

Helping college and university presidents convey the value of liberal education

Assessing College Students' Quantitative Literacy Skills

AAC&U's VALUE Scoring Collaborative measures student progress on learning outcomes that parents, policymakers, employers, and students themselves expect the undergraduate experience to develop. Using validated rubrics, certified VALUE scorers assess samples of original student work that were created in response to classroom assignments.

The Quantitative Literacy VALUE Rubric is used to assess student work for evidence of the skills and abilities associated with quantitative reasoning.

Quantitative literacy is characterized by competency and comfort in working with numerical data. Quantitative literacy skills are evidenced by demonstrated ability to reason and solve quantitative problems in a range of contexts and everyday situations.

The rubric focuses on the ability to solve quantitative problems and to create and communicate arguments supported by quantitative evidence.

Scorers use the rubric to assess student performance on six dimensions of quantitative literacy, assigning each a score ranging from 0 to 4.

Over a five-year period, 8,000+ student work samples from two-year and four-year colleges and universities were scored. Overall, scores were highest on Interpretation, Representation, and Communication.

- **Interpretation:** Explaining information presented in mathematical forms
- **Representation:** Converting information into various mathematical forms
- **Communication:** Presenting quantitative evidence in support of an argument or purpose

Differences in scores across students' sex, race/ethnicity, and Pell Grant-eligibility (a proxy for family income) were negligible.

Alignment between rubric dimensions and assignment instructions is important.

A notable percentage of student work samples received a score of 0, indicating an absence of evidence of learning. The highest percentages of scores of 0 were observed for the Calculation (39%) and Assumptions (48%) dimensions.

- **Calculation:** Solving a problem successfully and sufficiently
- **Assumptions:** Making and evaluating important assumptions in estimation, modeling, and data analysis

When submitting student work samples, faculty indicate which dimensions the corresponding assignment was intended to address. Assignments designed explicitly to address a dimension of quantitative literacy generally yield a lower percentage of 0 scores.

The Quantitative Literacy VALUE Rubric is currently undergoing revision based on user feedback and the latest research literature.

In fall 2023, over 30 faculty and staff from US colleges and universities partnered with AAC&U to gather information about the current state of quantitative literacy and how it is measured.

This spring, teams of faculty and staff will use this information to revise the rubric, field test it with student work samples, and solicit stakeholder feedback.