Based on assessments from across the curriculum, the vast majority of student performances met or exceeded expected standards for the thinking qualities associated with Critical Thinking 2.

Critical Thinking 2 Assessment Project Report
2014

HCC Assessment Committee
2014 Critical Thinking 2 (CT2) Assessment Project Report

Background
The most significant factor affecting the College’s academic climate—especially, but certainly not solely, for students enrolled in the first two years of baccalaureate education and intending to transfer to an upper division degree program—is the emphasis the College places upon its Essential Competencies (formerly General Education Learning Outcomes). They represent the College’s attempt to answer the following questions:

- What do we want our learners to be able to do?
- In what contexts will we teach them how to do these things?
- What level of proficiency do we require?

Through instructional and assessment practices, HCC reinforces 20 Essential Competencies (ECs) which represent important thinking skills and qualities. These competencies are embedded in a wide variety of courses across the curriculum. The 20 Essential Competencies come from four categories (Critical Thinking, Problem Solving, Diversity, and Communication). Essentially, the College expects its graduates to be able to write and speak clearly and effectively to different audiences for a variety of purposes; to appreciate diversity in a global context; and to solve problems and make critical judgments.

Purpose
In the spring semester of 2013, the College developed a plan to examine assessment practices and student achievement of Essential Competencies across the curriculum during the 2013-2014 academic year. The project focused discussion, training, and data collection on the most commonly assessed Essential Competency - Critical Thinking 2 (CT2). This effort was referred to as the CT2 Assessment Project. The CT2 competency states, Students determine the value of multiple sources or strategies and select those most appropriate in a given context.

The CT2 Assessment Project was aligned with AQIP (the Academic Quality Improvement Program pathway for our accreditation) category 1 (Helping Students Learn) and served the purpose of (1) defining our process for determining, communicating and ensuring the stated common learning outcomes (ECs), and (2) providing results for determining if students possess the knowledge, skills, and abilities that are expected.

Method
Instructors teaching a course with the CT2 competency were asked to complete an assessment form in which they detailed their instructional activity, method of assessment, and student achievement data for Critical Thinking 2. Assessments were submitted from the following disciplines: ART, BUSN, CHEM, CHLD, CRJ, CSCI, DMED, EASC, ECON, EDUC, ENGL, GENS, HLTH, HUMA, MAIN, MATH, NURS, PHI, PSY, RAD, READ, RELI, SOC, and THEA.
The assessment methods and data were examined by a committee of four faculty members during the summer of 2014. To ensure that any data regarding student achievement of CT2 was a true reflection of CT2 thinking qualities, the committee established criteria for determining the validity of the assessments and student achievement data, and compiled student achievement data based only on the assessments that met the validity criteria.

**Validity of Assessment Tool**
The CT2 competency states, *Students determine the value of multiple sources or strategies and select those most appropriate in a given context.* Two components of the competency served as validity criteria for the assessments. An assessment was judged to be valid measure of CT2 if it was clear that students:

- were required to determine the value of multiple sources or strategies, and
- were required to make a choice(s) that was most appropriate in the context of the task. The committee concluded that “most appropriate” implied that some choices were better than others, and the instructor would determine whether a student’s choice was adequate.

**Validity of Student Achievement Data**
Student achievement data were judged to be valid if it was clear that the data was a true reflection of how well students achieved the thinking qualities associated with CT2. That is, data based on additional qualities, such as the students spelling, grammar, ability to follow instructions, paper formatting, etc., were not representative of the CT2 qualities and therefore were excluded from the analysis.

Each assessment form was examined by three of the four committee members. Each member independently examined and classified each form as valid or not valid for CT2 qualities, and separately for the student achievement data. In most cases, there was a consensus among all three members with respect to validity. In cases where judgment was split, the members discussed the assessments and either came to a consensus or approved the judgment based on majority rule. Majority rule was used for approximately four of the 28 forms that were accepted for data collection.

**Results**
At the conclusion of the Spring 2014 semester, 71 assessment forms were received. A total of 1741 student performances of CT2 resulted from those assessments. Thirty-seven assessments met the validity criteria described above. Of those 37 assessments, 28 were determined to contain student achievement data that met the validity criteria for data (Table 1).

<table>
<thead>
<tr>
<th>Table 1: Validity Data</th>
<th>Forms Received</th>
<th>Percent of Total Forms Received</th>
<th>Performances Assessed</th>
<th>Percent of Total Performances Assessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid Assessments of CT2</td>
<td>37</td>
<td>52%</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Valid Data of Student Achievement</td>
<td>28</td>
<td>39%</td>
<td>868</td>
<td>50%</td>
</tr>
<tr>
<td>Total</td>
<td>71</td>
<td>100%</td>
<td>1741</td>
<td>100%</td>
</tr>
</tbody>
</table>

The discussion section of this report addresses reasons for invalid assessment.
**Student Achievement**

Based on the 28 assessments that contained valid data, there were 868 student performances for CT2. When students’ success was evaluated by aggregating data among A, B, and C performance levels, **86% of students demonstrated achievement of CT2 qualities at a satisfactory level or above.** Table 2 indicates student achievement at each of three levels.

<table>
<thead>
<tr>
<th>Level of Achievement</th>
<th>Number of Performances</th>
<th>Percentage of Performances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green (A/B)</td>
<td>555</td>
<td>64%</td>
</tr>
<tr>
<td>Yellow (C)</td>
<td>195</td>
<td>22%</td>
</tr>
<tr>
<td>Red (D/F)</td>
<td>118</td>
<td>14%</td>
</tr>
<tr>
<td>Total</td>
<td>868</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Timing of Assessment and Student Achievement**

The committee examined the timing of assessments to see if students performed better on CT2 over time. Of interest was whether students performed better in the latter parts of the semester due to practice and/or building upon lower level critical thinking skills earlier in the semester.

Due to data constraints, the committee could only examine student achievement by comparing their performance during the first half of the semester with that of the second half of the semester (Table 3). There was no indication that students performed better during the second half of the semester. Student achievement was actually slightly lower during the second half of the semester, but it is unclear if the differences in achievement rates are statistically significant. There are a variety of factors that could relate to this finding. Therefore, the results should not be interpreted as a lack of growth in critical thinking over time.

<table>
<thead>
<tr>
<th>Time of Assessment</th>
<th>Green</th>
<th>Yellow</th>
<th>Red</th>
</tr>
</thead>
<tbody>
<tr>
<td>First half semester (n=333)</td>
<td>66%</td>
<td>25%</td>
<td>9%</td>
</tr>
<tr>
<td>Second half semester (n=338)</td>
<td>57%</td>
<td>26%</td>
<td>17%</td>
</tr>
<tr>
<td>Unspecified or multiple (n=197)</td>
<td>72%</td>
<td>12%</td>
<td>16%</td>
</tr>
</tbody>
</table>

**Discussion**

**Validity of Assessments**

There were several reasons for assessments to fail the validity criteria. One of the most common reasons was a lack of information on the form or the attached assignment for the committee to be certain that the assessment was meeting both of the CT2 validity criteria. For example, in several cases it was unclear if students had to consider multiple sources or strategies. Additionally, there were cases in which students
had no choice to make, or that there was only one choice available to students. To ensure that the data analysis was an accurate reflection of CT2 achievement, the committee chose not to include those assessments. That is not to say that the assessments useless. Almost all of them were creative and interesting assessments, but simply unclear with respect to one or both validity criteria for CT2.

**Validity of Student Achievement Data**
A valid assessment was a prerequisite for valid student achievement data. That prerequisite eliminated 48% of the forms from the data analysis. In some cases, the assessment was valid, but it was clear to the committee that achievement level (green, yellow, or red) was based on more than just CT2 qualities. For example, some achievement designations were based on total points earned from an assignment, which included CT2 qualities, grammar, punctuation, spelling, formatting, etc. Because the data in those cases were not isolated to CT2 qualities, the committee decided not to include it in the final analysis.

Insufficient information regarding an instructor’s scoring of CT2 qualities was another reason that data were rejected. For example, it was unclear if the achievement designations were based only on CT2 qualities. Lastly, some forms simply did not include data from the instructor.

**Conclusions**

*Student Achievement*
Based on valid assessments with valid student achievement data, it appears that 86% of student performances demonstrated achievement of the CT2 qualities (Yellow (C) and Green (A and B) combined). Based on HCC’s letter grade rubric, in which a letter grade of C or higher is considered acceptable, one could conclude that HCC students are achieving the CT2 competency at an acceptable level based on the sample of performances received for this project. It is important to acknowledge that the student achievement data was based only on the assessments collected for this project. Because student demographic information was not collected, there is no way to indicate how much experience students from this project had at the collegiate level, which might be related to the results.

*Strengths*
There were several positive things noted by the committee as a result of completing the CT2 Project. There is a great degree of creativity at HCC when it comes to instruction and assessment. Each member of the committee could recall specific instructional activities and assessments that were engaging, interesting, and creative.

The committee also noted that even though several assessments did not meet the validity criteria, they were still assessing some form of critical thinking. They were also impressed by the amount of effort instructors appeared to put forth in completing the assessment form.

Lastly, even failures ended in success. Some instructors acknowledged in the reflection portion of their assessment form that they came to the conclusion that their assessment was not quite a good fit for CT2 after having examined it closely. When instructors go through the process of completing the assessment form and come to a conclusion that their assessment was not exactly suited for the outcome they
intended to measure, that represents success. The process of completing the assessment form is designed precisely for instructors to evaluate their work, make honest perceptions, and consider how they could do things differently in the future.

**Challenges**

One of the most prevalent pieces of information might be that 48% of the assessment forms were rated as not valid measures of CT2. However, it is important to consider that some of those assessments might have been valid, but were not determined as such due to a lack of information. The greatest challenge faced by the committee was determining whether each assessment met the validity criteria.

**Improvements**

Despite what appeared to be clear criteria, the committee still found it very difficult at times to determine validity, especially for assessments that were occurring outside their area of expertise. For this reason, the committee strongly recommends that more time be taken in the future for instructors, chairs, and program coordinators to discuss the Essential Competencies - to gain a common understanding of those outcomes, discuss ways to assess them, and how to filter out data that is not relevant to the outcome.

While campus training sessions for CT2 and the assessment form were helpful for many attendees during the 2013-14 academic year, the committee believes that each division, or perhaps discipline, should take the initiative to begin and maintain discussions about learning outcomes and assessment.

The next academic year will begin a new project to assess **Diversity 3** across the curriculum. That Essential Competency states:

**Students reflect upon the formation of their own perspectives, beliefs, opinions, attitudes, ideals, and values.**

Discussions within disciplines might include:

- How will we know if students have reflected on the formation of these concepts?
- What is meant by “perspectives”, “beliefs”, “values”, etc.?
- What kind of assignments can we develop to assess this?
- How can we ensure that scoring their achievement of Diversity 3 does not include other aspects of the assignment?
- Is there a common rubric that could be developed to score this competency?

For assessment resources and information, visit the Assessment Committee SharePoint site.

October 10, 2014