OIE Review of Discipline Efforts to Assess Student Learning for CEPC
Program Review

Mathematics Program
(February 26, 2014)

Overview

• Does the discipline/program have a viable assessment plan?

The current Mathematics program review report makes reference to the existence of a viable assessment plan for the discipline. The OIE would welcome a current copy of that plan, one that specifies the discipline’s intended learning outcomes for students and the methods by which these will be assessed. While the plan is mentioned in program review and assessment reports provided by the discipline and archived on the OIE website, none of these documents contain the current plan itself.

• Does the plan include intended student learning outcomes?

The Mathematics program review includes a statement of the objectives of the program. These objectives are phrased in terms of what the discipline seeks to provide students rather than in terms of intended learning outcomes. The program review report does include statements that hint at such learning outcomes, and one can draw inferences about the discipline’s intended learning outcomes from the methods it uses to assess students in the program (see below). It would be helpful if these learning outcomes were articulated explicitly, as part of the discipline’s learning outcomes assessment plan.

• Does the plan include direct as well as indirect measures of student learning?

The Mathematics discipline has a long-standing history of gathering, evaluating, and reporting learning outcomes data, and has used both indirect and direct methods of assessment.

The indirect methods of assessment include the SNC Current Student Survey, and, in the past, a survey of Mathematics alumni that the discipline developed in collaboration with the OIE.

The direct methods of assessment include the ETS Major Field Test in Mathematics and a test of pure mathematics (proof writing skills) developed by the discipline. The discipline has also used direct methods in assessing the performance of students in GS Area 8 mathematics courses in the former General Education program.
• Are the sources of evidence for student learning appropriate?

The discipline does make use of commonly used, appropriate indirect (CSS) and direct (MFT) methods of assessing student learning outcomes. The discipline has also developed its own indirect and direct methods of assessing mathematics students in order to address areas not covered by the commonly used methods, and these efforts are not only appropriate but laudable.

The discipline could be encouraged to make use of other existing indirect measures (the HERI Current Student Survey, the SNC Recent Graduate Survey, and perhaps even the HERI Freshman Survey) made available by the OIE, and to explore the possibility of examining MFT percent-correct data in addition to the percentile rank data it currently reports.

• Is data collection and analysis ongoing?

The discipline collects MFT and proof-based assessment data annually. The Current Student Survey data are also obtained annually. This annual data collection is supplemented by periodic analysis and review of the findings. The discipline could be encouraged to conduct such analyses and reviews annually and to file brief annual reports describing its plans to use such findings to ‘close the loop’.

• Are all program faulty/staff appropriately engaged in assessment?

It appears that all members of the faculty are involved in discussions of the results of the discipline’s direct and indirect methods of assessment. It is unclear whether the responsibility for gathering, analyzing, and reporting these assessment data is distributed evenly across the faculty members in the discipline, or this responsibility is assigned to specific individuals.

• Has the program made or proposed changes/improvements (intended to enhance student learning) based on learning outcomes data?

The current program review report describes a number of efforts the discipline has undertaken to improve the program. Among them is an effort to improve placement of incoming students in mathematics courses. The discipline has developed a method of systematically gathering information concerning students’ reasons for withdrawing from mathematics courses and seeks to use these data to improve student placement in and successful completion of mathematics courses.