Measuring Critical Thinking Student Learning Outcomes

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Student Learning Outcomes

When writing Learning Outcomes, the focus must be on the students and what they will think, know, **do**, or value as a result of participation in the educational environment.

**Specific**

**Measurable**

**Attainable**

**Results-focused**

**Time-focused**
### Cognitive Learning

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Knowledge</strong></td>
<td>to recall or remember facts without necessarily understanding them</td>
<td>articulate, define, indicate, name, order, recognize, relate, recall, reproduce, list, tell, describe, identify, show, label, tabulate, quote</td>
</tr>
<tr>
<td><strong>Comprehensive</strong></td>
<td>to understand and interpret learned information</td>
<td>classify, describe, discuss, explain, express, interpret, contrast, associate, differentiate, extend, translate, review, suggest, restate</td>
</tr>
<tr>
<td><strong>Application</strong></td>
<td>to put ideas and concepts to work in solving problems</td>
<td>apply, compute, give examples, investigate, experiment, solve, choose, predict, translate, employ, operate, practice, schedule</td>
</tr>
<tr>
<td><strong>Analysis</strong></td>
<td>to break information into its components to see interrelationships</td>
<td>analyze, appraise, calculate, categorize, compare, contrast, criticize, differentiate, distinguish, examine, investigate, interpret</td>
</tr>
<tr>
<td><strong>Synthesis</strong></td>
<td>to use creativity to compose and design something original</td>
<td>arrange, assemble, collect, compose, construct, create, design, formulate, manage, organize, plan, prepare, propose, set up</td>
</tr>
<tr>
<td><strong>Evaluation</strong></td>
<td>to judge the value of information based on established criteria</td>
<td>appraise, assess, defend, judge, predict, rate, support, evaluate, recommend, convince, conclude, compare, summarize</td>
</tr>
</tbody>
</table>

### Affective Learning

- appreciate, accept, attempt, challenge, defend, dispute, join, judge, praise, question, share, support
Developing Rubrics

Rubrics

- Disaggregate student learning
- Categorize performance levels
- Define learning outcomes
- Define success
Applying Rubrics to Student Work

• For Outcomes Assessment
  – Rubrics addressing one outcome
  – Rubrics addressing multiple outcomes

• For Grading
  – Address applicable outcomes
  – Sum of criteria = grade
AAC&U VALUE Rubrics

- Intellectual and Practical Skills
  - Inquiry and analysis
  - Critical thinking
  - Creative thinking
  - Written communication
  - Oral communication
  - Reading
  - Quantitative literacy
  - Information literacy
  - Teamwork
  - Problem solving
- Personal and Social Responsibility
  - Civic knowledge and engagement—local and global
  - Intercultural knowledge and competence
  - Ethical reasoning
  - Foundations and skills for lifelong learning
  - Global Learning
- Integrative and Applied Learning
  - Integrative and applied learning
### AAC&U VALUE Rubrics

#### Critical Thinking VALUE Rubric

**Definition**
Critical thinking is a habit of mind characterized by the comprehensive exploration of issues, ideas, artifacts, and events before accepting or formulating an opinion or conclusion.

**Evaluation**
Evaluators are encouraged to assign a score to any work sample or collection of work that does not meet benchmark (full, 1.0) level performance.

<table>
<thead>
<tr>
<th></th>
<th>Capstone</th>
<th>3</th>
<th>2</th>
<th>Benchmark</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation of issues</strong></td>
<td>Issue/problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.</td>
<td>Issue/problem to be considered critically is stated, described, and clarified so that understanding is not severely impeded by omissions.</td>
<td>Issue/problem to be considered critically is stated, but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/or backgrounds unknown.</td>
<td>Issue/problem to be considered critically is stated without clarification or description.</td>
</tr>
<tr>
<td><strong>Evidence</strong></td>
<td>Information is taken from source(s) with enough interpretation/evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.</td>
<td>Information is taken from source(s) with some interpretation/evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.</td>
<td>Information is taken from source(s) without any interpretation/evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as fact without question.</td>
<td>Information is taken from source(s) without any interpretation/evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as fact without question.</td>
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<td><strong>Influence of content and assumptions</strong></td>
<td>Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.</td>
<td>Identifies own and others' assumptions and several relevant contexts when presenting a position.</td>
<td>Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than only own (or vice versa).</td>
<td>Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.</td>
</tr>
<tr>
<td><strong>Student's position (perspective, thesis/hypothesis)</strong></td>
<td>Specific position (perspective, thesis/hypothesis) is imaginative, taking into account the complexities of an issue. Others' points of view are acknowledged.</td>
<td>Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/hypothesis).</td>
<td>Specific position (perspective, thesis/hypothesis) acknowledges different sides of an issue.</td>
<td>Specific position (perspective, thesis/hypothesis) is stated, but is simplistic and obvious.</td>
</tr>
<tr>
<td><strong>Conclusions and related outcomes (implications and consequences)</strong></td>
<td>Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.</td>
<td>Conclusion is logically tied to a range of information, including opposing viewpoints, related outcomes (consequences and implications) are identified clearly.</td>
<td>Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.</td>
<td>Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.</td>
</tr>
</tbody>
</table>
1) The Jewish women have taken off the veil because when their lives began to become intermingled with the surrounding cultures, the external pressures forced them to take them off.
2) The Christian women took off the veil also because of outside influences. However, there are some denominations that still require it.
3) The Muslim woman still wears the veil for the most part because it says in the Quran that is essential for modesty.
Embedding Rubrics in Grading

**Rubric Detail**

You can interact with a rubric to grade in Grid View or List View. More Help

<table>
<thead>
<tr>
<th>Grid View</th>
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<tbody>
<tr>
<td><strong>Name:</strong> Web Assignment Rubric</td>
<td></td>
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- **Developing**
  - Formatting & Grammar: Points: 0 (0%)
  - Clarity: Points: 0 (0%)
  - Critical Thinking: Points: 1 (10%)
  - Social Responsibility: Points: 1 (10%)

- **Sufficient**
  - Formatting & Grammar: Points: 1 (10%)
  - Clarity: Points: 1 (10%)
  - Critical Thinking: Points: 2 (20%)
  - Social Responsibility: Points: 2 (20%)

- **Proficient**
  - Formatting & Grammar: Points: 2 (20%)
  - Clarity: Points: 2 (20%)
  - Critical Thinking: Points: 3 (30%)
  - Social Responsibility: Points: 3 (30%)

Raw Total: 0.00 (of 10.0)

Change the number of points out of 10.0 to

**Feedback**

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  - Font: 3 (12pt)
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  - Font Size: 3 (12pt)
Establishing Targets

• What does success look like?
• Examples
  “80% of students will score a 2.5 out of 3 on the grading rubric.”
  “85% of students will score a 2 out of 3 on each criteria of the rubric.”
  Etc.
# Example Results

<table>
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<th>Outcome</th>
<th>Developing</th>
<th>Sufficient</th>
<th>Proficient</th>
</tr>
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<tbody>
<tr>
<td>Explanation of Issues</td>
<td>47%</td>
<td>23%</td>
<td>30%</td>
</tr>
<tr>
<td>Evidence</td>
<td>23%</td>
<td>57%</td>
<td>20%</td>
</tr>
<tr>
<td>Influence of Context</td>
<td>31%</td>
<td>60%</td>
<td>9%</td>
</tr>
<tr>
<td>Conclusions</td>
<td>81%</td>
<td>18%</td>
<td>1%</td>
</tr>
</tbody>
</table>

Where are the weaker spots?
Where are students doing well?
Is there an issue with my pedagogy?
Is there an issue with my assignment instructions?
Analyzing the Results

Questions to ask:

• Did the students meet the target?
• Was there a particular criteria of the rubric where they underperformed?
• Where in my course was that concept covered?
Improving Curriculum and Pedagogy

• How can I further reinforce that concept?
• What will I change the next time I teach this course?

This is the continuous improvement process!
Discussion
Contact

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For more information on the conference and registration, visit http://assessment.tamu.edu/conference

February 22-24, 2015
College Station, TX

15th Annual Assessment Conference

Plenary Speakers

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• Mr. Brandon Busteed, Gallup, Inc.