

Assessment Reporting Spring 2009 – Spring 2010

As you now know an interim report on the assessment of student learning is due to WASC in fall of 2010. We have been asked to demonstrate that we are using assessment data to improve student learning (i.e., "closing the assessment loop") and that the assessment process is sustainable. To that end, we are asking programs to report on their most complete student learning outcome (SLO) during this reporting cycle. Please identify your selected SLO in the box below and provide the requested information.

Program Information

Degree Program(s):	BA, BS	Department:	Physics
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Student Learning Outcome (SLO)

Students can demonstrate an understanding of Newton's laws

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Students can answer qualitative and quantitative problems in classical mechanics

Evidence for Need:

What evidence was used to identify this SLO as a candidate for improvement (e.g., describe the prior assessment activities and data that led to this decision)?

This learning outcome was evaluated in the first class of the calculus based introductory Physics sequence (Physics 50) in Spring of 2008. All students (204 in total) took the "Force Concepts Inventory" at the beginning and end of the semester. While the students scores on the "pretest" administered at the beginning of the semester were at the 10th percentile level compared nationally to other 4 year universities (i.e. worse than 90% of universities nationally), the "normalized gain" for the scores after a semester of instruction ranked no higher.

Actions Taken:

What actions were taken to improve student learning related to this outcome (e.g., program changes, changes in pedagogy, process changes, resources requests, etc)?

We have taken on the challenge of placing students quickly into class. Through discussion with students and instructors it was found that a common problem of students in this class (and several of our other classes that have both a lecture and a lab section) is that students who are trying to add the class late, often because they had previously failed and therefore had lowest priority during the initial registration process, were falling behind the first month of class as they would spend weeks searching for an open lab section (labs don't meet the first week of class, and then students who don't show up have their space reserved for them until the second meeting, so it takes until the third week for some spots in lab sections to be given to waiting students before they could register for the class). During this time many students don't attend class or do not attend the section they ultimately register for, and fall behind. To address this, the department formed a committee to investigate alternative registration procedures. The committee recommended a solution that will use internet based tools to match class availability

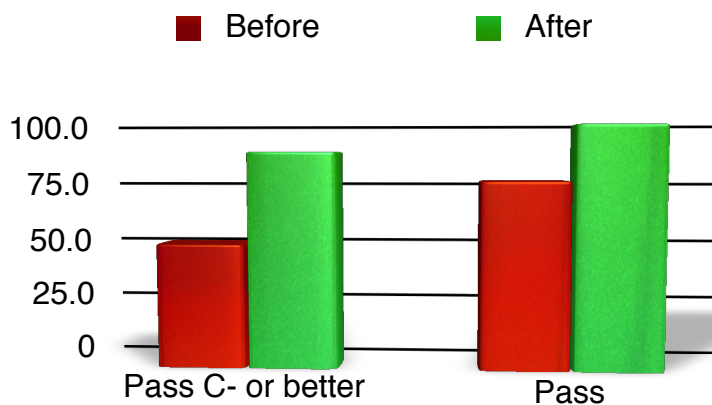
with students' time constraints and to schedule students into available lecture and lab seats within 24 hours of their request. This solution was implemented in the fall of 2009 for this and other physics courses that also have a laboratory component (Physics 2A, 2B, 50, 51, 52, 70, 71 and 72.)

Additionally we are working with Dan Walker in Science Education, to develop 1 unit required workshops to accompany the physics 50 series and 2 series courses. These workshops are modeled after a program in the math department that resulted in significant increase in the pass rate. They involve weekly meetings of small groups of students (about 20) who work in groups of 3 or 4 to solve problems on a white board under the watch of a workshop facilitator (usually a student who had taken the class in the past and done well). Dan Walker is providing funding through an NSF grant to hire facilitators for the first three years of the program and to supply release time to the workshop coordinators. The first workshops will be for Physics 50 and 2A in the fall of 2010, and then each semester after that the workshops will be extended to include the next class in the series, so that students beginning in the fall of 2010 will have the workshops all the way through.

Evidence for Impact:

What is the evidence that the actions taken above impacted student learning for this outcome?

Grade data was extracted from Peoplesoft for all students retaking Physics 2A, 2B, 50, 51, 52, 70, 71 and 72 for the Fall of 2008 (53 students, before the registration policy was changed) as well as the Fall of 2009 (9 students, after the registration policy was changed). This is subset of all students who added late, but because it is a group that is excluded from regular registration and so *must* add late, and is identified in Peoplesoft allowing grade data to be extracted (records were not available of who added late prior to the change in late registration policy). The large reduction in number of students retaking the class is a consequence of enrollment limits imposed by the university to manage the 2009-2010 budget crisis. This data shows that the pass rate (Grade of at least a D-) increased from 77% to 100%, and the rate of students getting at least a C- (the requirement to go on to the next course in the series) increased from 51% to 89%.



The percentage of students retaking Physics 2A, 2B, 50, 51, 52, 70, and 71 who passed before and after streamlining the process for adding the classes after the initial enrollment period ended

A similar analysis will be performed on the effect of workshops on student performance once the first semester of workshop courses has been completed.