Mathematics and Quantitative Reasoning Assessment Spring 2018

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The Mathematics and Quantitative Reasoning Assessment committee collected data during Spring 2018. All sections of the Mathematics and Quantitative Reasoning category were assessed. The chairs of the department and known instructors for these sections were notified of the assessment in December 2017. Instructors of the sections were contacted again at the beginning of Spring semester and given a brief description of the assessment process along with the questions to use on their exams. These questions were agreed upon by the committee in Fall 2017. After all exams were collected, randomized set of 20% of each section was selected to be assessed (each exam was numbered (i.e. 1, 2, 3…) then using a random number generator, 20% were selected). The exams were analyzed on May 22 – one person analyzed MAT 103; one person analyzed MAT 114; two people analyzed MAT 311/ECO 305 using the same rubric; one person analyzed MAT 122; one person analyzed PHI 107 and one person analyzed MAT 161 and MAT 124.
The Buffalo State College guidelines for Mathematics and Quantitative Reasoning assessment have the following student learning outcomes (SLOs):
The following were assessed during this administration cycle:
Students will demonstrate:
1. the ability to represent and analyze unknown relationships using algebraic and geometric models.
2. the ability to represent phenomena of the physical world in algebraic symbolic form.
3. the ability to solve problems using appropriate methods through logical relationships and reasoning.
[http://intellectualfoundations.buffalostate.edu/mathematics-and-quantitative-reasoning-0]

These three SLOs were assessed with separate questions for each topic (MAT 114 had different questions than MAT 311/ECO 305) because each course teaches different concepts, models and issues. Instructors administered the assessments on different days because the content items were imbedded into either a regularly-scheduled exam or the final exam.
The results are presented in the Appendix that contains the results disaggregated by topic. With regard to attainment of the SLOs in each category, 3,“exceeding”, 2, “meeting,” 1, “needs improvement,” and 0, “not meeting.”

The most striking finding of the assessment is that the results of MAT 122 show all of its sampled students at the exceeding or meeting expectations level for all three SLOs. MAT 161 also has a very high percentage of its sampled students at the exceeding or meeting expectations level. Clearly, these two courses are doing something right! By contrast, MAT 103 needs to improve student performance on SLO 1 and SLO 2 and MAT 311 on SLO 1. The performance of the sampled students in the other courses was neither impressively high nor worryingly low.

One might expect that the majority of students would be “meeting” expectations rather than “exceeding”, “approaching” or “not meeting” expectations. None of the results show this expectation.

It is a challenge to compare the results of this assessment with those from 2013 assessment since the SLOs used in these assessments are different. There is one similarity in the results from 2013: MAT 122 had some of the highest outcomes.

Members of the assessment committee contributed ideas for follow-up, or “closing the loop.”

Important questions arose in the committee discussions.

After discussion, the following action steps were proposed:

1. Continue to assess all sections in the category (at 100%) and then sample at 20%.
2. Have a face-to-face meeting with all instructors at the beginning of the next assessment cycle to ensure that they all understand the purpose of the assessment and have an opportunity to ask any questions that they might have about it.
3. In the next assessment cycle, map the three SLOs to particular assessment questions for each course while fixing the said questions.
4. Use peer tutoring and peer-led time management and study skills workshops, offered through the Mathematics Center, to improve student performance, particularly in MAT 103 and MAT 311.