Mathematics Department Course SLO Assessment Report

Course: MATH 70 Math for Liberal Arts Students

Team leader: Kerin Keys

Team members: Peter Rankenburg, Aaron Schusteff

Participating instructors (in addition to team leader and members): no others

Semester and year of assessment: Fall 2014

Course SLOs being assessed:

MATH 70:

B. Describe sets, perform operations on sets, and establish cardinality of sets.
G. Compute probabilities of events by applying techniques of counting.

Description of the assessment process as determined by the team.

We chose to assess these SLOs by analysis of final exam questions linked to the SLOs. Our team developed three questions that all MATH 70 instructors included as part of their Fall 2014 Final Exam. These questions were all open answer questions. Each individual instructor scored the questions for their own class according to the same rubric created by the SLO team:

2 points – Proficiency: Student understood and executed the concept with at most one minor error.
1 point - Developing: Student showed some understanding of the concept but did not demonstrate proficiency.
0 points - No Evidence: Student showed no evidence of making progress on this concept.

In an effort to obtain consistent results between all sections of MATH 70, the SLO team determined which errors would be considered minor and major for each question which individual instructors used to determined the score for each student on each question.

Individual instructors recorded results in a formatted spreadsheet which was compiled by the MATH 70 SLO team leader. The spreadsheet generated the data and charts shown below in the summary of results.

Once results were compiled, the MATH 70 SLO team discussed the results and made observations, suggestions, and recommendations.
Summary of assessment results.

Question 1: Probability of a repeated event.

Did Students Demonstrate Competency?

Did Score Match Class Outcome?

Day vs. Evening

Use of Groupwork in Class
Question 2: Conditional probability.

![Online vs. Offline HW](image)

**Question 2 Score Distribution**

![Graph showing score distribution](image)

**Did Students Demonstrate Competency?**

![Pie chart showing competency](image)

**Did Score Match Class Outcome?**

![Pie chart showing score outcome](image)
Question 3: Set operations.

Did Students Demonstrate Competency?

Did Score Match Class Outcome?

Day vs. Evening

Use of Groupwork in Class

Online vs. Offline HW
Analysis of assessment results.

58 students answered the 3 questions. A competent score is 2.

Overall Observations and Conclusions.

- Only around 20-25% of our students got a score of 2 on any of the questions.
- If a student got 2 points on any question, they passed, and from that of course we can see that no student who failed got a 2 on any question. Thus, a passing grade in the class does mean mastery of the SLOs.
- About half (43-48%) of our students' performance on any one of the questions matched their outcome in class (meaning if they got a 2, they passed and if they got a 0 or 1, they failed.
- More passing students got 1s than 2s for each question. Thus it seems we are teaching SLOs B and G to a degree but we could do better.

1. Observations and Conclusions for MATH 70 SLO B.

Question 3 addressed this SLO. 25.9% of all students scored competently.

- Lots more students in the evening class than day classes got Question 3 right (approximately 50% vs. 19%). There was, however, only one evening class and the instructor emphasized set operations in his final exam review session.
- Students in classes with offline homework did much better on Question 3 than those with online HW (50% vs. 17%). Set operation homework should be given offline.
- Question #3 had so many (6) parts that the 0-2 point scale may not have been the best scale to use and may have caused the above 2 observations.

2. Observations and conclusions for MATH 70 SLO G.

Questions 1 and 2 addressed these SLOs.
25.9% of all students scored competently on Question 1
20.7% of all students scored competently on Question 2

- There is no or slight difference in day vs. evening or online HW vs. offline HW.
- No students in a class without group work or collected homework got Question 2 (conditional probability) right.
- Group work and collected or online homework should be encouraged in MATH 70.

Recommendations for Future Assessments.

- Only assess SLOs with questions with one or two parts. Six parts is too many to get a good picture of understanding.
• The team recommends looking further into the role of group work in MATH 70. We would need to assess more classes that use and do not use group work in order to do this. We recommend getting specifics about which course topics group work was used for in class, and compare that with the results on course topics. Do students do better on the topics that they learned in groups?
• Give offline homework for set operations and collect it to see if performance increases on this topic with those measures.