RESEARCH

The Eighth E² Validity Study for RNs
Accuracy, Benchmarking, Remediation and Testing Practices

Summary Report

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Schools of nursing often depend on standardized testing in order to assess student readiness for licensure examinations. The HESI™ Exit Exam (E²) is a 160 item comprehensive test has been found to be a highly reliable predictor of NCLEX-RN® performance for students enrolled in BSN, ADN, and Diploma Nursing programs. In seven 1-7 prior studies, predictive validity has ranged between 93.36% to 99.2% across RN programs. These studies have reported NCLEX-RN outcomes of over 41,000 students at more than 150 academic institutions across the United States. The purpose of this study was to examine:

- HESI™ Exit Exam (E²) as a predictor of success on the NCLEX-RN and PN exams,
- the effectiveness of repeated exit exam testing when predicting NCLEX success, and
- to determine exit testing policies.

Methods:
The theoretical framework for this descriptive study based on Classical Test Measurement and Critical Thinking theories. A stratified random sample of 154 BSN, ADN, and diploma programs using the E² between September 1, 2007 to August 31, 2008 was electronically surveyed with 66 (43%) of Deans and Directors returning questionnaires. Participants were asked to identify:

- first time NCLEX-PN failures,
- school policies and procedures regarding benchmarking, and
- remediation strategies used for low scoring students.

To protect confidentiality of students, identifiers were stripped from the data base and only aggregate data were reported.

Findings:
Sample: The sixty-six participating schools represented a total of 4,134 students, stratified to mirror the proportion of nursing students by program type who sat for the NCLEX-RN licensure during the same timeframe of 2007-2008.

<table>
<thead>
<tr>
<th>Participant</th>
<th>BSN (%)</th>
<th>ADN (%)</th>
<th>Diploma (%)</th>
<th>RN Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schools</td>
<td>26 (39.4%)</td>
<td>36 (54.5%)</td>
<td>4 (6.1%)</td>
<td>66</td>
</tr>
<tr>
<td>Students</td>
<td>1,642 (39.7%)</td>
<td>2,363 (57.2%)</td>
<td>129 (3.1%)</td>
<td>4,134 (100%)</td>
</tr>
</tbody>
</table>
**Accuracy:**
The accuracy of the $E^2$ in predicting NCLEX-RN success on the first taking of the licensure exam, is determined by looking at the students scoring categories and ascertaining if the student in fact passed the NCLEX-RN exam. Of those students who were predicted to be successful (scoring category A/B 900 and above) 98.3% passed on the first try. The pass rates of this sample for each of the scoring categories are listed in Table 2. Note that as $E^2$ scores decreased, the NCLEX pass rate also decreased.

**Table 2 NCLEX-RN Pass Rates on the $E^2$ Version 1**

<table>
<thead>
<tr>
<th>Score Category</th>
<th>N</th>
<th>Passed</th>
<th></th>
<th>Failed</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>900 &amp; up</td>
<td>1132</td>
<td>1113</td>
<td>98.3</td>
<td>19</td>
<td>1.7</td>
</tr>
<tr>
<td>850-899</td>
<td>505</td>
<td>483</td>
<td>95.6</td>
<td>22</td>
<td>4.4</td>
</tr>
<tr>
<td>800-849</td>
<td>311</td>
<td>287</td>
<td>92.3</td>
<td>24</td>
<td>7.7</td>
</tr>
<tr>
<td>700-799</td>
<td>478</td>
<td>402</td>
<td>84.1</td>
<td>76</td>
<td>15.9</td>
</tr>
<tr>
<td>Below 700</td>
<td>259</td>
<td>160</td>
<td>61.8</td>
<td>99</td>
<td>28.2</td>
</tr>
<tr>
<td>Totals</td>
<td>2685</td>
<td>2445</td>
<td>91.1</td>
<td>240</td>
<td>8.9</td>
</tr>
</tbody>
</table>

**Exam Retakes:**
Some programs permit students who do not perform well on the first exit exam to repeat a parallel examination which is composed of different questions derived from the testing databank. This study determined the predictive accuracy for the second retake exam was 94.9% and all scoring categories are presented in Table 3. The second retake predictive accuracy was also highly predictive (95.9%) for category A/B.

**Table 3 NCLEX-RN Pass Rates on the $E^2$ Version 2**

<table>
<thead>
<tr>
<th>Score Category</th>
<th>N</th>
<th>Passed</th>
<th></th>
<th>Failed</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>900 &amp; up</td>
<td>355</td>
<td>337</td>
<td>94.9</td>
<td>18</td>
<td>5.1</td>
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<tr>
<td>850-899</td>
<td>189</td>
<td>167</td>
<td>88.4</td>
<td>22</td>
<td>11.6</td>
</tr>
<tr>
<td>800-849</td>
<td>99</td>
<td>91</td>
<td>91.9</td>
<td>8</td>
<td>8.1</td>
</tr>
<tr>
<td>700-799</td>
<td>159</td>
<td>130</td>
<td>81.8</td>
<td>29</td>
<td>18.2</td>
</tr>
<tr>
<td>Below 700</td>
<td>79</td>
<td>57</td>
<td>72.2</td>
<td>22</td>
<td>27.8</td>
</tr>
<tr>
<td>Totals</td>
<td>881</td>
<td>782</td>
<td>88.8</td>
<td>99</td>
<td>11.2</td>
</tr>
</tbody>
</table>
The effectiveness of repeated exams was explored and while there were some variations between repeat testing, students in high scoring categories generally perform well on NCLEX. Areas were significantly different in terms of retesting for category A/B among the three testing versions. Version 1 had significantly greater predictive capacity over version 2 ($\chi^2 = 12.266$, $df = 2$, $p = .002$). However, students scoring 900 or greater on any of the three tests are still predicted to pass at a rate of higher than 97%. Students scoring 850 to 899 on any of the three tests are still predicted to pass at a rate of higher than 92% and students scoring 800 to 849 on any of the three tests are still predicted to pass at a rate of higher than 90%.

In summary, there was:
- some fluctuation between first and third exams,
- pass rate composite was high for all exam versions, and
- risk of NCLEX failure increases with low scoring categories.

**Benchmark Level**
Benchmarking reflects school decisions regarding the minimum Exit Exam score that students must achieve in order to meet school requirements. The most commonly used benchmark is 850 for 32 (48.5%) of the 66 schools. For E² Version 1 exams, NCLEX predictive accuracy was achieved when using a benchmark of:
- 900 or above - 98.3%
- 850 or above - 97.5%
- 800 or above - 96.7%

**Repeat Exit Testing**
Many schools do not participate in exit exam repeated test taking. Of this sample of RN schools:
- 24 (36.4%) had no retesting
- 9 (13.6%) permitted one retake
- 9 (13.6%) permitted two retakes
- 11 (16.7%) permitted three retakes
- 12 (18.2%) allowed anywhere from four to seven retakes

**Time Intervals between Retake Exams**
Many programs use the E² testing to identify students who would benefit from remediation in order to be successful on the exit examination. Forty-seven (71%) of the RN schools required remediation, the most common remediation timeframe ranged from 2 to 6 weeks.

**Remediation Requirements**
A wide range of remediation policies existed for programs. Examples of some remediation practices were:
- 18 Evolve online
- 7 HESI 3 day live review
- 11 HESI online case studies
- 12 NCLEX Prep book
- 20 Live tutoring
- 17 Computer based tutoring
- 17 Other courses
Consequences of Exit Exam Outcomes

When students are identified at high risk for potentially being unsuccessful on NCLEX, schools may have policies that include consequences based on performance. Consequences that schools used in their programs were:

- 13 Fail Capstone/other course
- 21 Delay/deny graduation
- 18 Delay/deny NCLEX candidacy
- 42 Retake the exit exam
- 24 No consequences

Conclusions:

These findings indicate that the $E^2$ continues to accurately predict first time NCLEX-RN performance. While the predictive ability of the $E^2$ is slightly reduced for repeat testings, these exams still have the capacity to accurately predict future NCLEX-RN performance. As student $E^2$ scores diminish, the likelihood of not passing NCLEX-RN increases. The majority of schools have policies related to $E^2$ performance including benchmark scores that must be achieved. Eight hundred fifty is the most common benchmark level. Schools use a variety of strategies for student remediation.

References: