

Assessment Project

The quantitative assessment process has several stages that begin a semester before students are assessed in a course.

1. Departments are contacted and asked to identify potential courses, chosen to be mainly composed of juniors. Course instructors who agree to participate are given a questionnaire that lists the main topics found in beginning mathematics and statistics courses. Using it, instructors indicate the areas *essential for survival* and in which students are expected to be knowledgeable upon entry into the course.
2. Information provided by the instructor is used to construct a test reflecting the essential quantitative requirements of the course. The instructor reviews the test and suggests changes as necessary.
3. At the first class meeting students are given information about the assessment program and an outline of the material to be tested. This includes references to textbooks used in mathematics or statistics courses for all the material identified by the instructor as essential for survival in the course. *We also ask that instructors emphasize to the class that (a) the tests are intended to be useful and relevant for the students, (b) the test will cover important quantitative skills that are needed in the course, and (c) although performance on the exam will have no influence on their course grade, the instructor is very concerned that students make a substantial effort when writing the exam.* **Involvement of instructors with the process is crucial to obtain meaningful results.**
4. Students take the tests during a regularly scheduled period toward the end of the second week of classes. The tests are immediately corrected by mathematics graduate students who include comments on the tests to indicate whether the student solved the problem, and if not, give an indication of where errors were made. The graders also code a scan sheet for each test paper, recording information about what the student did and the grader's judgment of the *degree of success* achieved on each problem. This information is used to analyze the students' performance on the tests.
5. Tests are returned to students within a week along with solutions for all test versions and specific page or section references to review material in appropriate textbooks. The corrected tests and solutions are intended to inform students of any shortcomings in their quantitative capabilities early in the semester so that they can take "corrective action."
6. Data from the scan sheets are analyzed and a preliminary report of the class's performance is prepared within two weeks of the test administration. This is sent to the course instructor, who is asked for reactions to the test results. Discussion of the test results provides useful information that is incorporated into the final report for the semester.
7. A brief nine-item survey of students who took the tests is administered during class sometime toward the end of the semester. It is intended to help decide whether students felt the tests were useful and accurately reflected course requirements. A summary of this information is included in the final report, along with any reactions from the instructor about the assessment process.
8. A final report is prepared after the end of the semester. Copies of this report are sent to the instructor, the department chair for the course, the university assessment committee, and the departments of mathematics and statistics. The reports are used to produce a more general annual report about the quantitative and verbal capabilities of students beginning their upper-division studies at the university. When it seems appropriate, we also provide summary reports for all faculty in a department and attend faculty meetings to discuss the results.

We have found that some of the most useful results of the exercise arise from the interactive nature of the process, rather than just studying exam results. Getting faculty to focus on quantitative expectations has at times had substantive effects on class instruction. Information developed by the project has also had an impact on departmental and campus policies and curricular planning.