Developing and Piloting a Critical Thinking Rubric to Evaluate Written Nursing Care Plans in an Associate Degree Nursing Program

Pamela M. Morris, B.S.N., M.A.

Intercollegiate College of Nursing/Washington State University College of Nursing Tri-Cities

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To the Faculty of Washington State University:

The members of the Committee appointed to examine the clinical research project for PAMELA MORRIS find it satisfactory and recommend that it be accepted.

[Signatures]

Chair

[Signatures]
Acknowledgement

I wish to thank my research partner, Tracy Horntvedt, M.N., who began this process with me and who will continue this process with me as we refine our tool so that we can put it to use. I also wish to thank Joe Montgomery, Ph.D., who served as our resident statistician and mentored us through the process of deciding the appropriate statistics to apply to our data. The faculty of Columbia Basin College also deserve a big round of applause for agreeing to participate in piloting our tool and giving us the data to analyze. Finally, I wish to thank my research project committee, Zana Higgs, Ph.D., Lorrie Dawson, Ph.D. and Renee Hoeksel, Ph.D. for their guidance in this process and excellent suggestions for further research.
Abstract

Critical thinking has long been considered an essential feature of competent nursing practice. This requirement challenges those teaching nursing to find a way to measure this essential element. The National League of Nursing Accrediting Commission (NLN-AC) states that one of the essential program outcomes for nursing programs is that their graduates demonstrate critical thinking (2003). With this mandate in mind, it is important for educators to develop ways of measuring critical thinking in their nursing students.

This project was designed to develop a tool that could be used to measure critical thinking in A.D.N. (associate degree of nursing) students' written care plans. A rubric was developed using Scheffer and Rubenfeld's (2000) seventeen consensus dimensions of critical thinking in nursing practice. This includes ten habits of mind and seven cognitive skills that a critically thinking nurse incorporates into her daily practice. Once the rubric was developed, a group of nine faculty from a small community college in southeastern Washington piloted it by applying it to three different nursing care plans that were randomly selected from a group of twenty possible recent submissions.

Findings demonstrated that there was high agreement between raters, and faculty were able to clearly differentiate Habits of Mind from Cognitive Skills, but they were not able to clearly differentiate between individual concepts. Suggestions for further refinement of the Critical Thinking Rubric include: (a) providing education to enhance a deeper understanding of Habits of Mind and Cognitive Skills, (b) changing the scale on the evaluation tool to allow for a wider choice of responses, and (c) selecting a larger number and a wider variety of student work samples to further enhance reliability and validity of the rubric.
Introduction

Critical thinking has long been considered an essential element in nursing practice. Nurses are expected to make quick decisions that can have major effects on their clients’ outcomes. In addition, they are expected to exhibit wisdom and creativity in their decision-making processes. With these expectations in mind, it is not surprising that schools of nursing are expected to produce graduates who exhibit critical thinking skills. Most schools of nursing purport measurement of critical thinking in their nursing students (Ali, Bantz, & Siktberg, 2005). However, the measurement of these essential thinking skills is subjectively based on direct observation and assumptions made by the instructor (Scheffer and Rubenfeld, 2006). This article reports the development of a grading rubric to quantitatively measure critical thinking.

The National League of Nursing Accrediting Commission (NLN-AC) states that one of the essential program outcomes for nursing programs is that their graduates demonstrate critical thinking (2003). With this requirement in mind, the nursing faculty at Columbia Basin College (CBC), a community college located in Eastern Washington, sought to develop a method to measure critical thinking in their Associate Degree of Nursing (A.D.N.) students’ written work.

Background

There have been many differing views regarding the substance of critical thinking. Many of these views do not refer specifically to critical thinking as it relates to nursing practice. Scheffer and Rubenfeld (2006) conducted a three year study using a Delphi technique to define critical thinking specific to nursing practice. Their study revealed ten habits of mind and seven cognitive skills that are essential to critical thinking in nursing. Habits of mind include: confidence, contextual perspective, creativity, flexibility, inquisitiveness, intellectual integrity,
Critical Thinking Rubric

Intuition, open-mindedness. Cognitive skills include: Analyzing, applying standards, discriminating, information-seeking, logical reasoning, predicting, transforming knowledge.

With critical thinking skills in nursing clearly delineated, the task of measuring them becomes possible. There have been numerous studies regarding the measurement of critical thinking in nursing practice. Several of these studies used general tests of critical thinking skills such as: the California Critical Thinking Skills Test (CCTST), the California Critical Thinking Disposition Inventory (CCTDI) and the Watson Glaser Critical Thinking Appraisal Tool (WGCTA) (Leppa, 1997). The relationship between scores from these inventories and a variety of different factors have been investigated, e.g.: G.P.A., SAT scores, critical thinking dispositions, research utilization habits, cognitive development, age, level of education, years of nursing experience, and areas of expertise (Howenstein, Bilodeau, Brogna, & Good, 1996; Polge, 1995; Snow, Davidson, Evans, & Hansen, 2001; Rapps, Riegel & Glasser, 2001; Profito-McFrath, Hesketh, Lang, & Estabrooks, 2003). These studies found varying degrees of association between critical thinking inventory scores and the designated factors and were inconsistent in their findings.

One study investigated the relationship between critical thinking scores from the CCTST and CCTDI and performance of B.S.N. students on the NCLEX-RN (Giddens & Gloeckner, 2005). The researchers found higher scores on the CCTST for those who passed the NCLEX-RN on both the entry and exit CCTST. Yet another study measured critical thinking of Bachelor of Science in Nursing (B.S.N.) students using the CCTDI and found no relationship between passing the NCLEX-RN, standardized test scores, and CCTDI scores (Stewart & Dempsey, 2005). These researchers also found no significant difference in CCTDI scores between one group of sophomore and senior nursing students. These studies lend credence to the assumption
that standardized tests are not consistently measuring critical thinking as it applies to nursing practice.

Research directly related to measurement of nursing students' critical thinking is rare and studies measuring written works of students are even scarcer. One study used a tool with a Likert scale to evaluate critical thinking skills in students' online responses in three master's level courses (Ali et. al, 2005). These authors based their ten item critical thinking skills instrument on that developed by the American Psychological Association and Facione (1997). They found the students showed adequate critical thinking skills in the areas of analysis and synthesis, but needed improvement in the evaluation domain. Allen, Scheffer and Rubenfeld (2004) conducted research to develop a reliable assessment of clinical critical thinking skills. They taught both the faculty and the students the seventeen essential components described in their definition of critical thinking. They found that asking students to address these skills individually allowed them the opportunity to build a portfolio demonstrating clinical critical thinking (Allen et. al., 2004). These studies typify the beginning of an effort to develop standardized measurements of critical thinking in nursing students. Although this is a daunting task, it is imperative that nursing faculty begin to show evidence of measuring a quality they all proclaim to be fostering in their programs.

Critical Thinking Rubric Development

Written care plans are assigned by the CBC faculty for students to complete after caring for patients in the hospital. Written care plans were selected as a basis for measuring critical thinking because the students are asked to prioritize their care and state the rationale for the decisions they made regarding the care of the patient. After conducting a comprehensive literature review and critical thinking tool analysis, the researchers' adopted the concepts of
Scheffer and Rubenfeld’s book entitled *Critical Thinking Skills and Habits of Mind for Nursing* (2006). The aspects of critical thinking incorporated into the rubric included the habits of mind and cognitive skills deemed important to nursing practice as defined by Scheffer and Rubenfeld (2000). Table I defines each item in the rubric.

Table 1

**Seventeen Consensus Dimensions of Critical Thinking in Nursing (Scheffer and Rubenfeld, 2000.)**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Analyzing:</strong> separating or breaking a whole into parts to discover their nature, function, and relationships.</td>
</tr>
<tr>
<td>2</td>
<td><strong>Applying standards:</strong> judging according to established personal, professional, or social rules or criteria.</td>
</tr>
<tr>
<td>3</td>
<td><strong>Confidence:</strong> assurance of one’s reasoning abilities.</td>
</tr>
<tr>
<td>4</td>
<td><strong>Contextual perspective:</strong> consideration of the whole situation, including relationships, background and environment, relevant to some event.</td>
</tr>
<tr>
<td>5</td>
<td><strong>Creativity:</strong> intellectual inventiveness used to generate, discover, or restructure ideas, imagining alternatives.</td>
</tr>
<tr>
<td>6</td>
<td><strong>Discriminating:</strong> recognizing differences and similarities among things or situations and distinguishing carefully as to category or rank.</td>
</tr>
<tr>
<td>7</td>
<td><strong>Flexibility:</strong> capacity to adapt, accommodate, modify, or change thoughts, ideas, and behaviors.</td>
</tr>
<tr>
<td>8</td>
<td><strong>Information seeking:</strong> searching for evidence, facts, or knowledge by identifying relevant sources and gathering objective, subjective, historical, and current data from those sources.</td>
</tr>
<tr>
<td>9</td>
<td><strong>Inquisitiveness:</strong> an eagerness to know by seeking knowledge and understanding through observation and thoughtful questioning in order to explore possibilities and alternatives.</td>
</tr>
<tr>
<td>10</td>
<td><strong>Intellectual integrity:</strong> seeking the truth through sincere, honest processes, even if the results are contrary to one’s assumptions and beliefs.</td>
</tr>
<tr>
<td>11</td>
<td><strong>Intuition:</strong> insightful sense of knowing without conscious use of reason.</td>
</tr>
<tr>
<td>12</td>
<td><strong>Logical reasoning:</strong> drawing inferences or conclusions that are supported in or justified by evidence.</td>
</tr>
<tr>
<td>13</td>
<td><strong>Open mindedness:</strong> a viewpoint characterized by being receptive to divergent views and sensitive to one’s biases.</td>
</tr>
<tr>
<td>14</td>
<td><strong>Perseverance:</strong> pursuit of a course with determination to overcome obstacles.</td>
</tr>
<tr>
<td>15</td>
<td><strong>Predicting:</strong> envisioning a plan and its consequences.</td>
</tr>
<tr>
<td>16</td>
<td><strong>Self-reflection:</strong> contemplation of a subject, especially one’s assumptions and thinking for the purposes of deeper understanding and self-evaluation.</td>
</tr>
<tr>
<td>17</td>
<td><strong>Transforming knowledge:</strong> changing or converting the condition, nature or form or function of concepts among contexts.</td>
</tr>
</tbody>
</table>
A rubric was developed that listed all concepts and associated definitions with a forced-choice, three point-Likert-measurement scale. The scores included a zero, which reflected the absence of the quality; a one, which reflected the quality was minimally present; and a two, which reflected that the quality was fully present. The faculty reviewer also had the option of selecting a “Not Applicable” box if the reviewer believed that the concept could not be applied to written work.

Review Process

All nine nursing faculty from CBC reviewed selected student care plans using the Critical Thinking Rubric. Of these faculty members, six hold Master’s degrees in Nursing, two individuals hold Master’s degree in related areas, and one person has a Bachelor’s degree in Nursing with a specialized nursing certification.

Three sample written care plans were randomly selected from a total of twenty current submissions from sophomore students who had recently completed a medical/surgical rotation. As students turned in their care plans, the care plans were photocopied and student names were blacked out. After all care plans were photocopied, three care plans were randomly selected from the stack of work and labeled them #1, #2, and #3. Each care plan was then photocopied again for distribution.

The nine faculty members assembled in a large conference room and were given a brief description of the rubric. Faculty were then instructed to read through the rubric and ask any questions for clarification. Faculty were asked to read each care plan and complete the corresponding rubric in sequential order. Faculty were asked not to discuss the care plan or rubric content until after all faculty had completed the evaluations. Faculty were given a total of two hours to complete the three evaluations.
Results of Faculty Use of the Rubric

Tables 2 and 3 show the number of faculty responses for each concept under Habits of Mind and Cognitive Skills. The maximum number of possible responses for each item was 27. Concepts with less than 27 responses were a result of faculty circling "Not Applicable" for that concept (with the exception of Perseverance, in which N = 26 due to one missed response). A low percentage of faculty indicated that the concepts Flexibility, Intuition, and Open-mindedness could be applied to written work.

Table 2

*Number of Responses by Faculty for Concepts under Habits of Mind*

<table>
<thead>
<tr>
<th>Concept</th>
<th>Number of Responses</th>
<th>Percent Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Confidence</td>
<td>21</td>
<td>78%</td>
</tr>
<tr>
<td>2. Contextual Perspective</td>
<td>27</td>
<td>100%</td>
</tr>
<tr>
<td>3. Creativity</td>
<td>26</td>
<td>96%</td>
</tr>
<tr>
<td>4. Flexibility</td>
<td>14</td>
<td>52%</td>
</tr>
<tr>
<td>5. Inquisitiveness</td>
<td>24</td>
<td>85%</td>
</tr>
<tr>
<td>6. Intellectual Integrity</td>
<td>23</td>
<td>85%</td>
</tr>
<tr>
<td>7. Intuition</td>
<td>17</td>
<td>63%</td>
</tr>
<tr>
<td>8. Open-Mindedness</td>
<td>10</td>
<td>37%</td>
</tr>
<tr>
<td>9. Perseverance</td>
<td>18b</td>
<td>69%b</td>
</tr>
<tr>
<td>10. Reflection</td>
<td>21</td>
<td>78%</td>
</tr>
</tbody>
</table>
Table 3

*Number of Responses by Faculty for Concepts under Cognitive Skills*

<table>
<thead>
<tr>
<th>Concept</th>
<th>Number of Responses</th>
<th>Percent Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. Analyzing</td>
<td>27</td>
<td>100%</td>
</tr>
<tr>
<td>12. Applying Standards</td>
<td>25</td>
<td>93%</td>
</tr>
<tr>
<td>13. Discriminating</td>
<td>27</td>
<td>100%</td>
</tr>
<tr>
<td>14. Information Seeking</td>
<td>27</td>
<td>100%</td>
</tr>
<tr>
<td>15. Logical Reasoning</td>
<td>27</td>
<td>100%</td>
</tr>
<tr>
<td>16. Predicting</td>
<td>27</td>
<td>100%</td>
</tr>
<tr>
<td>17. Transforming Knowledge</td>
<td>23</td>
<td>85%</td>
</tr>
</tbody>
</table>

*aMaximum number of responses = 27.

bMaximum number of responses = 26.*
Figure 1 presents the mean scores obtained on each student's care plan (P1, P2, and P3) for each of the assessed concepts. Differentiation was evident for all concepts except Inquisitiveness, Intuition and Perseverance.

Figure 1

Concept Mean Scores by Student Rated

![Graph showing mean scores for P1, P2, and P3 across assessed concepts]

**Reliability: Internal Consistency**

Internal consistency, as measured by Cronbach's alpha, was .91 for the six Habits of Mind concepts of Confidence, Contextual Perspective, Creativity, Inquisitiveness and Intellectual Integrity. Cronbach's alpha was selected to measure internal consistency due its appropriateness when using scores that may have a range of values (Ary et al., 2006). The concepts Flexibility, Intuition, Open-Mindedness and Perseverance were excluded from analysis due to the high number of "Not Applicable" responses. Inter-item correlation values ranged from
.38 to .82, with a mean of .63 (see Table 5). Creativity correlated highly with all other concepts.

Reflection also correlated highly with Contextual Perspective and Inquisitiveness.

Table 6

Inter-item Correlation for Significant Habits of Mind Concepts

<table>
<thead>
<tr>
<th>Concept</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>5</th>
<th>6</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Confidence</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Contextual Perspective</td>
<td>.38</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Creativity</td>
<td>.76</td>
<td>.69</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Inquisitiveness</td>
<td>.47</td>
<td>.61</td>
<td>.76</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Intellectual Integrity</td>
<td>.65</td>
<td>.46</td>
<td>.71</td>
<td>.57</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>10. Reflection</td>
<td>.54</td>
<td>.71</td>
<td>.82</td>
<td>.72</td>
<td>.65</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Cronbach’s alpha for all seven Cognitive Skills was .95. Inter-item correlation values ranged from .51 to .92, with a mean of .72 (see Table 6). Although these seven concepts are a highly reliable set of items, most exhibited very high internal consistency. Applying Standards was the only concept that clearly showed differences. Analyzing also displayed differentiation in respect to Discriminating and Information Seeking, but was more closely correlated with Logical Reasoning, Predicting and Transforming Knowledge.
Table 7

*Inter-item Correlation for Significant Cognitive Skills Concepts*

<table>
<thead>
<tr>
<th>Concept</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. Analyzing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
</tr>
<tr>
<td>12. Applying Standards</td>
<td>0.51</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
</tr>
<tr>
<td>13. Discriminating</td>
<td>0.65</td>
<td>0.54</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
</tr>
<tr>
<td>14. Information Seeking</td>
<td>0.64</td>
<td>0.55</td>
<td>0.78</td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
</tr>
<tr>
<td>14. Logical Reasoning</td>
<td>0.75</td>
<td>0.63</td>
<td>0.75</td>
<td>0.90</td>
<td></td>
<td></td>
<td>1.00</td>
</tr>
<tr>
<td>16. Predicting</td>
<td>0.72</td>
<td>0.60</td>
<td>0.80</td>
<td>0.86</td>
<td>0.83</td>
<td></td>
<td>1.00</td>
</tr>
<tr>
<td>17. Transforming Knowledge</td>
<td>0.70</td>
<td>0.57</td>
<td>0.92</td>
<td>0.81</td>
<td>0.77</td>
<td>0.81</td>
<td>1.00</td>
</tr>
</tbody>
</table>

*Validity*

Analysis of variance (ANOVA) is a test used to analyze differences between mean scores in a study with more than two groups (Ary, Jacobs, Razavieh, & Sorensen, 2006). The ANOVA test states that the total sum of variance is a result of the sum of the variance between groups and the sum of variance within groups. When more than two groups are being studied, it is impossible to determine exactly where the differences exist with ANOVA (Burns & Grove, 2001).

An ANOVA comparison of concept mean scores by student (Table 8) found that three of the seventeen concepts (Confidence, Flexibility, and Open-Mindedness) were not statistically significant among the three students. Despite statistical significant of the other fourteen concepts, the possibility exists that faculty might not have been able to clearly differentiate between all of the concepts in each student's care plan. To determine if faculty could identify differences
between the broader categories of habit of Mind and Cognitive Skills in student care plans, an
ANOV A comparison was conducted (Table 9). The results show statistically significant
differences between the groups.

Table 8

Analysis of Variance Comparison of Concepts by Student

<table>
<thead>
<tr>
<th>Concept</th>
<th>df^a</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Habits of Mind</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Confidence</td>
<td>2, 18</td>
<td>2.28</td>
<td>0.13^b</td>
</tr>
<tr>
<td>2. Contextual Perspective</td>
<td>2, 24</td>
<td>9.6</td>
<td>0.0009</td>
</tr>
<tr>
<td>3. Creativity</td>
<td>2, 23</td>
<td>6.8</td>
<td>0.005</td>
</tr>
<tr>
<td>4. Flexibility</td>
<td>2, 11</td>
<td>1.5</td>
<td>0.26^b</td>
</tr>
<tr>
<td>5. Inquisitiveness</td>
<td>2, 21</td>
<td>5.2</td>
<td>0.01</td>
</tr>
<tr>
<td>6. Intellectual Integrity</td>
<td>2, 20</td>
<td>6.6</td>
<td>0.006</td>
</tr>
<tr>
<td>7. Intuition</td>
<td>2, 14</td>
<td>15.8</td>
<td>0.003</td>
</tr>
<tr>
<td>8. Open-mindedness</td>
<td>2, 7</td>
<td>0.4</td>
<td>0.7^b</td>
</tr>
<tr>
<td>9. Perseverance</td>
<td>2, 15</td>
<td>3.6</td>
<td>0.05</td>
</tr>
<tr>
<td>10. Reflection</td>
<td>2, 18</td>
<td>13.3</td>
<td>0.0003</td>
</tr>
</tbody>
</table>
Table 8 Continued

<table>
<thead>
<tr>
<th>Concept</th>
<th>df^a</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. Analyzing</td>
<td>2, 24</td>
<td>11.1</td>
<td>0.0004</td>
</tr>
<tr>
<td>12. Applying Standards</td>
<td>2, 22</td>
<td>5.7</td>
<td>0.01</td>
</tr>
<tr>
<td>13. Discriminating</td>
<td>2, 24</td>
<td>9.9</td>
<td>0.0007</td>
</tr>
<tr>
<td>14. Information Seeking</td>
<td>2, 24</td>
<td>12.6</td>
<td>0.0002</td>
</tr>
<tr>
<td>15. Logical Reasoning</td>
<td>2, 24</td>
<td>16.0</td>
<td>0.00004</td>
</tr>
<tr>
<td>16. Predicting</td>
<td>2, 24</td>
<td>24.0</td>
<td>0.000002</td>
</tr>
<tr>
<td>17. Transforming Knowledge</td>
<td>2, 20</td>
<td>21.1</td>
<td>0.00001</td>
</tr>
</tbody>
</table>

^aDegrees of freedom between groups, degrees of freedom within groups. ^bNot statistically significant.

Table 9

Analysis of Variance for Habits of Mind and Cognitive Skills by Student

<table>
<thead>
<tr>
<th>Concept Group</th>
<th>df^a</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Habits of Mind</td>
<td>2, 24</td>
<td>13.6</td>
<td>0.001</td>
</tr>
<tr>
<td>Cognitive Skills</td>
<td>2, 24</td>
<td>25.8</td>
<td>0.000001</td>
</tr>
</tbody>
</table>

^aDegrees of freedom between groups, degrees of freedom within groups.
**Interrater Reliability**

Using the Intraclass Correlation Coefficient, interrater reliability was found to be .84 for Habits of Mind and .71 for Cognitive Skills. This shows that there was a high degree of consistency in the measurements across all nine faculty members.

**Suggestions for Refinement of the Critical Thinking Rubric**

The Critical Thinking Rubric only offered faculty a three-point scale on which to score students’ work. Future rubrics should have a four or five-point scale which includes a "middle" or moderate score. The most common comment from faculty after the review process was that they felt forced at times to choose between "minimally present" or "fully present" when they would have liked to have selected "moderately present." Also, if the rubric were to be used to assign a grade to a student, it would be necessary to have a four or five point scale. The nursing care plans that were selected for this study ranged in quality from poor to fair to well done. The difference in quality from paper to paper allowed for straightforward scoring of critical thinking concepts. This raises the question of whether the results would have been very different had the care plans been of very similar quality. This confirms the need for faculty to review a larger number of student papers.

Although faculty had access to concept definitions on the Critical Thinking Evaluation Rubric during the evaluation and were given time to review the definitions and ask questions prior to starting the evaluation, the possibility still existed that faculty had differing ideas of how definitions were actually reflected in the care plans. Debriefing followed by a second round of reviews of another set of care plans would help assure consistency among faculty.
Discussion and Recommendations

This project was a good beginning toward the development of a grading rubric for critical thinking in written works. Although some items were difficult to assess in written works, there were clearly some items that have the ability to be consistently measured. This process needs to be continued with further refinement of the tool and larger sample sizes of written works across nursing curriculums. Our faculty plans to revise the tool by deleting some of the items that were difficult to assess in written works such as flexibility, intuition, open-mindedness, inquisitiveness, perseverance, information seeking, and confidence. Hopefully this revision will also make it easier to more clearly delineate some of the cognitive skills. The Cronbach’s alpha of .95 suggests that some of these items were difficult to differentiate from one another. The next logical step will then be to apply the tool yet again with a larger sample size and a more diverse selection of written works. Future studies might also include measuring differences in scores across the years of nursing education. One might hypothesize that as a nursing student gets closer to graduating, critical thinking in written works would become more evident.

Summary

Measuring critical thinking in the written work of students continues to be a challenge. In this study, Sheffer and Rubenfeld’s Critical Thinking Skills and Habits of Mind for Nursing (2006) provided the framework to evaluate the written care plans of three students in an Associate Degree program. Although there was high agreement between raters, and faculty were able to clearly differentiate Habits of Mind from Cognitive Skills, they were not able to clearly differentiate between individual concepts. Suggestions for further refinement of the Critical Thinking Rubric include: (a) providing education to enhance a deeper understanding of Habits of Mind and Cognitive Skills, (b) changing the scale on the evaluation tool to allow for a wider
choice of responses, and (c) selecting a larger number and a wider variety of student work samples.
References


