**December 5, 2024** 

# General Education Assessment of Artifacts Fall 2021, Spring 2022, Fall 2022 and Spring 2023

Report to the Provost and Vice President for Academic Affairs This paper summarizes the findings from the assessment of 552 artifacts from fall 2021, 343 artifacts from spring 2022, 186 artifacts from fall 2022, and 186 artifacts from spring 2023 against the Alternate Writing, Writing, Analytic Reasoning, Quantitative Reasoning, Information Management, and Scientific Reasoning General Education rubrics.

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#### **EXECUTIVE SUMMARY**

This report provides an analysis of the General Education Assessment conducted over four academic semesters: Fall 2021, Spring 2022, Fall 2022, and Spring 2023. The assessment attempted to evaluate student performance across several General Education competencies: Analytical Reasoning, Writing, Quantitative Reasoning, Information Management, and Scientific Reasoning. A total of 1,267 student artifacts were collected and assessed using rubrics, with faculty from various departments contributing to the evaluation process.

**Key Findings:** Generally, spring scores were higher than fall scores. This could be attributed to a number of factors including sample size, improvement in Student Proficiency, alignment of artifacts with rubrics, stronger cohorts, and increased familiarity with assessment tools. In addition, the results of the assessment revealed that students generally performed at a "Developing" level across most competencies, with slight variations observed between different semesters. Writing emerged as a relative strength, with noticeable improvements in grammar, mechanics. Analytical Reasoning also showed some positive trends, particularly on the dimensions Issue: Identify and explain the issue, problem, or questions, and Evidence: Present, organize, and evaluate sufficient and relevant evidence. However, the data highlighted challenges in Scientific Reasoning, where the majority of students were assessed at or below the "Novice" level in three of the four semesters analyzed. Students struggled with all dimensions of this rubric but performed best on generating or stating a research question and/or experimental objective that can be investigated using scientific methods/scientific reasoning. This would appear to indicate that there needs to be more focused instruction on all the dimensions of this rubric. Fall 2022 Quantitative Reasoning also presented challenges, with students finding it difficult to analyze and interpret quantitative data accurately.

Implications and Recommendations: The assessment findings point to the need for targeted interventions to address the gaps identified in student performance. Scientific Reasoning, in particular, requires immediate attention, with recommendations for curriculum enhancement and additional resources to support student learning in this area. Similarly, improving Quantitative Reasoning skills should be a priority, with suggestions to integrate more applied learning opportunities that allow students to practice and refine these skills. The report also emphasizes the importance of continuous faculty development in rubric-based assessment to ensure consistency and accuracy in evaluating student work. Furthermore, the report recommends sustained collaboration among departments to

strengthen the integration of General Education competencies across the curriculum, ensuring that these essential skills are reinforced throughout students' academic journeys.

**Conclusion:** This general education assessment highlights areas of progress, particularly in Writing and Analytical Reasoning, it also underscores the ongoing challenges in Scientific and Quantitative Reasoning. By addressing these gaps through targeted curriculum enhancements and faculty support, the institution can better equip students with the essential skills needed for academic success and sustained learning over time.

#### INTRODUCTION

The General Education Working Group contributed to the development of this report. This group supports the ongoing assessment work for the college. The Working Group consists of faculty from several academic departments as well as the Director for Policy Analysis for General Education and Student Learning Outcomes. This group has the following charge:

- Recommend policies and procedures for General Education assessment
- Facilitate the assessment process
- Disseminate assessment results, in the form of an annual report, to relevant stakeholders
- Revise the General Education assessment protocol on an ongoing basis as needed
- When appropriate, collaborate with the Senate Committee on Assessment and Institutional Effectiveness.

#### **METHODOLOGY**

In June 2022 13 raters assessed 552 Fall 2021 artifacts and 343 Spring 2022 artifacts several times. In June 2023 9 raters assessed 186 Fall 2022 artifacts and 186 Spring 2023 several times. During each assessment period:

- An email announcement was sent to all QCC faculty requesting that they submit artifacts as part of the General Education Project
- Interested faculty completed an online survey in which they identified which of their courses would be assessed and which rubrics were to be used in the assessment project.
- Faculty submitted artifacts using one of the following methods:
  - i. Submitting electronic copies
  - ii. Placing the artifacts in DropBox

- All faculty raters assessed the artifacts using Outcomes Assessment Project (formerly called Aqua by Watermark) assessment software.
- Faculty who submitted artifacts were sent a confidential memo outlining their students' performance on these General Education rubrics.

#### RESULTS<sup>1</sup>

#### Fall 2021 data<sup>2</sup>

#### **Analytical Reasoning Rubric**

The faculty evaluated 475 artifacts for Analytic Reasoning using a rubric with three dimensions. Each artifact was rated on a 4-point scale. The average score across all the dimensions of the rubric was 2.37, which represents competence at the lower Developing range of the rubric.

Average ratings for each of the three dimensions were as follows, each on the 4-point scale:

- (1) **Identify and explain the issue, problem, or question**: 2.55 (middle Developing)
- (2) **Present, organize, and evaluate sufficient and relevant evidence**: 2.30 (lower Developing)
- (3) Reach an informed conclusion or solution: 2.25 (lower Developing)

# **Writing Rubric**

Faculty evaluated 154 Writing artifacts for which all four dimensions of the rubric were applicable. Thus, each artifact was rated on four dimensions on a 4-point scale. The average score across all four dimensions of the rubric was 2.58, which represents competence at the middle Developing range of the rubric.

Average ratings for each of the four dimensions were as follows, each on the 4-point scale:

- (1) Awareness of audience, purpose, and genre: 2.65 (upper Developing)
- (2) Content development and organization: 2.48 (lower Developing)
- (3) Control of grammar and mechanics: 2.76 (upper Developing)

<sup>2</sup> The numerical scores represent average scores.

<sup>&</sup>lt;sup>1</sup> Trend data is listed in Appendix A

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(4) Evidence and/or sources: 2.42 (lower Developing)

#### Writing Rubric (without the fourth dimension)

Faculty evaluated 321 Writing artifacts for which the fourth dimension (Evidence and/or sources) was not applicable. The average score across the three dimensions of the rubric was 2.57, which represents competence at the middle Developing range of the rubric.

Average ratings for each of the three dimensions were as follows, each on the 4-point scale:

- (1) Awareness of audience, purpose, and genre: 2.59 (middle Developing)
- (2) Content development and organization: 2.41 (lower Developing)
- (3) Control of grammar and mechanics: 2.71 (upper Developing)

#### **Quantitative Reasoning**

The faculty evaluated 172 Quantitative Reasoning artifacts. The average score across the three dimensions of the rubric was 2.44, which represents competence at the lower Developing range of the rubric.

Average ratings for each of the three dimensions were as follows, each on the 4-point scale:

- (1) **Identify and Extract relevant quantitative information**: 2.72 (upper Developing)
- (2) **Application of Quantitative Data to Derive Information**: 2.51 (middle Developing)
- (3) Analysis, explanation, and interpretation of quantitative results: 2.08 (lower Developing)

#### **Information Management**

The faculty evaluated 88 Information Management artifacts. The average score across the three dimensions of the rubric was 2.36, which represents competence at the lower Developing range of the rubric.

Average ratings for each of the three dimensions were as follows, each on the 4-point scale:

- (1) Identify the scope of inquiry or investigation needed for the assignment: 2.57 (middle Developing)
- (2) Navigate digital responses to obtain relevant information: 2.28 (lower Developing)
- (3) Use Information: 2.24 (lower Developing)

#### Scientific Reasoning

The faculty evaluated 126 Scientific Reasoning artifacts. The average score across the five dimensions of the rubric was 0.93, which represents competence at a level below the Novice range of the rubric.

Average ratings for each of the five dimensions were as follows, each on the 4-point scale:

- (1) Generates or states a research question and/or experimental objective that can be investigated using scientific methods/scientific reasoning 1.15 (lower Novice)
- (2) Uses scientific methods/scientific reasoning to devise a hypothesis or thesis statement and/or writes an introduction for the experiment 0.79 (below Novice)
- (3) Gathers evidence/data to test the hypothesis or thesis statement 0.94 (below Novice)
- (4) Analyzes or synthesizes evidence/data to evaluate the hypothesis 0.92 (below Novice)
- (5) Uses scientific reasoning to draw conclusion(s) based on the analysis of the evidence/data 0.86 (below Novice)

Spring 2022 data<sup>3</sup>

#### **Analytical Reasoning Rubric**

The faculty evaluated 274 artifacts for Analytic Reasoning using a rubric with three dimensions. Each artifact was rated on a 4-point scale. The average score across all the dimensions of the rubric was 2.86, which represents competence at the upper Developing range of the rubric.

Average ratings for each of the three dimensions were as follows, each on the 4-point scale:

- (1) Identify and explain the issue, problem, or question: 3.05 (lower Competent)
- (2) Present, organize, and evaluate sufficient and relevant evidence: 2.77 (upper Developing)
- (3) Reach an informed conclusion or solution: 2.75 (upper Developing)

# **Writing Rubric**

Faculty evaluated 66 Writing artifacts for which all four dimensions of the rubric were applicable. Thus, each artifact was rated for four dimensions on a 4-point scale. The average score across all four dimensions of the rubric was 2.70, which represents competence at the upper Developing range of the rubric.

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<sup>&</sup>lt;sup>3</sup> The numerical scores represent average scores.

Average ratings for each of the four dimensions were as follows, each on the 4-point scale:

- (1) Awareness of audience, purpose, and genre: 2.74 (upper Developing)
- (2) Content development and organization: 2.63 (upper Developing)
- (3) Control of grammar and mechanics: 2.87 (upper Developing)
- (4) Evidence and/or sources: 2.55 (middle Developing)

#### Writing Rubric (without the fourth dimension)

Faculty evaluated 208 Writing artifacts for which the fourth dimension (Evidence and/or sources) was not applicable. The average score across the three dimensions of the rubric was 3.11, which represents competence at the lower Competent range of the rubric.

Average ratings for each of the three dimensions were as follows, each on the 4-point scale:

- (1) Awareness of audience, purpose, and genre: 3.20 (lower Competent)
- (2) Content development and organization: 2.99 (upper Developing)
- (3) Control of grammar and mechanics: 3.13 (lower Competent)

#### **Quantitative Reasoning**

The faculty evaluated 77 Quantitative Reasoning artifacts. The average score across the three dimensions of the rubric was 2.13, which represents competence at the lower Developing range of the rubric.

Average ratings for each of the three dimensions were as follows, each on the 4-point scale:

- (1) **Identify and Extract relevant quantitative information**: 2.48 (lower Developing)
- (2) Application of Quantitative Data to Derive Information: 2.14 (lower Developing)
- (3) Analysis, explanation, and interpretation of quantitative results: 1.77 (upper Novice)

# **Information Management**

The faculty evaluated 28 Information Management artifacts. The average score across the three dimensions of the rubric was 2.47, which represents competence at the lower Developing range of the rubric.

Average ratings for each of the three dimensions were as follows, each on the 4-point scale:

(1) Identify the scope of inquiry or investigation needed for the assignment: 2.63 (upper Developing)

- (2) Navigate digital responses to obtain relevant information: 2.45 (lower Developing)
- (3) **Use Information**: 2.34 (lower Developing)

#### Scientific Reasoning

The faculty evaluated 54 Scientific Reasoning artifacts. The average score across the five dimensions of the rubric was 1.39, which represents competence at the lower Novice range of the rubric.

Average ratings for each of the five dimensions were as follows, each on the 4-point scale:

- (1) Generates or states a research question and/or experimental objective that can be investigated using scientific methods/scientific reasoning 1.59 (middle Novice)
- (2) Uses scientific methods/scientific reasoning to devise a hypothesis or thesis statement and/or writes an introduction for the experiment 1.29 (lower Novice)
- (3) Gathers evidence/data to test the hypothesis or thesis statement 1.43 (lower Novice)
- (4) Analyzes or synthesizes evidence/data to evaluate the hypothesis 1.34 (lower Novice)
- (5) Uses scientific reasoning to draw conclusion(s) based on the analysis of the evidence/data 1.28 (lower Novice)

Fall 2022 data<sup>4</sup>

#### **Analytical Reasoning Rubric**

The faculty evaluated 167 artifacts for Analytic Reasoning using a rubric with three dimensions. Each artifact was rated on a 4-point scale. The average score across all the dimensions of the rubric was 2.21, which represents competence at the lower Developing range of the rubric.

Average ratings for each of the three dimensions were as follows, each on the 4-point scale:

- (1) Identify and explain the issue, problem, or question: 2.41 (lower Developing)
- (2) Present, organize, and evaluate sufficient and relevant evidence: 2.14 (lower Developing)
- (3) Reach an informed conclusion or solution: 2.09 (lower Developing)

# **Writing Rubric**

Faculty evaluated 49 Writing artifacts for which all four dimensions of the rubric were

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<sup>&</sup>lt;sup>4</sup> The numerical scores represent average scores.

applicable. Thus, each artifact was rated for four dimensions on a 4-point scale. The average score across all four dimensions of the rubric was 2.60, which represents competence at the upper Developing range of the rubric.

Average ratings for each of the four dimensions were as follows, each on the 4-point scale:

- (1) Awareness of audience, purpose, and genre: 2.67 (upper Developing)
- (2) Content development and organization: 2.55 (middle Developing)
- (3) Control of grammar and mechanics: 2.70 (upper Developing)
- (4) Evidence and/or sources: 2.49 (lower Developing)

#### Writing Rubric (without the fourth dimension)

Faculty evaluated 128 Writing artifacts for which the fourth dimension (Evidence and/or sources) was not applicable. The average score across the three dimensions of the rubric was 2.45, which represents competence at the lower Developing range of the rubric.

Average ratings for each of the three dimensions were as follows, each on the 4-point scale:

- (1) Awareness of audience, purpose, and genre: 2.48 (lower Developing)
- (2) Content development and organization: 2.29 (lower Developing)
- (3) Control of grammar and mechanics: 2.58 (middle Developing)

#### **Quantitative Reasoning**

The faculty evaluated 59 Quantitative Reasoning artifacts. The average score across the three dimensions of the rubric was 1.52, which represents competence at the middle Novice range of the rubric.

Average ratings for each of the three dimensions were as follows, each on the 4-point scale:

- (1) **Identify and Extract relevant quantitative information**: 1.57 (middle Novice)
- (2) **Application of Quantitative Data to Derive Information**: 1.51 (middle Novice)
- (3) Analysis, explanation, and interpretation of quantitative results: 1.47 (lower Novice)

#### **Information Management**

Faculty evaluated 31 Information Management artifacts. The average score across the three dimensions of the rubric was 2.51, which represents competence at the middle Developing range of the rubric.

Average ratings for each of the three dimensions were as follows, each on the 4-point scale:

- (1) Identify the scope of inquiry or investigation needed for the assignment: 2.60 (upper Developing)
- (2) Navigate digital responses to obtain relevant information: 2.46 (lower Developing)
- (3) **Use Information**: 2.46 (lower Developing)

#### **Scientific Reasoning**

The faculty evaluated 59 Scientific Reasoning artifacts. The average score across the five dimensions of the rubric was 1.48, which represents competence at the lower Novice range of the rubric.

Average ratings for each of the five dimensions were as follows, each on the 4-point scale:

- (1) Generates or states a research question and/or experimental objective that can be investigated using scientific methods/scientific reasoning 1.76 (upper Novice)
- (2) Uses scientific methods/scientific reasoning to devise a hypothesis or thesis statement and/or writes an introduction for the experiment 1.49 (lower Novice)
- (3) Gathers evidence/data to test the hypothesis or thesis statement 1.47 (lower Novice)
- (4) Analyzes or synthesizes evidence/data to evaluate the hypothesis 1.34 (lower Novice)
- (5) Uses scientific reasoning to draw conclusion(s) based on the analysis of the evidence/data 1.33 (lower Novice)

Spring 2023 data<sup>5</sup>

# **Analytical Reasoning Rubric**

The faculty evaluated 172 artifacts for Analytic Reasoning using a rubric with three dimensions. Each artifact was rated on a 4-point scale. The average score across all the dimensions of the rubric was 2.60, which represents competence at the upper Developing range of the rubric.

Average ratings for each of the three dimensions were as follows, each on the 4-point scale:

- (1) Identify and explain the issue, problem, or question: 2.74 (upper Developing)
- (2) Present, organize, and evaluate sufficient and relevant evidence: 2.55 (middle Developing)
- (3) Reach an informed conclusion or solution: 2.50 (middle Developing)

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<sup>&</sup>lt;sup>5</sup> The numerical scores represent average scores.

#### **Writing Rubric**

Faculty evaluated 15 Writing artifacts for which all four dimensions of the rubric were applicable. Thus, each artifact was rated for four dimensions on a 4-point scale. The average score across all four dimensions of the rubric was 3.10, which represents competence at the lower Competent range of the rubric.

Average ratings for each of the four dimensions were as follows, each on the 4-point scale:

- (1) Awareness of audience, purpose, and genre: 3.20 (lower Competent)
- (2) Content development and organization: 3.01 (lower Competent)
- (3) Control of grammar and mechanics: 3.18 (lower Competent)
- (4) Evidence and/or sources: 3.02 (lower Competent)

#### Writing Rubric (without the fourth dimension)

The faculty evaluated 157 Writing artifacts for which the fourth dimension (Evidence and/or sources) was not applicable. The average score across the three dimensions of the rubric was 2.69, which represents competence at the upper Developing range of the rubric.

Average ratings for each of the three dimensions were as follows, each on the 4-point scale:

- (1) Awareness of audience, purpose, and genre: 2.70 (upper Developing)
- (2) Content development and organization: 2.57 (middle Developing)
- (3) Control of grammar and mechanics: 2.80 (upper Developing)

# **Information Management**

Faculty evaluated 66 Information Management artifacts. The average score across the three dimensions of the rubric was 2.36, which represents competence at the lower Developing range of the rubric.

Average ratings for each of the three dimensions were as follows, each on the 4-point scale:

- (1) **Identify the scope of inquiry or investigation needed for the assignment:** 2.50 (middle Developing)
- (2) Navigate digital responses to obtain relevant information: 2.33 (lower Developing)
- (3) Use Information: 2.25 (lower Developing)

#### **Scientific Reasoning**

The faculty evaluated 26 Scientific Reasoning artifacts. The average score across the five dimensions of the rubric was 2.77, which represents competence at the upper Developing range of the rubric.

Average ratings for each of the five dimensions were as follows, each on the 4-point scale:

- (1) Generates or states a research question and/or experimental objective that can be investigated using scientific methods/scientific reasoning 2.84 (upper Developing)
- (2) Uses scientific methods/scientific reasoning to devise a hypothesis or thesis statement and/or writes an introduction for the experiment 2.74 (upper Developing)
- (3) Gathers evidence/data to test the hypothesis or thesis statement 2.86 (upper Developing)
- (4) Analyzes or synthesizes evidence/data to evaluate the hypothesis 2.74 (upper Developing)
- (5) Uses scientific reasoning to draw conclusion(s) based on the analysis of the evidence/data 2.69 (upper Developing)

# Analysis of Fall 2021 and Spring 2022 data

#### Four-dimension writing outcome

Writing	Writing Rubric (4 Dimensions)		
	fall 2021	spring 2022	fa21-sp22
Awareness of Audience, Purpose and Genre	2.65	2.74	3.4
Content Development and Organization		2.63	6.0
Control of Grammar and Mechanics	2.76	2.87	4.0
Evidence and/or Sources	2.42	2.55	5.4
Average Across all Dimensions	2.58	2.7	4.7

Scores for the 4-dimension writing rubric increased from fall 2021 to spring 2022, especially on the dimensions of *content development and organization* (6%) and *evidence and/or sources* (5%). The other dimensions also showed an increase by a slightly smaller amount. These changes could be attributed to varying courses and different scorers. In addition, the artifact sample size decreased from 154 artifacts in fall 2021 to 66 artifacts in the spring 2022. However, this decrease in the number of artifacts did not result in a large change in scores from one semester to the other. Overall, the scores were within the middle Developing to upper Developing range.

6.1%.

<sup>&</sup>lt;sup>6</sup> In this report percentage change is the difference resulting from subtracting the data associated with an earlier year (e.g. 2019) from the data associated with the later year (e.g. 2020) and then dividing that difference by the data value associated with the earlier year and multiplying that value by 100 to show it as a percentage. For example, the percentage change from fall 2019 to fall 2020 would be calculated as ((2.97-2.80)/2.80) \*100 which rounded would be

#### Three-dimension writing outcome

Writing Rubric (3 Dimensions)			% change
	fall 2021	spring 2022	fa21-sp22
Awareness of Audience, Purpose and Genre	2.59	3.2	23.6
Content Development and Organization		2.99	24.1
Control of Grammar and Mechanics	2.71	3.13	15.5
Average Across all Dimensions	2.57	3.11	21.0

Scores for the 3-dimension writing rubric showed large increases from fall 2021 to spring 2022. The largest increases were in *Content Development and Organization* (24%), and *Awareness of Audience, Purpose and Genre* (24%). Generally, fall 2021 rubric scores were in the Developing range and in spring 2022 all but one score was in the Competent (3.0 or higher) range of the rubric. It is interesting to see that the 4-dimension writing rubric had much smaller increases in scores from fall 2021 to spring 2022 compared to the 3-dimension writing rubric. These differences might have occurred because there were more 3-dimension writing artifacts assessed compared to 4-dimension artifacts in fall 2021 and spring 2022. Specifically, in fall 2021 321 3-dimension artifacts were assessed and 208 artifacts were assessed in the spring of 2022. This compared to 154 4-dimension writing artifacts being assessed in fall 2021 and 66 4-dimension artifacts assessed in spring 2022.

#### **Analytical Reasoning outcome**

	fall 2021	spring 2022	% change
Issue: Identify and Explain the Issue, Problem, or Question	2.55	3.05	19.6%
Evidence: Present, Organize, and Evaluate Sufficient and Relevant Evidence	2.30	2.77	20.4%
Conclusion: Reach an Informed conclusion or Solution	2.25	2.75	22.2%
Average Across all Dimensions	2.37	2.86	20.8%

From fall 2021 to spring 2022, there were large increases in scores. The large increases in scores may be attributed to there being almost twice as many artifacts assessed against this outcome in Fall 2021 (n=475) compared to Spring 2022 (n=274). In addition, the higher average scores in spring 2022 would appear to indicate that the spring 2022 artifacts were more aligned with the dimensions of the rubric than the fall 2021 artifacts. Finally, these large score increases might be attributed to there being stronger students in the spring 2022 cohort compared to the fall 2021 cohort.

#### **Information Management outcome**

	fall 2021	spring 2022	% change
Identify the Scope of Inquiry or Investigation Needed for the Assignment			
Assignment	2.57	2.63	2.3%
Navigate Digital Resources to Obtain Relevant Information	2.28	2.45	7.4%
Use Information	2.24	2.34	4.5%
Average Across all Dimensions	2.36	2.47	<b>4.</b> 7%

Average scores improved for all Information Management dimensions between fall 2021 and spring 2022. All scores remained in the Developing range on this rubric. It is worth noting that the total number of artifacts scored dropped from 88 in fall 2021 to 28 in spring 2022. Finally, students appear to be more proficient on the *dimension Identify the Scope of Inquiry or Investigation Needed for the Assignment* than on the dimension *Use Information* perhaps suggesting a need for more opportunities to practicing using information.

#### Quantitative Reasoning outcome

	fall 2021	spring 2022	% change
Identify and Extract Relevant Quantitative Information	2.72	2.48	-8.8%
Application of Quantitative Data to Derive Information	2.51	2.14	-14.7%
Analysis, Explanation, and Interpretation of Quantitative Results	2.08	1.77	-14.9%
Average Across all Dimensions	2.44	2.13	-12.7%

In both fall 2021 and spring 2022, on average, student scores decreased on each dimension of the rubric as the dimensions changed from measuring lower-order cognitive skills (LOCS) like identifying and applying to measuring higher-order cognitive skills (HOCS) like analyzing. Interestingly, the percentage change scores demonstrated greater negative change the higher the cognitive skill being assessed. For example, in Fall 2021, two of the three dimension scores were in the mid to upper Developing range of the rubric. In spring 2022, two of the three dimension scores were in the lower Developing range of the rubric and the third score was in the upper Novice range of the rubric.

#### **Scientific Reasoning Outcome**

Scientific Reasoning Rubric (5 Dimensions)			
	fall 2021	spring 2022	% change
Generates or states a research question and/or experimental objective that can be investigated using scientific			
methods/scientific reasoning	1.15	1.59	38.3
Uses scientific methods/scientific reasoning	0.79	1.29	63.3
Gathers evidence/data to test the hypothesis or thesis statement	0.94	1.43	52.1
Analyzes or synthesizes evidence/data to evaluate the hypothesis	0.92	1.34	45.7
Uses scientific reasoning to draw conclusion(s) based on the analysis of the evidence/data	0.86	1.28	48.8
Average Across all Dimensions	0.932	1.386	48.7

In fall 2021, the average outcome performance for scientific reasoning was 0.93. This translates to performance below the Novice range of the rubric. The dimension that had a slightly higher average score (among the five dimensions) was the dimension *Generates or states a research question and/or experimental objective that can be investigated using scientific methods/scientific reasoning* (1.15), the dimension *Uses scientific methods/scientific reasoning* (0.79) had the lowest average score.

In spring 2022, the average score across the five dimensions of the rubric was 1.39. This represents performance at the lower Novice range of the rubric. The dimension that had a slightly higher average score among the five dimensions, was *Generates or states a research question and/or experimental objective that can be investigated using scientific methods/scientific reasoning* (1.59). The dimension, *Uses scientific reasoning to draw conclusion(s) based on the analysis of the evidence/data* (1.28) had the lowest average score.

Comparing the fall 2021 and spring 2022 semesters, the dimension *Uses scientific methods/scientific reasoning* had the largest percent change. However, on every dimension of this rubric there was a large positive percent change from fall 2021 to spring 2022. The average percentage change was 49%. Overall, from fall 2021 to spring 2022, on average scores moved from being below the Novice range to being in the lower to mid Novice range on this rubric.

Although, the average percentage change from fall 2021 to spring 2022 was positive, there is still a need to improve students' performance in scientific reasoning because in both semesters, the average performance was at or below the Novice range of the rubric.

As was the case with the other general education outcomes discussed earlier, the percent change in scores from the fall 2021 to the spring 2022 might be attributed to the type of artifacts that were submitted in fall 2021 compared to what was submitted in spring 2022. For example, more lab reports were submitted in the spring 2022 compared to the fall 2021. Lab reports appear to align better than other artifacts with the dimensions of this rubric. In addition, fall 2021 was the first semester that the scientific reasoning rubric was utilized. It may be the case that artifact scores increased from fall 2021 to spring 2022 because scorers became more familiar with this rubric and faculty submitted artifacts that more closely aligned with the dimensions of the rubric.

# Analysis of Fall 2022 and Spring 2023 data

#### Writing Rubric (4 Dimensions) Outcome

Writing Rubric (4 Dimensions)				
	fall 2022	spring 2023	% change	
Awareness of Audience, Purpose and Genre	2.67	3.20	19.9	
Content Development and Organization	2.55	3.01	18.0	
Control of Grammar and Mechanics	2.7	3.18	17.8	
Evidence and/or Sources	2.49	3.02	21.3	
Average Across all Dimensions	2.6	3.10	19.2	

Scores for the 4-dimension writing rubric showed increases from fall 2022 to spring 2023 across all dimensions (17.8 to 21.3%). The largest increase was in dimension *Evidence and/or Sources* (21%). The changes could be attributed to varying courses and different scorers and student improvement from fall to spring within the same academic year. While the scores for fall 2022 were in the Developing range of this rubric, the spring 2023 scores trended toward the lower Competent range of the rubric. It should be noted that the difference in scores between fall 2022 and spring 2023 might be due to sample size differences. In the fall 2022, 49 artifacts were submitted for assessment. In spring 2023 15 artifacts were submitted. The unequal sample sizes between these two groups of artifacts may have attributed to the large differences in scores between fall 2022 and spring 2023.

#### Writing Rubric (3 Dimensions) Outcome

Writing Rubric (3 Dimensions)			
	fall 2022	spring 2023	% change
Awareness of Audience, Purpose and Genre	2.48	2.70	8.9
Content Development and Organization	2.29	2.57	12.2
Control of Grammar and Mechanics	2.58	2.80	8.5
Average Across all Dimensions	2.45	2.69	9.8

Scores for the 3-dimension writing rubric showed increases from fall 2022 to spring 2023. The largest increase was in the dimension *Content Development and Organization* (12%). These changes could be attributed to varying courses and different scorers, and student improvement from fall to spring within the same academic year. The scores were within the middle to upper Developing range of the rubric.

#### **Analytical Reasoning Outcome**

Analytical Reasoning				
	fall 2022	spring 2023	% change	
Issue: Identify and Explain the Issue, Problem, or Question	2.41	2.74	13.7	
Evidence: Present, Organize, and Evaluate Sufficient and Relevant Evidence	2.14	2.55	19.2	
Conclusion: Reach an Informed conclusion or Solution	2.09	2.5	19.6	
Average Across all Dimensions	2.21	2.6	17.6	

Scores for the analytical reasoning rubric showed increases from fall 2022 to spring 2023. The largest increases were on the dimensions *Evidence: Present, Organize, and Evaluate Sufficient and Relevant Evidence* (19%) and *Conclusion: Reach an Informed conclusion or Solution* (20%). These changes could be attributed to varying courses and different scorers, and student improvement from fall to spring within the same academic year. The scores on this rubric were within Developing range of the rubric.

#### **Information Management Outcome**

Information Management			
	fall 2022	spring 2023	% change
Identify the Scope of Inquiry or Investigation Needed for the Assignment	2.6	2.5	-3.8
Navigate Digital Resources to Obtain Relevant Information	2.46	2.33	-5.3
Use Information	2.46	2.25	-8.5
Average Across all Dimensions	2.51	2.36	-6.0

Scores for the information management rubric showed decreases from fall 2022 to spring 2023. The largest decrease was in the dimension *Use Information* (-9%). In fact, this dimension had the lowest scores for both semesters, suggesting that students may need to be provided with more opportunities to practice this skill in their work. Overall, the scores on this rubric were in the Developing range. It should be noted, that with the exception of spring 2023, in every other semester, information management artifacts were the smallest number of artifacts submitted for this assessment project.

# Quantitative Reasoning Outcome

Quantitative Reasoning			
	fall 2022	spring 2023	% change
Identify and Extract Relevant Quantitative Information	1.57	NA	NA
Application of Quantitative Data to Derive Information	1.51	NA	NA
Analysis, Explanation, and Interpretation of Quantitative Results	1.47	NA	NA
Average Across all Dimensions	1.52	NA	NA

Scores for the Quantitative Reasoning rubric were only measured in Fall 2022. All the dimensions showed scores in the middle to lower Novice range.

#### **Scientific Reasoning Outcome**

Scientific Reasoning					
	fall 2022	spring 2023	% change		
Generates or states a research question and/or experimental objective that can be investigated using scientific methods/scientific reasoning	1.76	2.84	61.4		
Uses scientific methods/scientific reasoning	1.49	2.74	83.9		
Gathers evidence/data to test the hypothesis or thesis statement	1.47	2.86	94.6		
Analyzes or synthesizes evidence/data to evaluate the hypothesis	1.34	2.74	104.5		
Uses scientific reasoning to draw conclusion(s) based on the analysis of the evidence/data	1.33	2.69	102.3		
Average Across all Dimensions	1.48	2.77	87.2		

Scores for the Scientific Reasoning rubric showed large increases from Fall 2022 to Spring 2023. The largest increase was on the dimension *Analyzes or Synthesizes Evidence/data* (105%). Scores across all dimensions improved from the Novice range in fall 2022 to the upper Developing range in spring 2023. One explanation for such large percent changes might be attributed to the type of artifacts submitted in fall 2022 and spring 2023. In the spring 2023 there were many more lab reports submitted and assessed compared to fall 2022.

#### **Summary**

The General Education Assessment report analyzed student performance across four semesters (Fall 2021, Spring 2022, Fall 2022, and Spring 2023) in several General Education competencies: Analytical Reasoning, Writing, Quantitative Reasoning, Information Management, and Scientific Reasoning. A total of 1,267 artifacts were assessed using standardized rubrics.

Key findings from the analysis revealed that Writing and Analytical Reasoning showed improvements, with Writing exhibiting the strongest gains in grammar and mechanics. Students generally performed at a "Developing" level across these competencies, although progress was uneven. Challenges were most significant in Scientific Reasoning, where the majority of students consistently scored at or below Page | 24

the "Novice" level, highlighting a need for enhanced instruction in this area. Quantitative Reasoning also showed difficulties, particularly in data interpretation. Spring semester scores tended to be higher than those from the fall, suggesting possible factors like improved alignment of artifacts, stronger student cohorts, and greater familiarity with assessment tools.

#### Conclusion

The General Education Assessment revealed a mixed picture of student progress. While improvements were noted in Writing and Analytical Reasoning, significant gaps remain in Scientific and Quantitative Reasoning. There were positive trends in Writing and Analytical Reasoning which might suggest that targeted interventions may have occurred in these areas. However, more attention is needed to address persistent deficiencies in Scientific Reasoning and Quantitative Reasoning.

#### **Recommendations for Future Work**

- 1. **Enhance Scientific Reasoning Instruction**: It might be useful to review the curriculum for Scientific Reasoning, with specific emphasis on developing hypotheses, gathering and analyzing data, and drawing conclusions. Perhaps more practical lab-based activities and research projects could help students gain hands-on experience.
- 2. **Targeted Support for Quantitative Reasoning**: Implement additional learning opportunities for students to practice data analysis and quantitative reasoning skills. Applied learning exercises that integrate real-world data analysis might help bridge the gap in higher-order cognitive skills.
- 3. **Expand Faculty Training in Rubric-Based Assessment**: It might be helpful to offer faculty professional development to ensure consistent and accurate evaluation of student artifacts. The training might emphasize alignment of artifacts with rubric dimensions and best practices in assessment.
- 4. **Increase Collaboration Across Departments**: A long term goal might be to strengthen interdisciplinary approaches to general education by fostering collaboration among departments. Ensuring that competencies like Writing, Analytical Reasoning, and Quantitative Reasoning are reinforced throughout various courses could help students build and integrate these skills.
- 5. Address Declining Artifact Submissions: Consider strategies to increase the number of artifact submissions in future assessments to ensure a more comprehensive analysis. Encouraging faculty participation and highlighting the importance of these assessments might lead to a more consistent submission rate.
- 6. **Leverage Spring Semester Success Factors**: Investigate the elements contributing to higher spring semester scores and find ways to apply those strategies to the fall semester. Understanding these success factors could

provide insights into enhancing student engagement and performance year-round.

# APPENDIX A-TREND DATA

#### **GENERAL EDUCATION OUTCOMES LONGITUDINAL RESULTS**

#### **Fall 2021, and Spring 2022**

#### **Analytic Rubric**

Dimension	Issue: Identify and	Evidence: Present,	Conclusion: Reach	Average Across All
	Explain the Issue,	Organize, and	an Informed	Dimensions
	Problem, or	Evaluate	conclusion or	
Semester	Question	Sufficient and	Solution	
		Relevant Evidence		
Fall 2021	2.55	2.30	2.25	2.37
Spring 2022	3.05	2.77	2.75	2.86

#### Writing Rubric (4 Dimensions)

Dimension	Awareness of	Content	Control of	Evidence	Average
	Audience,	Development	Grammar and	and/or	Across all
	Purpose and	and	Mechanics	Sources	Dimensions
Semester	Genre	Organization			
Fall 2021	2.65	2.48	2.76	2.42	2.58
Spring 2022	2.74	2.63	2.87	2.55	2.70

# Writing Rubric (3 Dimensions)

Dimension	Awareness of	Content	Control of	Average Across all
	Audience,	Development and	Grammar and	Dimensions
	Purpose and	Organization	Mechanics	
Semester	Genre			
Fall 2021	2.59	2.41	2.71	2.57
Spring 2022	3.20	2.99	3.13	3.11

# **Quantitative Reasoning Rubric**

Dimension	Identify and	Application of	Analysis,	Average Across all
	Extract Relevant	Quantitative Data	Explanation, and	Dimensions
	Quantitative	to Derive	Interpretation of	
	Information	Information	Quantitative	
Semester			Results	
Fall 2021	2.72	2.51	2.08	2.44
Spring 2022	2.48	2.14	1.77	2.13

# **Information Management Rubric**

Dimension	Identify the Scope of Inquiry or Investigation Needed for the Assignment	Navigate Digital Resources to Obtain Relevant Information	Use Information	Average Across All Dimensions
Semester				
Fall 2021	2.57	2.28	2.24	2.36
Spring 2022	2.63	2.45	2.34	2.47

### **Scientific Reasoning Rubric**

Dimension	Generates or	Uses scientific	Gathers	Analyzes or	Uses scientific	Average
	states a research	methods/scientific	evidence/data	synthesizes	reasoning to	Across All
	question and/or	reasoning to	to test the	evidence/data	draw	Dimensions
	experimental	devise a	hypothesis or	to evaluate	conclusion(s)	
	objective that can	hypothesis or	thesis	the	based on the	
	be investigated	thesis statement	statement	hypothesis	analysis of the	
	using scientific	and/or writes an			evidence/data	
	methods/scientific	introduction for				
Semester	reasoning	the experiment				
Fall 2021	1.15	0.79	0.94	0.92	0.86	0.93
Spring 2022	1.59	1.29	1.43	1.34	1.28	1.39

#### **GENERAL EDUCATION OUTCOMES LONGITUDINAL RESULTS**

#### **Fall 2022, and Spring 2023**

# **Analytic Rubric**

Dimension	Issue: Identify and	Evidence: Present,	Conclusion: Reach	Average Across All
	Explain the Issue,	Organize, and	an Informed	Dimensions
	Problem, or	Evaluate	conclusion or	
Semester	Question	Sufficient and	Solution	
		Relevant Evidence		
Fall 2022	2.41	2.14	2.09	2.21
Spring 2023	2.74	2.55	2.50	2.60

#### Writing Rubric (4 Dimensions)

Dimension	Awareness of	Content	Control of	Evidence	Average
	Audience,	Development	Grammar and	and/or	Across all
	Purpose and	and	Mechanics	Sources	Dimensions
Semester	Genre	Organization			
Fall 2022	2.67	2.55	2.70	2.49	2.60
Spring 2023	3.20	3.01	3.18	3.02	3.10

# Writing Rubric (3 Dimensions)

Dimension	Awareness of	Content	Control of	Average Across all
	Audience,	Development and	Grammar and	Dimensions
	Purpose and	Organization	Mechanics	
Semester	Genre			
Fall 2022	2.48	2.29	2.58	2.45
Spring 2023	2.70	2.57	2.80	2.69

# **Quantitative Reasoning Rubric**

Dimension	Identify and	Application of	Analysis,	Average Across all
	Extract Relevant	Quantitative Data	Explanation, and	Dimensions
	Quantitative	to Derive	Interpretation of	
	Information	Information	Quantitative	
Semester			Results	
Fall 2022	1.57	1.51	1.47	1.52
Spring 2023	NA	NA	NA	NA

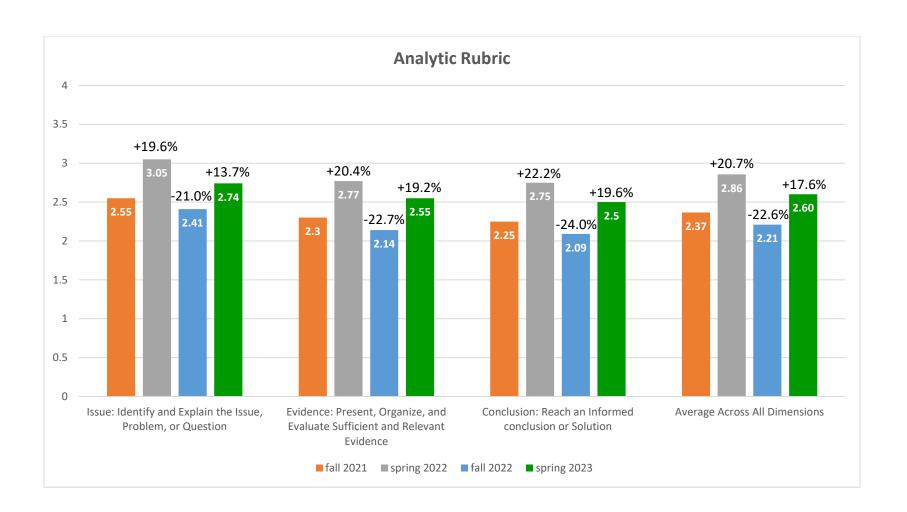
# **Information Management Rubric**

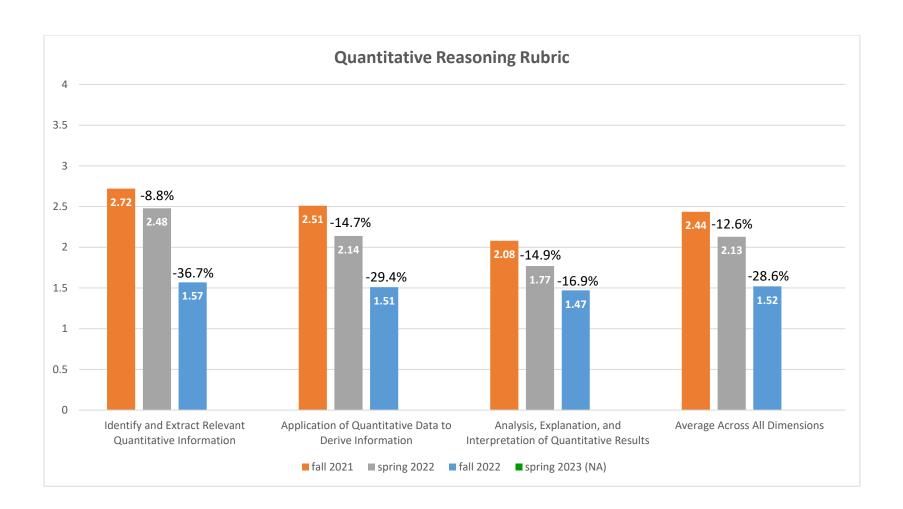
Dimension	Identify the Scope of Inquiry or Investigation Needed for the Assignment	Navigate Digital Resources to Obtain Relevant Information	Use Information	Average Across All Dimensions
Semester				
Fall 2022	2.60	2.46	2.46	2.51
Spring 2023	2.50	2.33	2.25	2.36

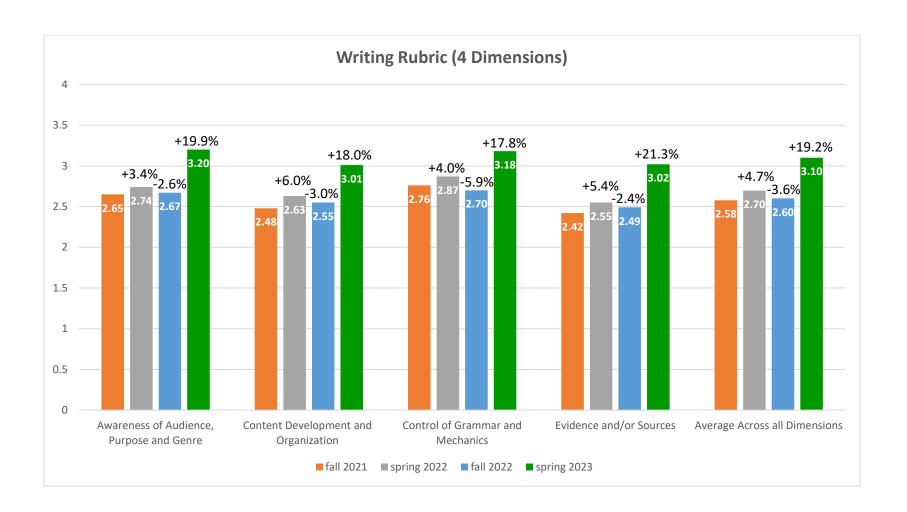
### **Scientific Reasoning Rubric**

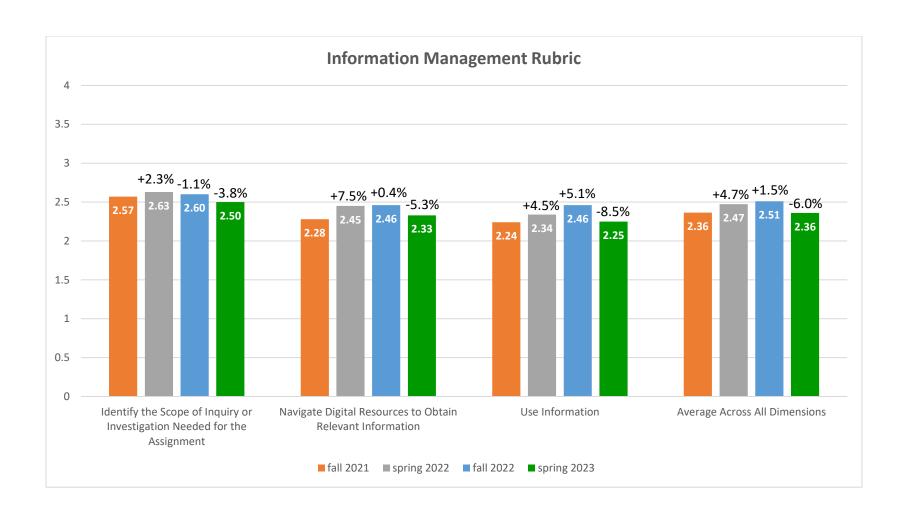
Dimension	Generates or	Uses scientific	Gathers	Analyzes or	Uses scientific	Average
	states a research	methods/scientific	evidence/data	synthesizes	reasoning to	Across All
	question and/or	reasoning to	to test the	evidence/data	draw	Dimensions
	experimental	devise a	hypothesis or	to evaluate	conclusion(s)	
	objective that can	hypothesis or	thesis	the	based on the	
	be investigated	thesis statement	statement	hypothesis	analysis of the	
	using scientific	and/or writes an			evidence/data	
	methods/scientific	introduction for				
Semester	reasoning	the experiment				
Fall 2022	1.76	1.49	1.47	1.34	1.33	1.48
Spring 2023	2.84	2.74	2.86	2.74	2.69	2.77

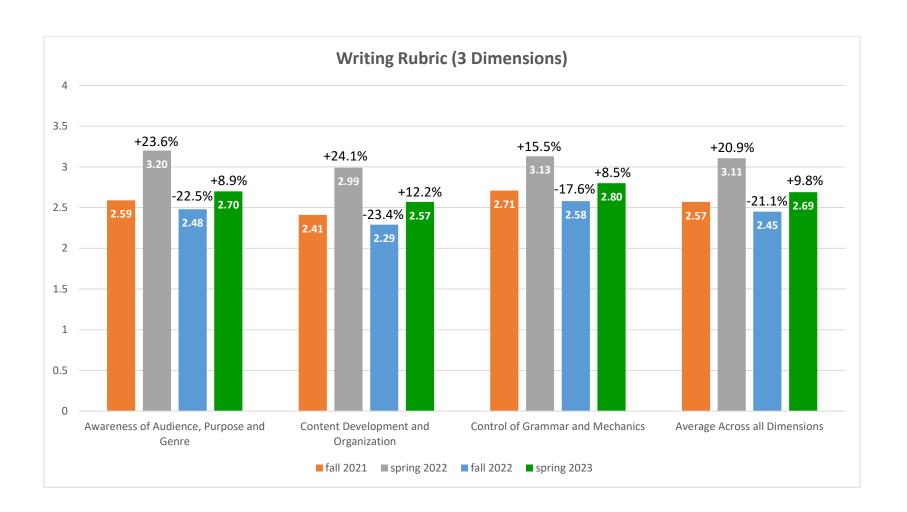
# APPENDIX B- DATA CHARTS

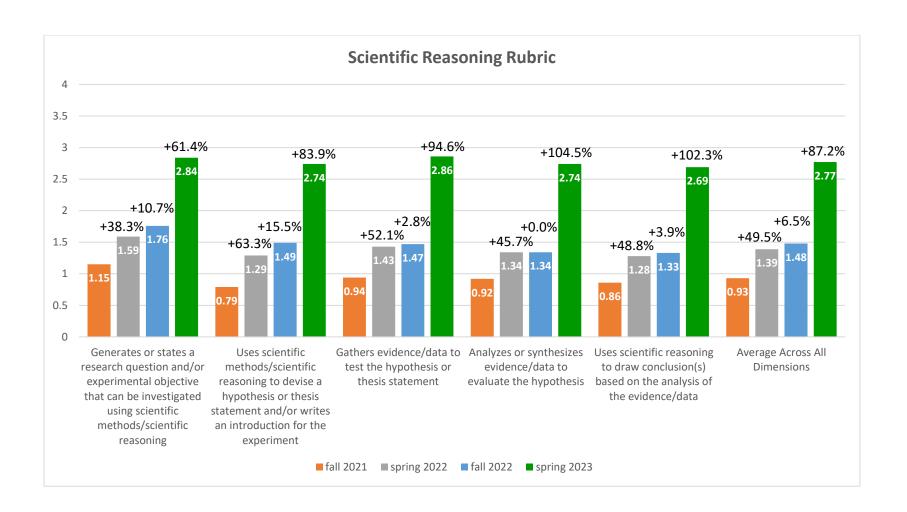












# APPENDIX CCOURSES IN STUDY

# Courses included in the Fall 2021 General Education Assessment Project

BI 201- General Biology I

BI 170- Plants and People

BI 111- Introduction to Human Biology

GE 101- Earth Science

CH 127- Introductory General Chemistry

CH 151- General Chemistry I

CH 128- Introduction to Organic Chemistry

CIS 205- Introduction to Information Systems and Technologies

ENGL 101- English Composition I

ENGL 102- English Composition II

HE 103- Fundamentals of Human Nutrition

HIST 111- Introduction to Medieval and Early Modern Western Civilization

HIST 127- Growth of American Civilization I: Colonial Period Through Reconstruction

HIST 128- Growth of American Civilization II: Reconstruction to the Present

MA 119- College Algebra

MA 336- Statistics

MUS 101- Introduction to Music

PH 101-Principles of Physics

PSYC 101- Psychology

PSYC 215- Child Development

PSYC 230- Abnormal Psychology

SP 211- Speech Communication

# Courses included in the Spring 2022 General Education Assessment Project

BI 171- Plants and People

CH 127- Introductory General Chemistry

CH 151- General Chemistry I

ENGL 101- English Composition I

ENGL 201- Introduction to Literary Studies

LF 401- French and Francophone Cultures Today

LS 402- Latin American and Caribbean Cultures Today

LS 221- Workshop in Reading and Writing for Spanish Heritage Speakers I

HIST 111- Introduction to Medieval and Early Modern Western Civilization

HIST 128- Growth of American Civilization II: Reconstruction to the Present

MA 119- College Algebra

MA 121- Elementary Trigonometry

MA 336- Statistics

MA 441- Analytic Geometry and Calculus I

MUS 101- Introduction to Music

PSYC 215- Child Development

# Courses included in the Fall 2022 General Education Assessment Project

CH 151- General Chemistry I

DAN 111- Introduction to the Art of Dance

ENGL 101- English Composition I

MA 336- Statistics

MUS 101- Introduction to Music

SP 211- Speech Communication

# Courses included in the Spring 2023 General Education Assessment Project

CH 127- Introductory General Chemistry

ENGL 101- English Composition I

ENGL 102- English Composition II

HIST 111- Introduction to Medieval and Early Modern Western Civilization

MUS 101- Introduction to Music

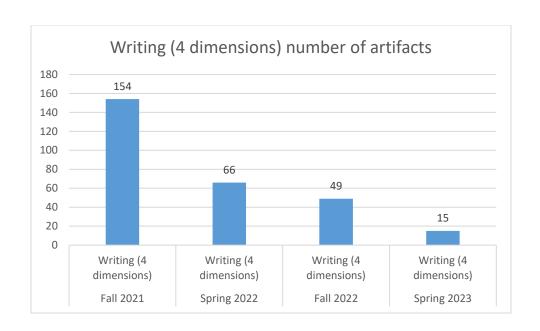
PH 101- Principles of Physics

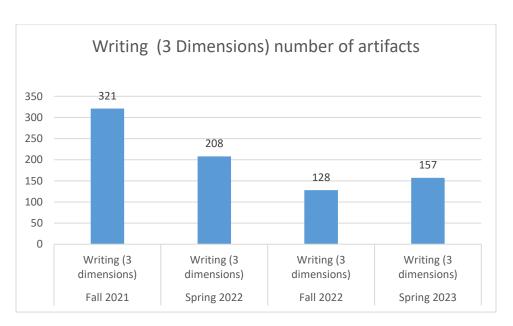
PH 112- Space, Astronomy, and Our Universe Laboratory

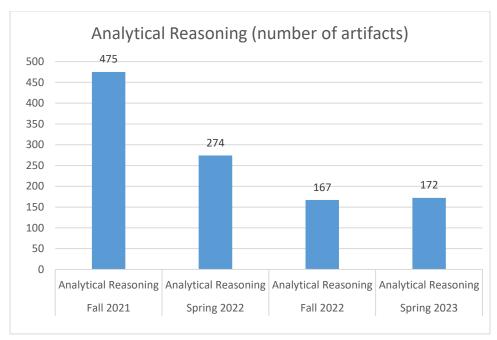
PSYC 215- Child Development

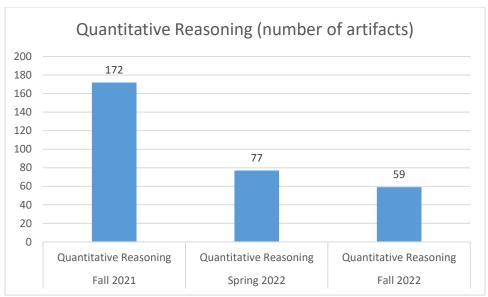
PSYC 201- Research Methods in Psychology

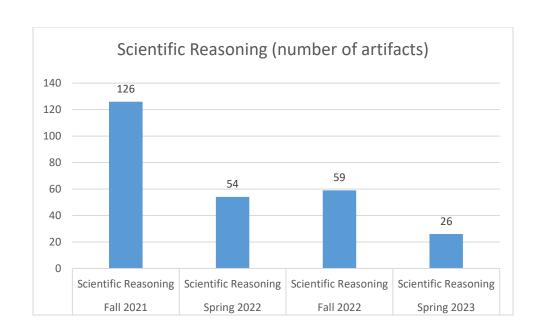
# APPENDIX DNUMBER OF ARTIFACT PER OUTCOME

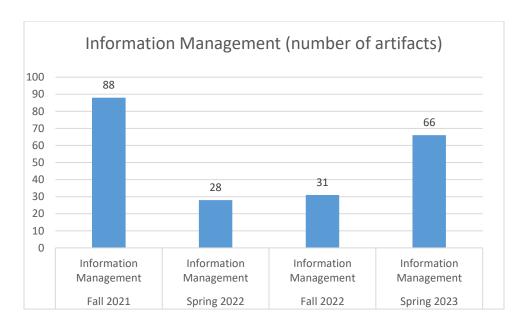












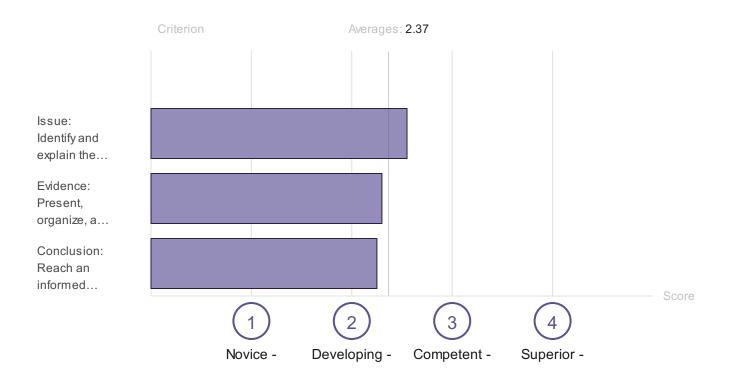
# APPENDIX E-RUBRIC RESULTS

# FALL 2021

Filtering by		
Assignment Data	Assignment	AII
Courses	Course	AII
	Course Section	All

Viewing by All Criteria

# AVERAGE BY CRITERION



Average by Criterion chart details

Issue: Identify and explain the issue, problem, or question.

Average Score: 2.55

Number of Submissions: 475

Number of Scores: 950

Evidence: Present, organize, and evaluate sufficient and relevant evidence.

Average Score: 2.3

Number of Submissions: 475

Number of Scores: 950

Conclusion: Reach an informed conclusion or solution.

Average Score: 2.25

Number of Submissions: 475

Number of Scores: 950

# SCORE DISTRIBUTION BY CRITERION



Score Distribution by Criterion chart details

Issue: Identify and explain the issue, problem, or question.

Maximum Score: 4 Minimum Score: 0 Median Score: 2.5

Number Of Submissions: 475

Evidence: Present, organize, and evaluate sufficient and relevant evidence.

Maximum Score: 4 Minimum Score: 0 Median Score: 2.5

Number Of Submissions: 475

Conclusion: Reach an informed conclusion or solution.

Maximum Score: 4 Minimum Score: 0 Median Score: 2.5

Number Of Submissions: 475

Filtering by		
Assignment Data	Assignment	All
Courses	Course	All
	Course Section	All

Viewing by All Criteria

# AVERAGE BY CRITERION



Average by Criterion chart details

# Awareness of Audience, Purpose, and Genre

Average Score: 2.65

Number of Submissions: 154

Number of Scores: 308

# **Content Development and Organization**

Average Score: 2.48

Number of Submissions: 154

Number of Scores: 308

#### **Control of Grammar and Mechanics**

Average Score: 2.76

Number of Submissions: 154

Number of Scores: 308

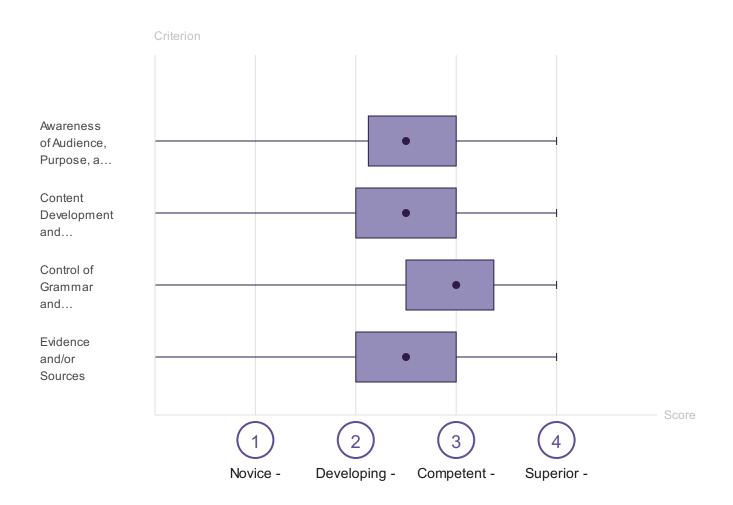
#### **Evidence and/or Sources**

Average Score: 2.42

Number of Submissions: 154

Number of Scores: 308

# SCORE DISTRIBUTION BY CRITERION



Score Distribution by Criterion chart details

# Awareness of Audience, Purpose, and Genre

Maximum Score: 4 Minimum Score: 0 Median Score: 2.5

Number Of Submissions: 154

# **Content Development and Organization**

Maximum Score: 4 Minimum Score: 0 Median Score: 2.5

Number Of Submissions: 154

#### **Control of Grammar and Mechanics**

Maximum Score: 4 Minimum Score: 0 Median Score: 3

Number Of Submissions: 154

### **Evidence and/or Sources**

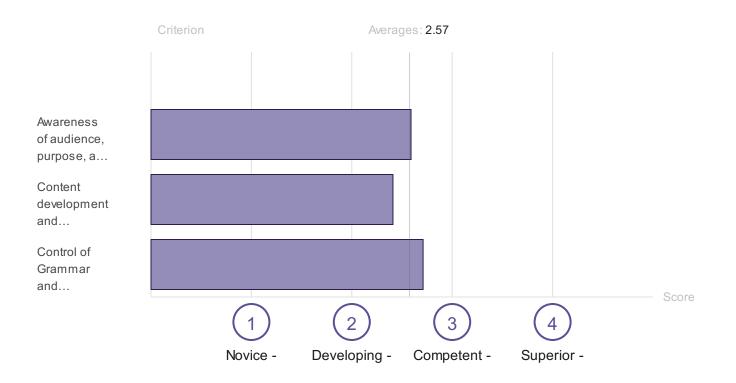
Maximum Score: 4 Minimum Score: 0 Median Score: 2.5

Number Of Submissions: 154

Filtering by		
Assignment Data	Assignment	All
Courses	Course	All
	Course Section	All

Viewing by All Criteria

# AVERAGE BY CRITERION



Average by Criterion chart details

# Awareness of audience, purpose, and genre

Average Score: 2.59

Number of Submissions: 321

Number of Scores: 642

# Content development and organization

Average Score: 2.41

Number of Submissions: 321

Number of Scores: 642

#### **Control of Grammar and Mechanics**

Average Score: 2.71

Number of Submissions: 321

Number of Scores: 642

# SCORE DISTRIBUTION BY CRITERION



Score Distribution by Criterion chart details

# Awareness of audience, purpose, and genre

Maximum Score: 4 Minimum Score: 0 Median Score: 2.5

Number Of Submissions: 321

# Content development and organization

Maximum Score: 4 Minimum Score: 0 Median Score: 2.5

Number Of Submissions: 321

#### **Control of Grammar and Mechanics**

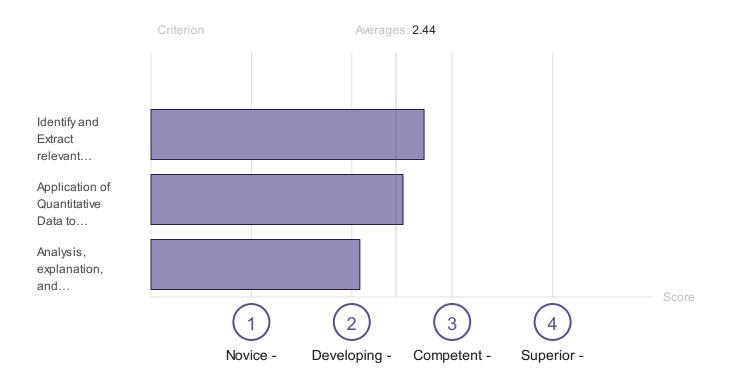
Maximum Score: 4 Minimum Score: 0 Median Score: 3

Number Of Submissions: 321

Filtering by		
Assignment Data	Assignment	All
Courses	Course	All
	Course Section	All

Viewing by All Criteria

# AVERAGE BY CRITERION



Average by Criterion chart details

# Identify and Extract relevant quantitative information

Average Score: 2.72

Number of Submissions: 172

Number of Scores: 331

# **Application of Quantitative Data to Derive Information**

Average Score: 2.51

Number of Submissions: 172

Number of Scores: 331

# Analysis, explanation, and interpretation of quantitative results.

Average Score: 2.08

Number of Submissions: 172

Number of Scores: 331

# SCORE DISTRIBUTION BY CRITERION



Score Distribution by Criterion chart details

# Identify and Extract relevant quantitative information

Maximum Score: 4 Minimum Score: 0 Median Score: 3

Number Of Submissions: 172

# **Application of Quantitative Data to Derive Information**

Maximum Score: 4 Minimum Score: 0 Median Score: 2.5

Number Of Submissions: 172

# Analysis, explanation, and interpretation of quantitative results.

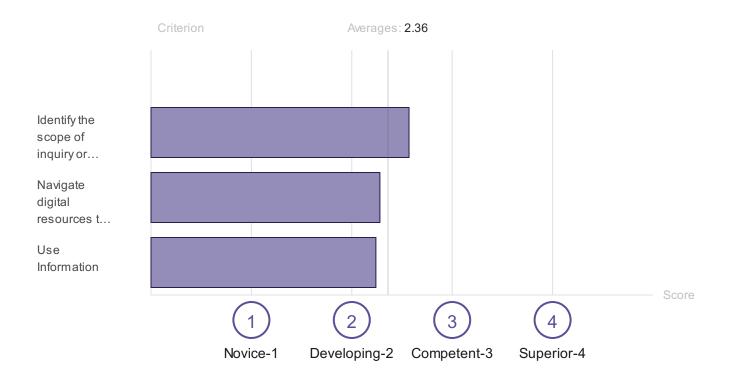
Maximum Score: 4 Minimum Score: 0 Median Score: 2

Number Of Submissions: 172

Filtering by		
Assignment Data	Assignment	AII
Courses	Course	AII
	Course Section	All

Viewing by All Criteria

#### AVERAGE BY CRITERION



Average by Criterion chart details

#### Identify the scope of inquiry or investigation needed for the assignment.

Average Score: 2.57

Number of Submissions: 88 Number of Scores: 176

#### Navigate digital resources to obtain relevant Information

Average Score: 2.28

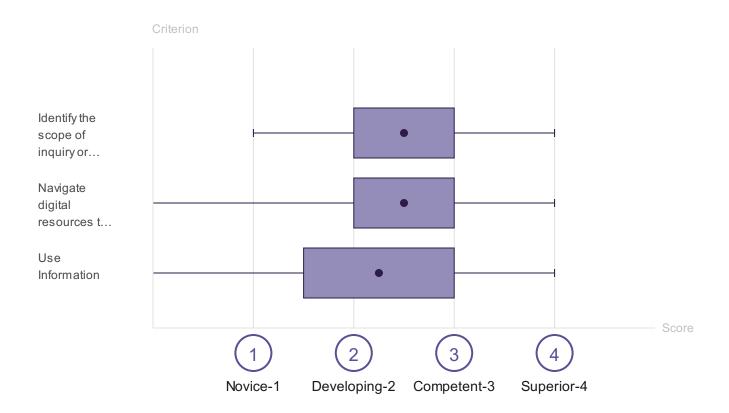
Number of Submissions: 88 Number of Scores: 176

#### **Use Information**

Average Score: 2.24

Number of Submissions: 88 Number of Scores: 176

#### SCORE DISTRIBUTION BY CRITERION



Score Distribution by Criterion chart details

#### Identify the scope of inquiry or investigation needed for the assignment.

Maximum Score: 4 Minimum Score: 1 Median Score: 2.5

Number Of Submissions: 88

#### Navigate digital resources to obtain relevant Information

Maximum Score: 4 Minimum Score: 0 Median Score: 2.5

Number Of Submissions: 88

#### **Use Information**

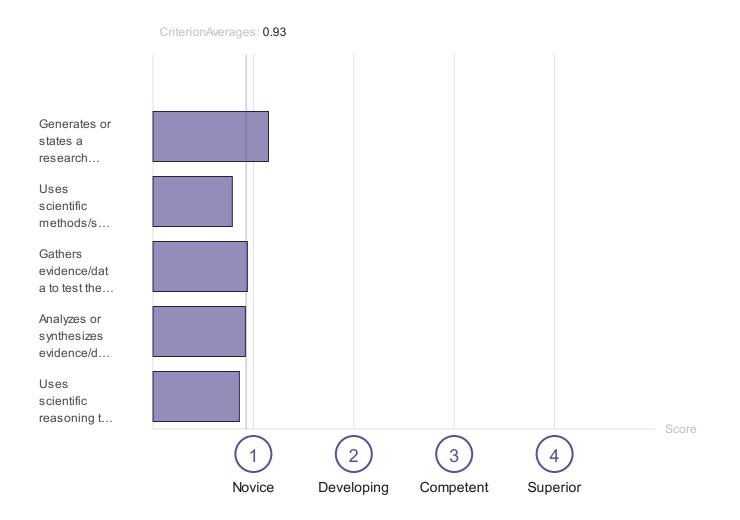
Maximum Score: 4 Minimum Score: 0 Median Score: 2.25

Number Of Submissions: 88

Filtering by		
Assignment Data	Assignment	All
Courses	Course	All
	Course Section	All

Viewing by All Criteria

#### AVERAGE BY CRITERION



Average by Criterion chart details

# Generates or states a research question and/or experimental objective that can be investigated using scientific methods/scientific reasoning

Average Score: 1.15

Number of Submissions: 126

Number of Scores: 252

#### Uses scientific methods/scientific reasoning

Average Score: 0.79

Number of Submissions: 126

Number of Scores: 252

#### Gathers evidence/data to test the hypothesis or thesis statement

Average Score: 0.94

Number of Submissions: 126

Number of Scores: 252

#### Analyzes or synthesizes evidence/data to evaluate the hypothesis

Average Score: 0.92

Number of Submissions: 126

Number of Scores: 252

#### Uses scientific reasoning to draw conclusion(s) based on the analysis of the evidence/data

Average Score: 0.86

Number of Submissions: 126

Number of Scores: 252

#### SCORE DISTRIBUTION BY CRITERION



Score Distribution by Criterion chart details

# Generates or states a research question and/or experimental objective that can be investigated using scientific methods/scientific reasoning

Maximum Score: 3.5 Minimum Score: 0 Median Score: 1

Number Of Submissions: 126

#### Uses scientific methods/scientific reasoning

Maximum Score: 3.5 Minimum Score: 0 Median Score: 0

Number Of Submissions: 126

#### Gathers evidence/data to test the hypothesis or thesis statement

Maximum Score: 3.5 Minimum Score: 0 Median Score: 0.5

Number Of Submissions: 126

#### Analyzes or synthesizes evidence/data to evaluate the hypothesis

Maximum Score: 3.5 Minimum Score: 0 Median Score: 0.5

Number Of Submissions: 126

#### Uses scientific reasoning to draw conclusion(s) based on the analysis of the evidence/data

Maximum Score: 3.5 Minimum Score: 0 Median Score: 0

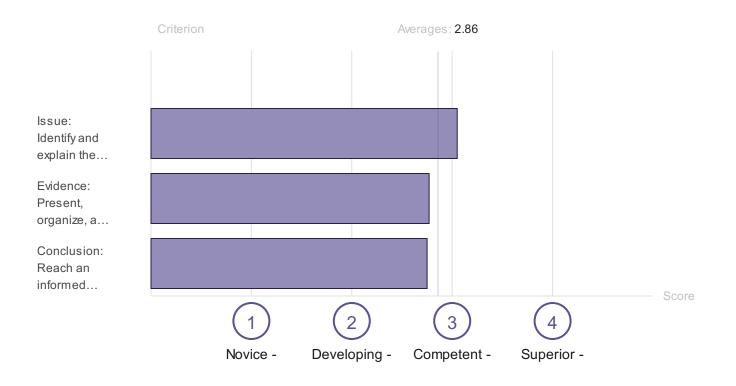
Number Of Submissions: 126

# Spring 2022

Filtering by		
Assignment Data	Assignment	AII
Courses	Course	AII
	Course Section	All

Viewing by All Criteria

#### AVERAGE BY CRITERION



Average by Criterion chart details

Issue: Identify and explain the issue, problem, or question.

Average Score: 3.05

Number of Submissions: 274

Number of Scores: 823

Evidence: Present, organize, and evaluate sufficient and relevant evidence.

Average Score: 2.77

Number of Submissions: 274

Number of Scores: 823

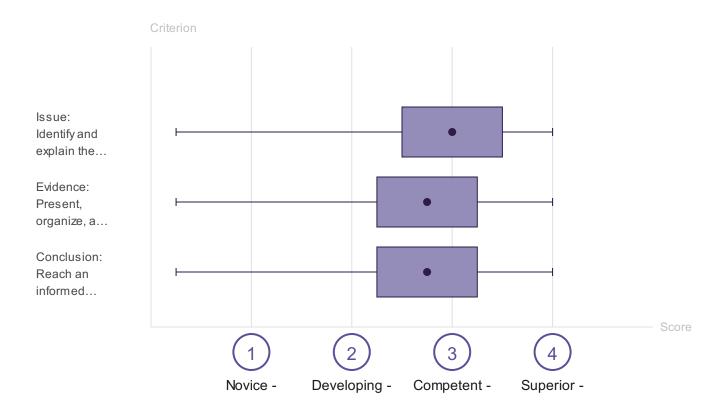
Conclusion: Reach an informed conclusion or solution.

Average Score: 2.75

Number of Submissions: 274

Number of Scores: 823

#### SCORE DISTRIBUTION BY CRITERION



Score Distribution by Criterion chart details

Issue: Identify and explain the issue, problem, or question.

Maximum Score: 4
Minimum Score: 0.25
Median Score: 3

Number Of Submissions: 274

Evidence: Present, organize, and evaluate sufficient and relevant evidence.

Maximum Score: 4 Minimum Score: 0.25 Median Score: 2.75

Number Of Submissions: 274

Conclusion: Reach an informed conclusion or solution.

Maximum Score: 4 Minimum Score: 0.25 Median Score: 2.75

Number Of Submissions: 274

Filtering by		
Assignment Data	Assignment	All
Courses	Course	All
	Course Section	All

Viewing by All Criteria

#### AVERAGE BY CRITERION



Average by Criterion chart details

#### Awareness of Audience, Purpose, and Genre

Average Score: 2.74

Number of Submissions: 66 Number of Scores: 264

#### **Content Development and Organization**

Average Score: 2.63

Number of Submissions: 66 Number of Scores: 264

#### **Control of Grammar and Mechanics**

Average Score: 2.87

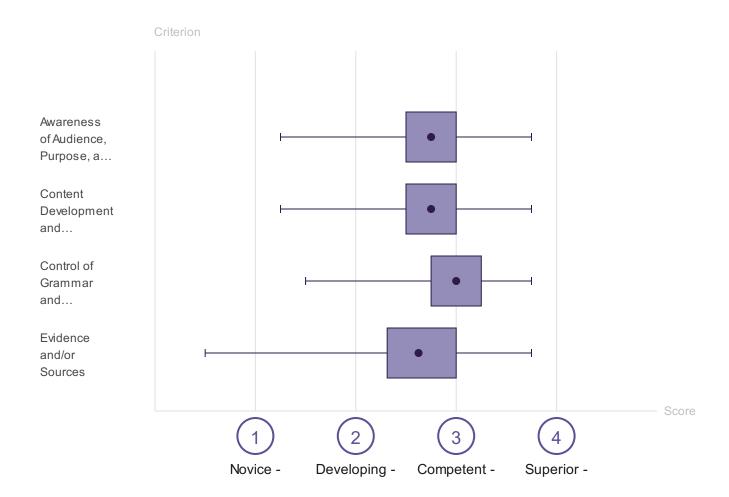
Number of Submissions: 66 Number of Scores: 264

#### **Evidence and/or Sources**

Average Score: 2.55

Number of Submissions: 66 Number of Scores: 264

#### SCORE DISTRIBUTION BY CRITERION



Score Distribution by Criterion chart details

#### Awareness of Audience, Purpose, and Genre

Maximum Score: 3.75 Minimum Score: 1.25 Median Score: 2.75

Number Of Submissions: 66

#### **Content Development and Organization**

Maximum Score: 3.75 Minimum Score: 1.25 Median Score: 2.75

Number Of Submissions: 66

#### **Control of Grammar and Mechanics**

Maximum Score: 3.75 Minimum Score: 1.5 Median Score: 3

Number Of Submissions: 66

#### **Evidence and/or Sources**

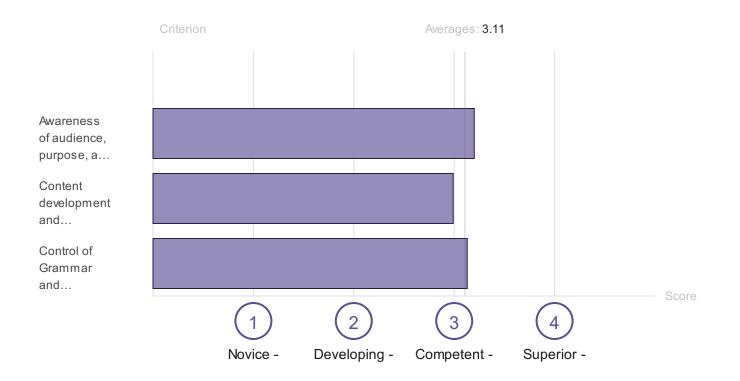
Maximum Score: 3.75 Minimum Score: 0.5 Median Score: 2.63

Number Of Submissions: 66

Filtering by		
Assignment Data	Assignment	All
Courses	Course	All
	Course Section	All

Viewing by All Criteria

#### AVERAGE BY CRITERION



Average by Criterion chart details

#### Awareness of audience, purpose, and genre

Average Score: 3.2

Number of Submissions: 208

Number of Scores: 559

#### Content development and organization

Average Score: 2.99

Number of Submissions: 208

Number of Scores: 559

#### **Control of Grammar and Mechanics**

Average Score: 3.13

Number of Submissions: 208

Number of Scores: 559

#### SCORE DISTRIBUTION BY CRITERION



Score Distribution by Criterion chart details

#### Awareness of audience, purpose, and genre

Maximum Score: 4 Minimum Score: 0.25 Median Score: 3.25

Number Of Submissions: 208

## Content development and organization

Maximum Score: 4
Minimum Score: 0.25
Median Score: 3

Number Of Submissions: 208

#### **Control of Grammar and Mechanics**

Maximum Score: 4 Minimum Score: 0.25

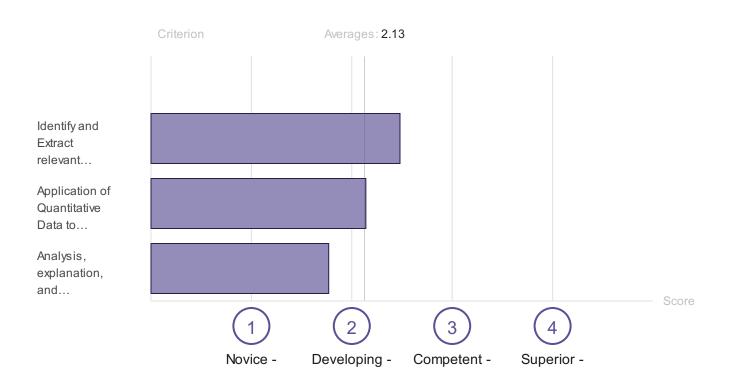
Median Score: 3

Number Of Submissions: 208

Filtering by		
Assignment Data	Assignment	All
Courses	Course	All
	Course Section	All

Viewing by All Criteria

#### AVERAGE BY CRITERION



Average by Criterion chart details

#### Identify and Extract relevant quantitative information

Average Score: 2.48

Number of Submissions: 77 Number of Scores: 141

#### **Application of Quantitative Data to Derive Information**

Average Score: 2.14

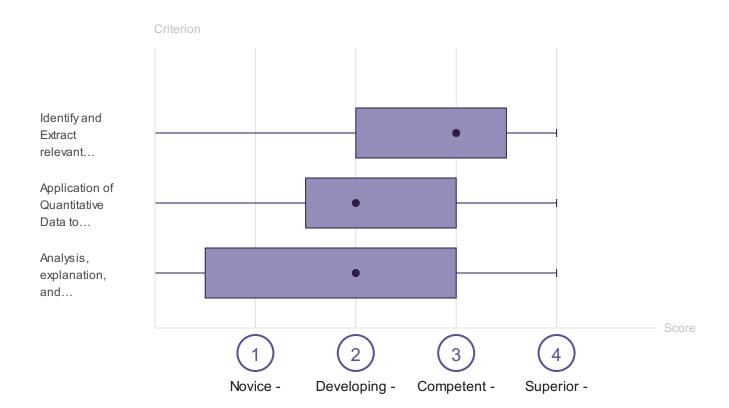
Number of Submissions: 77 Number of Scores: 141

#### Analysis, explanation, and interpretation of quantitative results.

Average Score: 1.77

Number of Submissions: 77 Number of Scores: 141

#### SCORE DISTRIBUTION BY CRITERION



Score Distribution by Criterion chart details

#### Identify and Extract relevant quantitative information

Maximum Score: 4 Minimum Score: 0 Median Score: 3

Number Of Submissions: 77

#### **Application of Quantitative Data to Derive Information**

Maximum Score: 4 Minimum Score: 0 Median Score: 2

Number Of Submissions: 77

#### Analysis, explanation, and interpretation of quantitative results.

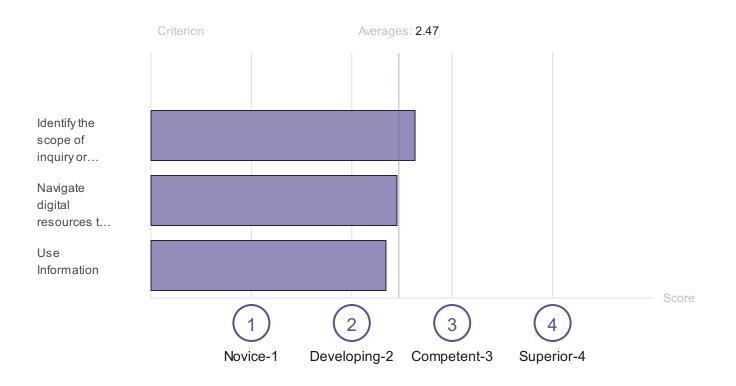
Maximum Score: 4 Minimum Score: 0 Median Score: 2

Number Of Submissions: 77

Filtering by		
Assignment Data	Assignment	AII
Courses	Course	AII
	Course Section	All

Viewing by All Criteria

#### AVERAGE BY CRITERION



Average by Criterion chart details

#### Identify the scope of inquiry or investigation needed for the assignment.

Average Score: 2.63

Number of Submissions: 28 Number of Scores: 112

#### Navigate digital resources to obtain relevant Information

Average Score: 2.45

Number of Submissions: 28 Number of Scores: 112

#### **Use Information**

Average Score: 2.34

Number of Submissions: 28 Number of Scores: 112

#### SCORE DISTRIBUTION BY CRITERION



Score Distribution by Criterion chart details

#### Identify the scope of inquiry or investigation needed for the assignment.

Maximum Score: 3.25 Minimum Score: 1.25 Median Score: 2.75

Number Of Submissions: 28

#### Navigate digital resources to obtain relevant Information

Maximum Score: 3 Minimum Score: 0.25 Median Score: 2.5

Number Of Submissions: 28

#### **Use Information**

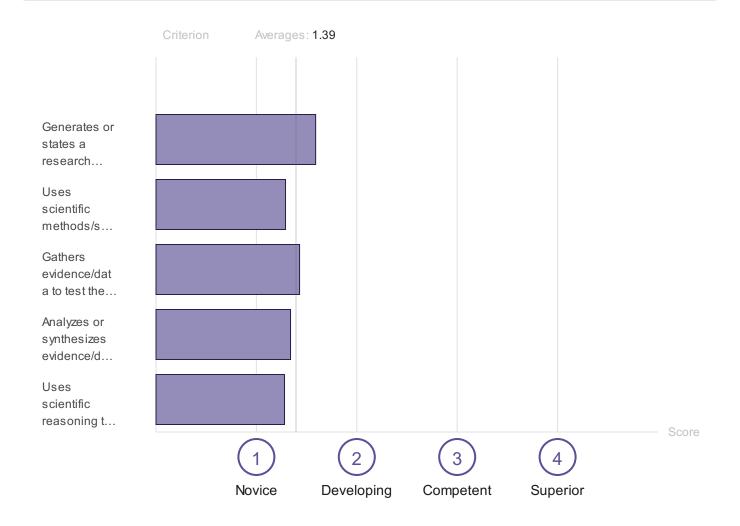
Maximum Score: 3.25 Minimum Score: 0.5 Median Score: 2.5

Number Of Submissions: 28

Filtering by		
Assignment Data	Assignment	All
Courses	Course	All
	Course Section	All

Viewing by All Criteria

#### AVERAGE BY CRITERION



Average by Criterion chart details

## Generates or states a research question and/or experimental objective that can be investigated using scientific methods/scientific reasoning

Average Score: 1.59

Number of Submissions: 54 Number of Scores: 216

#### Uses scientific methods/scientific reasoning

Average Score: 1.29

Number of Submissions: 54 Number of Scores: 216

#### Gathers evidence/data to test the hypothesis or thesis statement

Average Score: 1.43

Number of Submissions: 54 Number of Scores: 216

#### Analyzes or synthesizes evidence/data to evaluate the hypothesis

Average Score: 1.34

Number of Submissions: 54 Number of Scores: 216

#### Uses scientific reasoning to draw conclusion(s) based on the analysis of the evidence/data

Average Score: 1.28

Number of Submissions: 54 Number of Scores: 216

#### SCORE DISTRIBUTION BY CRITERION



Score Distribution by Criterion chart details

## Generates or states a research question and/or experimental objective that can be investigated using scientific methods/scientific reasoning

Maximum Score: 3.75 Minimum Score: 0 Median Score: 1.25

Number Of Submissions: 54

#### Uses scientific methods/scientific reasoning

Maximum Score: 3.5 Minimum Score: 0 Median Score: 0.75

Number Of Submissions: 54

#### Gathers evidence/data to test the hypothesis or thesis statement

Maximum Score: 3.5 Minimum Score: 0 Median Score: 0.75

Number Of Submissions: 54

#### Analyzes or synthesizes evidence/data to evaluate the hypothesis

Maximum Score: 3.5 Minimum Score: 0 Median Score: 0.75

Number Of Submissions: 54

#### Uses scientific reasoning to draw conclusion(s) based on the analysis of the evidence/data

Maximum Score: 3.75 Minimum Score: 0 Median Score: 0.75

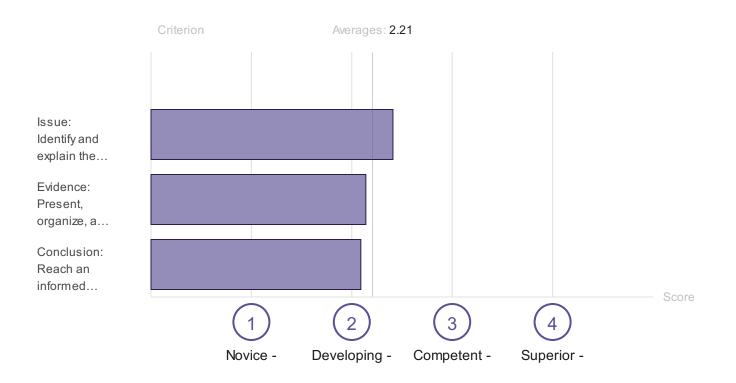
Number Of Submissions: 54

# FALL 2022

Filtering by		
Assignment Data	Assignment	AII
Courses	Course	AII
	Course Section	All

Viewing by All Criteria

#### AVERAGE BY CRITERION



Average by Criterion chart details

Issue: Identify and explain the issue, problem, or question.

Average Score: 2.41

Number of Submissions: 167

Number of Scores: 668

Evidence: Present, organize, and evaluate sufficient and relevant evidence.

Average Score: 2.14

Number of Submissions: 167

Number of Scores: 668

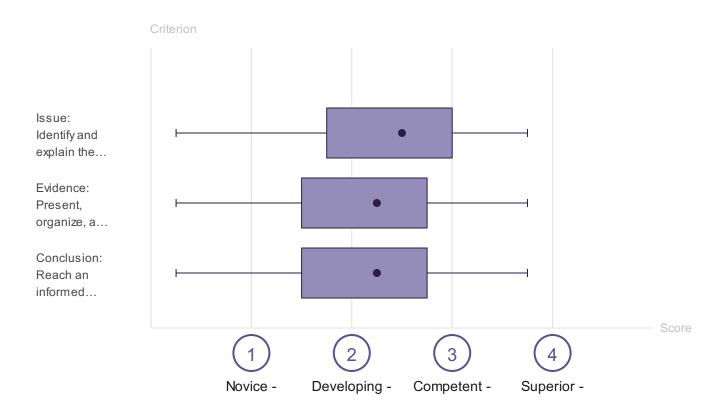
Conclusion: Reach an informed conclusion or solution.

Average Score: 2.09

Number of Submissions: 167

Number of Scores: 668

#### SCORE DISTRIBUTION BY CRITERION



Score Distribution by Criterion chart details

Issue: Identify and explain the issue, problem, or question.

Maximum Score: 3.75 Minimum Score: 0.25 Median Score: 2.5

Number Of Submissions: 167

Evidence: Present, organize, and evaluate sufficient and relevant evidence.

Maximum Score: 3.75 Minimum Score: 0.25 Median Score: 2.25

Number Of Submissions: 167

Conclusion: Reach an informed conclusion or solution.

Maximum Score: 3.75 Minimum Score: 0.25 Median Score: 2.25

Number Of Submissions: 167

Filtering by		
Assignment Data	Assignment	AII
Courses	Course	All
	Course Section	All

Viewing by All Criteria

#### AVERAGE BY CRITERION



Average by Criterion chart details

#### Awareness of Audience, Purpose, and Genre

Average Score: 2.67

Number of Submissions: 49 Number of Scores: 196

#### **Content Development and Organization**

Average Score: 2.55

Number of Submissions: 49 Number of Scores: 196

#### **Control of Grammar and Mechanics**

Average Score: 2.7

Number of Submissions: 49 Number of Scores: 196

#### **Evidence and/or Sources**

Average Score: 2.49

Number of Submissions: 49 Number of Scores: 196

#### SCORE DISTRIBUTION BY CRITERION



Score Distribution by Criterion chart details

#### Awareness of Audience, Purpose, and Genre

Maximum Score: 3.75 Minimum Score: 1.75 Median Score: 2.75

Number Of Submissions: 49

#### **Content Development and Organization**

Maximum Score: 3.75 Minimum Score: 1.5 Median Score: 2.5

Number Of Submissions: 49

#### **Control of Grammar and Mechanics**

Maximum Score: 3.75 Minimum Score: 1.75 Median Score: 2.75

Number Of Submissions: 49

#### **Evidence and/or Sources**

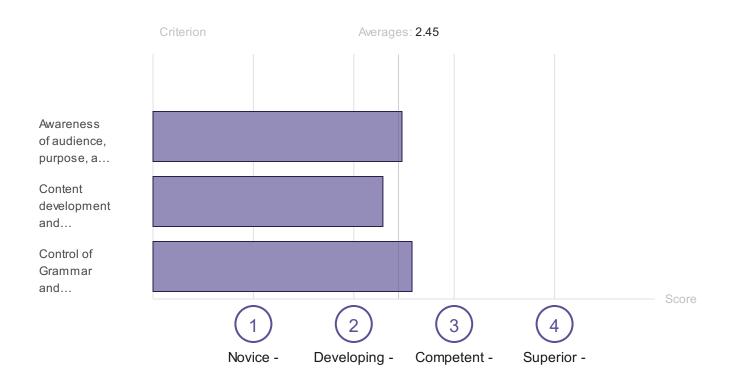
Maximum Score: 3.5 Minimum Score: 1 Median Score: 2.5

Number Of Submissions: 49

Filtering by		
Assignment Data	Assignment	All
Courses	Course	All
	Course Section	All

Viewing by All Criteria

#### AVERAGE BY CRITERION



Average by Criterion chart details

#### Awareness of audience, purpose, and genre

Average Score: 2.48

Number of Submissions: 128

Number of Scores: 512

#### Content development and organization

Average Score: 2.29

Number of Submissions: 128

Number of Scores: 512

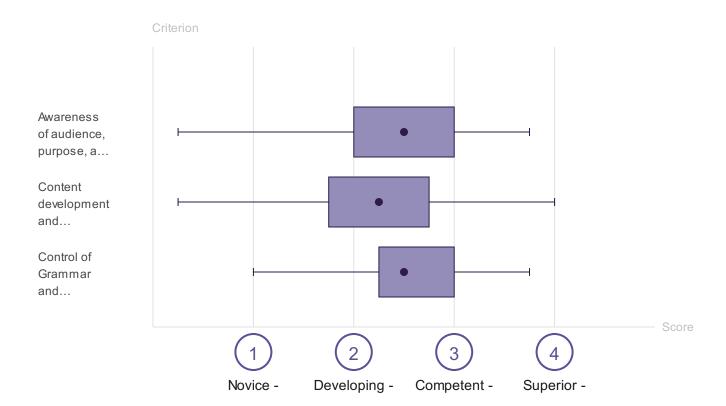
#### **Control of Grammar and Mechanics**

Average Score: 2.58

Number of Submissions: 128

Number of Scores: 512

#### SCORE DISTRIBUTION BY CRITERION



Score Distribution by Criterion chart details

#### Awareness of audience, purpose, and genre

Maximum Score: 3.75 Minimum Score: 0.25 Median Score: 2.5

Number Of Submissions: 128

### Content development and organization

Maximum Score: 4 Minimum Score: 0.25 Median Score: 2.25

Number Of Submissions: 128

#### **Control of Grammar and Mechanics**

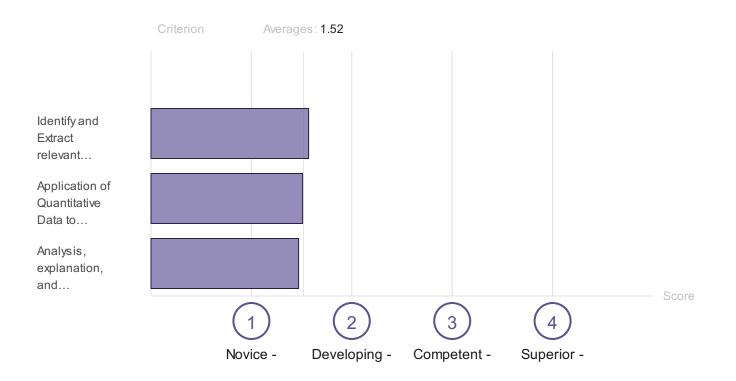
Maximum Score: 3.75 Minimum Score: 1 Median Score: 2.5

Number Of Submissions: 128

Filtering by		
Assignment Data	Assignment	All
Courses	Course	All
	Course Section	All

Viewing by All Criteria

#### AVERAGE BY CRITERION



Average by Criterion chart details

#### Identify and Extract relevant quantitative information

Average Score: 1.57

Number of Submissions: 59 Number of Scores: 236

#### **Application of Quantitative Data to Derive Information**

Average Score: 1.51

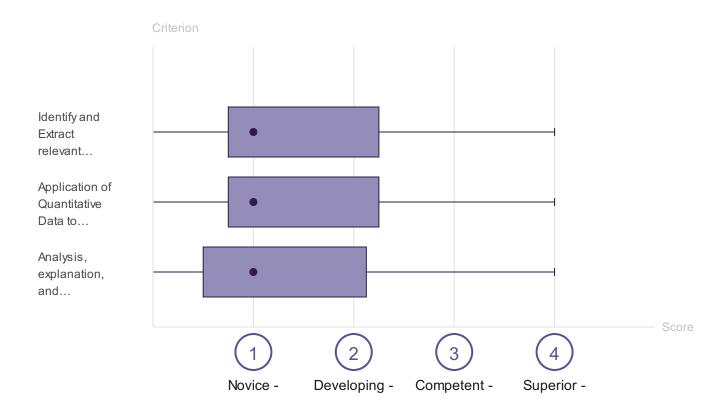
Number of Submissions: 59 Number of Scores: 236

#### Analysis, explanation, and interpretation of quantitative results.

Average Score: 1.47

Number of Submissions: 59 Number of Scores: 236

#### SCORE DISTRIBUTION BY CRITERION



Score Distribution by Criterion chart details

#### Identify and Extract relevant quantitative information

Maximum Score: 4 Minimum Score: 0 Median Score: 1

Number Of Submissions: 59

#### **Application of Quantitative Data to Derive Information**

Maximum Score: 4 Minimum Score: 0 Median Score: 1

Number Of Submissions: 59

#### Analysis, explanation, and interpretation of quantitative results.

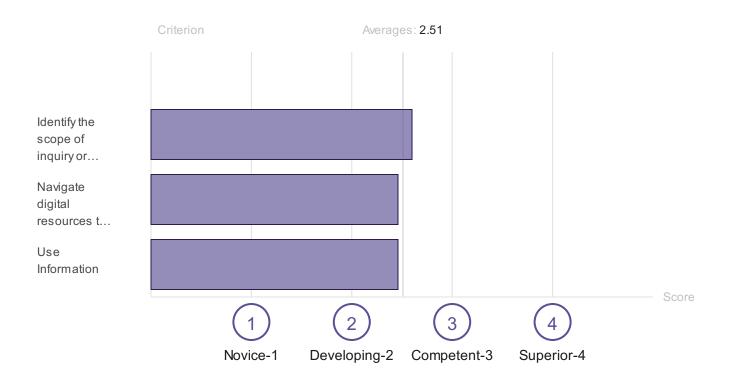
Maximum Score: 4 Minimum Score: 0 Median Score: 1

Number Of Submissions: 59

Filtering by		
Assignment Data	Assignment	AII
Courses	Course	AII
	Course Section	All

Viewing by All Criteria

#### AVERAGE BY CRITERION



Average by Criterion chart details

#### Identify the scope of inquiry or investigation needed for the assignment.

Average Score: 2.6

Number of Submissions: 31 Number of Scores: 124

#### Navigate digital resources to obtain relevant Information

Average Score: 2.46

Number of Submissions: 31 Number of Scores: 124

#### **Use Information**

Average Score: 2.46

Number of Submissions: 31 Number of Scores: 124

#### SCORE DISTRIBUTION BY CRITERION



Score Distribution by Criterion chart details

#### Identify the scope of inquiry or investigation needed for the assignment.

Maximum Score: 3.25 Minimum Score: 2 Median Score: 2.75

Number Of Submissions: 31

#### Navigate digital resources to obtain relevant Information

Maximum Score: 3.5 Minimum Score: 1.25 Median Score: 2.5

Number Of Submissions: 31

#### **Use Information**

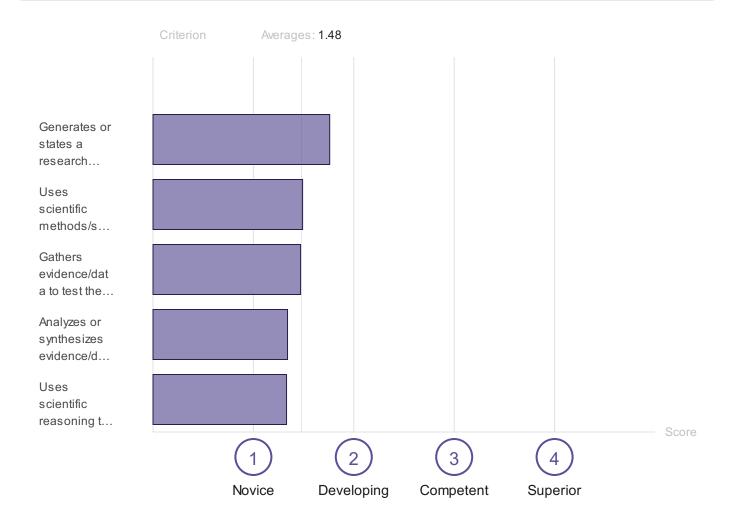
Maximum Score: 3.25 Minimum Score: 1 Median Score: 2.5

Number Of Submissions: 31

Filtering by		
Assignment Data	Assignment	All
Courses	Course	All
	Course Section	All

Viewing by All Criteria

#### AVERAGE BY CRITERION



Average by Criterion chart details

## Generates or states a research question and/or experimental objective that can be investigated using scientific methods/scientific reasoning

Average Score: 1.76

Number of Submissions: 59 Number of Scores: 236

#### Uses scientific methods/scientific reasoning

Average Score: 1.49

Number of Submissions: 59 Number of Scores: 236

#### Gathers evidence/data to test the hypothesis or thesis statement

Average Score: 1.47

Number of Submissions: 59 Number of Scores: 236

#### Analyzes or synthesizes evidence/data to evaluate the hypothesis

Average Score: 1.34

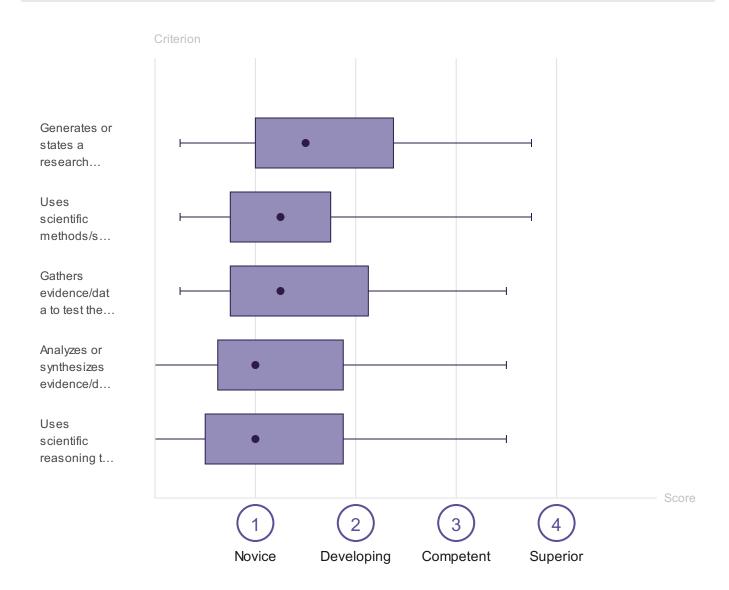
Number of Submissions: 59 Number of Scores: 236

#### Uses scientific reasoning to draw conclusion(s) based on the analysis of the evidence/data

Average Score: 1.33

Number of Submissions: 59 Number of Scores: 236

#### SCORE DISTRIBUTION BY CRITERION



Score Distribution by Criterion chart details

## Generates or states a research question and/or experimental objective that can be investigated using scientific methods/scientific reasoning

Maximum Score: 3.75 Minimum Score: 0.25 Median Score: 1.5

Number Of Submissions: 59

#### Uses scientific methods/scientific reasoning

Maximum Score: 3.75 Minimum Score: 0.25 Median Score: 1.25

Number Of Submissions: 59

#### Gathers evidence/data to test the hypothesis or thesis statement

Maximum Score: 3.5 Minimum Score: 0.25 Median Score: 1.25

Number Of Submissions: 59

#### Analyzes or synthesizes evidence/data to evaluate the hypothesis

Maximum Score: 3.5 Minimum Score: 0 Median Score: 1

Number Of Submissions: 59

#### Uses scientific reasoning to draw conclusion(s) based on the analysis of the evidence/data

Maximum Score: 3.5 Minimum Score: 0 Median Score: 1

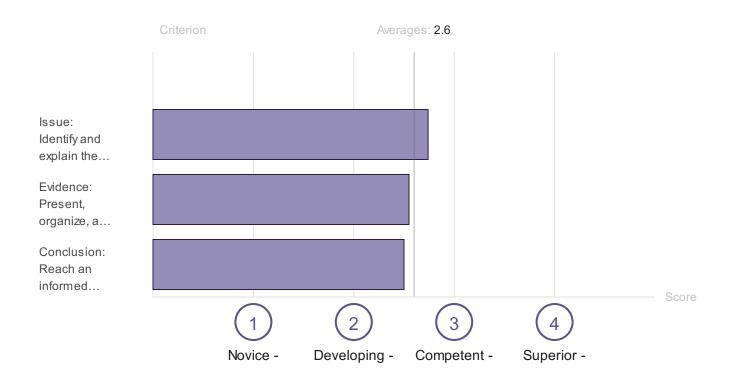
Number Of Submissions: 59

# Spring 2023

Filtering by		
Assignment Data	Assignment	AII
Courses	Course	AII
	Course Section	All

Viewing by All Criteria

### AVERAGE BY CRITERION



Average by Criterion chart details

Issue: Identify and explain the issue, problem, or question.

Average Score: 2.74

Number of Submissions: 172

Number of Scores: 526

Evidence: Present, organize, and evaluate sufficient and relevant evidence.

Average Score: 2.55

Number of Submissions: 172

Number of Scores: 526

Conclusion: Reach an informed conclusion or solution.

Average Score: 2.5

Number of Submissions: 172

Number of Scores: 526

### SCORE DISTRIBUTION BY CRITERION



Score Distribution by Criterion chart details

Issue: Identify and explain the issue, problem, or question.

Maximum Score: 4 Minimum Score: 0.67 Median Score: 2.67

Number Of Submissions: 172

Evidence: Present, organize, and evaluate sufficient and relevant evidence.

Maximum Score: 3.67 Minimum Score: 0.67 Median Score: 2.67

Number Of Submissions: 172

Conclusion: Reach an informed conclusion or solution.

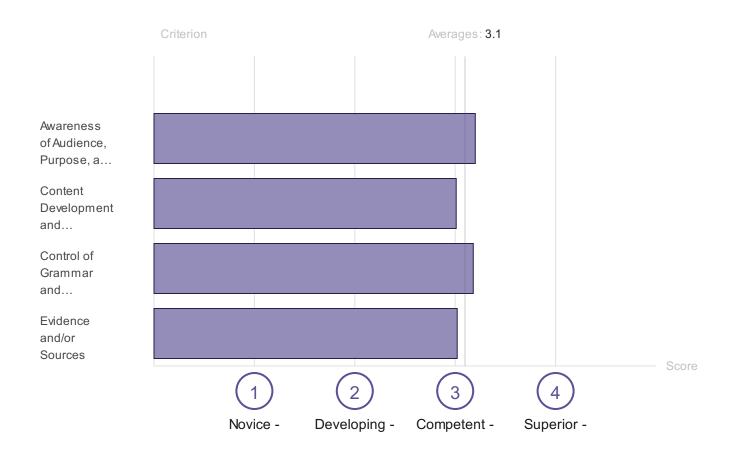
Maximum Score: 4 Minimum Score: 1 Median Score: 2.67

Number Of Submissions: 172

Filtering by		
Assignment Data	Assignment	AII
Courses	Course	All
	Course Section	All

Viewing by All Criteria

### AVERAGE BY CRITERION



Average by Criterion chart details

### Awareness of Audience, Purpose, and Genre

Average Score: 3.2

Number of Submissions: 15

Number of Scores: 47

### **Content Development and Organization**

Average Score: 3.01

Number of Submissions: 15

Number of Scores: 47

#### **Control of Grammar and Mechanics**

Average Score: 3.18

Number of Submissions: 15

Number of Scores: 47

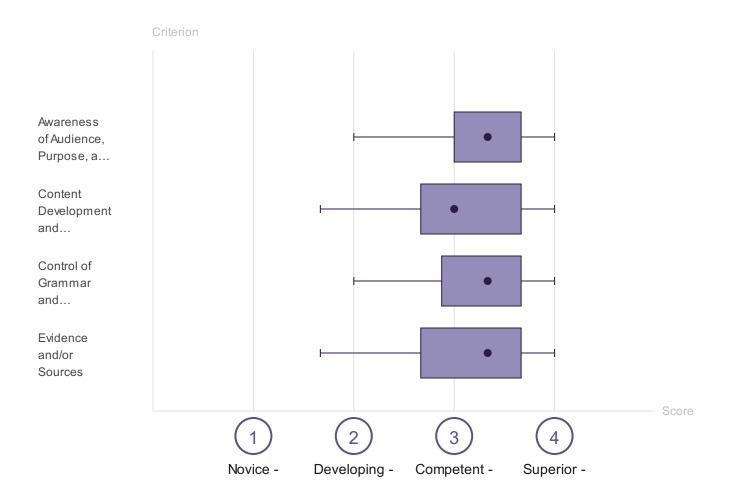
### **Evidence and/or Sources**

Average Score: 3.02

Number of Submissions: 15

Number of Scores: 47

### SCORE DISTRIBUTION BY CRITERION



Score Distribution by Criterion chart details

### Awareness of Audience, Purpose, and Genre

Maximum Score: 4 Minimum Score: 2 Median Score: 3.33

Number Of Submissions: 15

### **Content Development and Organization**

Maximum Score: 4
Minimum Score: 1.67
Median Score: 3

Number Of Submissions: 15

#### **Control of Grammar and Mechanics**

Maximum Score: 4 Minimum Score: 2 Median Score: 3.33

Number Of Submissions: 15

#### **Evidence and/or Sources**

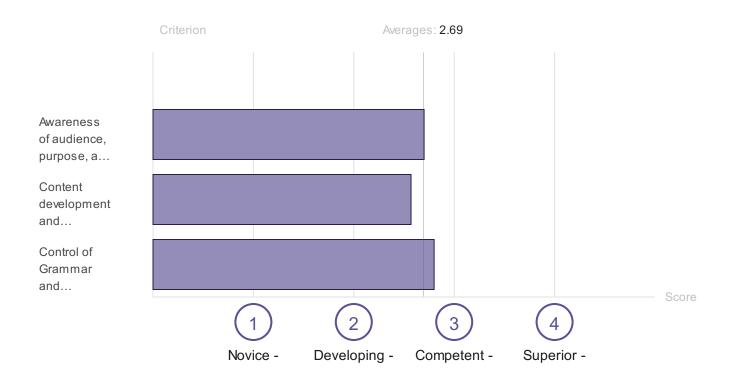
Maximum Score: 4 Minimum Score: 1.67 Median Score: 3.33

Number Of Submissions: 15

Filtering by		
Assignment Data	Assignment	AII
Courses	Course	All
	Course Section	All

Viewing by All Criteria

### AVERAGE BY CRITERION



Average by Criterion chart details

### Awareness of audience, purpose, and genre

Average Score: 2.7

Number of Submissions: 157

Number of Scores: 479

### Content development and organization

Average Score: 2.57

Number of Submissions: 157

Number of Scores: 479

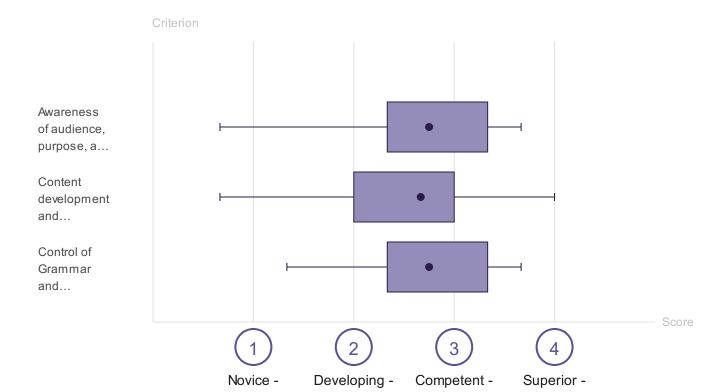
### **Control of Grammar and Mechanics**

Average Score: 2.8

Number of Submissions: 157

Number of Scores: 479

### SCORE DISTRIBUTION BY CRITERION



Score Distribution by Criterion chart details

### Awareness of audience, purpose, and genre

Maximum Score: 3.67 Minimum Score: 0.67 Median Score: 2.75

Number Of Submissions: 157

### Content development and organization

Maximum Score: 4 Minimum Score: 0.67 Median Score: 2.67

Number Of Submissions: 157

#### **Control of Grammar and Mechanics**

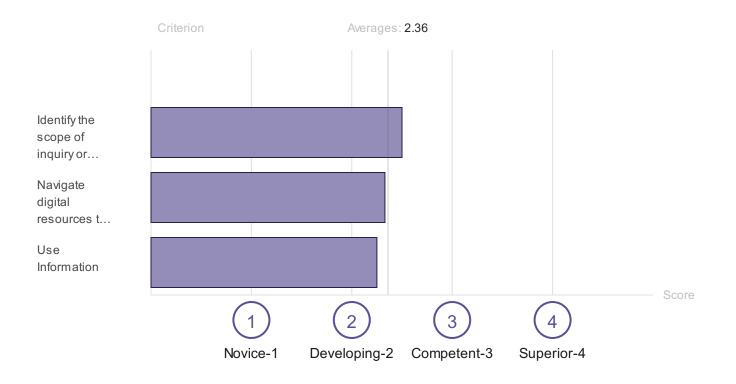
Maximum Score: 3.67 Minimum Score: 1.33 Median Score: 2.75

Number Of Submissions: 157

Filtering by		
Assignment Data	Assignment	AII
Courses	Course	AII
	Course Section	All

Viewing by All Criteria

### AVERAGE BY CRITERION



Average by Criterion chart details

### Identify the scope of inquiry or investigation needed for the assignment.

Average Score: 2.5

Number of Submissions: 66 Number of Scores: 201

### Navigate digital resources to obtain relevant Information

Average Score: 2.33

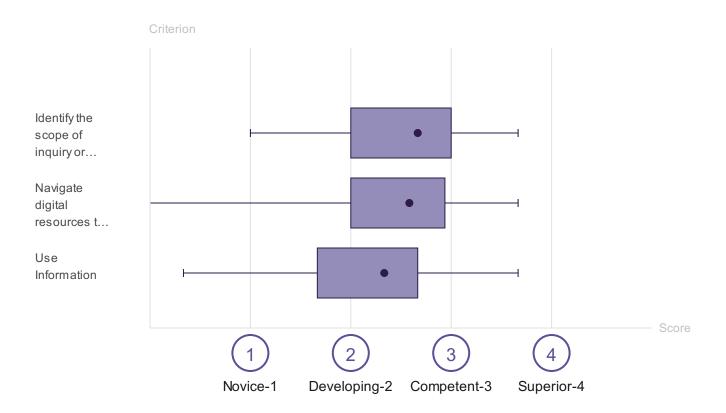
Number of Submissions: 66 Number of Scores: 201

### **Use Information**

Average Score: 2.25

Number of Submissions: 66 Number of Scores: 201

### SCORE DISTRIBUTION BY CRITERION



Score Distribution by Criterion chart details

### Identify the scope of inquiry or investigation needed for the assignment.

Maximum Score: 3.67 Minimum Score: 1 Median Score: 2.67

Number Of Submissions: 66

### Navigate digital resources to obtain relevant Information

Maximum Score: 3.67 Minimum Score: 0 Median Score: 2.58

Number Of Submissions: 66

#### **Use Information**

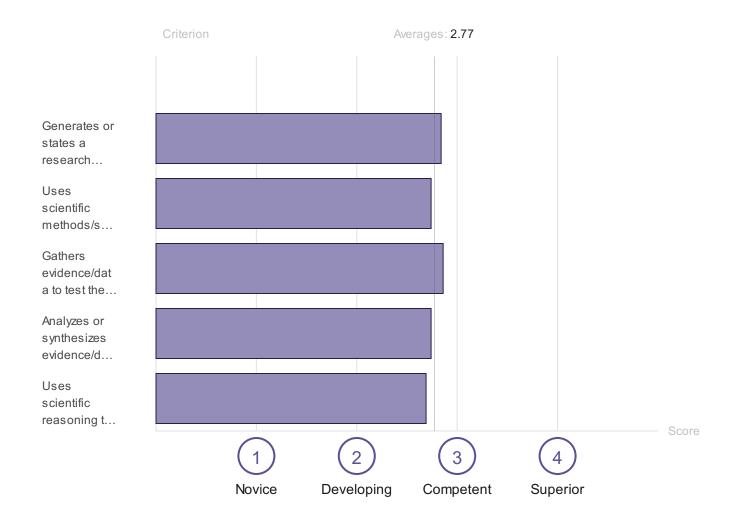
Maximum Score: 3.67 Minimum Score: 0.33 Median Score: 2.33

Number Of Submissions: 66

Filtering by		
Assignment Data	Assignment	All
Courses	Course	All
	Course Section	All

Viewing by All Criteria

### AVERAGE BY CRITERION



Average by Criterion chart details

# Generates or states a research question and/or experimental objective that can be investigated using scientific methods/scientific reasoning

Average Score: 2.84

Number of Submissions: 26

Number of Scores: 80

### Uses scientific methods/scientific reasoning

Average Score: 2.74

Number of Submissions: 26

Number of Scores: 80

### Gathers evidence/data to test the hypothesis or thesis statement

Average Score: 2.86

Number of Submissions: 26

Number of Scores: 80

### Analyzes or synthesizes evidence/data to evaluate the hypothesis

Average Score: 2.74

Number of Submissions: 26

Number of Scores: 80

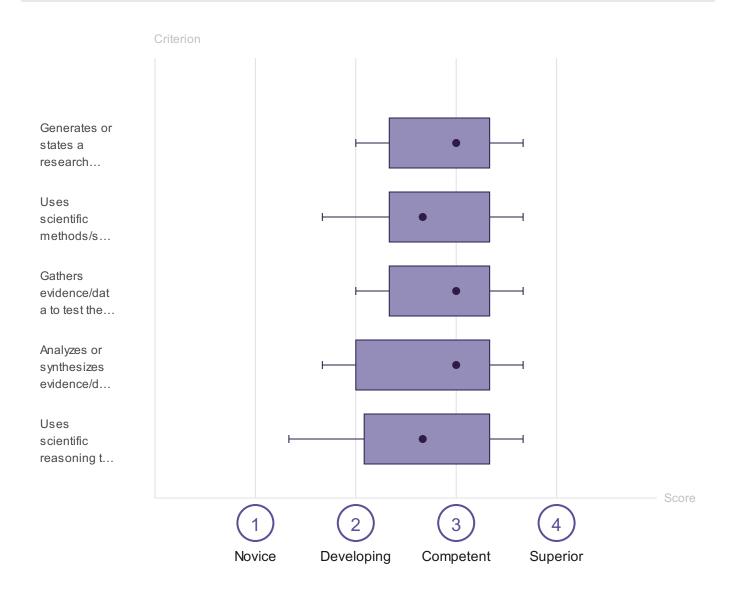
### Uses scientific reasoning to draw conclusion(s) based on the analysis of the evidence/data

Average Score: 2.69

Number of Submissions: 26

Number of Scores: 80

### SCORE DISTRIBUTION BY CRITERION



Score Distribution by Criterion chart details

# Generates or states a research question and/or experimental objective that can be investigated using scientific methods/scientific reasoning

Maximum Score: 3.67 Minimum Score: 2 Median Score: 3

Number Of Submissions: 26

### Uses scientific methods/scientific reasoning

Maximum Score: 3.67 Minimum Score: 1.67 Median Score: 2.67

Number Of Submissions: 26

### Gathers evidence/data to test the hypothesis or thesis statement

Maximum Score: 3.67 Minimum Score: 2 Median Score: 3

Number Of Submissions: 26

### Analyzes or synthesizes evidence/data to evaluate the hypothesis

Maximum Score: 3.67 Minimum Score: 1.67

Median Score: 3

Number Of Submissions: 26

#### Uses scientific reasoning to draw conclusion(s) based on the analysis of the evidence/data

Maximum Score: 3.67 Minimum Score: 1.33 Median Score: 2.67

Number Of Submissions: 26