Quantitative Literacy Assessment

Spring 2017

Method:

The General Education Outcome Quantitative Literacy was assessed through the collection of samples of student work. Eleven courses were chosen for the assessment (see Table 1), which comprised 92 individual classes. These courses were selected for inclusion by the College-Wide Assessment Committee (CWAC) based upon course outcome mapping to the Quantitative Literacy General Education Outcome, or course outcomes having relevance to quantitative literacy in some significant way. Four students were randomly selected for assessment from each class of the selected courses. This selection method resulted in a sample of 368 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 outcome that was to be assessed in their class and asked them to await instructions in an additional, forthcoming email notice. The second notice was sent two weeks following the initial email and contained the names of their selected students and instructions for submitting their work. Instructors were asked to send samples of work that demonstrated the ability to select and apply mathematical tools to draw conclusions from quantitative data. Attached to the email notification was a copy of the rubric that would be used in the assessment to better assist instructors in selecting appropriate pieces of student work. Instructors were also asked to submit a copy or brief description of the assignment in order to assist the assessors in evaluating the student work. Work could be submitted electronically or in paper form. If work could not be submitted, instructors were asked to indicate the reason for the lack of submission, such as the student dropped the course or did not complete the selected assignment. A reminder email was sent to all instructors of selected courses approximately two weeks before the due date for submissions.

All collected artifacts were anonymized and uploaded into the Tk20 assessment software program. A group of seven assessors attended a norming session in which five artifacts were communally assessed in the Tk20 system in order to ensure reliability of the rubric and within the group of assessors. After the successful norming session, all artifacts were assessed within Tk20 using the rubric. Each artifact was assessed twice, by two different volunteers. The analytic rubric consisted of four dimensions: Provides reasoning for numerical conclusions, Identifies and explains quantitative information, Performs computations correctly with appropriate precision, and Converts relevant information into various forms. These dimensions were rated on a 5-point scale ranging from 0, no proficiency, to 4, expert proficiency.

Table 1. Courses selected for assessment of Quantitative Literacy

Course	Number of Classes
AOS 160	1
CARP 110	2
CHEM 102	4
CIS 222	3
ENGR 102	4
MATH 103	34
MATH 111	9
MATH 202	19
NURS 125	2
PE 201	12
PSYC 241	2

Results

Artifacts were collected from 262 students (71.2%). Artifacts could not be collected from 49 (13.3%) of the selected students because the students either dropped the course or did not turn in the assignment chosen for assessment. The remaining artifacts either could not be assessed or were not submitted for various reasons, including the class having no required assignments suitable for assessment, or artifacts being submitted after the assessment deadline. To avoid undue burden on the assessment volunteers, only 200 of the 262 collected artifacts were included in the final assessment. These 200 were randomly selected for inclusion by the Tk20 juried assessment function. Rubric scores for the assessed students are shown in Table 2. Note that row counts do not total the number of assessed students because each student was assessed twice. In addition, "not applicable" and missing scores were not included in the row totals.

Table 2. Rubric scores

Criterion	0-No Proficiency	1-Limited Proficiency	2-Some Proficiency	3- Proficiency	4-Expert Proficiency	Total	Mean(SD)	NA/ Missing
Provides reasoning	18(5.9%)	62(20.3%)	91(29.8%)	118(38.7%)	16(5.2%)	305	2.17(1.0)	89
Identifies and explains	19(7.0%)	41(15.1%)	75(27.6%)	129(47.4%)	8(2.9%)	272	2.24(.98)	122
Performs computations	9(3.0%)	74(24.4%)	58(19.1%)	119(39.3%)	43(14.2%)	303	2.37(1.09)	91
Converts information	14(5.8%)	25(10.3%)	64(26.3%)	132(54.3%)	8(3.3%)	243	2.39(.93)	151
Total	60(5.3%)	202(18.0%)	288(25.6%)	498(44.3%)	75(6.7%)		2.29	