Quantitative Literacy Assessment

Fall 2020

Method:

Quantitative literacy was scheduled to be assessed in the Spring 2020 semester. The assessment was initiated and underway, however it was subsequently cancelled in March due to the COVID-19 pandemic and resulting switch to remote instruction. Therefore, the assessment was rescheduled and completed in the Fall 2020 semester.

Quantitative literacy was assessed by course instructors through the completion of rubrics on a sampling of their students' work. Seventeen courses were selected for the assessment using a stratified random sampling method to ensure that courses from each of the academic departments were represented (see Table 1). These courses were included in the sampling process based upon programs' course mapping to the Quantitative Literacy General Education Goal. The 17 courses comprised 166 individual classes. Two students from each class of the selected courses were randomly chosen for assessment, for a total of 332 students.

Instructors were initially notified of their class's inclusion in the assessment with an email sent within the first month of the semester. This notice informed the instructors of the goal that was to be assessed, and that they would be asked to assess a sample of student work that demonstrated the skills represented in that goal. They were further asked to await specific instructions in an additional, forthcoming email notice. This initial email also contained a link to an informational video clip describing the general education assessment process.

The second notice was sent approximately three week after the first notice and contained full assessment instructions and a link to an online survey to complete for the selected students from each of their class sections. A third email was sent to instructors approximately one week after the second notification that contained a link to a second instructional video demonstrating the process for assessing student work using the rubric survey. Reminder emails that again contained the survey link were sent to faculty members whom had not yet responded

approximately two weeks before the due date for submission, and again the week before the due date. Submissions were due after final exams, on the same day that final grades were to be submitted. At the close of the assessment, results were downloaded from the survey software for analysis.

The survey was developed in Qualtrics survey software. Upon clicking on the link in the email notice, instructors were taken into the online survey and presented first with an instruction page containing the text of the general education outcome and the details of the selected class section. The survey was then separated into two parts; one for each of the randomly selected students. Each section listed the name of the selected student and began with an item to indicate whether work from the student was available, with selection options to indicate why the work may be unavailable for assessment.

If student work was available for assessment, the survey continued on to the assessment rubric. The analytic rubric assessed students on four criteria; providing reasoning for numerical conclusions, identifying and explaining quantitative information, performing computations, and converting relevant information into various forms. These criteria were rated on a four-point scale, ranging from 0, entry, to 3, advanced. The survey also included an option to mark any criterion as not applicable if the student work did not contain any elements that could be assessed for that criterion. After the completion of the rubric, instructors were asked to indicate if the assignment used for the assessment required critical thinking. This question was included in order to facilitate the separate analysis of the general education critical thinking goal. Finally, instructors were asked to describe the assignment that they had used to assess their students' quantitative literacy. This question was included in order to assist instructors in selecting appropriate assignments for the assessment of quantitative literacy in the future.

Table 1. Courses selected for assessment of quantitative literacy

Course	Number of Classes
ART 115	3
BIOL 101	12

CPS 162	2
MATH 100	14
MATH 103	47
MATH 104	8
MATH 110	7
MATH 111	13
MATH 113	2
MATH 119	5
MATH 121	4
MATH 122	4
MATH 125	1
MATH 202	36
PHYS 211	3
PSYC 241	4
THTR 142	1

Results:

Surveys were submitted for 154 students (46.39%). Surveys could not be completed for 61 (18.37%) of the selected students because the students either dropped the course or did not turn in the assignment that was chosen for assessment. The remaining missing surveys (117 (35.24%)) could not be accounted for or were not submitted for other reasons. Rubric scores for the assessed students are shown in Table 2.

Table 2. Frequency table of rubric scores for all assessed students

Criteria	3- Advanced	2-Established	1- Developing	0- Entry	Mean (SD)
Provide reasoning for conclusions	78(54.2%)	35(24.3%)	20(13.9%)	11(7.6%)	2.25(.09)
Identify and explain information	79(51.6%)	51(33.3%)	12(7.8%)	11(7.2%)	2.29(.90)
Perform computations	84(54.9%)	42(27.5%)	21(13.7%)	6(3.9%)	2.33(.86)
Convert relevant information	85(58.2%)	42(28.8%)	13(8.9%)	6(4.1%)	2.41(.82)

 All four of the criteria for Quantitative Literacy reached proficiency. Mean scores between the criteria showed little variability, with the mean for the "converting relevant information" criterion being the highest with a mean of 2.41 (0.82), and the mean for the "providing reasoning for conclusions" criterion being the lowest, with a mean of 2.25 (.09). A limitation of this assessment was the low submission rate, with less than half of the selected students being scored with the rubric.