

Teaching an Entirely Online Statistics Course

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As with other courses, the pedagogy of teaching statistics courses has been changed, enhanced, and sometimes made poorer with the inclusion of web-based capabilities. Most all would agree, though, that online capabilities have enabled richer courses to be offered.

Statistics, like many of the scientific courses, requires a considerable amount of “telling” and “showing” to be effective. Teaching a statistics course online is clearly different from just taking a regular onground course and putting all the materials online. Most of the telling and showing would be missing with such a strategy.

Students, particularly students in statistics service courses, find it very difficult to learn the material on their own. I have found that many online students struggle even more than traditional onground students, not just because of the absence of telling and showing activities, but because many online students are non-traditional students and have not had any mathematics courses for quite a while. Some of my online students, for example, have not had any mathematics courses for 25 or 30 years.

Thus online students, even more than onground students, need the telling and showing. This greater need conflicts with the reduced capability in online statistics courses. My spotlight session highlights some online techniques that I have used to address these shortcomings.

My main area of new teaching methods investigation has been to provide telling and showing activities that can be asynchronously accessed by online students. Asynchronous discussion boards synchronous chat sessions are commonly used tools for online classes, but which are insufficient to learn statistics. In addition to those, I have used pre-recorded lectures, pre-recorded examples, recorded live lectures, and just-in-time videos to assist the students in their learning. I am currently on my 6th version of my video internet help site.

I have had a reasonable level of success with these techniques. At a minimum, I receive student comments in every class that they would never have been able to pass the course without my additional materials. Receiving those comments has motivated me to continue to try additional methods.

I have a set of recorded video lectures and examples at <http://newaiu.zenterprise.com> for one of my online courses. Recorded live lectures for that course are not accessible (for privacy reasons, by request from that school).

A summary and comparison of various functions is listed below, including basic online methods and my own practices.

Activity / Function – lectures on new topics

Onground: In-class lectures 2 or 3 times per week at fixed times.

Basic online: Sometimes CD's come with the textbook. Otherwise most students are left to fend for themselves.

My additional online: I have found that online students hunger for lectures. I accomplish this through a program of recorded video lectures and some synchronous lectures through chat rooms. Students appreciate their own instructor lecturing rather than an anonymous other instructor.

Activity / Function – working through examples and homework in class

Onground: Done in class, flexible but within the regular class hours.

Basic online: Some done in synchronous chats at the discretion of the instructor.

My additional online: Many or most students learn best through examples. I have recorded video solutions for examples in each course unit and do some additional ones in the synchronous chats.

Activity / Function – classroom assessment

Onground: Done in class, during and/or at the end of lectures or via homework.

Basic online: Difficult because of a lack of real-time interaction. Limited assessment can be inferred from discussion boards and student questions.

My additional online: I offer to do a preliminary grading of assignments if the student turns it in 3 days early. That allows the student to fix errors and gives me an earlier view of student progress.

Activity / Function – office hours, individual assistance

Onground: Fixed times, times by appointment, and hit-and-miss stopping by the office

Basic online: Fixed times for the instructor to be available

My additional online: I announce to the class that I am often accessible via various Instant Messaging services for real-time help.

Activity / Function – homework

Onground: Typically synchronously assigned and asynchronously done

Basic online: Also typically synchronously assigned and asynchronously done. All students are usually working on the same assignments each week.

My additional online: I follow each university's guidelines, usually weekly homework.

Activity / Function – tests and quizzes

Onground: Done in class (synchronously) or at home (hopefully asynchronously)

Basic online: Often no tests or quizzes, usually grades are entirely based on homework and projects. Validating student identities for tests is difficult.

My additional online: I follow each university's guidelines, often no exams.