 75% mark for three consecutive years, the school is placed on conditional accreditation and potentially may not be permitted to enroll a freshman class (New Jersey Board of Nursing, 2005, chap. 37.1). This, of course, would jeopardize the long term survival of a program.

Because of the value attributed to success on the licensure exam, it is important for students and faculty to have a means of determining students' preparedness for the licensure exam so that if remediation is indicated, it can be initiated before graduation. Further, nursing faculty and administrators need to identify strategies to maximize their graduates' passing rate on the licensure exam. It is difficult to identify who is at risk for failing the licensing exam by using traditional measures of students' knowledge such as course grade, GPA, etc. However, there are several standardized examinations available for purchase that purport themselves to be statistically significant in predicting who is at risk to fail the NCLEX-RN exam. One such standardized test called the "HESI Exit Exam", a product of Health Education Systems, Inc, was used by 378 of the 1718 schools of nursing across the United States in 2004. This 150 item comprehensive exam is typically given to nursing students at the completion of their nursing program to ascertain their readiness to take the licensing exam. The results further identify areas of weakness that suggest where remediation be focused (Morrison, Adamson, Nibert, & Hsia, 2005). The reliability and validity of the HESI Exit Exam in predicting success on the NCLEX-RN exam has been well demonstrated and is discussed in detail later in this paper. Daley, Kirkpatrick, Frazier, Chung, and Moser (2003) found that the "HESI examination provided

greater sensitivity, specificity, positive and negative predictive value, and test efficiency than the Mosby Assess Test” (p. 395).

In addition to offering a standardized diagnostic and predictive exam at the end of a nursing program, many schools have begun to incorporate additional measures to enhance the success of their student’s on the licensing examination. One such measure is the requirement that students achieve a certain score on a standardized exit exam in order to graduate or take the licensing examination. These so-called “progression benchmarks” take a variety of forms. Some schools make a certain score on the exit exam a course requirement in a capstone course in the last semester, while others make this a requirement for graduation. In any case, the end result is the same, students are not eligible to graduate, and therefore take the NCLEX-RN licensing exam, until they achieve the progression benchmark.

Another modality schools of nursing use to enhance their students’ success on the NCLEX-RN is the incorporation of remediation or intervention strategies during the nursing program. There is little data regarding the efficacy of specific measures and as such, it seems clear that we need to explore which intervention or remediation modalities are the most effective, and when they should be initiated. This will assist faculty in maximizing their students’ success on the licensing examination.

One modality that may be effective is the use of standardized case studies developed by the HESI company that schools of nursing may utilize for remediation or intervention during a nursing program. Of the 378 schools of

nursing that utilized the HESI Exit Exam in 2004, 50 schools obtained licenses for and presumably used these case studies (Dr. Ainslie Nibert, Director of Research for the HESI, Inc., personal communication, October 14, 2005). The HESI company, which offers 50 Case Studies for RN nursing students, has designed the cases so that each one follows a client from presentation through resolution of a plan of care. In a series of content-oriented, multiple-choice questions, students test their knowledge of nursing concepts, ethical/legal issues, management abilities and communication skills. Each series of questions provides immediate feedback and rationale, and is cross referenced with HESI's NCLEX review manual (A. Nibert, personal communication, July 22, 2005).

#### Purpose of the Study

The purpose of this study is twofold. First, to determine if utilization of these standardized HESI case studies are effective in improving scores on the HESI Exit Examination, and secondly to determine if the length of time a school of nursing used the case studies has any impact on the HESI Exit Examination results. Since the performance on the HESI Exit Exam is predictive of success on the NCLEX-RN examination, such information will be invaluable to nursing educators as they continue to struggle with not only educating their students, but also ensuring their success on the licensing examination.

### Primary Research Question

What is the impact of HESI case studies on student performance on the HESI Exit Examination for students preparing for the National Council Licensure Examination for Registered Nurses?

### Subsidiary Research Questions

1. Does the utilization of HESI Case Studies have an impact on the student's scores on the HESI Exit Examination?
2. For schools of nursing which obtained the Case Study License in 2004 and had two groups of students that took the HESI Exit Exam during that time, is there a difference in mean HESI Exit Exam scores for the schools before and after the Case Study License was obtained?
3. For schools of nursing which obtained the Case Study License in 2004, is there a correlation between the length of time the school had the Case Study License and the mean scores their students' achieved on the HESI Exit Examination?

### Identification of the Variables

1. Independent Variable:
  - a. Utilization of the HESI Case Studies
  - b. Length of time the school of nursing used the case studies.
2. Dependent Variable: Scores on the HESI Exit Examination.



### Operational Definitions

1. **HESI exit exam:** “A 150 item comprehensive exam that is designed for administration near the completion of the curriculum to measure student preparedness for the NCLEX-RN” (Morrison et al., 2005, p. 41S)
2. **HESI standardized case studies:** A series of 50 case studies designed for students enrolled in a professional nursing program available for purchase by a school of nursing, a so called “Case Study License”.
3. **Schools of nursing:** Any department or school approved and accredited by the State Board of Nursing to operate a program to educate professional nurses who will be eligible to site for the NCLEX-RN licensing examination.
4. **Case Study License:** A series of case studies which a school of nursing purchases from HESI, Inc. and which then allows all students from that school to access and use the case studies on an unlimited basis.

### Limitations and Delimitations of the study

1. Scores on the HESI Exit Exam could be affected by many variables other than whether HESI case studies are used and the way in which they are used.
2. If a school of nursing has purchased the case study license from HESI for \$2000, it is assumed the students in the program have used the case studies.
3. The population of this study is limited to schools of nursing who are clients of HESI, Inc.
4. In this study, 23 institutions used the HESI Case Studies for a period ranging from one to eleven months. Since lasting change in organizations and curriculum typically takes 3-5 years, it is possible the data in this study did not yet reflect the impact of using the HESI Case Studies.

### Ethical Considerations

There are no ethical considerations in this research study as all data provided to the researcher was coded to protect the anonymity of the schools of nursing and the students attending those schools.

## CHAPTER II: LITERATURE REVIEW

### Registered Nurse Licensure

The practice of Nursing is regulated by state licensure. Every graduate of a school of nursing is required to pass a national licensure examination called the NCLEX-RN, which is overseen by the National Council of State Boards of Nursing. The test validates that a graduate possesses the minimal essential skills, abilities and knowledge necessary for entry into professional practice as a Registered Nurse (Chornick & Wendt, 1997). State Boards of Nursing have the statutory authority to protect the public from unsafe care and the NCLEX-RN licensing exam is the vehicle by which this is achieved.

One solution to the shortage of registered nurses is to recruit a more culturally diverse candidate pool (Grossman & Massey, 1998). One problem with this strategy, though, is that studies indicate that ethnic minorities and foreign-born nursing students experience higher attrition rates and higher NCLEX failure rates than do non-minority English speaking students. Sayles, Shelton, and Powell (2003) studied the NCLEX results of 88 students in Louisiana and found that "minority students were less likely than their white counterparts to pass the NCLEX-RN" (p. 119). Likewise, Wilson (2001) found a significantly lower completion rate in associate degree nursing programs in California for non-white students when compared with their Caucasian counterparts. Crow et al. (2004) supported this finding in their analysis of 166 baccalaureate nursing programs wherein they found the "percentage of white students was positively correlated to

NCLEX success while the percentage of Hispanic students was negatively correlated” (p. 183). Internationally educated students have a similar record of lower pass rates on the NCLEX-RN licensing examination. In 2004, the pass rate for students educated in the U.S was 85.3%, while this pass rate for those who received their nursing education elsewhere was 58.2% (NCSBN, 2004). Clearly strategies need to be developed and implemented which will enhance the passing rates of these candidates.

NCLEX failure not only contributes to the nursing shortage by delaying new graduates entrance into the work force, but it also has personal and financial consequences for the candidate, nursing faculties and administrators, and prospective employers. Unsuccessful NCLEX candidates suffer loss of potential wages that might have been earned if they were licensed nurses. In addition to the financial consequences of licensure failure for unsuccessful NCLEX candidates, Vance and Davidhizar (1997) reported failure results in an even greater emotional loss, characterized by feelings of inadequacy and grief. Because of the value attributed to success on the licensure exam, it is important for students and faculty to have a means of determining students’ preparedness for the licensure exam so that if remediation is indicated, it can be initiated before graduation. Therefore, nursing faculty and administrators need to identify strategies to maximize their graduates’ passing rate on the licensure exam.

## Prediction of NCLEX-RN Success

As previously reported, there has been a reported decrease in the national pass rates for RN's, and as such, significant attention has been given to delineating reliable and valid factors which predict how students will perform on the licensing examination (Newman et al., 2000). If nursing faculty members can accurately predict who is at risk for failing the licensure examination, early remediation can be initiated and perhaps improve pass rates so that probationary action by the State Board of Nursing and NLNAC can be avoided. Remediation will potentially promote success on the licensing exam, thereby increasing the number of nurses prepared to practice nursing. Two areas clearly need to be addressed. First, what variables are significant predictors of NCLEX failure and secondly, what type of remediation is found to be the most effective?

Much attention is given in the literature to attempts to identify students at risk for failing the NCLEX so that remediation to promote NCLEX success might be initiated. Beeson and Kissling (2001) conducted a retrospective study on 505 baccalaureate nursing graduates from schools in the southeastern United States. They found a significant positive relationship between NCLEX-RN results and cumulative GPA, as well as the grade the students received in both Biology and the sophomore nursing course. The most significant predictor Beeson and Kissling identified was "the number of C's, D's, and F's in nursing courses through the junior year" (p. 126).

Endres (1997) studied 150 randomly selected nursing students over a five year period. She compared their NCLEX success or failure with several variables

including admission GPA, ethnicity, grades in a medical-surgical nursing course, nursing course GPA, cumulative GPA at graduation, age at time of licensing examination, and number of D's and F's received in nursing courses (p. 366). Chi-square and two-way ANOVA showed that the significant predictors of NCLEX success in her sample were: receiving a D or F in a nursing course, GPA in nursing courses, and cumulative GPA's. Endres acknowledges a limitation to her study in that there were "small numbers of (NCLEX) failures in the foreign-born and white sample, and also small numbers of foreign-born and African American graduates" (p. 369). It made it difficult, therefore, to prove her premise that ethnicity is a significant predictor of NCLEX success or failure.

Briscoe and Anema (1999) examined six academic and non-academic variables and their relationship to NCLEX success. The academic records of 38 associate degree graduates (a convenience sample) in a public urban university were compared to the chosen variables which were "pre-admission GPA, failing a nursing course, scores on the NLN I and NLN II (two standardized examinations given during the program), age and race" (p. 81). Utilizing the Pearson Correlation coefficient, they found that the NLN scores, age and race were all significant. The limitation of this study, of course, is the small sample size and the fact that the sample was not randomly chosen.

An interesting study was also conducted by Waterhouse and Beeman (2003) where they developed a risk appraisal instrument to identify students at risk for failing the NCLEX-RN at the University of Delaware. They examined the student records of 539 baccalaureate students over a four year period, and found

that grades in medical-surgical and critical-care courses were predictive of success on the licensing examination. The authors report on the reliability and validity of their instrument, the DRAI (Delaware Risk Appraisal Instrument), but also state, “the trial and error method used by the researchers to calculate the variable weights in the DRAI may have resulted in a less than optimal formula” (p. 38).

In a study of 224 baccalaureate graduates over a two year period, Daley et al. (2003) found that only a final course grade in a medical-surgical nursing course and CGPA were predictive of NCLEX success. Campbell and Dickson (1996) and Mills, Sempel, Pohlman, and Becker (1992) similarly identified cumulative GPA as the only significant predictor in their respective studies. This finding is further supported by Washington and Perkel (2001), who found no significant relationship between NCLEX-RN success and ethnicity, age, or primary language, but did find that cumulative GPA and a repeated science or nursing course were predictive of performance on the licensing examination.

Conversely, Sayles et al.'s (2003) findings were somewhat different. Their study of 68 graduates showed ethnicity to be a significant predictor, as well as cumulative GPA and the grade students achieved in the last nursing course. Boughan (1993) studied the NCLEX-RN passing rate of 853 graduates of a community college in Maryland over a 7 year period. He found a correlation only with the student's performance on the entry level English placement test taken before the students began their studies, a factor not mentioned in other studies. Crow et al. (2004) conducted a descriptive correlational study of 160

baccalaureate nursing programs throughout the United States in an effort to delineate predictors of success on the NCLEX-RN licensing examination. The factors they found to be statistically significant were standardized entrance examinations and SAT score as admission criteria, clinical proficiency and use of exit examinations as graduation requirements.

It's clear from a review of the literature that significant predictors of NCLEX success are difficult to identify. The majority of the studies cited in the literature were conducted using data from one specific school. With the exception of cumulative GPA, each researcher identified different predictors for their student's NCLEX performance. Therefore, the generalizability, and therefore external validity of these studies is severely limited. As Crow et al. (2004) suggest, "because the variables found to be significant in some studies were omitted in others, generalization is difficult, if not impossible" (p. 174).

DiBartolo and Seldomridge (2005) support this premise that identifying students at risk for failing the licensing exam is arduous, suggesting that "the development of a comprehensive and consistent model of prediction has been complicated by the ever-changing NCLEX-RN test plan, question format, passing standard, and the enigmatic interaction of demographic, academic, and psychosocial variables" (p. 166). The authors further suggest that nursing educators focus less on predicting who will fail the licensing examination, and instead focus on who will be successful (Seldomridge & DiBartolo, 2004).

Another obstacle one faces in researching this problem is that data on who passes the licensing examination on the first attempt is not readily available.



While aggregate data for a specific nursing program is readily obtainable from the State Board of Nursing, individual student results are considered confidential. Administrators of nursing programs also encounter difficulty in correlating the performance of their own students with variables they feel may be significant in predicting NCLEX success. Typically, data is reported to individual schools on an annual basis by the State Board of Nursing in the state where the students received their nursing education. If a student were to graduate in May 2005 and wait to take the licensing examination until after January 1, 2006, that data would not be reported to the school until April 2007 making data collection arduous.

#### HESI Exit Examination

Fortunately, there is a statistically significant corollary that can be used as a predictor of success on the NCLEX-RN licensing exam. This corollary is called the HESI (Health Education Services, Inc.) Exit Examination. Many schools across the country administer this exam to students at the conclusion of the nursing program. Some schools even require that the students pass this exam before they are allowed to graduate and take the NCLEX-RN exam. The reliability and validity data for the HESI exit exam is quite strong. Using the results of over 30,000 baccalaureate nursing graduates, studies have repeatedly shown that the HESI exam administered just before graduation was significant ( $p=.05$ ) in predicting NCLEX success (Lauchner, Newman, & Britt, 1999; Newman et al., 2000; Nibert & Young, 2001; Nibert, Young, & Adamson, 2002; Nibert, Young, & Britt, 2003).

Lauchner et al. (1999) studied the results of 2809 students at 62 schools in the 1996-1997 academic year and found that the HESI exam administered just before graduation was significant in predicting NCLEX success ( $p=.05$ ). Lauchner et al.'s study was replicated in the 1997-1998 academic year by Newman et al. (2000) whose results of 3752 nursing graduates similarly showed the HESI exit exam to be predictive of passing the licensing examination on the first attempt. ( $p=.05$ ). Interestingly, they also found that "in schools that use the (HESI Exit Exam) for remediation, significantly fewer of their low scoring students failed the licensing examination" (p. 136). A third validity study was conducted for the following academic year, 1998-1999 (Nibert & Young, 2001), using a sample of 6277 graduates. As in the previous year, "low-scoring students (on the HESI exit exam) were significantly more likely to fail the licensing exam than high scoring students ( $p=.001$ )" (p. 172). These results were supported by a 4<sup>th</sup> validity study of graduates in the 1999-2000 year (Nibert et al., 2002), this time with a sample of 10,546 students who took the HESI exit exam. In fact these researchers found that "the percentage of students who failed the NCLEX more than doubled with each successively lower scoring interval" (p. 261). The data cited above support the utilization of the HESI exit exam score as a valid predictor of NCLEX success or failure.

Daley et al. (2003) conducted a study 224 subjects and gave half the group the Mosby Assess Test (another standardized exit examination), and the other half the HESI Exit Examination. They found that the "HESI Exit Examination demonstrated greater sensitivity, specificity, positive and negative

predictive value, and test efficiency, compared to the Mosby Assess Test” (p. 394).

### Outcomes Assessment and Remediation in Higher Education

Assuming one can identify students at risk for failing the registered nurse licensure examination, the next logical step would be to design and evaluate remediation measures that increase the passing rate of these aforementioned students. Before one can implement a remediation program designed to improve academic success, one needs to determine how this success is defined, as well as identify the factors that contribute to it. Closely tied to this concept of academic success is the practice of educational outcomes assessment. One can argue that academic success is the achievement of pre-determined, measurable outcomes. Assessment of student learning outcomes or “outcomes assessment” as it is often referred to, has emerged as a major issue in higher education. It impacts many elements including accreditation, accountability, performance indicators, and performance funding (Seybert, 2002). “One of the keys to accountability, sustained improvement, and organizational change is the ability to measure quality in a systematic way, a point that has been emphasized in the literature on quality management in higher education” (Welsh, Alexander, & Dey, 2001, p. 392).

A review of the literature regarding remediation in higher education suggests that scholars see remediation as being synonymous with developmental education (Boylan, Bonham, & White, 1999; Breneman & Harlow,

1998; Dwinell & Higbee, 1998; Gaither, 1999; Griffith & Meyer, 1999; Ignash, 1997; McCabe & Day, 1998; Murdock & Hogue, 1999). The increased diversity of college students in the US, as well as the trend toward mass access to higher education, has resulted in the need for comprehensive programs in remediation, particularly of reading and basic math. The aforementioned literature primarily focuses on students who do poorly on college entrance examinations in basic skills. As a report from the Office of Educational Research and Improvement in Washington, DC (2001) states, “those who argue for remediation note that higher education cannot maintain an ‘open door policy’ without addressing those students who want to attend, but lack basic skills in math, reading, writing, or all of these. Others argue that remediation should be handled by the secondary schools” (p. 4).

### Remediation in Nursing Education

In an effort to enhance the success of their student’s on the licensing examination, many schools of nursing have begun to offer additional measures to their students during their program. These so called remediation or intervention strategies are varied and numerous. Sometimes this remediation takes place at the end of the nursing program when it’s determined that students are at risk for failing the NCLEX-RN.

In other cases, the intervention is done during the course of the nursing program. Some schools require remediation measures or intervention strategies for all students, and some require them only for students who they have identified

are at risk. There is little data regarding the efficacy of specific measures. It seems clear that we need to explore which intervention or remediation modalities are the most effective, and when they should be initiated.

Regarding the existence and efficacy of remediation programs in nursing, Morrison et al. (2002) found that there is “no consistency (among schools) in the type of remediation provided” (p. 96). Daley et al. (2003) point out that “the initial component of a comprehensive, structured approach to remediation requires the determination of valid and reliable indicators of the need for help” (p. 392). This supports the earlier premise that one must first identify which students should be remediated before any plan is implemented. Beeson and Kissling (2001) also suggest that schools must first identify those who are at risk for failing, and then require remediation rather than offer it on a voluntary basis because “poor study habits and problems with punctuality and attendance may be part of the student’s problem” (p. 126).

In terms of specific remediation programs reported in the literature, Newman et al. (2000) found that early remediation can improve pass rates so that accreditation sanctions by the State Board of Nursing, and other accrediting agencies can be avoided. They suggest that early remediation may promote success on the licensing exam, thereby increasing the number of nurses prepared to practice nursing. They do not, however, stipulate any specifics.

At the University of South Carolina in Greensboro, the faculty arrange counseling sessions on an individual basis for at-risk students as well as sessions designed to improve test-taking skills and study habits. The faculty also

carefully choose clinical experiences for the at-risk students to strengthen identified area of weakness (Beeson & Kissling, 2001). The authors suggest these measures assisted their students on the licensing examination.

Waterhouse, Carroll, and Beeman (1993) report that at the University of Delaware, they offer “any necessary interventions to improve the performance of high-risk students” (p. 282). These include support courses during the 5 week winter intersession, seminars in test-taking and studying techniques, and group sessions administered by the faculty. Several authors further support the use of faculty to tutor students as being a successful remediation technique. Arathuzik and Aber (1998) utilize this modality as well as suggesting the effectiveness of review courses, classes focusing on study skills, test taking, time management, and anxiety reducing strategies. These same strategies are supported by Vance and Davidhizar (1997), who additionally suggest the importance of ongoing support by the same person, presumably a faculty member until the student has passed the NCLEX-RN.

Yet another modality is delineated by Frierson, Malone, and Shelton (1993), who advocate a “three-pronged intervention approach” including “instruction in effective test-taking, participation in learning teams, and follow-up activities conducted by the faculty” (p. 222). One wonders how faculty resources are available for all of these time-intensive techniques, and how the faculty find adequate time for scholarly activities.

Higgins (2004) studied whether peer tutoring increased retention for at-risk students. She reports a significant relationship between the variables, but her

small sample size of N=26 limits the generalizability of the results. Wolahan and Wieczorek (1991) stipulate that computer assisted instruction, group study, multiple tests, and tutoring are all potentially effective remediation modalities.

The researcher previously alluded to the utilization of a standardized exam prepared by the HESI company as a means of identifying students at risk for failing the NCLEX-RN. There is additional evidence that some schools of nursing have instituted remediation policies for students who failed the HESI Exit Examination on their first attempt. In this case 'remediation' is defined as "any type of additional study used by the students in preparation for retesting with the second or third version of the HESI Exit Examination" (Morrison et al., 2002, p. 95). Several different remediation modalities are reported using the HESI exam as a benchmark. Students are often directed to independently review the results of their HESI exam to identify which areas to focus on. This is typically combined with some combination of faculty tutoring, computer assisted instruction, additional written assignments (Morrison et al., 2002).

At the University of Arkansas, faculty used all of the following:

- Faculty-led review sessions: 4 sessions at 3 hours each
- Visualization and guided imagery: 5 minutes at the end of each of the review sessions
- A class focusing on test-taking strategies (one 3.5 hour session)

Their sample group was small (N=9), but all students increased their scores on the HESI Exit Exam significantly (English & Gordon, 2005).

Nibert et al. (2003) surveyed the program administrators from 159 schools who use the HESI Exit Exam as a progression benchmark. They received 94.30% of the surveys back, and report the following findings:

- 71% of schools did not require remediation for students who failed the HESI Exit Examination
- For the 29% of programs (N=42 schools of nursing) that did require remediation:
  - 22 schools used a specially designed remediation course
  - 10 schools used computer assisted instruction
  - 4 schools used a review guided by an NCLEX preparation book
  - 4 required participation in mandatory tutoring sessions with faculty
  - 1 school required completion of an NCLEX simulation exam
  - 1 school required the students to re-take certain core nursing courses.

Returning to my earlier premise about identifying students at risk for failing the NCLEX-RN exam, there is little doubt that faculties in schools of nursing are being called upon to provide or oversee remediation services for their students. Sometimes this remediation takes place at the end of the nursing program when it's determined that students are at risk for failing the NCLEX-RN. In other cases, the remediation is done during the course of the nursing program. It seems clear that we need to explore which remediation modalities are the most effective, and when they should be initiated.



### HESI Case Studies as an Intervention Strategy

To this end, the HESI company has developed 50 Case Studies that schools of nursing may utilize for remediation. The student accesses the case studies online. If they answer a question incorrectly, they're automatically given a content review of the appropriate area. These are designed so as not to be cues to the answer. The faculty receives a grade report indicating the student's first answer to the questions posed in the case.

## CHAPTER III: METHODOLOGY, RESEARCH DESIGN, AND DATA ANALYSIS

### Introduction

The purpose of this study is to determine if the use of standardized case studies, specifically those offered to schools of nursing by the HESI (Health Education Systems, Inc.) company, has an impact on the performance of nursing students on the HESI Exit Exam. The HESI Exit Exam is a predictor of performance on the RN licensing exam. The study will further determine if the length of time a school of nursing utilized the case studies has an effect on the students' scores on the HESI Exit Examination

As stated in Chapter 1, the primary research question is, "What is the impact of HESI case studies on student performance on the HESI Exit Examination for students preparing for the National Council Licensure Examination for Registered Nurses?"

The subsidiary research questions are:

1. Does the utilization of HESI Case Studies have an impact on the student's scores on the HESI Exit Examination?
2. For schools who obtained the Case Study License in 2004 and had two groups of students that took the HESI Exit Exam during that time, is there a difference in mean HESI Exit Exam scores for the schools before and after the Case Study license was obtained?
3. For schools of nursing which obtained the Case Study License in 2004, is there a correlation between the length of time the school had the

Case Study License and the mean scores their students' achieved on the HESI Exit Examination?

### Research Design

An ex-post facto research design was employed by the researcher using a convenience non-probability sample. The dependent variable in this study was the score a student achieves on the HESI Exit Examination. The two independent variables were the use of HESI Case Studies and the length of time the school of nursing utilized these case studies.

The population was the 378 member schools of nursing with RN programs who were clients of HESI, Inc. in 2004. Data was reported to the researcher by HESI, Inc. on an Excel spreadsheet wherein each school was coded with an identification number. In order to protect the confidentiality of HESI's member schools, the researcher did not know the names of the schools included in the study. Next to the identification number of the school, the type of program (associate degree, baccalaureate degree, or diploma) was indicated as well the individual student's scores on the HESI Exit Examination as well as the date the student took the HESI Exit Examination. Lastly, for those schools which utilize the Case Studies, the date the school received the Case Study License was indicated.

### Description of the Population

As Table 1 indicates, there were a total of 378 schools of nursing in the population which included 155 baccalaureate programs, 212 associate degree

programs, and 11 diploma school programs. Table 1 also lists the number of students in each of these programs.

**Table 1: Description of the Population**

Type of Nursing Program	TOTAL	Baccalaureate	Associate Degree	Diploma
Number of schools in population	378	155	212	11
Number of students in each category the population	22,785	8485	13,237	1063

#### Description of the Sample

Of the 378 schools of nursing that comprise the population, 50 schools were identified as having the Case Study License. 16 of these schools were eliminated from the sample as they obtained the case study license after their students took the HESI exit examination. This resulted in a sample of 34 schools of nursing whose students presumably used the case studies prior to taking the HESI Exit Examination. Tables 2 and 3 illustrate the breakdown of this data by showing the number of schools and students, respectively, who utilized the HESI case studies.

**Table 2: Utilization of HESI Case Studies: Number of nursing schools in the population that did and did not use HESI Case Studies**

	TOTAL	Baccalaureate	Associate Degree	Diploma
Number of schools in the sample who utilize HESI Case Studies	34	15	16	3
Number of schools in the sample who did not use HESI Case Studies	344	140	196	8
TOTAL NUMBER OF SCHOOLS	378	155	212	11

**Table 3: Utilization of HESI Case Studies: Number of nursing students in the population who did and did not use HESI Case Studies**  
(NOTE: CSL = Case Study License)

<b>Number of students</b>	TOTAL	BSN	ADN	DIPLOMA
CSL	1544	643	606	295
Non- CSL	21,241	7842	12,631	768
Total # of students	22,785	8485	13,237	1063

### T-test for Two Independent Samples

The data was first analyzed using a t-test for two independent samples, namely students attending schools of nursing who had the case study license (CSL) and students attending schools who did not have the case study license (Non-CSL). The groups were compared by looking at the students' scores on the HESI exit exam.

**Table 4: T-test for 2 independent samples.**

Individual Score	Group	N	Mean	Standard Deviation	Standard Error of the Mean
	CSL	1544	896.71	139.749	3.557
	Non-CSL	21241	859.88	149.194	.988

	Levine's test for Equality of Variances		T-test for Equality of Means				
	F	Sig.	T	df	Sig. (2- tailed)	Mean Difference	Standard Error Difference
Individual score: Equal variances assumed	5.225	.022	9.426	24237	.000	36.837	3.908
Individual score: Equal variances not assumed			9.979	1789.822	.000	36.837	3.691

The mean of students who attended schools that had the Case Study License was 896.71. This compares with the mean of students whose schools did have the Case Study License which was 859.88. In that the F value in Levines's test is greater than .050, equal variances are not assumed. The t- value is positive (t=of 9.979) and is statistically significant (p=.000). These results suggest that the HESI case studies did indeed have a positive impact on the scores the students achieved on the HESI exit examination.

#### Squared Point Biserial Coefficient

Whenever one observes a statistically significant t-value based on large sample sizes, as in this case, it is often useful to further utilize the squared point biserial correlation coefficient ( $r^2_{pb}$ ). This statistical test potentially

provides a more “accurate estimate of effect size because it is not inflated by large sample sizes” (Witte & Witte, 2001, p. 357). The calculation for the  $r^2$  coefficient for this study is found in Table 5.

**Table 5: Calculation of the Squared Point Biserial Correlation Coefficient ( $r^2_{pb}$ )**

$r^2_{pb}$ formula (Witte & Witte, p. 356): $r^2_{pb} = \frac{t^2}{t^2 + df}$
Implementation of formula : $r^2_{pb} = \frac{99.5804}{1889.4024} = .0527$ For the results in this study

This means that the estimated difference in the variance in HESI Exit Exam scores explained by the use of the HESI Case Studies is .05. While this number may seem quite small and perhaps insignificant at face value, Cohen’s guidelines for interpreting this finding allow us to make a somewhat different conclusion. Cohen suggests that the  $r^2_{pb}$  be interpreted as follows (Witte & Witte, p. 357):

- When  $r^2_{pb}$  is in the “vicinity” of .01, this indicates a small effect suggesting that the estimated difference in the means may lack importance.



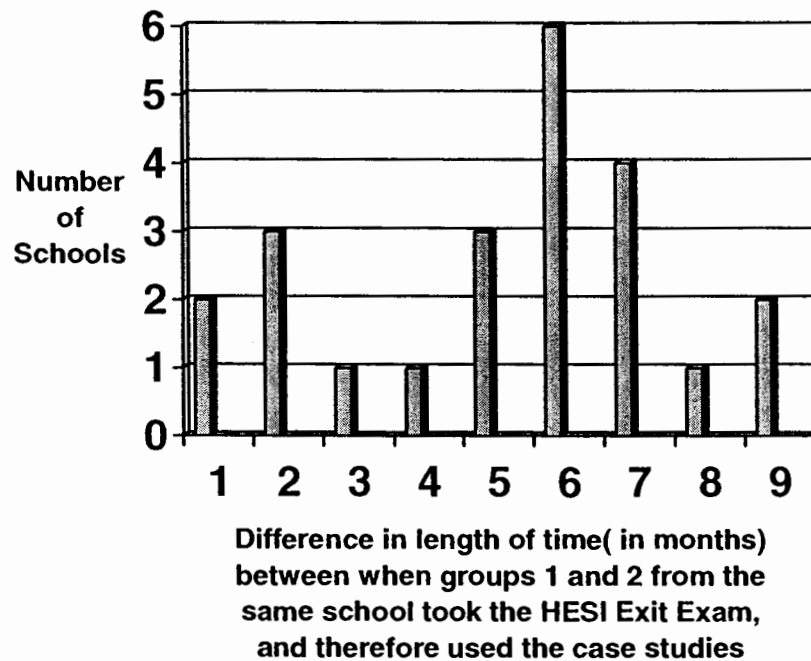
- When  $r^2_{pb}$  is in the “vicinity” of .06, this indicates a medium effect suggesting that the estimated difference in the means could have some importance.
- When  $r^2_{pb}$  is in the vicinity of .14, this indicates a large effect suggesting that the estimated difference in the means probably has importance.

Therefore, the finding of  $r^2_{pb} = .0527$  in this study suggests that there is a “medium effect” of using the HESI case studies on the HESI Exit Exam scores.

### Paired Samples T-Test

Next, a paired samples t-test was employed to determine if there is a statistically significant difference in the HESI Exit Exam Scores for schools which had multiple groups take the HESI Exit Exam in 2005, some before the school obtained the HESI Case Study License, and some after. Of the 34 schools in the sample that that utilized the Case Studies, 23 schools were utilized for the matched pair t-test. The length of time the groups at each school used the case studies before taking the HESI Exit Exam varied from 1 to 9 months. Table 6 summarizes this information.

**Table 6: Difference in length of time between when groups 1 and 2 from the same schools of nursing took the HESI Exit Exam**



The results from the paired samples t-test are found in Tables 7 and 8.

**Table 7: Paired Samples Statistics**

		Mean	N	Standard Deviation	Standard Error of the Mean
Pair 1	Mean before CSL	907.287709	23	56.3268935	11.7449692
	Mean after CSL	882.257617	23	43.4314669	9.0560869

**Table 8: Paired Samples T-Test**

		Mean	Standard Deviation	Standard Error of the Mean	t	Df	Sig. (2-tailed)
Pair 1	Mean before CSL- Mean after CSL	25.0300913	57.8487154	12.0622910	2.075	22	.050

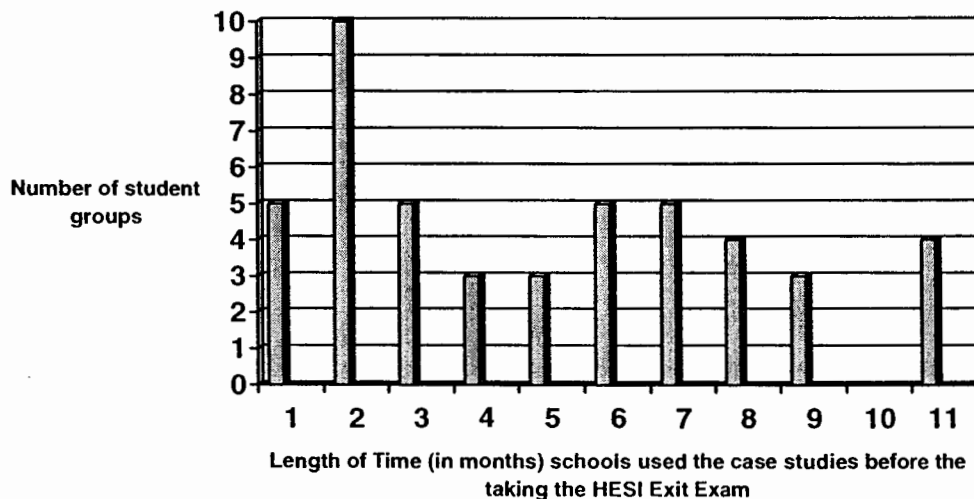
An examination of the means show that mean HESI Exit Exam score for students before using the case studies was 907.287709 as compared with the mean HESI Exit Exam score after using the case studies which was 882.2571617. The t-score was positive at 2.075 which was statistically significant ( $p=.050$ ). These results actually suggest that students scored lower on the HESI Exit Exam *after* using the HESI Case Studies. The accuracy of this finding is definitely questionable due to the large standard error in the "before group" (59.66) indicating a large amount of variance.

#### Linear Regression

Lastly, a linear regression was employed to determine if the length of time a school of nursing used the case studies had any impact on their students' HESI exit exam scores. There were 45 groups of students in the sample whose

schools had the case study license for varied amounts of time before the students took the Exit Exam. Table 9 presents summary of the sample used for the linear regression.

**Table 9: Length of time in months schools had the Case Study License before students took the HESI Exit Exam.**



Tables 10 through 14 represent the results of a linear regression applied to this data.

**Table 10: Descriptive Statistics for the Linear Regression**

	Mean	Standard Deviation	N
Mean: HESI Exit Exam Scores	893.502338	59.6635850	45
Length of time the schools had the Case Study License	4.91	3.154	45

**Table 11: Pearson Correlation Coefficient**

		E2 Mean	Time CSL Used
Pearson Correlation	Mean Time CS used	1.000 -.180	-.180 1.000
Significance (1-tailed)	E2 Time School had CSL	--- .118	.118 ---
N	E2 mean Time School had CSL	45 45	45 45

**Table 12: Model Summary for the Linear Regression**

Model	R	R square	Adjusted R square	Standard Error of the Estimate
1	.180	.032	.010	59.3662110

**Table 13: Model Summary Continued: R square**

Model	R square change	F Change	Df1	Df2	Significance of F change
1	.032	1.442	1	43	.236

**Table 14: Analysis of Variance**

Model		Sum of squares	Df	Mean Square	F	Sig.
1	Regression	5081.787	1	5081.787	1.442	.236
	Residual	151546.922	43	3524.347		
	Total	156628.708	44			

**Table 15: Unstandardized and Standardized Coefficients**

Model		Unstandardized Coefficients		Standardized Coefficients		Sig.
		B	Standard Error	Beta	t	
1	(Constant)	910.237	16.509		55.136	.000
	Length of Time School had Case Study License	-3.408	2.838	-.180	-1.201	.236

In a simple regression model where HESI Exit Exam scores were predicted by the length of time students utilized the HESI case Studies, an F value of 1.442 was obtained. This value was not significant at .05 level ( $p=.236$ ). The no-significance of this regression model is further exemplified by the r-

squared value of .032. This indicates that only 3% of variance in HESI Exit Exam scores is explained by the length of time the schools used the case studies. Therefore, 97% of the variance is left unexplained. The standardized Beta similarly reflects the lack of impact of the length of time the case studies were used on the Exit Exam scores Beta = -.180 not significant at the .05 level ( $p=.236$ ). Therefore, one can conclude that the length of time the case studies were used had no significant impact on the Exit Exam scores for this sample.

## CHAPTER IV: DISCUSSION OF FINDINGS

### Introduction

The purpose of this study was to determine if the use of standardized case studies, specifically those offered to schools of nursing by the HESI (Health Education Systems, Inc.) company, have an impact on the performance of nursing students on the HESI Exit Exam, a predictor of performance on the RN licensing exam. The study further sought to determine if the length of time a school of nursing utilized the case studies had an effect on the students' scores on the HESI Exit Examination. The primary research question was, "What is the impact of HESI case studies on student performance on the HESI Exit Examination for students preparing for the National Council Licensure Examination for Registered Nurses?"

The study employed an ex-post facto research design using a convenience non-probability sample. The data was reported to the researcher by the HESI Company on excel spreadsheets where the students and schools, all clients of HESI, were coded to protect their anonymity. The data set included the HESI exit exam scores for each of the 22,785 students who took the HESI Exit Exam in 2004 as well the dates each school obtained a license to access and use the standardized case studies also offered by the HESI company. By correlating the data, the researcher sought to determine if the use of the case studies had any impact on the scores on the HESI exit exam, a predictor of student performance on the licensing exam for Registered Nurses, the NCLEX-RN.



### Research Question # 1

The first subsidiary research question was ,”Does the utilization of HESI Case Studies have an impact on the student’s scores on the HESI Exit Examination? This question was tested using the following hypotheses:

- $H_0$ : For schools which obtained the Case Study License in 2004, there is no statistical difference in the HESI Exit Exams scores for the students who attended schools with the Case Study License versus the schools that did not.
- $H_1$ : Students at schools of nursing that had the Case Study License will have higher HESI Exit Exam scores than students who attended schools that did not.
- $H_2$ : Students at schools of nursing that had the Case Study License will have lower HESI Exit Exam scores than students who attend schools that did not.

As reported in Chapter 3, a “t-test for two independent samples” was conducted wherein the mean HESI score of the students attending schools with case study access were compared with the mean HESI scores of students attending schools without access to the case studies. There were a total of 1,544 students at 34 schools of nursing who had the Case Study License. Their mean HESI Exit Exam score was 896.71. This compared with 21,241 students at 344 schools which did not have the Case Study License. Their mean was 859.88. A comparison of these means resulted in a finding of  $t = 9.979$  significant at the  $p=.000$  level. This highly significant finding suggests a definite positive link

between use of the HESI Case Studies scores on the HESI Exit Exam. The t-test results were further clarified using the “squared point biserial correlation coefficient” wherein  $r^2_{pb} = .0527$ . This result suggests that there is a “medium effect” of using the HESI case studies on the HESI Exit Exam scores indicating that the t-value may have some importance (Witte & Witte, 2001).

These findings allow the researcher to reject the null hypothesis and accept the first research hypotheses ( $H_1$ ). The students who attended schools of nursing with access to the Case Studies scored significantly higher on the HESI Exit Exam than did students who attended schools without access to the Case Studies. This result has great implications for nursing educators and administrators. As previously discussed, the HESI Exit Exam is predictive of how students will do on the NCLEX-RN licensing examination. The utilization of a standardized tool such as the case studies provide not only a useful and helpful way for students to prepare for the exam, but it allows them to do so independently without using faculty resources.

#### Research Question # 2

The second subsidiary research question was, “For schools which obtained the Case Study License in 2004 and had two groups of students that took the HESI Exit Exam during that time, is there a difference in mean HESI Exit Exam scores for the schools before and after the Case Study License was obtained?” This question was tested using the following hypotheses:

- $H_0$ : For schools which obtained the Case Study License in 2004, there is no statistical difference in the mean HESI Exit Exam scores for the groups of students from those schools who had access to the Case Studies versus those that did not.
- $H_1$ : For the schools of nursing which obtained the Case Study License in 2004, the groups of students from those schools that took the HESI Exit Exam prior to having access to the Case Studies will have lower mean scores than the groups of students which took the exam after using the case studies.
- $H_2$ : For the schools of nursing which obtained the Case Study License in 2004, the groups of students from those schools that took the HESI Exit Exam prior to having access to the Case Studies will have higher mean scores than the groups of students which took the exam after using the case studies.

The data was tested using a "paired samples t-test". There were 23 schools of nursing in the sample which had two groups take the HESI Exit Exam in 2004, one before obtaining the case studies, and one after. The length of time the students used the case studies varied from a minimum of 1 month to a maximum of 9 months. The mean HESI exit exam score of the schools before using the case studies was 907.297709. This compared with the mean score for the students after using the case studies, which was 882.257617. A paired samples t-test resulted in a finding of  $t=2.075$  significant at the  $p=.05$  level. Based on

these findings, one could presumably accept the second research hypothesis ( $H_2$ ).

This finding was definitely puzzling. The t-value for the independent sample t-test was overwhelming in its' support of the case studies positively affecting Exit Exam scores. Why, then, did the students in this sample seemingly do "worse" *after* using the case studies? One possible contributing factor may be that the difference in length of time the groups actually used the case studies was quite small, ranging from only 1 month to 9 months. Secondly, perhaps the low "N" in this test may negatively affected this result. Thirdly, the finding was significant only at the  $p=.05$  level, the lowest possible value for statistical significance. A fourth contributing factor that may account for this surprising result is that the standard error of the mean in the first group (11.7449692) was larger than for the same finding in the second group (9.050869). In this case, the sample size may not be large enough to infer anything from the statistically significant finding, especially in light of the fact that the standard error in the first group was larger than the standard error in the second group.

### Research Question # 3

The third subsidiary research question was , "For schools of nursing which obtained the Case Study License in 2004, is there a correlation between the length of time the school had the Case Study License and the mean scores their students' achieved on the HESI Exit Examination?". The hypotheses used to test this question were:

- $H_0$ : There is no statistical correlation between the length of time a nursing program had access to the case studies and that school's mean HESI Exit Exam scores
- $H_1$ : The length of time a school of nursing had access to the case studies will have a positive impact on their student's mean scores on the HESI Exit Exam.
- $H_2$ : The length of time a school of nursing had access to the case studies will have a negative impact on their student's mean scores on the HESI Exit Exam.

There were 45 groups of students from 34 schools that took the HESI Exit Exam after using the case studies. The length of time the students in the groups used the case studies varied from a minimum of 1 month to a maximum of 11 months. A linear regression resulted in a finding of an F value of 1.442 which was not statistically significant ( $p=.236$ ). This result leads us to accept the null hypothesis ( $H_0$ ) indicating no relationship between the length of time the case studies were used and the scores on the exit exam. This event is also somewhat puzzling, especially in light of the original t-test results. Again, the "N" was rather small, and perhaps more importantly the length of time the case studies were used differed only by months. It is likely that this was not a sufficient length of time to have had any measurable impact on the exit exam scores.

The researcher also submits that the variance that existed with results based on the individual scores was lost by using the means of the schools and/or groups. The t-test for 2 independent samples that resulted in a  $t=9.979$  significant

at the  $p=.000$  level was calculated using the individual exit exam scores for the sample of 1,544 students. The 2 subsequent statistical tests, the paired sample t-test and the linear regression, were calculated using the scores of groups of students with much smaller sample numbers. This factor may well have masked the variance that we had with the original t-test.

CHAPTER V: CONCLUSIONS AND RECOMMENDATIONS  
FOR FURTHER STUDY

Summary of the Problem and Methodology

The purpose of this study was to determine if the use of standardized case studies, specifically those offered to schools of nursing by the HESI (Health Education Systems, Inc.) company, have an impact on the performance of nursing students on the HESI Exit Exam, a predictor of performance on the RN licensing exam. The study further sought to determine if the length of time a school of nursing utilized the case studies had an effect on the students' scores on the HESI Exit Examination.

NCLEX passing rates are an issue of great importance for nursing faculty and administrators. They affect accreditation of nursing programs by the accrediting organizations including The Commission on Collegiate Nursing Education, The National League for Nursing Accreditation Commission, and various State Boards of Nursing. They also affect a school's reputation, having ramifications for its ability to attract students and faculty. Success on the licensure exam also impacts graduates who are not permitted to work in the role they have arduously prepared for until they successfully pass the exam. Compounding this problem is the fact that the exam has become more difficult to pass as previously outlined.

Because of the value attributed to success on the licensure exam, it becomes an institutional imperative that schools of nursing develop ways of maximizing their students' performance on the NCLEX-RN licensing exam.

One modality that may be effective is the use of standardized case studies developed by the HESI company that schools of nursing may utilize for remediation or intervention during a nursing program. Of the 378 schools of nursing that utilized the HESI Exit Exam in 2004, 50 obtained licenses for and presumably used these case studies (A. Nibert, personal communication, October 14, 2005). The HESI company, which offers 50 Case Studies for RN nursing students, has designed the cases so that each one follows a client from presentation through resolution of a plan of care. In a series of content-oriented, multiple-choice questions, students test their knowledge of nursing concepts, ethical/legal issues, management abilities and communication skills. Each series of questions provides immediate feedback and rationale and is cross referenced with HESI's NCLEX review manual (personal communication, Dr. Ainsley Nibert, July 22, 2005).

The ideal way to determine the impact of these case studies would be to compare their use with students' performance on the NCLEX-RN licensing exam. Unfortunately, this data is not readily available as previously discussed. Therefore, for the purposes of this research study, a corollary for the NCLEX-RN exam, the HESI Exit Exam was utilized as a basis for determining the effectiveness of the HESI Case Studies. The reliability and validity data for the HESI exit exam is quite strong. Using the results of over 30,000 baccalaureate nursing graduates, studies have repeatedly shown that the HESI exam administered just before graduation was significant in predicting NCLEX success



( $p=.05$ ; Newman et al., 2000; Nibert & Young, 2001; Nibert et al., 2002; Nibert et al., 2003).

An ex-post facto research design was employed by the researcher using a convenience non-probability sample. The dependent variable in this study was the score a student achieves on the HESI Exit Examination. The two independent variables were the use of HESI Case Studies and the length of time the school of nursing utilized these case studies.

The population was the 378 member schools of nursing with RN programs who were clients of HESI, Inc. in 2004. These schools represented 22,785 nursing students. Data was reported to the researcher by HESI, Inc. wherein each school was coded with an identification number. In order to protect the confidentiality of HESI's member schools, the researcher did not know the names of the schools included in the study. Next to the identification number of the school, the type of program (associate degree, baccalaureate degree, or diploma) was indicated as well the individual student's scores on the HESI Exit Examination and the date the student took the HESI Exit Examination. Lastly, for those schools which utilize the Case Studies, the date the school received the "case study license" was indicated.

### Summary of the Findings

Statistical analysis showed mixed results. First, the mean HESI score of the students attending schools with case study access were compared with the

mean HESI scores of students attending schools without access to the case studies. A t-test for two independent samples showed a highly significant finding ( $t=9.979$ ,  $p=.000$ ) suggesting a definite positive link between usage of the case studies and scores on the HESI exit exam. This result was further clarified using the squared point biserial correlation coefficient which further suggested that the case studies did indeed have a positive effect on the HESI Exit Exam scores.

Secondly, for schools which obtained the Case Study License in 2004 and had two groups of students that took the HESI Exit Exam during that time, The researcher sought to determine if there was a difference in HESI Exit Exam scores for the schools before and after the Case Study license was obtained. The data was tested using a paired samples t-test. The findings were puzzling indicating that the students at these schools actually better on the HESI Exit Exam before they started using the case studies ( $t=2.075$ ,  $p=.05$ ). One possible contributing factor may have been that the difference in length of time the groups actually used the case studies was quite small, ranging from only 1 month to 9 months. Also, the low "N" of 23 schools in this test may negatively affected this result, and it's notable that the finding was significant only at the  $p=.05$  level. Lastly, the standard error of the mean in the first group (11.7449692) was larger than for the same finding in the second group (9.050869). In this case, the sample size may not be large enough to infer anything from the statistically significant finding, especially in light of the fact that the standard error in the first group was larger than the standard error in the second group. The researcher

believe that, in view of these mitigating factors, the results of the paired sample t-test in this study were inconclusive.

The third statistical test was a linear regression which sought to determine if the length of time a school used the case studies had an impact on the Exit Exam scores. The results indicated no statistical relationship between these variables ( $F=1.442$ ,  $Beta=-.180$ ,  $p=.236$ ). Again, the "N" was rather small ( $N=45$ ), and perhaps more importantly the length of time the case studies were used differed only by months. It is likely that this was not a sufficient length of time to have had any measurable impact on the exit exam scores. The researcher also submits that the variance that existed with results based on the individual scores was lost by using the means of the schools and/or groups. The t-test for 2 independent samples that resulted in a  $t=9.979$  significant at the  $p=.000$  level was calculated using the individual exit exam scores for the sample of 1,544 students. The 2 subsequent statistical tests, the paired sample t-test and the linear regression, were calculated using the scores of groups of students with much smaller sample numbers. This factor may well have masked the variance that we had with the original t-test.

In summary, statistical analysis suggested that once again, the "N" was rather small, and perhaps more importantly the length of time the case studies were used differed only by months. It is likely that this was not a sufficient length of time to have had any measurable impact on the exit exam scores.

The researcher also submits that the variance that existed with results based on the individual scores was lost by using the means of the schools and/or

groups. The t-test for 2 independent samples that resulted in a  $t=9.979$  significant at the  $p=.000$  level was calculated using the individual exit exam scores for the sample of 1,544 students. The 2 subsequent statistical tests, the paired sample t-test and the linear regression, were calculated using the scores of groups of students with much smaller sample numbers. This factor may well have masked the variance that we had with the original t-test.

In summary, statistical analysis suggested that case study usage does indeed increase individual student scores on the HESI Exit Exam. In that the HESI Exit Exam has shown to be predictive of success on the NCLEX-RN licensure exam, one can conclude that the Case Studies will likely enhance student success on this important benchmark.

While the results were inconclusive when aggregate school data was correlated with case study usage, this does not negate the importance of the previous finding. The researcher believes that the variance that existed with results based on the individual scores was lost by using the means of the schools and/or groups. This was likely due to the relatively small sample size when aggregate school data was used as opposed to individual student scores.

It is also noteworthy that the case studies first became available in 2004, and therefore, were used for a relatively short period of time by the schools in question. The researcher recommends this study be replicated on a longitudinal basis using data from students using the case studies and taking the HESI Exit exam in 2005 and onward. This will likely provide more meaningful data as to the

impact of these case studies on the aggregate school scores on the HESI Exit Examination.

It is somewhat difficult to relate the findings of this study to the extant literature on the subject. As previously alluded to, much attention is given in the literature to the identification of students at risk for failing the NCLEX-RN licensing examination. Variables studied include cumulative GPA, race, age of students, grades in nursing and science courses, grades on entry level English placement tests, and SAT scores.

The literature suggests that significant predictors of NCLEX success are difficult to identify as many of the studies cited were conducted using data from one specific school. With the exception of cumulative GPA, each researcher identified different predictors for their student's NCLEX-RN performance. Therefore, the generalizability, and therefore external validity of these studies is severely limited.

Rather than looking at which student characteristics are associated with success on the licensing exam, this study sought to determine if an intervention strategy, namely the use of HESI Case Studies, has an impact on student performance on this exam. There is some evidence in the literature that remediation or intervention strategies are being used by some nursing programs to maximize their students' performance on this important test. Unfortunately, little consistency is found among nursing schools in the type of remediation being utilized (Morrison et al., 2002).

Several authors suggest the effectiveness of sessions focusing on test-taking strategies and study habits (Arathuzik & Aber, 1998; Beeson & Kissling, 2001; Frierson et al., 1993; Vance & Davidhizar, 1997; Waterhouse et al., 1993). Also discussed are varied intervention strategies such as peer tutoring (Higgins, 2004), computer assisted instruction (Wolahan & Wieczorek, 1991), learning teams (Frierson et al., 1993), and lastly, review sessions led by faculty (Arathuzik & Aber, 1998; English & Gordon, 2005; Vance & Davidhizar, 1997; Waterhouse et al., 1993; Wolahan & Wieczorek, 1991). There was no evidence in the literature of standardized intervention or remediation strategies such as the HESI Case Studies.

The results of this study are noteworthy as this an initial attempt to assess the impact of a standardized strategy requiring only minimal faculty intervention. While further study is needed to confirm the results, it is a promising finding for nursing students, educators and administrators.

### Implications for Nursing Education and Future Research

#### Policy Recommendations

The implications of this study for nursing education are considerable. It is of great importance for nursing educators to have at their disposal methods of remediation associated with NCLEX-RN success. As previously discussed, NCLEX pass rates affect a school's accreditation status, ability to attract students, and ability to attract faculty, all necessary for the long term success of any nursing program. To date, nursing faculty members have relied on labor

intensive strategies such as individual student tutoring, review sessions, and the like. Also, the implementation of these methods is highly variable from school to school and faculty member to faculty member. There is, therefore, no way of measuring the effectiveness of these approaches or generalizing the results to other schools, or even to other students within the same school.

#### Implications for Practice

There is no question that nursing educators and nursing students would benefit from modalities that will not only increase success on the licensing exam, but which also are standardized and require no direct faculty intervention. If such a modality can be statistically correlated with passing the NCLEX-RN exam, administrators can rest a bit easier about their schools passing rate and faculty can then devote their limited time to the more important areas scholarship, teaching, and service to their institutions.

This study was an initial attempt to determine if these standardized case studies had an impact by comparing their use to results on the HESI Exit Exam. In future studies, the researcher believes it will be important to explore which other methods the students in the sample used to prepare for the HESI exit exam. The effect of this extraneous variable may be significant and future researchers should seek to control for it. One way to do this might be to survey the students under study to determine what other study aids they used, and for approximately how many hours they used them. This survey could potentially be given to students along with the HESI Exit Exam.

### Recommendations for Future Research

Future research should also seek to quantify how much the case studies were used. A limitation of this study, as previously mentioned, is that it is assumed that if a school had the case study license, then the students were using them. It would be helpful to determine how many case studies each student accessed, and how many hours they spent on the case studies. One way this could be accomplished is to have students complete a short survey when they take the Exit Exam. Alternatively, HESI could track this information by electronically compiling the specifics of case study usage, and a future researcher could correlate this data with scores on the Exit Exam. This would provide more detailed information as to the impact of case study usage.

Another area for future research would be to correlate the use of case studies with actual NCLEX-RN results. In addition to exploring the effect of using case studies on the HESI Exit Exam, it would be also be useful to survey schools and determine which students eventually passed the licensing exam on their first attempt. This information will not be as objective as the HESI Exit Exam scores because it will rely on the subjective responses from the nursing schools. Even with this limitation, the researcher believes it would still be useful as this subject is studied in greater depth.

The researcher further recommends researchers explore if other standardized methods are being utilized by nursing students to prepare for the NCLEX-RN licensing examination. If so, the effectiveness of their use should be



compared with that of the HESI Case Studies, and also with NCLEX-RN success.

The need to explore and measure the effectiveness of modalities to enhance the success of students on the National Council Licensing Examination for Registered Nurses cannot be understated. This study was an effort to add to the body of work in this area.

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APPENDIX A  
GRADUATE STUDENT AGREEMENT TO  
PARTICIPATE IN HESI EDUCATIONAL RESEARCH PROJECTS



# HESI

### Graduate Student Agreement to participate in HESI educational research projects

Thank you for agreeing to participate in HESI-focused research to meet requirements for your graduate study course(s). Please review the HESI guidelines that pertain to educationally-focused research studies, and sign and return a copy of this form to us prior to handling any HESI data.

- (1) All data received by the graduate student for analysis must be maintained in a secure location for the duration of the student's involvement with this study.
- (2) The graduate student agrees to maintain the confidentiality of all individual scores identified within any data summary document.
- (3) The graduate student recognizes that reporting of HESI-focused research findings are described as aggregate findings only, which is a criterion of educational studies exempt from review of the institutional review boards (IRB) as recognized by the IRBs at most universities. Any reporting of HESI scores pertaining to individual students must be approved by the IRB prior to initiation of any HESI-related project.
- (4) Once the final analysis of the data is complete, the graduate student must return all hardcopies of documents to HESI, as well as provide electronic or hardcopies of all spreadsheets or other types of files generated from statistical software packages and/or word processing programs. Any electronic files stored on the hard drive(s) of students' computers must be destroyed once the data have been returned to HESI, and HESI has (1) confirmed receipt of returned hardcopies and/or files; and (2) determined that the files are uncorrupted, accessible on our computer systems, and complete.
- (5) The graduate student will receive recognition (depending on the level of involvement with the project) as a research assistant, co-author, or lead author on related manuscripts prepared for publication.
- (6) For any questions, contact:  
Ainslie T. Nibert, PhD, RN  
Director of Research  
Health Education Systems, Inc. (HESI)  
2666 South Loop W. Suite 690  
Houston, TX 77054  
800.950.2728  
voice 713.838.7787, ext. 224  
fax 713.838.0079  
[ainslien@hesitest.com](mailto:ainslien@hesitest.com)

We are pleased that you chose HESI-focused research for completion of your course requirements. Thanks for participating, and we look forward to seeing your results!

*Christine C. Mihal*  
Graduate Student (Signature)

Christine C. Mihal  
(Print Name)

1/9/06  
Date

*Ainslie Nibert*  
Director of Research, HESI

Ainslie Nibert  
(Print Name)

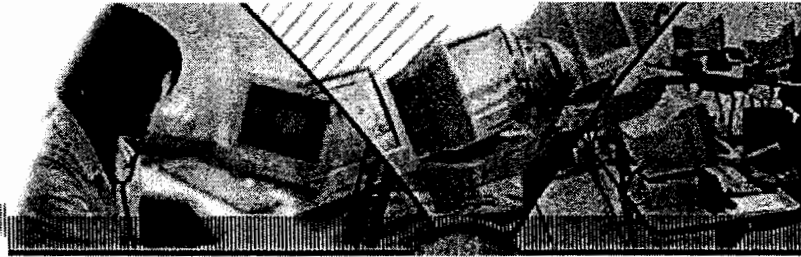
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APPENDIX B  
INFORMATION ON HEALTH EDUCATION SERVICES, INC.  
AND THE HESI EXIT EXAMINATION

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We are pleased to announce that HESI—the leading provider of high-quality exams for the nursing and allied health markets, has merged with the Health Sciences Division of **Elsevier**—the world-leading publisher of scientific, technical and medical information products and services.

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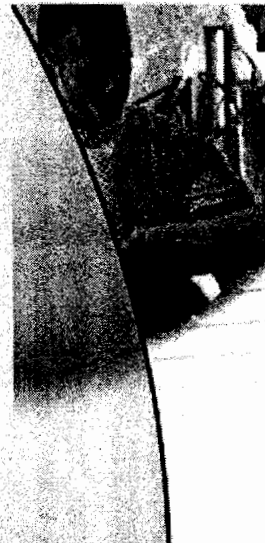
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## Description of HESI Exams

### Critical Thinking Test Items

- HESI Exams provide **critical thinking** test items which are developed using the model described by Morrison, Smith, and Britt, in *Critical Thinking and Test Item Writing*. Nurse educators and nurse practitioners from around the country write test items for HESI Exams. HESI writers have been previous item writers for the NCLEX-RN® and/or are published writers of various nursing textbooks. All test items are reviewed by at least two additional nurse educators and are piloted before they are used in calculating a student's score. (Each test contains 5-10 pilot items.)

### Rationales for Test Items

- Rationales for items missed appear on the screen at the completion of the exam. These rationales provide an excellent learning opportunity for students and contain the rationale for the correct answer, as well as the incorrect answers.

### School Summary

- A school summary is provided for all secure HESI Exams and is included in the cost of the exam. The summary includes color charts describing the school's response to each subject category tested. HESI guarantees that the school summary will be available online within 24 hours and if you wish to have them



printed by HESI they will be mailed from our office within 10 working days of receipt of your data--most reports are mailed within 48 hours of receipt of the data.

### Cat Format

- CAT format is used for taking exams. The same keys as those used for the NCLEX-RN® are used to take HESI Exams. However, HESI Exams are *not* adaptive because it is important for students to experience answering *all* test items.

### Diskette, Network, and HESiNET®

- Every school's technology infrastructure is different. That is why we provide three, easily deployable distribution options for all HESI exams:
  - **Diskette** - Each student will receive their own diskette. Testing software will need to be installed on each computer.
  - **Network** - Testing software only needs to be installed on one computer and exam files are loaded to that computer. Students connect to that computer to take the exam
  - **Web Distributed** - Thanks to **HESiNet®**, you can order your exams, download them to your network, administer the exam, and transfer your data back to HESI using the Internet. This means that ordering and administering the HESI is now faster and easier. Plus, you can view your reports in minutes instead of days.

All three versions are the same price. However, we recommend **HESiNET®**, as it is the fastest and most secure . In the meantime, feel free to download and try out our Sample HESI Exam.

### Available HESI Exams

- HESI provides testing throughout the nursing curriculum, from entrance to exit.

To obtain information about specific HESI Exams go to:

- [HESI Admission Assessment\(A<sup>2</sup>\)™](#)

- The HESI Exit Exam (E<sup>2</sup>)®
- HESI Specialty Exams™
- HESI Custom Exams™

HESI Exams are reliable and valid instruments of measure.

See *Computers In Nursing*, May-June, 1999: "Predicting Licensure Success With a Computerized Comprehensive Nursing Exam: *The HESI Exit Exam®*" by Lauchner, Newman, and Britt.

### Sample HESI Exam

- Download a FREE Sample HESI Exam. This sample software enables you to experience and evaluate a ten-question HESI Exam. For a thorough evaluation, the software is configured to let you take the exam up to five times.

## HESI Frequently Asked Questions

- What are the system requirements for HESI Exams?
- How do we order and download web-delivered exams ?
- Where can I download the HESItest Software?
- Are there any instructions for administering the HESI?
- Is there an additional charge for web-delivered exams?
- Will I be charged shipping and handling fees for web-delivered exams?
- Can I convert from diskette version to web-delivered exams easily?
- How do we get our analyses back, and how long does it take?
- Do all of our students need to take the exam at the same time?
- Can students in other geographical locations take the exam?
- What is the difference between a Basic Faculty Account and a Premier Account ?
- Does HESI still offer the Diskette version HESI exams?
- Will students know their areas of weakness after taking the HESI?
- Can we have exams customized to fit our curriculum?
- How can I get credit for unused exams?
- Where can I get a copy of the HESI End User License Agreement?
- Where can I get a copy of the HESI Student Confidentiality Statement?

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### What are the system requirements for HESI Exams?

- Microsoft Windows 98SE/2000/XP.
- Pentium, 300 MHz or higher processor.
- 64 MB RAM (more memory improves performance).
- Approx. 15 MB free hard drive disk space for HESItest in the installation directory.
- High quality laser or ink printer installed with the latest drivers AND "Set as Default" on computers to be used for testing. (Epson Stylus 460/660/760/860 and some HP Laserjet printers require the absolute latest drivers from the manufacturer.)
- 3.5" 1.44 MB floppy drive configured as Drive A or Drive B
- Approximately 120 KB per exam per student in the HESItest installation directory
- Each computer used for testing must have an established path to the shared HESItest installation directory on the network server
- The account the students use to log on to the network will need: read/write/modify/execute permissions to the shared HESItest directory on the network server (hence forth known as the HESItest folder) installation directory
- We have experienced performance lags on wireless networks.

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## How do we order and download web-delivered exams?

- Go to <http://www.hesitest.com>
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- Click on “[Order Exams]”.
- Select the exams you wish to order.
- On the “Shopping Cart” page, verify that the number of exams in your shopping cart is correct.
- In the box that says “Your exams can be configured in one of these three modes”, select “Download”.
- Enter the exam date and to whom you would like the results to be sent.
- Indicate whether or not you are an ACE customer. (If you do not know if you are an ACE customer, or would like information on how you could receive HESI exams and Review Courses at a discounted price, call 1-800-950-2728).
- Be certain that you have completed this page in its entirety.
- Select the method of payment and click “Checkout”.
- After you have completed the transaction, HESI staff will automatically be notified of your order, and we will begin creating your HESI exam. Once it has been created, you will receive an email that provides you with an access code. Also, there will be links to the necessary procedures for administering a web distributed HESI exam.
- You must have the HESItest™ installation package on a server. This package contains the HESItest™ software for testing, and the HESliNET™ administrators’ utility. This is available for download at:  
<http://www.myhesitest.com/support/files/hesitest.exe>.
- Go to the folder in which HESItest™ was installed (If defaults were accepted, that would be c:\programfiles\hesi\hesitest).
- Double-click on HESInet.exe.
- Click on the “Internet Download” button.
- You will be prompted to enter your user name, password and access code. The access code was provided in step 12.
- The download will take less than 2 minutes.
- After the download is complete, you may enable testing.

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## Where can I download the HESItest Software?

The HESItest software and the HESliNET network administrators utility can be downloaded from <http://www.hesitest.com/support>, or [Click Here](#).

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## **Are there any instructions for administering the HESI?**

Instructions on administering HESI exams can be downloaded from <http://www.hesitest.com/support>, or [Click Here](#).

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## **Is there an additional charge for web-delivered exams?**

No. There are no additional charges for web-delivered exams. In fact, you can save money by using the web-delivered version. There are no shipping costs associated with standard web-delivered orders and they require less administrative effort.

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## **Will I be charged shipping and handling fees for web-delivered exams?**

The only time an additional charge will be applied to a web-delivered exam is when the exam is needed the next day. In such a case, there will be a \$25 rush fee.

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## **Can I convert from floppy version to web-delivered exams easily?**

The transition is quite simple. All you have to do is install HESItest on a network server instead of each PC. Using the HESiNET network administrators utility, you will download the exams from HESI, enable testing and allow students access to the testing folder. Initially, you may need some help from your Computer Services Department, as they will need to grant the appropriate permissions.

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## **How is our analyses returned, and how long does it take?**

Receiving your school's Summary Analysis is now faster and easier with HESliNet, our proprietary web-based Informatics Center. When 10 or more students complete a HESI exam and the data is transferred back to us via HESliNet, our server will automatically score the exams and provide you with a Summary Analysis that can be viewed online in a matter of minutes. All you need to do is logon to our website using your User-name and Password, click on the "Access Your Account" link and select "Summary Analysis".

If you are using the diskette or network version, HESI still guarantees that your information will be mailed to you no later than 10 days after we receive your data. However, most analyses are mailed to you within 48 hours. These reports will still be available for you to view online.

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## **Do all of our students need to take the exam at the same time?**

In order to prevent students who have taken the HESI from discussing it with those who have not, we do recommend that all students take the exam as close to the same time as possible. However, it is not required. What is required is that all students complete the exam before the results are transferred to HESI. Once the results have been transferred, the exam is no longer resident on your server. Therefore, no one else will be able to test.

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## **Can students in other geographical locations take the exam?**

This would depend on your network configuration. Technically they can as long as they have access to the server. It is, however, a requirement in the HESI End User License Agreement that the exam be proctored.

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## **What is the difference between a Basic Faculty Account and a Premier Account?**

**A Basic Faculty Account** is required for ordering exams. This access

level allows you to order exams, view summary information, and student reports. This account is provided to you free of charge. [To request a Faculty Account, click here.](#)

**The Premier Account** offers users with unlimited access to HESITest.com's Premier Services. This service allows users access to a variety of premium features. These features include the ability to export your data into an excel spreadsheet, display charts for trends and comparisons between your school, regions, states, students, etc. Premier services also displays a question of the month which gives insights into useful item generation techniques. Finally the case study of the month allows uses to access a monthly case in which questions will be asked to perform diagnostics on a patient.

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### **Does HESI still offer the diskette version of HESI Exams?**

Yes we do! All that you have to do is select "Diskette" when placing your order.

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### **Will students know their areas of weakness after taking the HESI?**

After completing the exam, the student will have the opportunity to view the rationales for the items that were answered incorrectly. They will also be able to print out a detailed report that will provide them with information regarding their performance in each of the various categories tested by the HESI exam.

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### **What types of exams does HESI offer?**

For a complete listing of HESI exams and a description of each one, [click here.](#)

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## **Can an exam be customized to our curriculum?**

HESI can customize exams to meet your particular course objectives. You provide HESI with the course syllabus, and HESI will design an exam for you. The test items for your exam will come from HESI's vast array of test item banks that contain critical thinking test items, which have been nationally normed.

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## **How can I receive credit for unused exams?**

All requests for credit must be submitted in writing or submitted electronically. To submit a credit request, [click here](#).

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## **Where can I find a copy of the HESI End User License Agreement?**

To download the [HESI EULA](#), [click here](#)

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## **Where can I locate a copy of the HESI Student Confidentiality Statement?**

To download the [HESI Confidentiality Statement](#) [click here](#)

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**APPENDIX C**

**LISTING OF HESI CASE STUDIES AVAILABLE FOR STUDENT USE**

## HESI CASE STUDY TITLES

### A. General Nursing Care

1. Breathing Patterns
2. Constipation
3. Fluid Balance
4. Loss, Grief, and Death
5. Mobility
6. Pain
7. Sensory Function
8. Skin Integrity
9. Sleep Pattern
10. Urinary Patterns

### B. Nursing Management

11. Management of a Medical Unit
12. Management of a Pediatric Unit
13. Management of a Skilled Care Unit
14. Management of a Surgical Unit
15. Management of an Oncology Unit
16. Benign Prostatic Hyperplasia

C. Nursing Care of the Adult Client

17. Breast Cancer
18. Cerebrovascular Accident
19. Chronic Renal Failure
20. Cirrhosis
21. Congestive Heart Failure
22. COPD with Pneumonia
23. Coronary Artery Disease
24. Deep Vein Thrombosis
25. Diabetes: Type 1
26. Head Injury
27. Hepatitis
28. HIV and Tuberculosis
29. Inflammatory Bowel Disease
30. Laryngeal Cancer
31. Lung Cancer
32. Parkinson's Disease
33. Peripheral Vascular Disease with Amputation
34. Rheumatoid Arthritis and Joint Arthroplasty
35. Spinal Cord Injury
36. Thyroid Disorder



D. Nursing care of the Obstetric Client

- 37. Health Newborn
- 38. Postpartum Complications
- 39. Preeclampsia

E. Nursing Care of the Pediatric Client

- 40. Burns
- 41. Cleft Lip and Cleft Palate
- 42. Compound Fracture (Preschooler)
- 43. Congenital Heart Disease
- 44. Cystic Fibrosis
- 45. Sickle Cell Anemia

F. Nursing Care of the Psychiatric Client

- 46. Alcoholism
- 47. Alzheimer's Disease
- 48. Depression
- 49. Psychosis
- 50. Schizophrenia

F. Test Taking Skills

- 51. Test Taking Tutorial

APPENDIX D

THE NATIONAL COUNCIL STATE BOARDS OF NURSING

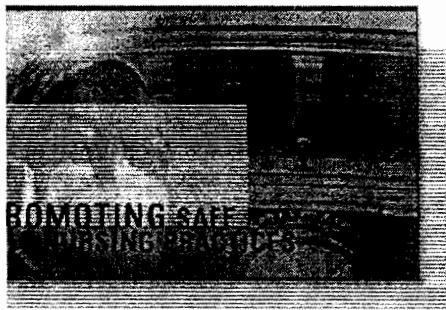
NURSING REGULATION AND LICENSURE

WEBSITE: [WWW.NCSBN.ORG](http://WWW.NCSBN.ORG)



## ABOUT NCSBN :::

| [Programs & Services](#) | [Boards of Nursing](#) |



### Membership-

The National Council of State Boards of Nursing, Inc. (NCSBN) is a not-for-profit organization whose membership comprises the boards of nursing in the 50 states, the District of Columbia, and five United States territories--American Samoa, Guam, Northern Mariana Islands, Puerto Rico, and the Virgin Islands..

### Mission

The National Council of State Boards of Nursing (NCSBN), composed of Member Boards, provides leadership to advance regulatory excellence for public protection.

**Vision** - Building regulatory expertise worldwide.

### Values

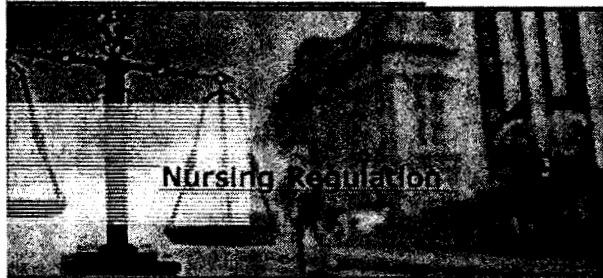
- **Integrity:** Doing the right thing for the right reason through informed, open and ethical debate.
- **Accountability:** Taking ownership and responsibility for organizational processes and outcomes.
- **Quality:** Pursuing excellence in all endeavors.
- **Vision:** Using the power of imagination and creative thought to foresee the potential and create the future.
- **Collaboration:** Forging solutions through the collective strength of internal and external stakeholders.

### Purpose

The purpose of NCSBN is to provide an organization through which boards of nursing act and counsel together on matters of common interest and concern affecting the public health, safety and welfare, including the development of licensing examinations in nursing.

NCSBN's [programs and services](#) include developing the NCLEX-RN® and NCLEX-PN® examinations, performing policy analysis and promoting uniformity in relationship to the regulation of nursing practice, disseminating data related to the licensure of nurses, conducting research pertinent to NCSBN's purpose, and serving as a forum for information exchange for members.

## NURSING REGULATION :::



Nursing regulation is the governmental oversight provided for nursing practice in each state. Nursing is regulated because it is one of the health professions that pose risk harm to the public if practiced by someone who is unprepared and incompetent. The public may not have sufficient information and experience to identify an unqualified health care provider, and is vulnerable to unsafe and incompetent practitioners.

Through regulatory processes, the government permits only individuals who meet predetermined qualifications to practice nursing. The board of nursing is the authorized

state entity with the legal authority to regulate nursing. Legislatures enact the Nurse Practice Act for a state. The Nurse Practice Act typically:

- Defines the authority of the board of nursing, its composition and powers
- Defines nursing and the boundaries of the scope of nursing practice
- Identifies types of licenses and titles
- States the requirements for licensure
- Protects titles
- Identifies the grounds for disciplinary action

Boards of nursing are authorized to develop administrative rules and regulations that are used to clarify or make the statutes more specific. Rules and regulations must be consistent with the Nurse Practice Act, cannot go beyond the law, and, once enacted, have the force and effect of law. Public comment periods are provided to allow nurses, students and the public to participate in the rule-making process by submitting written comment or participating in rule-making hearings.

[Click here](#) to see the Model Nursing Practice Act Model Nursing Administrative Rules.