

Standardize Predictive Testing: Practices, Policies, and NCLEX-RN Outcomes

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Abstract

- **Purpose:** The aims of this study were to investigate continued accuracy of a predictive exit exam, testing and remediation policies and practices, and to determine the outcomes of repeat testing.
- **Methods:** Deans and directors of nursing schools that administered Elsevier HESI™ Exit Exam (E²) students during the **2010** academic year responded. Data were collected regarding students' national nursing licensure examination outcomes and the schools' remediation and re-testing strategies and policies.
- **Results:** A random stratified sample of **5438** student records was obtained, **3084** were from Associate Degree (AD) and **2354** were from Baccalaureate Degree (BD) programs. NCLEX outcomes were known for all but **316 (5.8%)** students. The re-validation accuracy of the E² for NCLEX-RN success was **98.26%** for students scoring 900 and above. As E² scores decreased failure rates increased. **Seventy-three (74%) of the 98 schools had exit policies, the most frequent established benchmark score was 90%, and 74% of schools counted the standardized exam as part of course grades. More than 60% of the student remediation strategies were student self-directed, including review based on testing reports.**
- **Conclusion:** A national United States sample of BD and AD nursing programs has found that electronic standardized end of program assessments are highly accurate at predicting licensure success. Faculty's implementation strategies, policy development, and methods for remediation were compared to HESI E2 scores.

Objectives

- The learner will be able to summarize a standardized RN end of program examination's predictive validity.
- The learner will be able to critique potential contextual policy strategies for including standardized examinations within nursing programs.

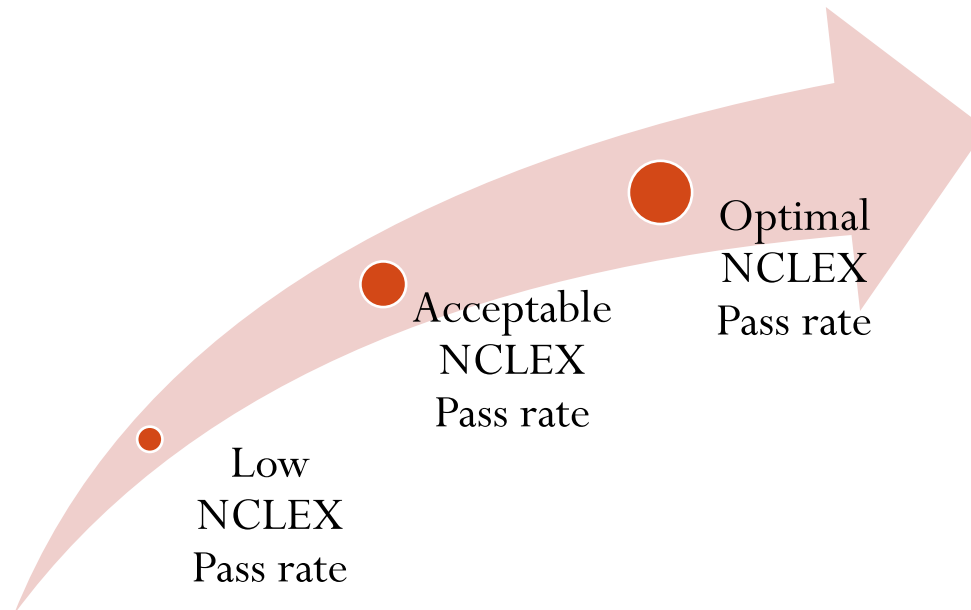
Background

- Nurse educators use standardized testing, curricular standards and guidelines to direct educational practice.
- Standardized testing predicts student success and identifies student's weak content areas to allow for a focused remediation plan.
- Multiple remediation strategies are often implemented simultaneously.
- Little is known about the effectiveness of preparation , remediation, and retesting policies in nursing educational programs in regards to standardized outcome testing.

The Problem

The Policy Dilemma

<http://www.xtranormal.com/watch/13456235/stikz-movie>



Purpose

The four primary aims of this study were to:

- Describe the predictive accuracy of the HESI Exit Exam for NCLEX-RN success.
- Describe schools remediation policies and practices.
- Determine if students who attend nursing programs with certain high stakes testing policy components score better on the HESI Exit Exam than students who attend nursing programs without certain high stakes testing policy components.
- Identify which combination of policy components result in higher HESI Exit Scores.

Conceptual Framework

- Classical test theory
 - Reliability and Validity
 - Crocker and Algina (1986)
- Vygotsky's Zone of Proximal Development
 - Third Voice
 - Developmental goal attainment
 - Eun, Knoetek, & Heining-Boynton, 2007)

Methods

- A random stratified sample was drawn from Elsevier's HESI™ Exit Exam users
- Timeframe – **1 September 2009 through 31 August 2010**
- Deans/Directors were queried via password protected email survey
- Phase I – Testing Policies & Practices
 - **471 schools were invited; 99 schools responded to the Questionnaire – 21% response rate**
- Phase II – Predictive Accuracy of HESI Exit Exam
 - **Of the 99 schools, 69 reported NCLEX-RN outcomes for a 70% response rate**

Methods

- Participants were asked to identify outcomes for students in their program on their first attempt NCLEX-RN, as well as to answer several questions regarding testing and remediation policies implemented at their school
- To protect subjects' anonymity, data regarding student NCLEX-RN[®] examination outcomes were reported to the research team as aggregate data only

Outcome Measures

- **HESI™ Exit Exams Scores**
 - 160-item (10 pilot items) comprehensive exam
 - Most schools administered the E² within 6 weeks prior to completion of the nursing curriculum
- **NCLEX-RN® Outcomes**
 - First time test takers
 - Pass/Fail; Unknown; Did not graduate
- **School of Nursing HESI E2 Policy Components**
 - Preparation Components
 - Remediation Components
 - Consequence Components

Instruments

- Phase I - HESI Exit Exam Practices/Strategies Questionnaire
- 29-item multiple choice and fill in the blank electronic survey
 - Exit Exam program policy
 - Benchmark use
 - Strategies used to prepare for the Exit Exam
 - Duration of time allotted to preparation
 - Re-testing practices
 - Remediation required between testing
 - Consequences of the Exit Exam

Instruments

- Phase II – NCLEX Outcome Sheet by Student HESI Scores
 - Student information: version, last HESI score were provided to the faculty participants via email using a password protected excel document.
 - Faculty participants provided the following NCLEX information for each student : PASS/FAIL/UNKNOWN/Did not Graduate.
 - Faculty de-identified the Outcome Sheet by removing the student names.
 - Emailed return still password protected.

Sample

Randomly selected

Phase II	Invited	Total Sample	AD Sample	BD Sample	Response Rate
Schools	99	69	40	29	70%
Students		5122	2869	2253	

Results:

Phase I Testing Policies and Practices

- Descriptive Data
 - Required Preparation Plan
 - Testing a Component of Course Grade
 - Mandatory Remediation
 - Remediation Type
 - Number of attempts
 - Time between attempts
 - Version Changing
 - Consequences

Policy, Benchmark & Re-Testing

N = 54 Schools

Policy

- 54 schools (84.4%) had an exam policy
- 37 (69%) used 850; 10 (19%) used 900
- Range was 700 - 950

Benchmark

- 24 schools (44%) of the 54 schools achievement of benchmark was mandatory

Re-Testing

- 37 schools (69%) required re-testing
- 1 time 15 – schools; 2 times – 9 schools; 3 times – 11 schools; 4 times – 1 school

HESI Exit Exam (E2)

- 46 schools used the E2 as course requirement
 - 11 schools – exam for course completion
 - 11 schools – pass/fail criteria
 - 11 schools – counted exam as 5-10% of course grade
 - 10 schools – counted exam as 20-30% of course grade
 - 3 schools – counted exam as greater than 30% of course grade

Preparation Plan

Types of Preparation	Frequency	Percent (N=39)
Self-guided formal review course (online)	5	12.8
Self-guided review (eg., case studies, study guide, NCLEX type items)	33	84.6
Formal review course (eg., HESI, ATI, Kaplan)	17	43.6
Faculty guided group review	22	5
Faculty guided individual review	18	46.1
Peer/mentor tutoring	13	33.3

HESI E2

Preparation Plan

- 39 of 67 schools provided students with an exit exam preparation plan
- Only 33 schools required students to use the preparation plan
- School's timeframe
 - 32 (82%) 6 weeks
 - 30 (77%) more than a week

Remediation

- 41 of 54 schools required remediation after the initial failure to meet benchmark
- 15 (37%) schools required students to pay additional fees for remediation
- 37 (90%) schools required proof of participation in remediation

Consequences

- Of the 54 schools that had a benchmark:
 - 30 schools (56%) set consequences for NOT meeting the benchmark
 - Top 3: 1st course failure (15); 2nd Delay NCLEX candidacy (13); 3rd Delay graduation (9)
 - Multiple consequences:
 - Repeat applicable course
 - Audit applicable course
 - Delay/Deny graduation
 - Delay/Deny NCLEX candidacy
 - Program removal

Results:

Phase I Testing Policy and Practices

Policy	Yes	No	Significance
Achieving the HESI E2 benchmark score is mandatory	n = 1426 Mean = 907.20 SD = 112.38	n = 2908 Mean = 855.16 SD = 124.23	$p < .0001^{**}$
Require students to participate in preparation plan	n = 1469 Mean = 905.47 SD = 112.83	n = 3144 Mean = 853.13 SD = 124.14	$p < .0001^{**}$
Require students to re-test	n = 2429 Mean = 888.76 SD = 114.80	n = 2184 Mean = 848.98 SD = 128.47	$p < .0001^{**}$
Require remediation after a student fails to meet the benchmark	n = 2618 Mean = 885.18 SD = 116.99	n = 1995 Mean = 849.91 SD = 127.89	$p < .0001^{**}$

Phase I: Remediation Policy Strategies: Correlations to Last HESI E2 Score (N=5038)

	Correlation	<i>P</i> value
Formal Review Course	.182	.0001**
Tailored Self-Guided HESI Exam Review	.112	.0001**
Self-Guided Online Review course	.097	.0001**
Self-Guided Case Studies	.068	.0001**
Peer/Mentor Tutoring	.042	.003**

**0.01 two-tailed
Note. Bonnferroni correction $p = .006$

Results:

Phase II Predictive Accuracy

- Of the **99** schools, **67** schools also reported on NCLEX-RN passage rates by student HESI scores for the last HESI Exit Exam that the students took prior to their first time sitting of the licensure examination.
- **Of the 67 schools:**
 - **27 (40%) were BSN programs and 40 (60%) were ADN programs**
 - **represented 5,038 students (2,181 BSN students and 2,857 ADN students).**
 - **Overall predictive accuracy was 98.26% for students scoring in 900 and above regardless of program type**

Phase II Predictive Accuracy of the HESI Exit Exam for NCLEX-RN Outcomes (N = 5038)

HESI Exit Exam Category	Student NCLEX Outcome		Predicted Accuracy
	<u>Passed</u>	<u>Failed</u>	
900 and above	2084	37	98.26
850 – 899	879	45	95.13
800 – 849	585	48	92.43
700 – 799	780	127	86.00
699 or less	323	130	71.30
TOTAL	4651	387	92.32

Conclusions

- The HESI E2 Comprehensive Exam is predictive of NCLEX success.
- Schools of Nursing are designing and implementing high stakes testing policies to manage the implementation of the HESI E2 Exam.
- Several components within a high stakes testing policy are significantly related to individual scores on the HESI E2 Exam.
- Certain types of remediation policies can be correlated with HESI E2 individual scores.
- High stakes testing policies need to be crafted to include certain components that are related to HESI E2 success.