

Template to Report Results of Assessment of General Education Learning Outcomes

Academic Year 2010-2011

Subject Area: Mathematics

1. Identify the course(s) used in the assessment. Include the prefix, number, and title of each course.
The course for the TBR course-embedded assessment was Math 1110, College Algebra. This is the math course designed for non-science majors.
2. Indicate the number of students who were assessed. Was sampling used? If yes, briefly describe the method of selecting student work and the percentage of students whose work was assessed.

Sampling was not used. The data set is based on 410 students enrolled in the above course fall 2010 that took the final examination at the University's scheduled day and time. A total of 602 students initially enrolled in this course. There were 192 students that are not accounted for in this data set.

These students fall in one of the following categories:

- a. Missed the final at the scheduled time and took a make up test later.
 - b. Stopped attending class after the drop date.
 - c. Decided to not take the final exam.
 - d. Teacher(s) did not submit the class scantron sheets to be included
In this report. (Three sections were not included).
3. Do the procedures described in Items 1 and 2 represent any significant change from the pilot assessment? If so, describe the changes and rationale.
No.
 4. Per the evaluation rubric utilized at your institution, adapt the table below to record the results of the assessments of each learning outcome in the subject area discussed in the report.

Mathematics Outcome to be Assessed	Students exceeding minimum mastery Number and Percent	Students minimally mastering objectives Number and Percent	Students failing to master objective Number and Percent
1. Students are able to use mathematics to solve problems and determine if solutions are reasonable.	$\frac{193}{410} = 47\%$	$\frac{84}{410} = 20\%$	$\frac{134}{410} = 33\%$
2. Students are able to use mathematics to model real world behaviors and apply mathematical concepts to solution of real-life problems.	$\frac{267}{410} = 65\%$	$\frac{50}{410} = 12\%$	$\frac{93}{410} = 23\%$
3. Students are able to make meaningful connections between mathematics and other disciplines.	$\frac{277}{410} = 68\%$	$\frac{59}{410} = 14\%$	$\frac{73}{410} = 18\%$
4. Students are able to determine appropriate use of technology for mathematical reasoning and problem solving.	$\frac{240}{410} = 58\%$	$\frac{88}{410} = 22\%$	$\frac{82}{410} = 20\%$
5. Students are able to apply mathematical and/or basic statistical reasoning to analyze data and graphs.	$\frac{266}{410} = 65\%$	$\frac{57}{410} = 14\%$	$\frac{87}{410} = 21\%$

5. Summarize your impressions of the results reported in item 4. Based upon your interpretation of the data, what conclusions emerge about student attainment of the learning outcomes?

The five learning outcome variables in item 4 of this report have been grouped into two (2) broad categories. Variables 1, 4 and 5 may be considered to represent abstract or critical thinking skills whereas variables 2 and 3 represent more concrete or applied skills.

Combining the results in items 1, 4, 5 the data show that 57% of students included in this study demonstrated performance exceeding minimum mastery, 15.5% minimally mastered and 24.5% were deficient. Students exceeding mastery remained about the same while there was a substantial increase (6.5%) in the number of student who failed to mastery the critical thinking skills in comparison to last year's performance.

Results from the two variables measuring abstract skills (Items 2 and 3) show that 67% exceeding minimum mastery for use of technology and ability to analyze data and graphs, This result is slightly less than the results on the 2010 study, however, there was a 6.5% increase in the failure rate from 2010.

Overall, students performed best at making connections between mathematics and other disciplines which is a key goal according to “best practices” in mathematics. Sixty-seven (67%) percent of the students exceeded minimum mastery of the objective and an additional 14% were able to minimally master the concept.

It must be noted that this data was compiled on students enrolled in Math 1110 in the fall semester. All prior studies involved students enrolled in Math 1110 in a spring semester students. Many of the students enrolled in this course in a fall semester are first time freshmen students. Whereas, in a spring semester Math 1110 course the majority of the students consist of a combination of second semester freshman students, upper classman students, repeater or student who were enrolled in a R/D class the first semester. Our intent is to use data from fall semester 2011 for comparison in the next study.

6. Do you plan to implement strategies to correct any deficiencies that emerged from the data obtained? If yes, please explain.

As in previous studies, the data indicate that efforts should be placed on moving students from minimal mastery to mastery of the learning outcomes. As stated in the proposal, students that fall in this category can correctly identify the problem and exhibit evidence that they are able to perform some of the components needed to solve the problem. They are unable to select the best response because they may use inappropriate math models/tools or have some difficulty in discarding impossible solutions. To remedy this problem a thorough examination of teaching strategies used by faculty and time spent may be the best solution. A review of the assessment tool will be reevaluated and determine if adjustments are warranted.

At the end of each semester (fall and spring) a complete analysis of the final results for the course will be reviewed. The entire faculty for this course will be advised of the deficiencies and will be asked to suggest solutions. The fall semester of 2010 many of the faculty included more technology in their course as a result of the 2009 study which indicated that as many as 35% are able to perform only minimally at the use of technology. These classes will be compared with the regular classes when time permit for such a study.

7. Have you implemented any plans to correct deficiencies based upon data obtained from the pilot assessment in 2008-09?

Findings of the pilot study were presented to the Math faculty. The identified deficiencies were evaluated. After a thorough analysis of these deficiencies an improvement plan was developed and presented to the faculty to implement. This plan included, but not limited to: a) additional focus placed on these areas, b) use of additional resources to supplement the text, c) revision of the assessment tool used and d) the use of “best practices” for teaching mathematics.

Assessment of Critical Thinking

Critical Thinking Learning Outcomes	Minimal or above mastery of objective	Students failing to master objective
1. Students are able to precisely formulate the problem.	$\frac{327}{410} = 79\%$	$\frac{83}{410} = 21\%$
2. Students are able to make an informed decision about an appropriate mathematical model for the problem.	$\frac{354}{410} = 86\%$	$\frac{41}{410} = 15\%$
3. Students are able to choose appropriate technology to properly assist with the solving of the problem.	$\frac{328}{410} = 80\%$	$\frac{82}{410} = 20\%$
4. Students are able to determine if a possible solution is reasonable.	$\frac{278}{410} = 68\%$	$\frac{132}{410} = 32\%$

1. Summarize your understanding of the results yielded by the THEC test regarding critical thinking. Based upon your interpretations of the data, what conclusions emerge about student attainment of critical thinking skills?

For the outcomes above the results do not indicate a significant different than the 2009 study, except for item #3. For item 3 there is a 17% decrease in mastery. As stated in # 6 may be the reason for decrease in score, see below:

As in previous studies, the data indicate that efforts should be placed on moving students from minimal mastery to mastery of the learning outcomes. As stated in the proposal, students that fall in this category can correctly identify the problem and exhibit evidence that they are able to perform some of the components needed to solve the problem. They are unable to select the best response because they may use inappropriate math models/tools or have some difficulty in discarding impossible solutions. To remedy this problem a thorough examination of teaching strategies used by faculty and time spent may be the best solution. A review of the assessment tool will be reevaluated and determine if adjustments are warranted.

2. Identify the Performance-Funding test of general education used by your institution.

See Item 1. above.

3. If you used sampling as permitted by THEC, describe the method used.

See Item 2. above.

4. Present the institutional mean scores or sub-scores on the Performance Funding instrument that your institution reviewed to assess students' comprehension and evaluation of arguments. If comparable scores for a peer group are available, also present them.

See Chart above and #1 for summary.