Spring 2017
Core Curriculum Assessment Report

of

Knowledge 1 - Mathematics, Social and Natural Sciences, Engineering and Technology

from the

Mathematics

Core Curricular Area

submitted by

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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 as on campus students 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?

Collection of Artifacts.....
Collecting artifacts from Concurrent courses in a timely manner was difficult; even though, they were sent many reminder emails. We did eventually receive the artifacts; however, they came to late to include their results in this report. Also, since many concurrent courses are year-long courses, their artifacts won't be available until the end of the school year.

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.

College Algebra.....
Knowledge 1- Outcome 1 and Outcome 2
There were big differences between overall scores of the online college algebra courses and the on campus courses. Concurrent college algebra scores were much better than both online and on campus college algebra scores. This could be due to the fact that concurrent students have much more class time than college students.
If we look at the big picture, 47/74 or 64% of College Algebra students scored in the Advanced or Proficient categories for Learning Outcome 1, and 52/74 or 70% of the students scored Advanced or Proficient for Learning Outcome 2.

QMR.....
Knowledge 1 - Outcome 1 and Outcome 2
We only offer this course on campus and online. There are no concurrent QMR courses offered. There were no huge differences in the results between the two modalities with respect to each outcome.
If we look at the big picture, 33/36 or 92% of QMR students scored in the Advanced or Proficient categories for Learning Outcome 1, and 25/36 or 69% of the students scored Advanced or Proficient for Learning Outcome 2. This lower percentage on Outcome 2 may indicate that improvements need to be made. Further investigation will ensue.

Overall College Algebra and QMR.....
Of the 220 reported scores given for both outcomes, 71% scored Advanced or Proficient. This is

encouraging.

All Other Core Mathematics Courses.....
Our department lists Trigonometry, Applied Calculus, Pre-Calculus, Business Calculus, Calculus, and Intro to Statistics as core math courses, as well. For these courses, we decided to analyze how well our placement program works on placing students into these courses. Data was collected from OIR and is currently being analyzed by our two statistics professors. Initial results are as follows.

Pass (A,B,C) versus Fail (D,F,W,NC)
Three groups of placement test: ACT, SAT and Compass. All courses considered.

Chi-square test, Anova, and regression analysis were used to compared the passing rates among three groups of placement test. All of them show that there are significant differences in passing rates among three groups. In detail, students in SAT group have significantly higher passing rate compared to the other two groups. Students in ACT group have significantly higher passing rate compared to students in Compass group.

To further detect differences in passing rates among groups of placement test for each course, we will run the same analysis for each course. However, we notice that, the sample size for SAT is low compared to other groups. So for some courses, we might not be able to compare SAT with other two groups.

Continuous Improvement

What changes will be made based upon the assessment results?

1) Work on a way to obtain assessment results from concurrent teachers in a timely manner. This may include contacting the high school concurrent coordinators for help in collecting these artifacts.
2) Online College Algebra - the results indicate there is a need to incorporate more "problem solving" opportunities in these online courses. There is a need to provide more of the opportunities in both online and on campus courses.
3) QMR - the results were encouraging. This is a course where we develop skills necessary to solve problems in everyday life AND we incorporate many opportunities for students to exercise their problem solving skills. We will continue to focus on developing these skills in this course.
4) I feel there is an issue with the excel template used to report the data on Knowledge Outcome #2. The problem is that the template treats Outcome #2 as a "single" objective; however, we have two objectives within this outcome. The reporting form does not allow for the scores on these two objectives to be input separately, therefore, we had to average the scores on the two objectives to determine a single score for Outcome #2. The two objectives are (a) Use mathematical terminology, and quantitative methods such as arithmetic algebra, geometry, or statistics to solve problems. (b) Discern if the mathematical results obtained are reasonable. We feel these objectives are quite different and the averaging of these two scores does not accurately reflect the results we want to consider. In the future, it would be beneficial if the reporting template were changed to accommodate all the objectives for each outcome.
5) We are getting some very valuable initial information from the statistical analysis that is being done with respect to placement in our core math courses. When this analysis is complete, we will hopefully be able to improve our placement methods into these courses.

Feedback

What changes are recommended for Core assessment?

With respect to the Core Math Course listing, I recommend that we remove Trigonometry, Pre-Calculus, Business Calculus, Applied Calculus, Calculus, and Intro to Statistics. We should concentrate our artifact collection efforts and core assessment efforts on College Algebra and QMR because these are the math courses that the MAJORITY of UALR students take in order to graduate.

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

It should be promoted heavily across the campus, among all disciplines, so that EVERYONE is willing to be involved in the process.

Comments

Other comments?

One of my comments was given earlier regarding the reporting template for Knowledge 1 - Outcome 2. It should allow for reporting individual objectives within each outcome.

I feel that this new "standardized" approach to reporting our assessment results is a GREAT IMPROVEMENT!

END OF REPORT