

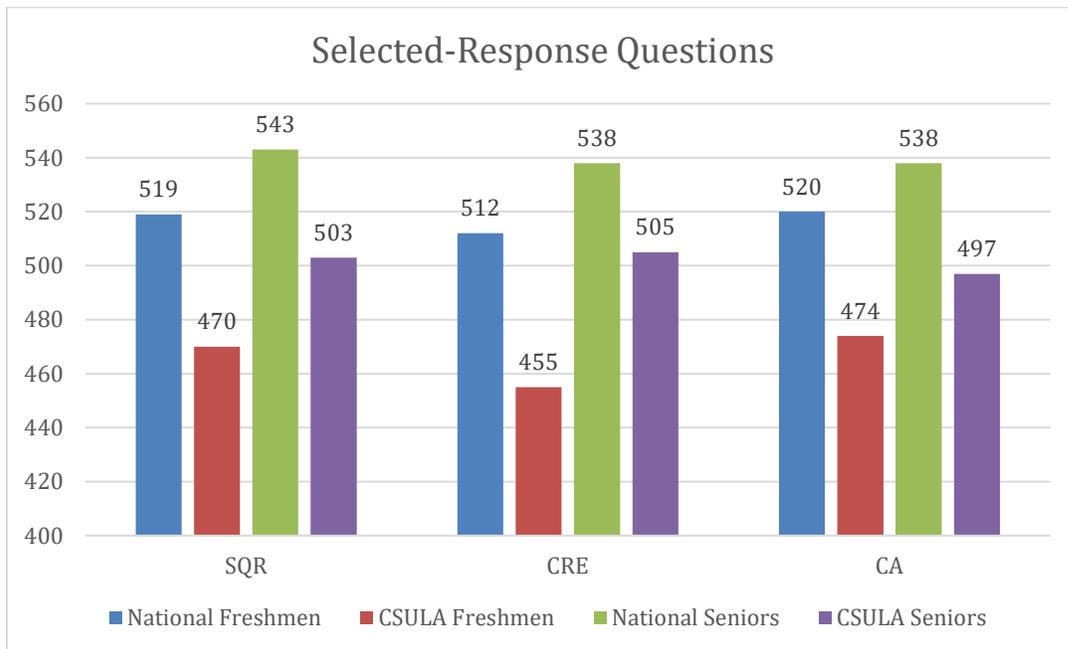
Plan for the Assessment Quantitative and Mathematical Reasoning
February 8, 2017

Available Institutional Assessment Data Relevant to Quantitative Reasoning:

In fall of 2014 and the spring of 2015, California State University, Los Angeles administered the Collegiate Learning Assessment (CLA) to 217 freshmen (fall), and 132 seniors (spring). Approximately 198 freshmen, 3 juniors, and 93 seniors had complete data for CLA data analysis purposes.

The CLA includes a performance task (PR) that assess three skill areas: Analysis and Problem Solving, Writing Effectiveness, and Writing Mechanics. Additionally, it contains selected-response questions (SRQ) that assess three additional skill areas: Scientific and Quantitative Reasoning (10 questions), Critical Reading and Evaluation (10 questions), and Critique and Argument (5 questions). Score values range from approximately 200 to 800 for each SRQ section.

With regard to Scientific and Quantitative Reasoning (SQR), California State University, Los Angeles freshmen scored 470 and seniors scored 503, representing some gain. Cal State LA students scored below the national comparative reference. **Figure 1** below shows the selected-response question scores with the national comparative references for each.



More detailed information about the results of the CLA can be found in the CLA Institutional Report. Overall, the results indicate that although CSULA students scored lower than freshmen and seniors at the national level, in Western schools and at large institutions, they scored significantly higher than students at similar MSI institutions and higher than students at similar high-Pell grant institutions. Additionally, the percentage of students scoring proficient or higher doubled from freshman to senior year. These results also indicate a medium effect size in gain from freshmen to seniors.

Although the results of the CLA provide some evidence that Cal State LA students do make gains in quantitative reasoning from the freshmen to senior level, the implications of these results for specific changes to curriculum or pedagogy are limited by the small size and haphazard nature of the sample. Faculty may find the results more useful if these can be disaggregated by major and if the measure included more sub-components of quantitative reasoning.

Plan for Developing a Pilot-Study of the Assessment of Quantitative Reasoning across Disciplines at Cal State LA:

Another route to ascertaining quantitative and mathematical reasoning skill of our entry and graduating students might be to use student scores or assessments from the GE math requirements to examine proficiency at the lower division level. The assessment of proficiency in QR at the senior-level has been a topic of intense discussion at EEAC and other venues due to the fact that different degree programs widely vary in extent to which they emphasize and reinforce QR skills throughout their programs. The approach commonly taken by institutions is for programs to develop expected outcomes for QR in their degree and appropriate assessments near graduation, while still being aligned with ILOs and College level outcomes. In examining the program learning outcomes of programs across the Cal State LA campus, the assessment team (Dean of Graduate Studies, Interim Director of Assessment, Director of GE, Associate Director of Institutional Research) and College Assessment Coordinators (CACs) have found that QR is not consistently included among all programs. The CACs are currently directing programs which lack QR within their program learning outcomes to develop QR outcomes that are appropriate to the program. The CACs will provide guidance and support to departments, encouraging them to develop assessment plans for these outcomes.

Additionally, our next steps will involve having the assessment team develop a plan for the Institutional assessment of QR skills. Assessment team members will meet with faculty in departments with expertise in this competency in order to ascertain the current practices being used to assess quantitative reasoning in their courses, focusing on introductory level and general education courses for those with responsibility in those areas and also at the senior level to gather evidence of current practice and how to improve and disseminate their practices to other programs. The team will consider published literature and seek advice from other institutions regarding best practices for the assessment of QR. The team may

consider the use of standardized or locally-developed assessments which could be given to students at the entry, mid-level, and senior level in order to compare QR performance. These evaluations will be reported in the WASC self-study and disseminated for use by stakeholders.

It should be noted that in September 2016, the Academic Senate of the CSU published the Quantitative Reasoning Task Force Final Report which made recommendations regarding the how baccalaureate programs in the CSU should define of QR and how programs might promote equity in the attainment of QR skills. We will incorporate these recommendations into our decisions as we further develop a plan for the Institutional assessment of QR.

Summary and Timeline:

Spring 2017

- Find the PLO(s) that address QR for each program at the senior level
- College assessment coordinators work with programs to develop program level QR outcomes as needed.
- Members of the assessment team will meet members of the Math Department to plan an evaluation of QR in GE B4 courses.
- Assessment team will begin review of literature on QR.
- Members of the assessment team will meet with faculty in departments with expertise in this competency in order to ascertain the current practices being used to assess quantitative reasoning in their courses.

Summer 2017

- Assessment team will develop a plan for a pilot project of data collection at entry, mid-level, and senior-level.
- Team will identify suitable courses and sufficient evaluators for a pilot project.

Fall 2017

- Assessment team will collect data for a pilot project from freshmen, mid-level, and senior-level courses across all 6 colleges.

Spring 2018

- Team will analyze and disseminate results to EEAC and other stakeholders.
- Team will make recommendations regarding the next phase of data collection on QR.