

Low-Stakes & Quick-Feedback Assessment in STOR155

STOR155:

Level: Introductory undergraduate service course (pre-requisite: MATH110)

Clientele: Prospective majors in business/economics/pre-med/etc.

Class Size: 100+ per section (2 sections in Spring 2015; 2 sections in Spring 2016)

Class Meeting Schedule: T/Th 75-minute class period

Class Meeting Format: Lectures incorporating interactive EXCEL demonstration spreadsheets

Objective:

Motivate students to stay engaged & up-to-date with the current material

Traditional Model:

Homework:

Assigned weekly (or even daily with each lecture)

Due/Collected weekly (or even daily at the next lecture)

Graded by TA (1-week turn-around at minimum; quality of feedback)

9-day lag / 3-lecture lag (between introducing new material and feedback)

- can be even longer, especially if homework is assigned/collected weekly

Even with daily assigning/collecting....

- does not motivate serious preparation prior to class meeting
- does not motivate in-class attentiveness/engagement

Collaboration (OK up to a point) / Copying (not OK)

Additional practice exercises not readily available

Midterm Exams (1 or 2):

Studying: cram + forget

Stress: high-stakes (20%, 25%, 30%); many courses give exams near the same dates

Timing (too late): no serious assessment/feedback until mid-semester

Disrupts the flow of course material: in-class review day; exam-day; post-mortem day

Low-Stakes & Quick-Feedback Assessment Model:

Made possible only by modern technology: WebAssign platform

Extensive flexibility under the Instructor's control

- **times/dates when assignments/quizzes appear and disappear**
- **many types of questions/responses (fill-in, multiple-select, multiple-choice, etc.)**
- **set the accuracy/tolerances for grading the responses**
- **allocate point-values per questions (or parts)**
- **automatic grade-book recording & computations (with weightings)**
- **multiple attempts at responses can be allowed without penalty**
- **instantaneous feedback to student and to instructor**
- **submit responses “one-part-at-a-time” (midstream feedback helps with later parts)**
- **practice-another-version available to students (not graded)**
- **individually randomized questions for each student**

Homework, Quizzes (“Entrance Quiz” and “Exit Quiz”), Final Exam

Homework:

Assigned daily (after each class meeting)

Due at the start of next class meeting

Multiple attempts at responses are allowed (usually 4 or 5 attempts on each question/part)

Immediate feedback to students and to instructor

Office Hours & Tutorials are available between date assigned and due-date

Collaboration-OK, but copying is prevented by the individual randomization feature

Unlimited practice versions of exercises are available (after due-date)

27 Homework Assignments (equal weights), worth 30% of semester grade

Quizzes:

Daily “Entrance Quiz” and “Exit Quiz” (all with open resources)

Entrance Quiz –

- **10 minutes at the start of each class meeting**
- **students arrive punctually**
- **motivates serious preparation prior to class meeting**
- **emphasis on recent material/homework, but inherently cumulative content**
- **students are up-to-speed for learning today's new material**
- **only 1 attempted response (per question/part) is allowed**
- **immediate feedback to students and to instructor**
- **copying/cheating is prevented by the individual randomization feature**
- **27 Entrance Quizzes (equal weights), worth 30% of semester grade**

Exit Quiz –

- **5 minutes at the end of class meeting**
- **students do not pack-up early**
- **motivates in-class attentiveness & engagement**
- **content: purely on the basics of today's new material**
- **only 1 attempted response (per question/part) is allowed**
- **immediate feedback to students and to instructor**
- **copying/cheating is prevented by the individual randomization feature**
- **27 Exit Quizzes (equal weights), worth 20% of semester grade**

Final Exam:

- **WebAssign, similar format to Homework & Quiz questions**
- **cumulative content**
- **closed resources (except for EXCEL allowed)**
- **only 1 attempted response (per question/part) is allowed**
- **immediate feedback to students and to instructor**
- **copying/cheating is prevented by the individual randomization feature**
- **Worth only 20% of semester grade (relatively Low-Stakes for a Final Exam)**

Daily Quiz Schedule vs. Midterm Exams:

Build up your grade (and your knowledge) cumulatively in small steps

No high-stakes exams

No rote memorization/regurgitation for quizzes (open-resources)

Just learn & recognize the thought processes / steps of solving problems

Become accustomed to the daily routine of 2 quizzes

(rather than 1 or 2 “special” stressful Midterm Exam days)

In-Class Time per semester:

Entrance Quizzes + Exit Quizzes = 405 minutes

2 Midterms (with review class & post-mortem) = 450 minutes

Outcomes:

Compared to my students in the previous traditional version of STOR155 –

- students in this course mastered topics that are more sophisticated**
- these students also earned higher semester grades (overall average = 80)**

Strong feelings among students regarding the time-pressure during quizzes

Most students adapted to the daily quiz routine, some even appreciated it

Some students found daily quizzes stressful throughout the semester (in spite of low-stakes)

Resources / Costs:

Students pay for WebAssign account (either linked to textbook, or not)

Can eliminate the departmental expense of paying TA/grader, or....

Can reallocate the TA's time to offer additional Office Hours / Tutorials for 1-on-1 help

I.T. Glitches:

WebAssign site crash (rare)

Individual student computer / WiFi malfunction (occasional)

be lenient – unless it becomes a habitual excuse

Writing/Refining the WebAssign Questions:

More than 250 WebAssign questions (often multi-part) were developed

Learn WebAssign syntax & options

Learn PERL

Spend a few hundred hours....

“Law of Unintended Consequences”:

(especially as it relates to contextualized grades on transcripts)

Provide early & serious assessment and feedback to students

Students make an informed & realistic decision to drop course

(instead of unrealistically hanging on, ultimately to get D or F)

Most D & F students have bailed from the semester grade distribution

- “cheapens” the A, B, C grades of the remaining students, by making the course look “easy”