CCSU General Education Assessment Retreat

January 2022

❧ Critical Thinking Learning Outcome Results ❧

Artifacts from Fall 2021

Office of Institutional Research and Assessment

Central Connecticut State University

Introduction

As part of our Davis Educational Foundation (DEF) grant, Central Connecticut State University (CCSU) faculty participated in assignment alignment workshops for the Critical Thinking general education learning outcome (General Education Objective 4). This rubric, created by Association of American Colleges and Universities (AAC&U), was adopted for use by CCSU faculty in 2014. (Rubric attached.)

The rubric features five dimensions on a rating scale of 1 to 4, where 1 represents the lowest assessable performance and 4 represents the highest performance. A score of zero is awarded in cases where a student failed to address the dimension. The rubric is grounded in the following 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.

The five dimensions of the rubric include:
- Explanation of the Issues
- Evidence (*selecting and using information to investigate a point of view or conclusion*)
- Influence of Context and Assumptions
- Student's Position (perspective, these/hypothesis)
- Conclusions and Related Outcomes (implications and consequences)

In both Spring 2021 and Fall 2021, a number of faculty participated in DEF workshops to align existing assignments to this rubric. Working in teams, faculty helped each other align their respective assignments to ensure that each dimension of the rubric was evident in the assignment. Those assignments were then given to students; upon completion, the assignments were submitted to the Office of Institutional Research and Assessment for scoring by faculty at the annual winter assessment retreat.

In January 2022, a team of five CCSU faculty scored 130 student artifacts using the Critical Thinking (CT) rubric. The artifacts were contributed from the faculty participating in the DEF workshops and represented student work throughout the Spring 2021 and Fall 2021 semesters. For scoring purposes, only first-year and seniors student artifacts were assessed. This model provides important information, allowing for the comparison on where first-year students start and where seniors are prior to graduation.

The CT artifacts scored at this retreat represented 62 first-year students and 68 senior-level students from ten courses representing all four colleges/schools on campus: College of Liberal Arts and Social Sciences, College of Business, School of Education and Professional Studies, and School of Engineering, Science, and Technology. Each artifact was scored by two different faculty and the scores were averaged.

It is important to note that our general education learning outcome assessment model measures student learning on skills and knowledge that are gained across their courses and academic career. As such, this assessment is not reflective of a single instructor nor a single course, but rather a reflection of where students are in their academic journey.

The results presented on the following pages are from our January 2022 assessment retreat, with comparisons between academic groups and demographic data.

Overall Results

As seen in Figure 1, the overall score for first-year students evaluated on their Critical Thinking artifacts was 1.9 and represents low-level performance. The score for each individual dimension fluctuated between 1.8 and 2.3, with the dimension *Explanation of Issues* having the highest score. The areas needing greatest improvement *are Influence of Context and Assumptions*, *Student's Position*, *Conclusions and Related Outcomes*.

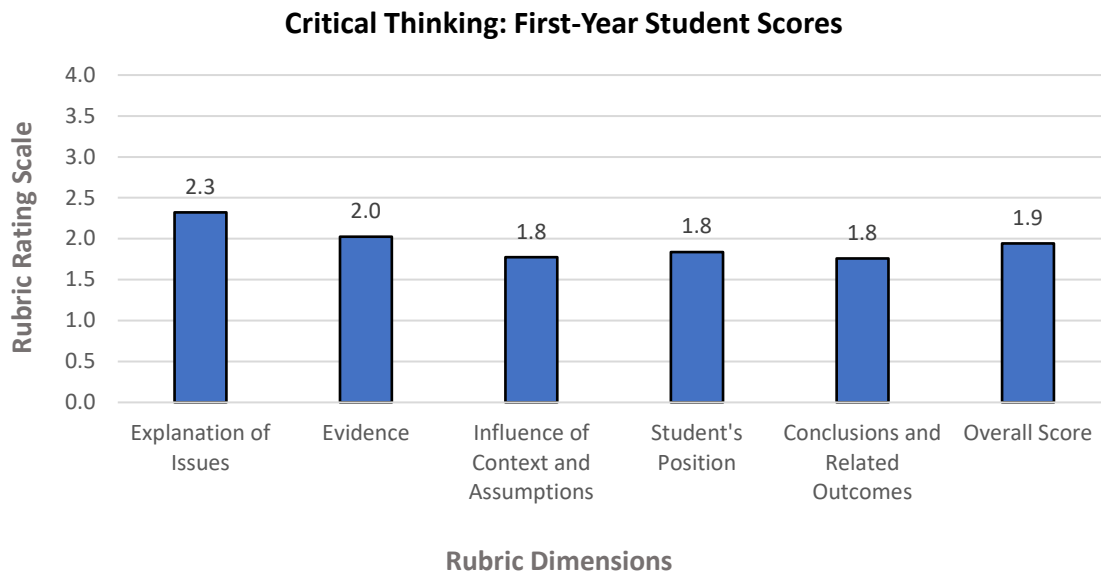**Critical Thinking: First-Year Student Scores**

Figure 1. Overall scores of first-year students for Critical Thinking Rubric, n=62

Results of our senior-level students are shown in Figure 2. Seniors had an overall score of 2.2, which is 0.3 points higher than first-year students. Student performance across all five dimensions showed higher scores than first-year students, with a range of 2.0 to 2.7. Interestingly, senior-level student average scores followed almost the same pattern as first-year students. Seniors scored the highest on *Explanation of Issues* with an overall score of 2.7; like first-year students, the dimensions that scored the lowest were *Influence of Context*, *Student's Position*, and *Conclusions and Related Outcomes*.
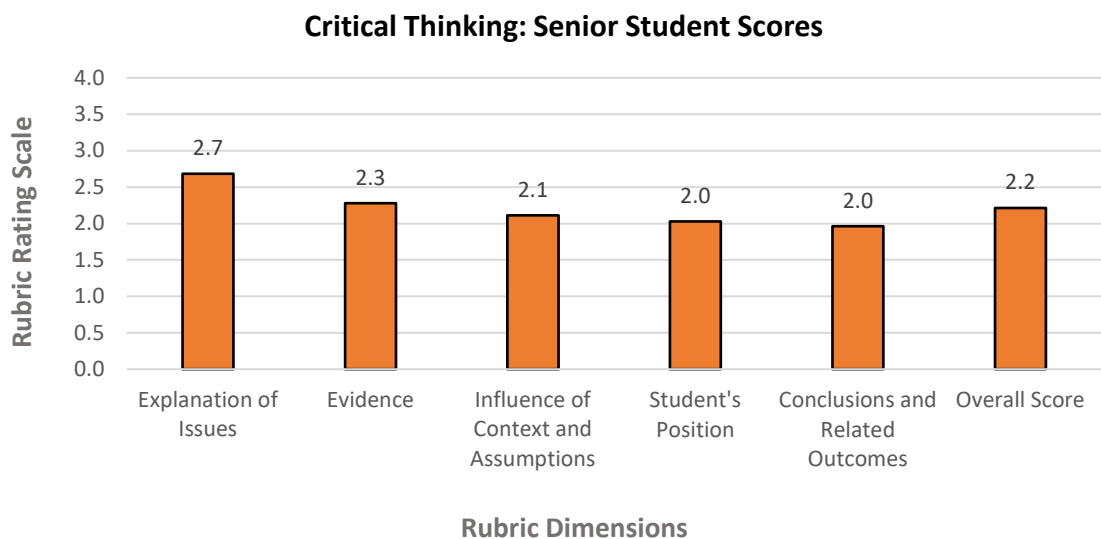
Critical Thinking: Senior Student Scores

Figure 2. Overall scores of senior students for Critical Thinking Rubric, n=68

Data Disaggregated by Gender

When looking at the results of first-year students by gender, male students had higher scores overall and for each dimension (Figure 3). *Explanation of Issues* and *Articulating Student Position* had the largest differential in scores, with male students scoring 0.3 units higher than female students. In fact, male students scored 0.3 points higher on three of the five dimensions.
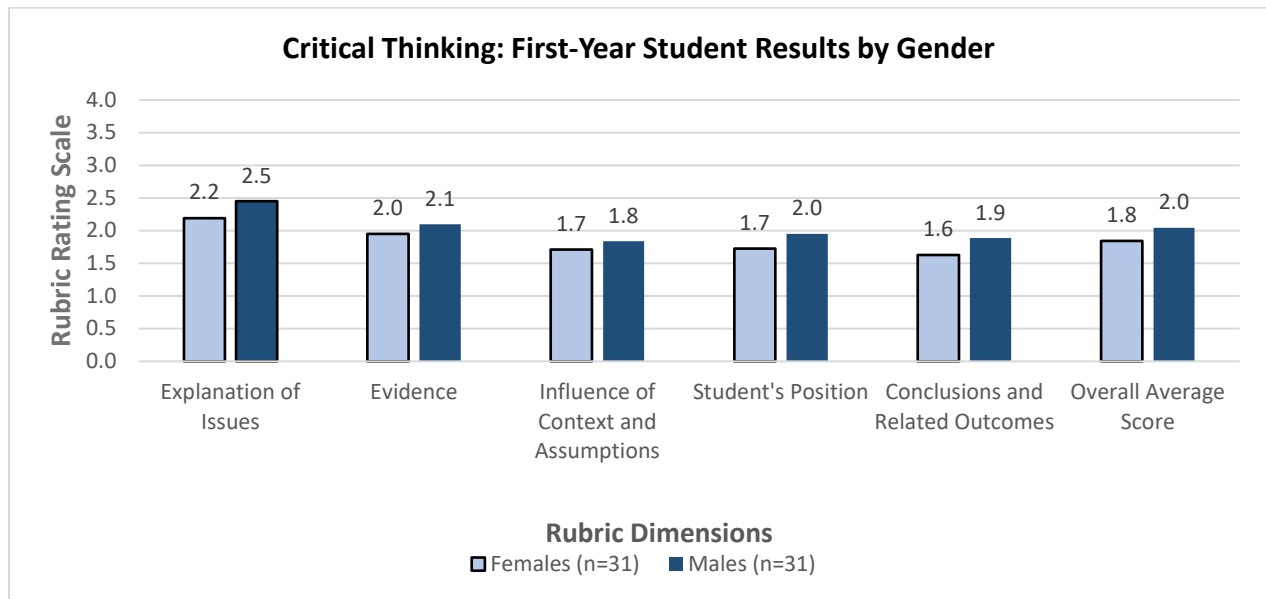

Figure 3. Scores of first-year students by gender

For senior-level students, females scored equal to or higher than males on each of the dimensions. Most notably, senior female students had a score 0.3 points higher than males for both providing evidence and articulating student position. Overall, their scores had a differential of 0.1 points.

Comparing male first-year and seniors we see that first-year students scored higher than seniors in two of the five dimensions, *Evidence* and *Student's Position*. This was not the case for females; senior females scored 0.4 points higher overall and higher on all five dimensions than first-year females. More specifically, the differential between first-year and seniors ranged from a high of 0.5 on *Explanation of Issues* to 0.3 on *Evidence*.
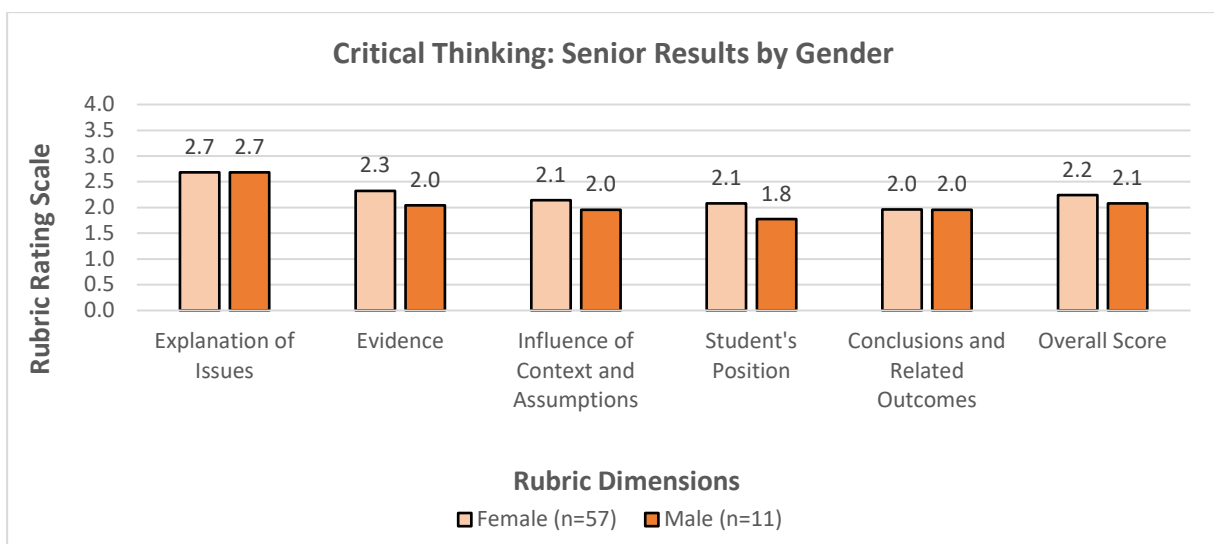

Figure 4. Scores of senior students by gender

Data Disaggregated by Race/Ethnicity

Results based on race/ethnicity for first-year students showed a varied level of performance within each dimension and between groups (see Table 1). The overall score leveled out somewhat with a maximum differential of 0.3 points between race/ethnic groups. Looking at each dimension, all groups performed best on the explanation of issues. Within that dimension, however, the scores fluctuated; Asian students performed notably higher than their counterparts by as much as 0.7 points. *Influence of Context and Assumptions* on the other hand, presented challenges for first-year student groups; this dimension shows the lowest score for Hispanic, Asian, and Black students. White students scored lowest on *Conclusions and Related Outcomes*.

Table 1. *First Year Results by Race/Ethnicity**

	Hispanic (n=10)	Asian (n=6)	Black (n=8)	White (n=34)
Explanation of Issues	2.2	2.8	2.1	2.3
Evidence	1.8	2.0	1.9	2.1
Influence of Context and Assumptions	1.5	1.6	1.6	1.9
Student's Position	1.8	2.0	1.6	1.9
Conclusions and Related Outcomes	1.9	1.9	1.7	1.8
Overall Average Score	1.8	2.1	1.8	2.0

*The sample sizes for Non-Resident Alien, American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, Two or More Races, and Unknown were too small, and their data were not included in the table for privacy concerns.

When looking at the data for seniors based on race/ethnicity, results were similar within each dimension and between groups (Table 2). The overall scores were within 0.2 points of one another; however, in comparing the differentials between race/ethnicity across a dimension, the scores differed by as little as 0.2 points to as high as 0.4 points. Yet, within each population, the differentials from one dimension to the next were more varied. Like first-year students, senior race/ethnic populations performed best on *Explanation of Issues* and were challenged by *Student Position.*

Table 2. *Senior Results by Race/Ethnicity**

	Hispanic (n=12)	Black (n=10)	White (n=42)
Explanation of Issues	2.6	2.6	2.8
Evidence	2.2	2.2	2.4
Influence of Context and Assumptions	1.9	2.1	2.2
Student's Position	1.8	2.1	2.1
Conclusions and Related Outcomes	1.8	2.2	2.0
Overall Average Score	2.1	2.2	2.3

*The sample sizes for Asian, Non-Resident Alien, American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, Two or More Races, and Unknown were too small, and their data were not included in the table for privacy concerns.

Data by Distribution of Scores

Looking at the data by percentage of students in each rubric rating category, the largest percentage of first-year students had a score between 2.00 and 2.99 for all five dimensions, as shown in Figure 5. Again, students performed best on *Explanation of Issues* with 50% having a score between 2.00 and 2.99 and 27% with a score between 3.00 and 3.99. However, in disaggregating the data in this way, first-year students were most challenged on the dimension *Conclusions and Related Outcomes*, with six percent of students having a score less than one.
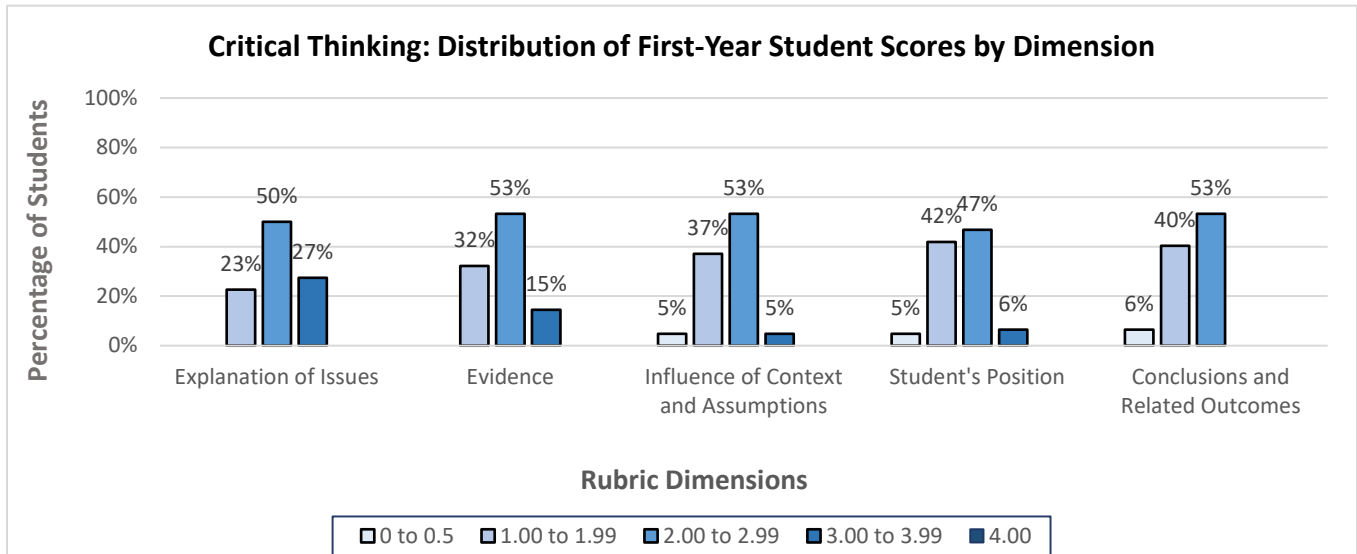
Critical Thinking: Distribution of First-Year Student Scores by Dimension

Figure 5. Distribution of first-year student scores

Similar to first-year students, Figure 6 shows that the largest percentage of senior-level students had a score between 2.00 and 2.99 all five dimensions. However, a greater percentage of seniors had a score between 3.00 to 3.99 on all five dimensions, as much as 17 percentage points higher than first-year students. As well, one or more seniors achieved a score of 4.00 on two dimensions: *Explanation of Issues* and *Student Position*. That said, the dimension of *Student Position* was the greatest challenge for seniors, with 38% having a score ranging from 0.00 to 1.99.
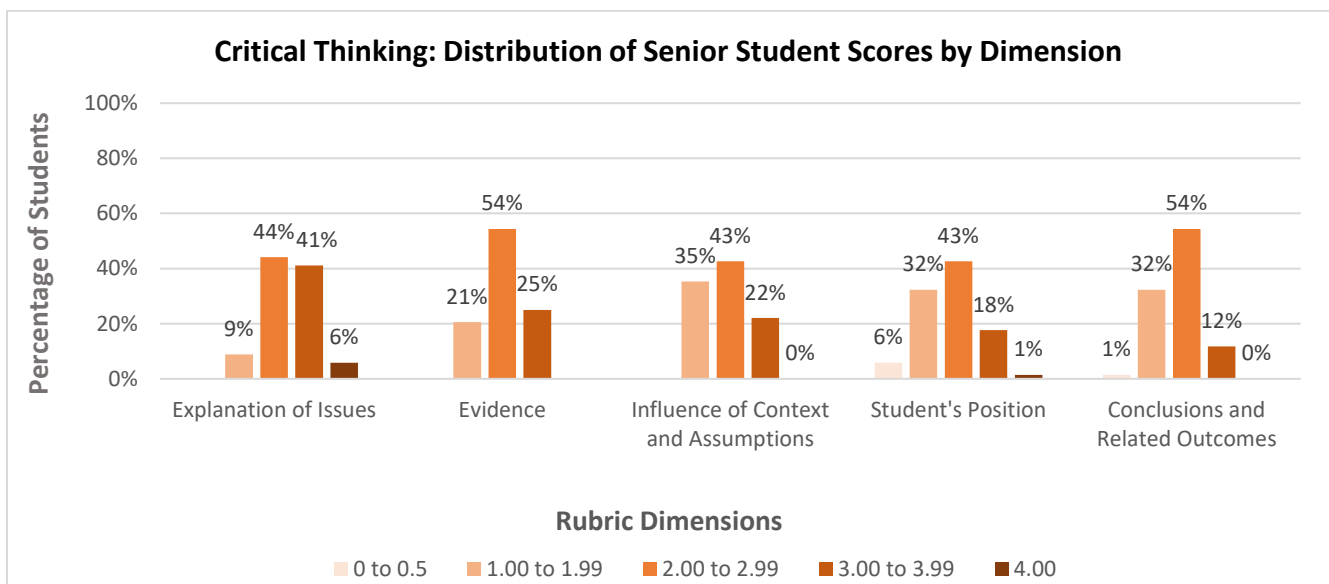
Critical Thinking: Distribution of Senior Student Scores by Dimension

Figure 6. Distribution of senior-level student scores

<u>Conclusion</u>

It is our hope that you find these results both informative and valuable. As with any assessment, the results can be used to validate current practices, applaud successful outcomes, and/or identify areas for further attention.

Some faculty have found the following questions helpful as they review these data:

- Where did our students demonstrate success in Critical Thinking?
- Which Critical Thinking dimensions are clear areas for continued growth?
- How might these data be used to inform teaching and further students' Critical Thinking learning?

To conclude, it is important to note that these scores reflect multiple factors at work and should be viewed within that context. As we continue to seek improvements on the various factors that go into scoring, our ultimate goal is to have CCSU undergraduate students demonstrate enhanced performance for our Critical Thinking Learning Outcome, providing them with a solid foundation for future intellectual and personal pursuits.

Please contact Martie Kaczmarek, Assessment Coordinator, OIRA, if you would like additional information. Email: mkaczmarek@ccsu.edu or call 860-832-2304.

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