Business Professor Teaching Summit
Teaching the Quantitative Course Online

Challenges and Opportunities

Sally A. Hamilton, Ph.D.
Clinical Assistant Professor of Accounting
LeBow College of Business, Drexel University
Anyone who has taught via distance methods is familiar with methods designed to improve feedback, enhance interaction with students, and facilitate achievement of key objectives.

Many students struggle with learning quantitative material.

Many of the tools and techniques for providing feedback to students are not easily extendable to the quantitative course.

This paper outlines some of the challenges and opportunities in the online modality and summarizes some practical recommendations.
The key components for design of a quantitative course share some common features with any other course. However, unique features exist.

My approach tends to be practical and is based on my work over the last two plus years with students at the LeBow College of Business at Drexel University.

I’ve gradually developed some tools and techniques that have been applied successfully in graduate and undergraduate accounting and finance courses.

These components can be grouped into four key areas.
Before class starts

* Set the course up in advance, making it very logical and consistent.
* Determine if your school has a preferred format, and follow it.
* Using a standard format doesn’t mean you have to be boring. Provide online course materials that are well organized and visually pleasing.
* Load all course material ahead of time if at all possible. This includes web links to reference materials or readings, verifying that the links work.
* Prepare lectures ahead of time. Even if you have taught the class previously you will need to revise and modify the lecture material. Break recorded lectures into pieces.
* Recognize the need to provide detailed examples. I record example problems using Excel or screen captures of other problem solving.
* I’ve put links on basic algebra, and post hints or reminders for assignments where errors are common.
* I’ve also put links on various Excel or financial calculator topics on YouTube into the classroom for students to use.
During the course

- Prepare an online welcome for students to see first. Keep it short and lively.
- Include an introduction discussion thread at the start of class. This allows students to present their professional experience.
- I provide a weekly announcement and email. It includes any changes to the schedule or syllabus, reminds students of deliverables and due dates, and introduces the topic and learning objectives of the week.
- Show up. I tell students that I log in daily, usually early California time. If I am doing to be unavailable to respond to questions I let them know.
- Manage your time. When students post homework questions via private email I respond but also post the response in the course.
- Don’t try to be a technology problem solver. Be sensitive to students with difficulties in this regard but technology should be the enabler, not the excuse.
**Discussions**

* Make discussions relevant. Use questions relating to real world companies making reference to assigned learning materials. In the first week I ask students to each select a different company and look information up online and discuss it.
* When students first post to the questions I respond with a follow-up or comment within 24 hours.
* Keeping the threaded discussion flowing engages the learner to look forward to checking postings to see who has responded.
* Put each question in its’ own discussion forum, and provide a separate forum for questions and problems related to coursework.
* Each week’s discussion relates to the learning objectives for the week.
* A favorite of many classes is the question during ‘revenue’ week. I ask students to find a different company that ‘got caught doing something wrong’ and discuss it.
Assignments

* Provide clear learning outcomes each week and relate them to the assignments.
* Provide explicit directions on assignments and examples of what a complete, ‘good’ assignment looks like.
* Provide frequent and descriptive feedback to students in the grading.
* It is critical to provide assignments that higher level thinking and reinforce learning objectives.
* Give Relevant Examples- I’ve created examples, mainly in Excel, showing exactly how to use the theoretical principles in the lecture to address quantitative problems.
* “Show Me” State I tell students up front they MUST SHOW WORK. This allows me to both identify plagiarism and figure out what students did wrong.
* In introductory courses I often use publisher integrated software for assignments. I create customized assignments focusing on the desired objectives. Students can select ‘help’ and check their work as they go.
* Repeat, as needed - In some courses, if students do poorly on an assignment, I give them until the end of the following week to revise and resubmit the assignment.
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<thead>
<tr>
<th>Objective</th>
<th>Technology</th>
<th>How to Use It</th>
<th>Pros and Cons</th>
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<tbody>
<tr>
<td>Show students how to perform calculations</td>
<td>Excel – of course, with Camtasia to record the audio/video</td>
<td>Record examples illustrating concepts</td>
<td>Very helpful in showing how to apply concepts. Less useful for higher order analysis.</td>
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<td>Lectures – present new material</td>
<td>PowerPoint, recorded with Camtasia</td>
<td>Record lectures, but break it up.</td>
<td>Familiar but run the risk of being overly long and tedious.</td>
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<td>Practice techniques</td>
<td>Examples with and without solutions</td>
<td>Excel, cases, Problem examples and solutions.</td>
<td>Students need to take the initiative to perform the work.</td>
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<tr>
<td>Answer questions</td>
<td>Use a BBL discussion forum for questions and problems</td>
<td>Check daily for questions.</td>
<td>Students prefer text or email so a higher potential for overload.</td>
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<tr>
<td>Live interaction</td>
<td>Skype, Bb Voiceboard, Go-to-meeting</td>
<td>For one on one or for a review session for a group</td>
<td>Hard to emulate a ‘whiteboard’ with an instructor.</td>
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<tr>
<td>Screen capture</td>
<td>SnagIt, for screen shots</td>
<td>Used when it can’t be done via Camtasia.</td>
<td>Excellent for how to run simulations or non-standard applications</td>
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<td>Integrated learning</td>
<td>Publisher software</td>
<td>Custom assignments, algorithmic problems, autograding</td>
<td>Avoids multiply logins, reduces cheating.</td>
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<td>Collaborative work</td>
<td>Many</td>
<td>integrated cases, simulations</td>
<td>Keep groups small.</td>
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<tr>
<td>Assessments</td>
<td>BBL assignment setup or integrated software.</td>
<td>I use Excel rubrics for grading assignments and then post grades in BBL.</td>
<td>Native assignment ability in BBL hard to use, I prefer assignments in Excel.</td>
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Quantitative classes present some unique challenges when it comes to ensuring original work.

Turnitin is not helpful for verification of calculations, and common finance terms will lead to a high ‘false positive’ reading.

Use algorithmic problems for homework, quizzes, and exams. Scramble questions and modify numbers regularly even if the underlying concepts don’t change.

Require that students include work in Excel, showing how they reached the answers.

If you distribute solutions or examples you should password protect them so they cannot be copied.

Require students to use real world financial information including the most recent 10K or 10Q. Only one student per class can select each company, and insist they include a copy (pdf) of the source data as well as a complete citation.
Conclusions

* As online educational options continue to grow it is imperative that we develop ways to engage and connect with our students.
* Integrated technologies continue to offer a platform to facilitate learning as well as measurement.
* As we broaden our online course and program offerings it will be possible to find other fruitful areas to examine.
* A key area will be determining how best to incorporate and integrate simulations or exercises without locking the course into a particular platform.
Thank you!