Fall 2017
Core Curriculum Assessment Report

of

Skills 1 – Communication

from the

Mathematics

Core Curricular Area

submitted by

Melissa Hardeman

on behalf of the

Mathematics
Core Area Assessment Committee

Methods

How was student work (artifacts) collected for assessment?

All College Algebra students were given the same assessment problem to work as part of their final exam.
On campus QMR students were given an assessment problem to work in class.
Online QMR students were given the same assessment problem to work as part of their final exam.
We required that all students work these assessment problems in a proctored environment either as part of a test or as an in class quiz.
ALL artifacts were collected by Melissa Hardeman.

What type of artifacts were collected?

The artifacts were multiple step, show your work type problems. Students were required to come to a conclusion at the end of the problem based on the work they completed in the first steps.

How were the artifacts sampled for assessment?

Based on information obtained from our Statistics Professor, we chose a little over 10% of the artifacts for the College Algebra on campus courses, and approximately 20% of the artifacts from each of our other courses/modalities.

How were the artifacts scored?

The artifacts were scored by the math department faculty. Each faculty member was paired with another faculty member to score the same set of artifacts. Each faculty member scored approximately 10-12 artifacts in total. Artifact sets were labeled (A or B) and numbered (1 through n). Since the artifacts were graded by two persons, this labeling/numbering system allowed us the opportunity to investigate further any scoring's that differed by more than 1 unit.

How was reliability in scoring determined and ensured?

Two faculty members were assigned the same set of artifacts to score. If there was a discrepancy in scores that was greater than 1 unit, the artifacts were further investigated to determine why this may have occurred. Fortunately, this happened on only one or two occasions. To remedy this discrepancy, the two scores were averaged to obtain one conclusive score.

I attribute this small number of discrepancies in scoring to the very detailed rubric we designed and used.

Reflection

What was learned from the assessment results?

Scoring of Artifacts and Reliability
There was one faculty member who DID NOT complete their grading assignment; therefore, we did not have two scores for every artifact that was scored. This may or may not skew the reliability of some of the data; however, we do feel that the rubric we developed and used is very good and attributes to the reliability of our data.

Reflecting on the results listed below - It appears that our current teaching methods are effective, for all modalities, with respect to the basic use of mathematical formulas and terminology. We consider this surface learning. Where many of our students are performing poorly is in the area of deeper learning where they make connections among ideas and effectively explain/communicate those connections. It appears that the F2F QMR students are performing better in this area than any other course/modality. This is probably due to the fact that this course is taught quite differently than the College Algebra course in the sense that students work in groups to solve real world type mathematical problems thereby giving them more exposure to communicating/explaining mathematics both orally and in writing.

Learning Outcome 1 "Use basic mathematical formulas and terminology"

Across all modalities - The percentage of students that were ranked as
 either Advanced or Proficient in   both MATH 1302 College Algebra and MATH 1321 Quantitative and Mathematical Reasoning was   83% compared to 4% who were ranked as either Not Met or Absent. We feel that this is a successful outcome.

Individual modalities that stood out - MATH 1321 Quantitative and Mathematical Reasoning Online scored the lowest with 67% who were ranked either Advanced or Proficient while MATH 1302 College Algebra Concurrent had 100% who were ranked either Advanced or Proficient.

Learning Outcome 2 "Explain orally and in writing the mathematical reasonableness of a statement that is presented as being implied by data"

Across all modalities - The percentage of students that were ranked as either Advanced or Proficient in both MATH 1302 College Algebra and MATH 1321 Quantitative and Mathematical Reasoning for was 46% compared to 32% who were ranked as either Not Met or Absent. This is

concerning and will be addressed.

Individual modalities that stood out -   For MATH 1321 Face-to-Face, the scores were 70% Advanced/Proficient and 4% Not Met/Absent. This is a successful outcome; however, the following individual modalities give us concern. For MATH 1302 Face-to-face the scores were 29% Advanced/Proficient and 50% Not Met/Absent, for MATH 1302 Online the scores were 30% Advanced/Proficient and 60% Not Met/Absent, and for MATH 1321 Online the scores were 58% Advanced/Proficient and 8% Not Met/Absent.

Learning Outcome 3 "Communicate about math precisely orally and in writing"

Across all modalities- The percentage of students that were ranked as either Advanced or Proficient in both MATH 1302 College Algebra and MATH 1321 Quantitative and Mathematical Reasoning was 73% compared to 7% who were ranked as either Not Met or Absent. We feel that this is a somewhat successful outcome; however, there was a clear outlier that is concerning. See below.

Individual modalities that stood out - For this learning outcome one modality was an outlier, MATH 1302 College Algebra Online. The percentage of students who were ranked as Advanced or Proficient was 20% compared to the 30% who were ranked as Not Met or Absent.

Continuous Improvement

What changes will be made based upon the assessment results?

We will not make any changes at this time concerning Learning Outcome 1. We will concentrate on improving Learning Outcome 2. The main concern is with writing and explaining mathematical concepts. It is important to note that the majority of these courses are taught by graduate students who have limited teaching experience. Currently, there are 3 fulltime faculty who act as coordinators/mentors for the graduate students. One person oversees their major course work (graduate coordinator) while the two other faculty members coordinate the teaching of developmental and core math courses. Graduate Student orientations are held at the beginning of each semester to orient them to their teaching responsibilities, the courses they will teach, and the best practices when teaching these courses. We will look into revising our current orientation plan to include classroom visits and bi-weekly meetings.   We will purposefully include more questions in class and on tests which require two or three sentences of explanation.

Feedback

What changes are recommended for Core assessment?

I think there are WAY TOO many competencies that need to be assessed in each curricular area. It is time to pare down to the bare minimum.

There should be some type of compensation for the enormous amount of work involved in core assessment.

ALL members of a department should be involved in this process.

Comments

Other comments?

END OF REPORT