



Putting it Into Action: Online Assessments

Subject Number: **2.001**
Instructor: Simona Socrate
Course Name: Mechanics and
Materials

Overview

Simona Socrate teaches Mechanical Engineering's large introductory class and she uses MITx for learning sequences, psets, and assessments. In addition to allowing more efficient grading, online assessments are part of a multi-pronged environment which supports diverse student test-taking styles. Online assessments also provide ancillary learning opportunities while students are taking a test. Online tests occur in a secure environment.

Educational Challenges

Problem:

How to make test grading in a large introductory class less laborious and more efficient? How to do this while accommodating the test-taking styles of students and attending to instructor needs for security and cheating deterrence?

Solution:

Online and Paper Tests. Dr. Socrate made a portion of each test available online. Each test was also printed on paper for students who prefer handwritten assessments. In the online portion of the test, problems were broken into sequenced steps. Students were able to tell – as they proceeded through the steps of the problem – whether they were correct via a green check, or wrong via a red cross. Socrate allowed her students up to 10 tries for the green check, with no penalty for multiple tries.

Student response. Socrate surveyed her class throughout the semester. Not only did she record and analyze their responses, she tailored subsequent tests according to their feedback. Student response to the first online test was positive: 57% of the students liked online problems. 14% were neutral. Because of this, Socrate continued with offering online tests later in the semester. By maintaining the option to take the test on paper, Socrate was able to accommodate all students.



Simona Socrate
Principal Research Scientist



OFFICE OF DIGITAL LEARNING

Test Time Limits. Socrate gave the first test with a time limit imposed on the online problems. She was concerned students would spend too much time working on getting the online problems correct (trying for the 'green check') and ignore the handwritten problems.

Student response. When she surveyed the students about their experience, they overwhelmingly preferred to manage their own time. For subsequent tests, Socrate removed the time limit. In a survey following the second online test, the response of the students was overwhelmingly positive: 84% of the students preferred the online problems and 11% were neutral.

MITx reveals student activity. Because MITx let Socrate see the answer attempts of any student, she could tell whether a student was authentically trying to work out a problem or merely trying to guess the answer. The guessing behavior was not rewarded since students were required to show their calculations in their workbooks. Only students that showed correct approaches and solution procedures received full credit.

Online assessments promote learning in the moment. Although not all students took advantage of the sequenced steps in an online problem, those who did were able to gauge their progress and adjust accordingly if they were off track. It was through this activity that students could still learn even while they were taking the test. The sequenced steps provided a scaffolding for students to see what they needed to correct before they got too far into a problem.

Security. Socrate's online assessments are secure and prevent cheating:

- Students were required to show full screen on their laptops, thus preventing visits to other pages.
- The test screen was a distinctive color so proctors in the back of the room could quickly see if anyone was not on the test screen.
- Correct answers (green checks) were immediately hidden so other students could not see and copy.
- Student were required to show their work and did not get full credit for an online problem unless their work had the appropriate calculations.
- Student clicks allowed course staff to take attendance via MITx and determine who was present and taking the exam.

Key Take-Aways

Online assessments make grading more efficient, and provide information on student test-taking behavior. They also support strong security and cheating prevention. Student surveys allow instructors to make adjustments mid-semester.

If you are interested in using the concepts from this case study in your teaching, please contact [MITx Residential](#) to speak with a consultant.