

Assessment for the Lab Science Distribution AY 2014-15

Assessment Plan

Student Learning Outcomes Assessed: Upon completion of the core curriculum, students will have demonstrated the ability to

- Evaluate the significance of texts and data.
- Use discussion, research, information literacy, class presentations, writing, etc. to demonstrate critical thinking.

Assessment Activities:

- Rubric Scoring, Random Sample of Student Work
- Discussion of Results
- Development of Action Plans

Rubrics:

- Core SLOs
 - **Evaluate Data:** Evaluate the significance of texts and data.
 - **Critical Thinking:** Use discussion, research, information literacy, class presentations, writing, etc. to demonstrate critical thinking.
- Critical Thinking AAC&U VALUE
 - Explanations
 - Position
 - Conclusions
- Problem Solving AAC&U VALUE
 - Define
 - Propose
 - Evaluate
- Quantitative Literacy AAC&U VALUE
 - Representation
 - Application
 - Communication

Assessors:

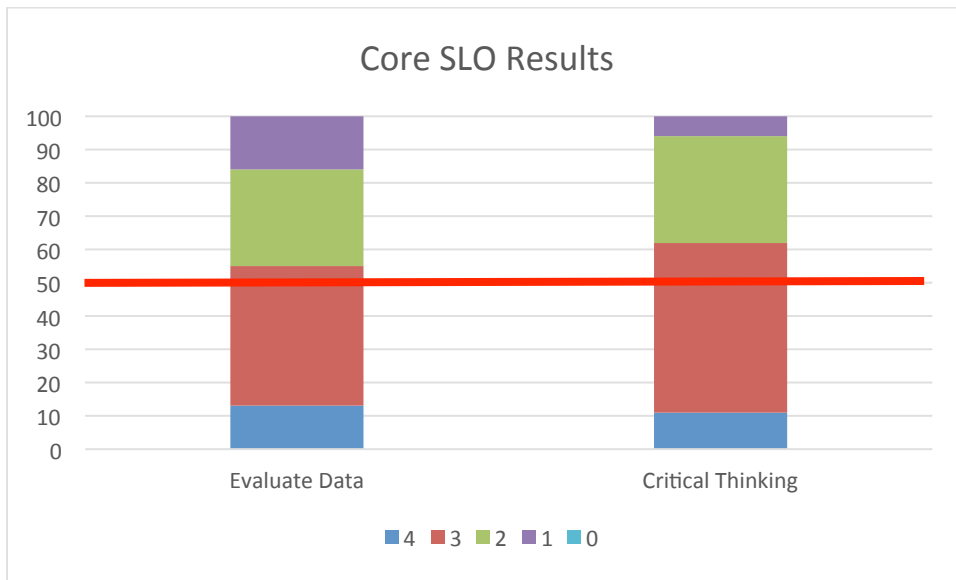
- Abi Adballah, Biology
- Stanisky, Chemistry
- Hecking, Physics

Assessment Results

Assessment Baseline:

50% of students assessed will score a 2 or higher on each assessed criterion.

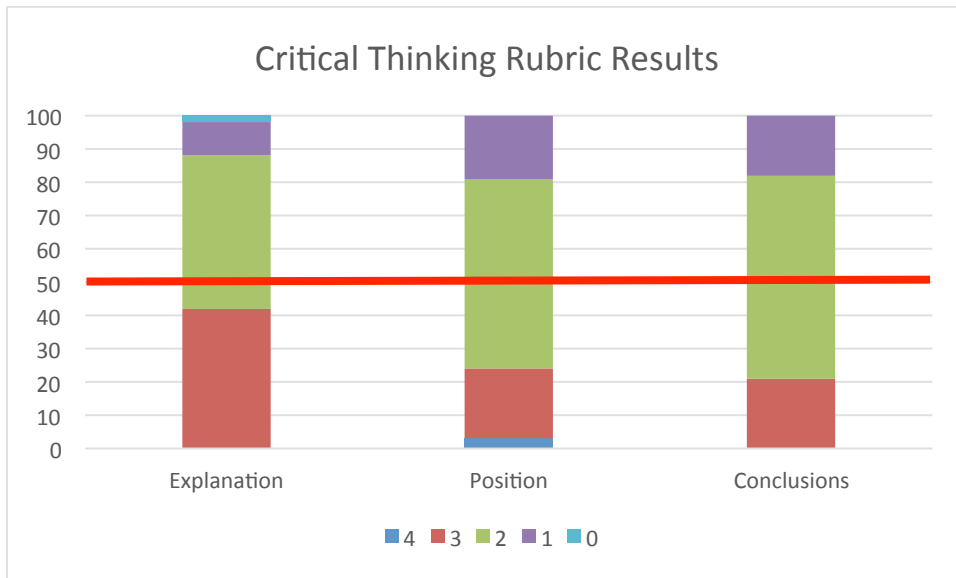
Assessment of Core Learning Outcome:



Core Learning Outcomes

- *Evaluate Data*: With 84% of the student samples scoring a 2 or higher, we **met** our assessment goal.
- *Critical Thinking*: With 94% of the student samples scoring a 2 or higher, we **met** our assessment goal.

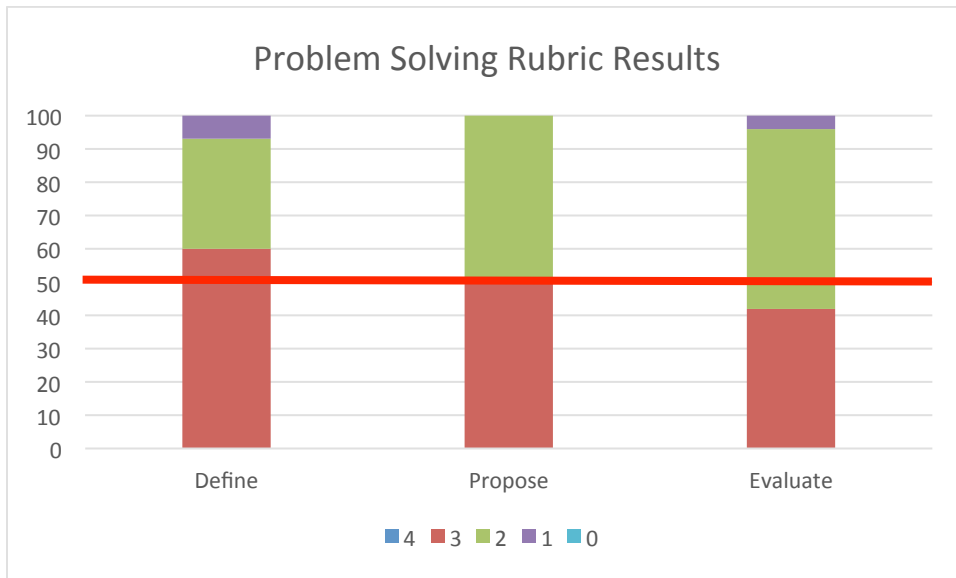
Assessment of Critical Thinking Rubric



Critical Thinking VALUE Rubric

- *Explanation*: With 88% of the student samples scoring a 2 or higher, we **met** our assessment goal.
- *Position*: With 81% of the student samples scoring a 2 or higher, we **met** our assessment goal.
- *Conclusions*: With 82% of the student samples scoring a 2 or higher, we **met** our assessment goal.

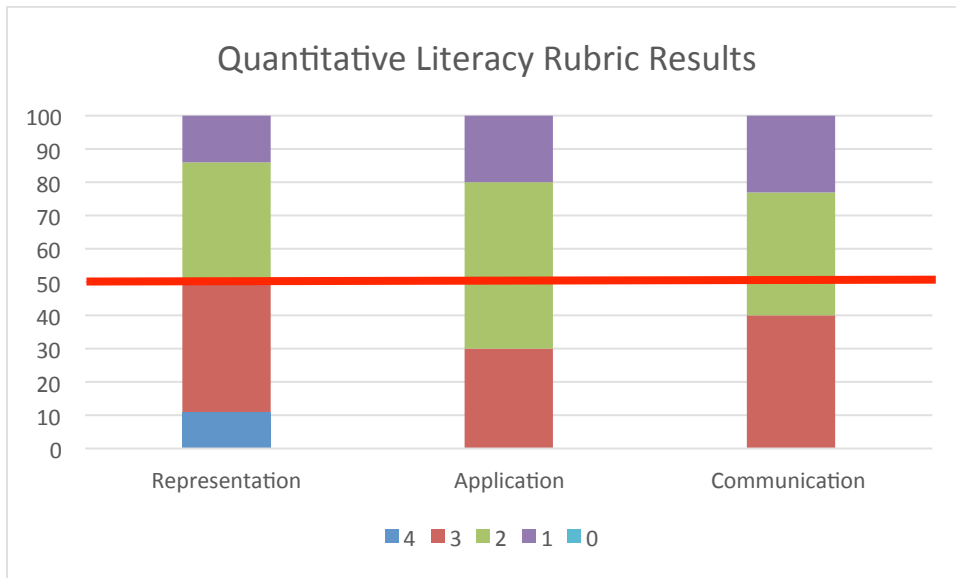
Assessment of Problem Solving Rubric



Problem Solving VALUE Rubric

- *Define*: With 93% of the student samples scoring a 2 or higher, we **met** our assessment goal.
- *Propose*: With 100% of the student samples scoring a 2 or higher, we **met** our assessment goal.
- *Evaluate Solutions*: With 96% of the student samples scoring a 2 or higher, we **met** our assessment goal.

Assessment of Quantitative Literacy Rubric



Quantitative Literacy VALUE Rubric

- *Representation*: With 86% of the student samples scoring a 2 or higher, we **met** our assessment goal.
- *Application*: With 80% of the student samples scoring a 2 or higher, we **met** our assessment goal.
- *Communication*: With 77% of the student samples scoring a 2 or higher, we **met** our assessment goal.

Reflection

General Reflections

- The group realized that too many of our samples received a score of N/A. There was a clear mismatch between the nature of the works submitted and the rubric. For example, a good portion of the rubric does not apply specifically to lab assignments that prescribe a specific series of steps and procedures. The nature of the assignment does not leave the student room for any critical thinking or problem solving.
- The wording in the rubric portion for quantitative literacy does not match our expectations for quantitative literacy. Some of the criteria are ill-suited for labs that have prescribed procedures. For example, sometimes labs are designed to demonstrate a particular concept and as a result they are not intended for students to have “deep and thoughtful judgments”.
- Large parts of the rubric are not suited for quantitative science.
- Our group felt that the rubric reads more of a program assessment tool rather than a project or lab assessment rubric.

Action Items

1. Re-write a rubric that fits the specific needs of the lab sciences.
2. We see the value in condensing the contents of the critical thinking rubric and the problem solving rubric. For example, the problem solving rubric can be reduced to two items: defining a problem and proposing and evaluating a solution to the problem. Likewise for the critical thinking rubric; we don't see the difference between distinguishing between the student's position and conclusion. They are one and the same in the sciences.
3. The quantitative literacy rubric should be reworded to include more emphasis on technical mastery of lab procedures and data analysis.
4. We strongly suggest that there should be a unified lab class that all students take for their core science requirement. The focus of this course would be on scientific reasoning, scientific method, data analysis, and statistical analysis.