

2022 Report
Of
The Provost's Assessment Committee
For
General Education Learning Outcomes

Committee Members

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The Provost's Assessment Committee for General Education Learning Outcomes (PAC GELO) was formed in the Fall of 2016 and was charged with developing assessment tools and a process to assess the extent to which UAS undergraduate students have acquired broadly expected academic skills through the completion of UAS prescribed General Education Requirements (GER) coursework. The committee includes faculty members from the three UAS campuses and from different disciplines within the schools of Education and Career Education, and the departments of Humanities, Social Sciences, Natural Sciences, and Business Administration. Work on identifying and creating General Education Learning Outcomes (GELO) began soon after representatives from the committee attended an Association of American Colleges & Universities (AAC&U) workshop in February 2017.

Since its inception, the PAC GELO has been successful in developing and assessing general education student learning outcomes using rubrics that we have collaboratively developed.

This report comprises four sections, each of which outlines phases through which the PAC GELO has passed in meeting its obligations to date.

I. General Education Learning Outcomes & Rubric Development

The current GELOs were approved by Faculty Senate in November 2019 and are as follows:

1. **Effective Communication:** *Communicate thoughts and ideas effectively, orally and in writing.*
2. **Critical Thinking:** *Demonstrate comprehensive exploration of issues, ideas and/or theories, artifacts, and events before accepting or formulating an opinion, conclusion, or solution.*
3. **Creative Thinking:** *Present creative works of expression, innovative approaches to tasks, or solutions to problems.*
4. **Empirical Reasoning:** *Articulate the scientific method and pose well-reasoned questions in the search for answers through data.*
5. **Environmental and Community Engagement:** *Explore Indigenous and global social perspectives with respect for diversity of people, different perspectives of resource sustainability, and human impact on the environment.*

Rubrics for assessing the GELOs were initially based on material provided in the AAC&U Value Rubrics resources. Each rubric was carefully created to demonstrate that an undergraduate student has acquired some level of competency in each of the learning outcomes. The PAC GELO continues to fine-tune these rubrics based on knowledge gained through each workshop, and views this as a continuous improvement process.

In Spring 2022, the PAC GELO piloted a new tool to assess the Critical Thinking GELO. In the process of reviewing this tool, the committee determined that the Critical Thinking GELO and rubric could use some edits to make it more widely applicable to a variety of artifacts. They updated both the GELO and the rubric and will present the newly worded GELO to Faculty Senate next academic year for official approval.

In the sections that follow, you will find details about 2021-2022 workshops, results from this year's assessment activities, and suggestions for next steps.

II. Method of Assessment

Starting in spring 2018, the PAC GELO has hosted workshops to assess two GELOs per semester on a rotating basis, as follows:

- **Spring 2018:**
 - Effective Communication
 - Critical Thinking
- **Fall 2018:**
 - Empirical Reasoning
 - Creative Thinking
- **Spring 2019:**
 - Effective Communication
 - Critical Thinking
- **Fall 2019:**
 - Empirical Reasoning
 - Environmental and Community Engagement
- **Spring 2020:**
 - Effective Communication
 - Creative Thinking
- **Fall 2020:**
 - Creative Thinking
 - Critical Thinking
- **Spring 2021:**
 - Empirical Reasoning
 - Environmental and Community Engagement
- **Fall 2021:**
 - Effective Communication
 - Empirical Reasoning
 - Creative Thinking
- **Spring 2022:**
 - Empirical Reasoning
 - Critical Thinking
 - Environmental and Community Engagement

The Fall 2020, Spring 2021, Fall 2021, and Spring 2022 workshops were conducted online via Zoom due to Covid-19 safety precautions. Each workshop was scheduled for two hours, with participants assessing a single artifact with three to ten student work samples per artifact. The student work samples were assessed based on the GELO rubrics. Unless otherwise specified below, work samples used for the assessment were randomly selected by assigning each student work sample a sequential number, and then running a random number-generating application to determine which samples to assess.

Artifacts and Workshops For AY 2022

Fall 2021 - Effective Communication and Creative Thinking

For the *Effective Communication* and *Creative Thinking* workshop, the Committee decided to assess a single collection of sample student work by these two GELOs. While the workshop participants were divided into two small groups of seven, they both assessed the same **artifact**, which was from a 100-level

writing course. The Committee decided to attempt assessing the sample work by two GELOs at once, Effective Communication and the Creative Thinking rubrics, to see if it was possible, effective, and potentially more time efficient.

Each of the two workshop groups received a unique collection of 10 student sample works submitted as a “Personal Statement on Place”. The assignment asked students for a 700-800 word essay about a specific personal experience in a specific physical place to which they felt a strong personal connection. The typical student taking this course is enrolled in either an associate or bachelor’s degree program, and is often in their freshman year. It is a general education course that is required of all students, so students in the course are enrolled in a wide variety of degree programs. To take this course, students must either have passed an introductory college writing course with a C or better, or they must have tested out of that course.

In each group, participants first discussed the process of the workshop. Then, participants rated the same student sample work(s) individually before returning to the group to discuss consistencies and discrepancies in each participant's ratings. This cycle was repeated one or two times. Each group also made time to discuss the process of assessment itself and the rubrics.

Group 1 consisted of three PAC GELO members (one of whom facilitated) and four other faculty members. The group was only able to assess 6 of the 10 samples during the 2-hour workshop.

Group 2 consisted of four PAC GELO members (one of whom facilitated) and three other faculty volunteers. Group 2 completed the assessment of all 10 student sample works from the same writing course assignment.

Fall 2021 & Spring 2022 - Empirical Reasoning

To assess *Empirical Reasoning* in Fall 2021, two PAC GELO members administered a standardized online assessment to students in a 200-level statistics course and a 200-level computer information systems course. The PAC GELO member developed the “Salmon Derby” assessment instrument during the previous academic year, and other Committee members assisted in the process of aligning each question with the appropriate categories and levels within the GELO rubric. The instrument provided to students data and charts from the results of a local salmon derby over a period of 72 years. Students were asked to respond to a series of multiple choice questions.

During AY 2020-21 the Committee discussed that the Salmon Derby instrument could potentially be used to assess two GELOs at once (Empirical Reasoning and Critical Thinking), Committee members’ attempts to align the instrument questions with the Critical Thinking rubric criteria proved that this was too difficult to be feasible.

Instead, the PAC GELO member administered the Salmon Derby instrument to assess learning in Empirical Reasoning to a new group of students in Spring 2022. These students were enrolled in mathematics for elementary school teachers II.

Spring 2022 - Critical Thinking

To assess Critical Thinking in Spring of 2022, the Committee members searched the internet for instruments used by other respected universities and organizations. A PAC GELO member found an instrument used at [Tennessee Tech](#). The Committee evaluated the instrument to see if its multiple choice

questions aligned with the GELO rubric. The Committee decided to pilot the instrument in Spring 2022. The assessment instrument, nicknamed “The Thinker” was administered to students in mathematics for elementary school teachers II, and a slightly revised rubric was used to assess learning.

Spring 2022 - Environmental and Community Engagement

For the *Environmental and Community Engagement* GELO, workshop participants split into two groups, each with an artifact and a collection of student sample work to assess by this rubric. A total of ten faculty (six of whom are PAC GELO members) participated in the workshop in Spring 2022. In each group, participants first discussed the process of the workshop. Then, participants reviewed the artifact instructions and rated the same student sample work(s) individually before returning to the group to discuss consistencies and discrepancies in each participant's ratings. This cycle was repeated one or two times. Each group also made time to discuss the process of assessment itself and the rubrics.

Group 1 consisted of three PAC GELO members (one of whom facilitated) and two other faculty volunteers. The committee provided the group with an artifact from a 100-level writing course. This is the same course that provided the Fall 2021 Effective Communication and Creative Thinking workshop artifact. See that subsection above for more information about that course. The artifact was a “Land Acknowledgement Reflection Portfolio” prompt, which invited students to learn about this practice, to write their own land acknowledgement, and reflect on the experience. The workshop participants assessed 10 student sample works of 1-3 paragraphs each.

Group 2 consisted of three PAC GELO members (one of whom facilitated) and two other faculty volunteers. The committee provided the group with an artifact from a 300-level history course (also cross-listed in anthropology). The prerequisites for this course are a 100-level writing course and upper division standing, or instructor permission. The artifact was a “Museum Evaluation Paper” of 3-4 double-spaced pages, in which students were asked to evaluate and analyze their experience volunteering and being trained at a museum preparing for an upcoming exhibit on Alaska Native women artists. The course was small and only three students submitted this assignment, so the group assessed all 3 student submissions.

III. Results

As with the previous round of assessments, raw scores assigned by assessment teams were summarized using pivot tables with two aims. The first was to determine the consistency of the scores and the second was to assess student learning, the actual purpose of the assessment process.

Results from assessments for each of Effective Communication, Critical Thinking, Creative Thinking, Empirical Reasoning, and Environmental and Community Engagement follow.

Results for Effective Communication

Scores assigned to students for this learning outcome are summarized below. The majority of evaluators had difficulty relating the fourth rubric criterion to the artifact used, so no score summary is provided for this.

Table 3.1: Summary of scores obtained from the Effective Communication sample works includes mean scores (\bar{x}), standard deviations (s), and percentages of scores greater than or equal to each benchmark.

| | | % of work products with a score \geq | | | | |
|-------------------|------------------------|--|-------------|-------------|-------------|-------------|
| | | \bar{x} | s | 1 | 2 | 3 |
| Outcomes | 1. Context | 1.68 | 0.75 | 96.4 | 58.0 | 13.4 |
| | 2. Arrangement | 1.70 | 0.83 | 92.9 | 60.7 | 16.1 |
| | 3. Content Material | 1.82 | 0.66 | 100.0 | 67.9 | 14.3 |
| | 4. Supporting Material | - | - | - | - | - |
| | 5. Use of Language | 1.41 | 0.93 | 82.9 | 45.0 | 13.5 |
| Overall summaries | | 1.65 | 0.81 | 93.1 | 57.9 | 14.3 |

Achievable scores range from 0 through 3, so standard deviations close to 1 suggest widely varying student scores within each rubric criterion. Average scores for all assessed criteria for the sample were above 1.41 with standard deviations over 0.66. While a majority of the students assessed achieved the proficient level (2 or higher) in the first two assessed criteria, fewer achieved the proficient level in criterion 5, and very few achieved the mastery level (3) in all criteria assessed.

Results for Critical Thinking

Scores assigned to students for this learning outcome, with revised rubric criteria, are summarized below. Since students took the same online quiz for this assessment, scores earned in this pilot assessment are independent of evaluators. On the face of it, the instrument used seemed to work well, and the idea behind this pilot assessment appears sound.

Table 3.2: Summary of scores obtained from the Critical Thinking sample includes mean scores (\bar{x}), standard deviations (s), and percentages of items with scores greater than or equal to each benchmark.

| | | % of work products with a score \geq | | | | |
|--------------------------|----------------------|--|-------------|--------------|--------------|------------|
| | | \bar{x} | s | 1 | 2 | 3 |
| Outcomes | 1. Understanding | 2.57 | 0.22 | 100.0 | 100.0 | 5.6 |
| | 2. Facts/Assumptions | 2.50 | 0.26 | 100.0 | 100.0 | 5.6 |
| | 3. Synthesis | 2.51 | 0.30 | 100.0 | 100.0 | 5.6 |
| | 4. Strategy | 2.43 | 0.33 | 100.0 | 100.0 | 5.6 |
| | 5. Conclusions | 2.56 | 0.28 | 100.0 | 100.0 | 11.1 |
| Overall summaries | | 2.51 | 0.22 | 100.0 | 100.0 | 5.6 |

Standard deviations well below 0.5 suggest fairly consistent student scores within each rubric criterion. Average overall for all but one assessed criteria for the sample were above 1.5 with standard deviations of at most 0.33. All of the students assessed achieved the proficient level (2 or higher), but only one achieved the mastery level (3) in all criteria assessed.

Results for Creative Thinking

Scores assigned to students for this learning outcome are summarized below. There were some difficulties aligning all five of the rubric criteria to one of the artifacts used, however, the second artifact provided enough data to assess student learning for all of the rubric criteria.

Table 3.3: Summary of scores obtained from the Creative Thinking samples includes mean scores (\bar{x}), standard deviations (s), and percentages of items with scores greater than or equal to each benchmark.

| | | % of work products with a score \geq | | | | |
|--------------------------|---------------------------|--|-------------|-------------|-------------|------------|
| | | \bar{x} | s | 1 | 2 | 3 |
| Outcomes | 1. Vision & Framework | 1.10 | 0.73 | 78.6 | 30.4 | 0.9 |
| | 2. Details | 1.33 | 0.70 | 88.4 | 42.9 | 0.9 |
| | 3. Approach | 1.06 | 0.74 | 78.6 | 25.0 | 0.9 |
| | 4. Use of Existing Models | 1.07 | 0.62 | 85.7 | 20.0 | 1.4 |
| | 5. Outcome | 1.38 | 0.69 | 95.5 | 34.8 | 0.9 |
| Overall summaries | | 1.20 | 0.71 | 85.3 | 31.5 | 0.2 |

Achievable scores range from 0 through 3, so once again standard deviations close to 1 suggest widely varying student scores within each rubric criterion. Average scores for all assessed criteria for the sample were well below 1.5 with standard deviations well over 0.5. While the majority of the students assessed

achieved the beginning level (1 or higher), much fewer achieved the proficient level (2 or higher) and almost none achieved the mastery level (3) in all criteria assessed.

Results for Empirical Reasoning

Scores assigned to students for this learning outcome from Fall 2021 and Spring 2022 are summarized below in separate tables. As for Critical Thinking students took the same online quiz for this assessment, so scores earned in this assessment are also independent of evaluators. On the face of it, this instrument has worked well for the three times it has been used, and here too the idea behind this assessment approach appears sound.

Table 3.4: Summary of scores obtained for the Empirical Reasoning sample from Fall 2021 includes mean scores (\bar{x}), standard deviations (s), and percentages of items with scores greater than or equal to each benchmark.

| | | % of work products with a score \geq | | | | |
|--------------------------|----------------------------|--|-------------|--------------|-------------|------------|
| | | \bar{x} | s | 1 | 2 | 3 |
| Outcomes | 1. Description | 2.27 | 0.63 | 100.0 | 88.5 | 15.4 |
| | 2. Factors Applicable | 1.93 | 0.58 | 100.0 | 80.8 | 7.7 |
| | 3. Design of Study | 1.94 | 0.57 | 100.0 | 69.2 | 7.7 |
| | 4. Data Collection Methods | 1.83 | 0.53 | 100.0 | 73.1 | 0.0 |
| | 5. Results | 1.68 | 0.53 | 100.0 | 65.4 | 0.0 |
| Overall summaries | | 1.93 | 0.47 | 100.0 | 73.1 | 0.0 |

Table 3.5: Summary of scores obtained for the Empirical Reasoning sample from Spring 2021 includes mean scores (\bar{x}), standard deviations (s), and percentages of items with scores greater than or equal to each benchmark.

| | | % of work products with a score \geq | | | | |
|--------------------------|----------------------------|--|-------------|---------------|-------------|------------|
| | | \bar{x} | s | 1 | 2 | 3 |
| Outcomes | 1. Description | 2.12 | 0.59 | 100.00 | 81.0 | 9.5 |
| | 2. Factors Applicable | 1.52 | 0.68 | 95.2 | 57.1 | 0.0 |
| | 3. Design of Study | 1.82 | 0.54 | 100.00 | 76.2 | 0.0 |
| | 4. Data Collection Methods | 1.70 | 0.50 | 100.00 | 61.9 | 0.0 |
| | 5. Results | 1.76 | 0.39 | 100.00 | 81.0 | 0.0 |
| Overall summaries | | 1.78 | 0.46 | 100.00 | 66.7 | 0.0 |

It is interesting to observe that the summaries for the two semesters listed (and a previous semester) are very similar even though the quiz was administered to several different classes. While the scores earned are a little spread out (standard deviations around 0.5), almost all students in both semesters achieved the beginning level (1 or higher) and the majority of the students in both semesters achieved the proficient

level (2 or higher). However, not many achieved the mastery level. This is likely because of the inclusion of some questions that require a deeper conceptual understanding of data analysis.

For all three implementations of this instrument, rubric criterion 1 was the one that students achieved the highest score on average.

Results for Environmental and Community Engagement

Scores assigned to students for this learning outcome are summarized below. There were difficulties aligning the third and fourth rubric criteria to both of the artifacts used so summary scores for these have been excluded.

Table 3.6: Summary of scores obtained from the Environmental and Community Engagement sample includes mean scores (\bar{x}), standard deviations (s), and percentages of items with scores greater than or equal to each benchmark.

| | | % of work products with a score \geq | | | | |
|-----------------|--------------------------|--|-------------|-------------|-------------|------------|
| | | \bar{x} | s | 1 | 2 | 3 |
| Outcomes | 1. Influence | 1.48 | 0.73 | 92.3 | 49.2 | 6.2 |
| | 2. LIK | 1.29 | 0.80 | 84.6 | 38.5 | 6.2 |
| | 3. Perspectives | - | - | - | - | - |
| | 4. Human Impact | - | - | - | - | - |
| | Overall summaries | 1.38 | 0.77 | 88.5 | 43.8 | 3.1 |

There were clearly difficulties in assessing this learning outcome and, while the scores assigned to the first two rubric criteria do suggest some learning, it is clear that more explorations are needed in assessing this learning outcome.

IV. Lessons Learned and Next Steps

The PAC GELO members have continued to assess GERs and modify GELO rubrics as needed. Our assessment workshops provide an opportunity to assess how well our students are meeting the general education learning outcomes and allow the PAC GELO team to refine our rubrics and tailor them more specifically to meet our needs. All GELOs have now been assessed at least three times. While we continue to revise the rubrics after each workshop session, overall, we are confident that the rubrics are clear and effective, even the Environmental and Community Engagement rubric, which we have previously had some concerns with, particularly in regard to its broad range.

This section includes a breakdown of observations by PAC GELO members and assessment workshop participants, as well as an outline of the committee's proposed next steps in completing the task of preparing and implementing an effective general education student learning assessment plan.

Assessment Observations

As reported previously, the group feels comfortable with the process and structure of the assessment of sample artifacts according to the GELO rubrics. We are also very grateful for the faculty volunteers who participate in the workshops. We have several repeat volunteers that make the process run very smoothly. This year, we experimented with some new assessment approaches, and we are overall very satisfied with the results.

In the first place, we decided for the first time to assess two rubrics at once, using the same artifact set. In the December 2021 workshop, we combined the Effective Communication rubric with the Creative Thinking rubric while assessing a series of personal narrative essays from WRTG 111, Writing Across Contexts. In previous workshop sessions, for the Creative Thinking rubric in particular, participants reported difficulty in focusing purely on creativity and found themselves drawn to assessing the quality of the student writing. When these two rubrics were paired together, workshop participants were able to separate their assessment to focus entirely on the communication and then entirely on creativity, and participants reported much greater confidence in more accurately assessing creativity. While we understand that not all combinations of rubrics may work together smoothly as Effective Communication and Creative Thinking, we plan to continue to experiment with combining different rubrics in the future. Our ideal long-term goal is to combine all five rubrics to a limited number of artifacts to demonstrate the potential for faculty to generate assignments that reinforce a more rounded student development, regardless of a course's discipline.

In addition to this experiment, the committee has also started to experiment this year with the assessment model for Critical Thinking and Empirical Reasoning. In particular, we developed two respective automated multiple-choice assessment quizzes of 25 questions each (for example, the Empirical Reasoning quiz asks students to interpret a graph of winning weights from the Golden North Salmon Derby over time). Each question of each of these two quizzes is aligned with a specific criterion in the Critical Thinking rubric or the Empirical Reasoning rubric, respectively. These quizzes were then administered to all students enrolled in a particular section of MATH S212, Mathematics for Elementary School Teachers II. We thought this new model was highly successful, as it allowed us to assess more

students at once and without the need for overhead in terms of arranging a workshop with several participants.

There are a few areas that we hope to improve moving forward.

Artifact-rubric fit has continued to be a minor area of concern. Although this did not cause any major issues, it is a part of the process that we are always interested in improving. Every year, there seem to be improvements made in our ability to select appropriate artifacts, but it's possible that there are other changes that could be made to the process that would eliminate this concern.

Rubric Design

Actual application of the rubrics during the workshops has continued to provide crucial feedback resulting in even more user-friendly versions of the rubrics. In particular, this year we spent a lot of time rethinking and revising the Effective Communication and Creative Thinking rubrics, based on workshop participant feedback. Additionally, *Environmental and Community Engagement*, the least-assessed rubric continues to be a work in progress. Our plan is to continue to modify this rubric based on feedback from the workshop. This year's workshop participants provided helpful feedback indicating that we need to further clarify some of the rubric language. Further, committee members and workshop participants began a dialogue regarding the intention of the *Environmental and Community Engagement* rubric. The learning outcome seems to be both very broad and simultaneously too specific causing us to question the overarching goal of this GELO and its associated GERs. Next year, we plan to do a deeper dive into this GELO and the expectations of the GERs. At a time when UAS is thinking critically about decolonizing higher education, it seems appropriate to interrogate our GELOs to better understand how they may address this goal.

Next Steps

In an effort to respond to some of our past challenges, we will continue to explore the effectiveness of standardization through digitization and also some ideas around asynchronous assessments. These are ongoing discussions within the PAC GELO team. Given the nature of the different GELOs, it still seems likely that this method could only apply to the *Empirical Reasoning* and *Critical Thinking* GELOs, but we will continue to think through this process and experiment as relevant.

Our assessment cycle continues as we plan to continue to assess as many GELOs as possible. This is the first year we have been able to assess all five GELOs in the same year, and the process was highly successful. In the future, as we continue to refine our automated assessment for some GELOs, we hope to assess some GELOs twice within the same year. We currently plan to follow the assessment schedule we followed this year, perhaps adding more if the opportunity arises. The committee will therefore work according to the following tentative assessment schedule:

- Fall 2022: GELO #1 (*Effective Communication*) & GELO #3 (*Creative Thinking*).
- Spring 2023: GELO #2 (*Critical Thinking*) & GELO #4 (*Empirical Reasoning*) & GELO #5 (*Environmental and Community Engagement*).

- Fall 2023: GELO #1 (*Effective Communication*) & GELO #3 (*Creative Thinking*)
- Spring 2024: GELO #2 (*Critical Thinking*) & GELO #4 (*Empirical Reasoning*) & GELO #5 (*Environmental and Community Engagement*).

Throughout the last few years of assessment, the PAC GELO team has discussed the potential benefits of designing an artifact for a course in advance of the workshop to address some of the artifact-rubric design concerns mentioned previously. In other words, we welcome the opportunity to work with a faculty volunteer to design an assignment prior to the beginning of the semester with the goal of using the assignment for the workshop. After much discussion, it appears that we have a faculty volunteer willing to attempt this. Additionally, we plan to present at convocation and share this opportunity with more faculty. Although it is not required or expected for one course to fully meet all criteria of a GELO, if possible, designing an assignment to meet the rubric could improve the assessment process and may even aid in the overall goal of closing the loop and better understanding our students' specific strengths and areas in need of improvement.

The committee also continues to work toward their long-term goal of helping UAS scale up the assessment processes. In the past year, the charge of the committee has been clarified and, though it is not exclusively our responsibility to find ways to improve student scores in some of the weaker areas, we are still a part of the overall UAS mission to turn the results of assessment into useful information related to the instructional programs at UAS. The PAC GELO committee continues to engage with the larger UAS learning community to ask whether undergraduate students are meeting the GELO outcomes? And, if not, what methods can be implemented to help UAS achieve its critical learning outcomes?

RUBRICS

1. **EFFECTIVE COMMUNICATION:** Communicate thoughts and ideas effectively, orally and/or in writing.

| | AUDIENCE, CONTEXT, AND PURPOSE... | CONTENT MATERIAL (CENTRAL MESSAGE OR ARGUMENT)... | ARRANGEMENT OF MATERIAL... | SUPPORTING MATERIALS (DETAILS, INFORMATION, RESOURCES)... |
|-----------------------|--|---|---|---|
| NOT APPLICABLE | <input type="checkbox"/> N/A | <input type="checkbox"/> N/A | <input type="checkbox"/> N/A | <input type="checkbox"/> N/A |
| NOT YET (0) | <input type="checkbox"/> ...are not considered. | <input type="checkbox"/> ...is not appropriate for the assigned task. | <input type="checkbox"/> ...is not organized. | <input type="checkbox"/> ...are not present or are not appropriate. |
| BEGINNING (1) | <input type="checkbox"/> ...are somewhat considered. | <input type="checkbox"/> ...is presented in a somewhat general manner that is relevant to the assigned task. | <input type="checkbox"/> ...incorporates basic transitions through shifts in topic. | <input type="checkbox"/> ...are clearly referenced within the work. |
| PROFICIENT (2) | <input type="checkbox"/> ...are clearly aligned with the assigned task. | <input type="checkbox"/> ...is developed or presented in a specific and detailed manner. | <input type="checkbox"/> ...follows consistent patterns throughout the entire work. | <input type="checkbox"/> ...are relevant to the assigned task and are integrated effectively. |
| MASTERY (3) | <input type="checkbox"/> ...are addressed according to the assigned task, with full nuance and complexity, demonstrating deep understanding. | <input type="checkbox"/> ...effectively, clearly and creatively conveys the central message or argument in a compelling manner. | <input type="checkbox"/> ...skillfully maintains the work's cohesiveness. | <input type="checkbox"/> ...are used to thoroughly develop ideas appropriate for the discipline and genre of the assigned task. |

2. **CRITICAL THINKING:** Demonstrate comprehensive exploration of issues, ideas and/or theories, artifacts, and events before accepting or formulating an opinion, conclusion, or solution.

The committee may explore revisions to this rubric in the near future.

| | ISSUE OR PROBLEM TO BE CONSIDERED CRITICALLY... | PERSPECTIVE, THESIS, OR HYPOTHESIS... | ASSUMPTIONS... | INFORMATION TAKEN FROM SOURCES... | CONCLUSION OR RELATED OUTCOMES... |
|-----------------------|--|---|---|--|--|
| NOT APPLICABLE | <input type="checkbox"/> N/A | <input type="checkbox"/> N/A | <input type="checkbox"/> N/A | <input type="checkbox"/> N/A | <input type="checkbox"/> N/A |
| NOT YET (0) | <input type="checkbox"/> ...is not stated. | <input type="checkbox"/> ...is not stated. | <input type="checkbox"/> ...are not acknowledged. | <input type="checkbox"/> ...is not present. | <input type="checkbox"/> ...is not present. |
| BEGINNING (1) | <input type="checkbox"/> ...is implied. | <input type="checkbox"/> ...is implied. | <input type="checkbox"/> ...are identified. | <input type="checkbox"/> ...is included. | <input type="checkbox"/> ...is tied to some of the information discussed. |
| PROFICIENT (2) | <input type="checkbox"/> ...is presented in a clear and logical manner. | <input type="checkbox"/> ...is explicitly stated. | <input type="checkbox"/> ... are discussed. | <input type="checkbox"/> ...is used to develop a coherent analysis or synthesis. | <input type="checkbox"/> ...clearly identifies some related outcomes (consequences or implications). |
| MASTERY (3) | <input type="checkbox"/> ...is framed in such a manner that delivers information necessary for clear and complete understanding. | <input type="checkbox"/> ...takes into account the complexities of the issue. | <input type="checkbox"/> ... are used to question the context and/or others' assumptions. | <input type="checkbox"/> ...is used to develop an effective and comprehensive analysis or synthesis. | <input type="checkbox"/> ...incorporates opposing viewpoints and/or limitations. |

3. **CREATIVE THINKING:** Present creative works of expression, innovative approaches to tasks, or solutions to problems.

| | STUDENT'S VISION AND FRAMEWORK OF EXPLORING IDEAS... | DETAILS IN STUDENT'S IDEAS, QUESTIONS, FORMATS, OR PRODUCTS... | STUDENT'S APPROACH TO THE TASK... | STUDENT'S USE OF EXISTING MODELS... | STUDENT'S OUTCOME (OBJECT, SOLUTION, OR IDEA)... |
|-----------------------|---|---|---|--|--|
| NOT APPLICABLE | <input type="checkbox"/> N/A | <input type="checkbox"/> N/A | <input type="checkbox"/> N/A | <input type="checkbox"/> N/A | <input type="checkbox"/> N/A |
| NOT YET (0) | <input type="checkbox"/> ...relates strictly to the assigned task. | <input type="checkbox"/> ...relate strictly to the assigned task. | <input type="checkbox"/> ...relates strictly to the assigned task. | <input type="checkbox"/> ...copies or restates what is already available. | <input type="checkbox"/> ...does not serve its intended purpose. |
| BEGINNING (1) | <input type="checkbox"/> ...considers alternative perspectives. | <input type="checkbox"/> ...show signs of original thought. | <input type="checkbox"/> ...considers alternative processes. | <input type="checkbox"/> ...shows signs of deviation from expectations and common assumptions. | <input type="checkbox"/> ...serves its intended purpose (for example, solving a problem or addressing an issue). |
| PROFICIENT (2) | <input type="checkbox"/> ...actively explores alternative perspectives. | <input type="checkbox"/> ...demonstrate uniqueness and novelty. | <input type="checkbox"/> ...experiments with alternative processes. | <input type="checkbox"/> ...actively explores ideas in alternative contexts. | <input type="checkbox"/> ...makes an original contribution in its intended purpose. |
| MASTERY (3) | <input type="checkbox"/> ...engages in untested and potentially risky approaches to the assigned task(s). | <input type="checkbox"/> ...challenge traditional limitations. | <input type="checkbox"/> ...applies alternative processes with consideration to consequences. | <input type="checkbox"/> ...synthesizes what is already available to apply ideas in a new context. | <input type="checkbox"/> ...provides a meaningful answer to the task in an original and surprising context. |

4. **EMPIRICAL REASONING:** Apply the scientific method to well-reasoned questions in the search for answers through data.

| | A DESCRIPTION OF THE PROBLEM... | FACTORS APPLICABLE TO THE PROBLEM... | DESIGN OF THE STUDY... | DATA COLLECTION METHOD... | RESULTS... |
|-----------------------|--|---|---|--|--|
| NOT APPLICABLE | <input type="checkbox"/> N/A | <input type="checkbox"/> N/A | <input type="checkbox"/> N/A | <input type="checkbox"/> N/A | <input type="checkbox"/> N/A |
| NOT YET (0) | <input type="checkbox"/> ...is not present. | <input type="checkbox"/> ...are not identified. | <input type="checkbox"/> ...is not present. | <input type="checkbox"/> ...is not identified. | <input type="checkbox"/> ...are not present. |
| BEGINNING (1) | <input type="checkbox"/> ...is outlined. | <input type="checkbox"/> ...are identified. | <input type="checkbox"/> ...is described in terms of its purpose and objective. | <input type="checkbox"/> ...is identified. | <input type="checkbox"/> ...are summarized as appropriate to the discipline. |
| PROFICIENT (2) | <input type="checkbox"/> ...is clear and complete. | <input type="checkbox"/> ...are classified clearly. | <input type="checkbox"/> ...identifies appropriate methodology. | <input type="checkbox"/> ...is implemented correctly. | <input type="checkbox"/> ...are interpreted as appropriate to the discipline. |
| MASTERY (3) | <input type="checkbox"/> ...is formulated to include a proper and precise research question. | <input type="checkbox"/> ...are formulated into an appropriate testable hypothesis. | <input type="checkbox"/> ...identifies limitations of the proposed study. | <input type="checkbox"/> ...is used to produce (or leads toward) consistent and accurate data. | <input type="checkbox"/> ...are used to provide clear and concise scientific explanations of analysis. |

5. **ENVIRONMENTAL AND COMMUNITY ENGAGEMENT:** Explore Indigenous and global social perspectives with respect for diversity of people, different perspectives of resource sustainability, and human impact on the environment.

| | INFLUENCE OF CULTURAL NORMS... | LOCAL INDIGENOUS KNOWLEDGE (LIK) AND PERSPECTIVES... | GLOBAL PERSPECTIVES... | HUMAN IMPACT ON AN ENVIRONMENT... |
|-----------------------|--|--|--|---|
| NOT APPLICABLE | <input type="checkbox"/> N/A | <input type="checkbox"/> N/A | <input type="checkbox"/> N/A | <input type="checkbox"/> N/A |
| NOT YET (0) | <input type="checkbox"/> ...is not identified. | <input type="checkbox"/> ...are not acknowledged. | <input type="checkbox"/> ...are not addressed. | <input type="checkbox"/> ...is not addressed. |
| BEGINNING (1) | <input type="checkbox"/> ...is identified. | <input type="checkbox"/> ...are acknowledged. | <input type="checkbox"/> ...are addressed. | <input type="checkbox"/> ...is addressed. |
| PROFICIENT (2) | <input type="checkbox"/> ...is explained. | <input type="checkbox"/> ...are developed or presented in an effective manner. | <input type="checkbox"/> ...are developed or presented in an effective manner. | <input type="checkbox"/> ...is described along with its consequences. |
| MASTERY (3) | <input type="checkbox"/> ...is analyzed and/or interrogated. | <input type="checkbox"/> ...are analyzed to thoroughly develop ideas. | <input type="checkbox"/> ...are analyzed to thoroughly develop ideas. | <input type="checkbox"/> ...is analyzed in a way that expresses the need for respectful engagement. |