

**Assessment Trend Report
Student Learning Outcomes in Natural Science with Lab**

November 2009

The goal of this report is to evaluate the assessment of student learning outcomes in the Natural Science with Lab requirement. The report addresses four key questions to evaluate the quality of our assessment processes.

(1) How have we sustained the assessment effort over a multi-year period of time?

How many years have you completed an annual assessment report?

2006 2007 2008 2009

The learning goals were developed by Eric Martell and re-affirmed by the faculty of the Biology, Chemistry, and Physics departments. Professor Martell conducted the assessment in 2006 and 2007, and Professor Robertson conducted the assessment in 2008. No assessment was conducted for the 2008-9 academic year due largely to a breakdown in communication as a result of changes in university leadership. Artifacts are available to remedy this gap, and Drs. Acheson from Chemistry and Schultz-Norton from Biology will assume the leadership role.

(2) How do we systematically and comprehensively collect and analyze data about student learning?

The departments of Biology, Chemistry, and Physics have developed the following learning goals for students taking a course that satisfies the MPSL Natural Science with Lab non-sequential requirement:

- 1) (Students will...) Develop an understanding of how to use logic and the scientific method to analyze the natural world and solve problems.
- 2) Learn about issues in science that are important both personally and globally.
- 3) Utilize technology in laboratory and field environments in order to connect theories and descriptions found in lectures and textbooks with real-world phenomena.

Data are collected by one faculty member (in each department) within the Natural Sciences each year, and analyzed through the use of rubrics developed by the science faculty. The faculty conducting the assessment are to rotate every year, and as such the data are comprehensive when considered over a period of time which would include instruction by all faculty.

Each faculty member conducting assessment chooses artifacts as appropriate for his or her course, including lab books, exams, pre- and post-tests, written and oral presentations, etc. The particular kinds of materials chosen for analysis using each rubric differ from instructor to instructor.

	Student Learning Outcome 1	Student Learning Outcome 2	Student Learning Outcome 3
AY 2006-07	GREEN	YELLOW	YELLOW
AY 2007-08	GREEN	GREEN	GREEN
AY 2008-09	NO DATA	NO DATA	NO DATA

(3) How do we use the analysis to improve curriculum and pedagogy and to inform decisions about budgets and strategic priorities?

In 2007, the data were shared with the science faculty via distribution of the report and was discussed during a division meeting. No widespread formal or informal discussions have taken place since then. The 2008 report was sent to the Dean of Teaching and Learning and posted on the web.

As a result of the first year of data, the faculty realized that the learning goals were not fully incorporated across the board in Natural Science with Lab classes, either in terms of being articulated within the syllabi or being intentionally addressed with instruction and assessment. Changes were made in a number of courses, and the improvement in the second year is largely attributed to an increase in intentionality within the curriculum.

(4) How do we evaluate, modify, and continue to improve the student learning assessment process in this program?

The assessment process has remained static over time, as the learning goals still reflect the mission of the university and the need for a natural science with lab experience for all students. However, due to gaps in leadership and lack of direct university support for this assessment process, the process has stalled over the last year and a half.

Evaluation from Focus Visit Leadership Team (includes Academic Deans, Program Leaders, and Focus Visit Report Writers)

Rating: Yellow

Academic program	Goal 1 (multi-year)	Goal 2 (data collection)	Goal 3 (Use assessment to improve)	Goal 4 (improve assessment)	Total
Natural Science/Lab	2	2	2	2	8

Based on the four questions/criteria, the Focus Visit Leadership Team rates the Natural Science with Lab requirement as yellow. It is surprising that the Natural Science with Lab requirement has received such inconsistent attention from the Natural Science faculty, given the well-established culture of assessment within the three Natural Science departments. There needs to be improved communication about these learning goals and assessment processes by faculty in the Natural Sciences and Mathematics division.