

**Assessment Report for Math 125: Quantitative Reasoning
AY 2014-2015**

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.

Assessment Activities:

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

Rubrics:

- Core SLO
 - **Evaluate Data:** Evaluate the significance of texts and data.
- Quantitative Literacy AAC&U VALUE
 - Interpretation
 - Representation
 - Calculation
 - Application / Analysis
 - Assumptions

Assessors:

- Richins, Math
- Wu, Math
- Anderson, Math

Assessment Results

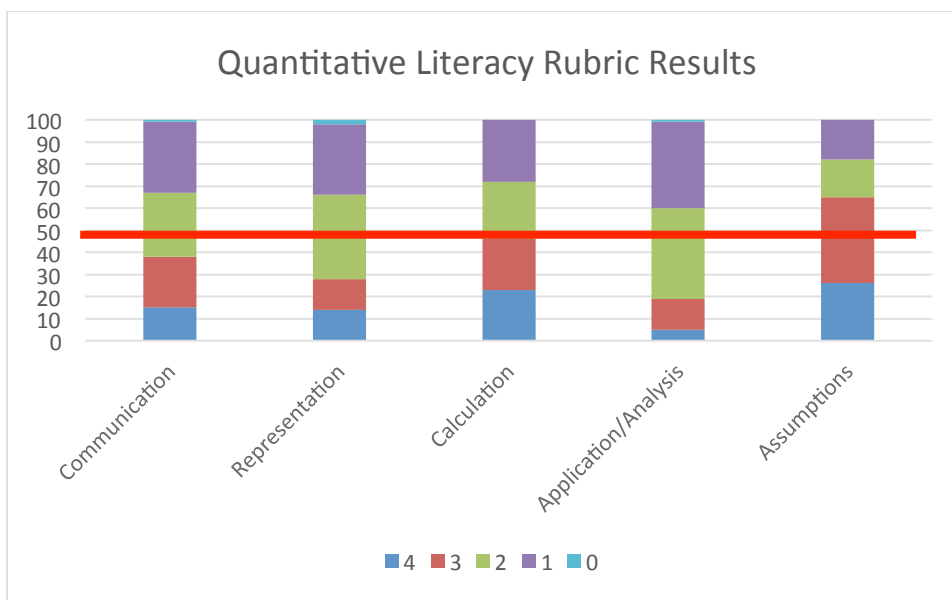
Assessment Baseline:

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

Assessment of Core Learning Outcome

- The samples provided dealt mainly with computation and not evaluation of data. Based on the samples submitted, the Core SLO: Evaluate the significance of texts and data could not be assessed. See action items for how this can be remedied in the future.

Assessment of Quantitative Literacy



Quantitative Literacy

- *Interpretation:* With 67% of the student samples scoring a 2 or higher, we **met** our assessment goal.
- *Representation:* With 66% of the student samples scoring a 2 or higher, we **met** our assessment goal.
- *Calculation:* With 72% of the student samples scoring a 2 or higher, we **met** our assessment goal.
- *Application:* With 60% of the student samples scoring a 2 or higher, we **met** our assessment goal.
- *Assumptions:* With 82% of the student samples scoring a 2 or higher, we **met** our assessment goal.

Reflection

Communication: Students were not asked to communicate their reasoning in the samples that were provided, they were only asked to calculate. Therefore, the samples provided were not optimal for assessing the students' skills in this area.

Representation: While the models used by the students were mostly correct in many cases, important details were still missing in nearly every case. It appears that the majority of these mistakes stem from a misunderstanding of the relationships between different quantities.

Calculation: If most students coming out of high school have any mathematical skill, it is calculation. However, there was still a significant portion of students who struggled in this area. Possible causes of this were over-reliance on calculators and an inability to judge whether an answer is reasonable.

Application and Analysis: This was by far the weakest category for the samples assessed. Because of the way most of the questions on the samples were posed, there was little motivation for students to analyze once they believe they believe they have done the right computation. In the particular questions that we used to assess this category many students had difficulty with definitions (of combinations and equivalent graphs).

Assumptions: This item would be much easier to assess if the questions on the samples were specifically written with the intent that students identify their assumptions. In the particular questions we used to assess this item, many students completely misidentified the assumptions by assuming a triangle was a right triangle (without deducing this from the given information) and by assuming order of choice mattered when it did not.

General Reflection

1. The samples we were given were not appropriate for assessing most of the items we would like to assess. Homework is especially problematic as some students may have collaborated or used outside sources to answer problems. Responses to exam questions are preferable.
2. Most of the questions are constructed for calculation rather than explanation, and the items on the rubric mostly require some explanation.
3. Because the questions did not fit the rubric well, we often assigned scores that gave “the benefit of the doubt,” which resulted in higher scores that we would have given otherwise.
4. The focus of the course should be reasoning, not necessarily data (which is the emphasis of the rubric). The statistics course should be taken if a focus on data is desired.

Action Items

1. Modify the core learning outcome associated with this course to be something akin to the following:
Use reasoning to analyze mathematical models and solve problems involving those models.
2. Develop a new rubric that corresponds more closely to the core learning outcome associated with this course.
3. Come up with a plan for administering the material for assessment so that all students are asked questions that correspond directly to the categories that are assessed by the new rubric.
4. Encourage students to develop their skills in explanation by making this a significant portion of the examinations for the course.
5. Build a bank of questions that can be used for assessment.
6. The assessors/instructors should meet at the beginning of each semester to ensure that each of these groups understands the needs and expectations of the other.