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A Case Study of Teaching MBA Quantitative Analysis Online

Daniel R. Ball
Molloy College, dball@molloy.edu

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Daniel R. Ball
Molloy College
School of Business
1000 Hempstead Avenue, C-103
Rockville Centre, New York 11571, USA
(516) 323-3095
DBall@molloy.edu

ABSTRACT
Advancements in video capture and learning management systems (LMS) provide faculty with more tools than ever before to effectively teach quantitative business subjects to graduate students enrolled in blended and online courses. Students pursuing an MBA often come from diverse educational and professional backgrounds, with some continuing directly from undergraduate programs while others may be returning to school after spending years in the workforce. These students require instructional design that is both comprehensive and flexible to meet their various needs, accommodating the increasing preference for visual content delivery. Early in an MBA program, a course in quantitative analysis often serves multiple purposes including as a refresher of prerequisite knowledge areas, an introduction to graduate topics of management science, and a preparation for future courses in the curriculum. This case study paper describes the evolution of an MBA managerial quantitative analysis course using instructor-created videos and a modern LMS in both blended and online formats. The proposed model includes designing a consistent module structure, establishing a virtual classroom environment that extensively uses tutorial videos, setting appropriate course rules, and creating an effective assignment philosophy. The proposed best practices will allow this model structure to be used for other quantitative business courses.

Keywords
Education, online, e-learning, blended learning, quantitative analysis, business

1 INTRODUCTION

Graduate business programs have steadily changed their degree and course format options based on evolving market needs and technological capabilities. As suggested by Hiltz and Turoff (2005), technological advancements have allowed online learning to revolutionize the ways society and schools approach education. This change has been facilitated in part by society's comfort with computer technology coupled with advancements in LMS platforms. Whereas MBA programs have continued to provide blended and online degree and course options, teaching quantitative subjects is still a challenge. For example, Grandzol (2004) presented many complexities of teaching MBA statistics online including such factors as student preparedness level, content complexity, and technological expertise.

An introductory MBA course in quantitative analysis often serves multiple purposes. The standalone course content teaches the student how to develop and use mathematical models to assist with managerial decision-making. The probability, statistics, and Microsoft Excel content serves both as a refresher of prerequisite knowledge areas and as preparation for future courses in the curriculum. Student success in this course sets the tone for the remainder of the program.

This paper provides a case study analysis of how one MBA course in quantitative analysis was successfully converted into a fully online format and taught in a 7-week immersion semester using a carefully designed LMS course shell and supporting tutorial videos.

2 COURSE MODEL

The following subsections provide the framework for this online quantitative analysis course.

Technology, Teaching Materials, and Philosophy

The primary technology employed for this course was a combination of a carefully designed course shell in the Canvas LMS and multiple instructor-created videos using the Panopto video capture platform. A total of 33 tutorial videos were created across seven learning modules (one for each week of the semester). The activities embedded into the tutorial videos were designed to facilitate an active learning environment where the student participated as opposed to passively watching content. To control an

organized flow through the modules, "gates" were created that prevented students from moving to successive modules without completing the prior ones. In addition to the online platform and videos, traditional course materials from a text book were merged with personalized handouts that reflected the instructor's specific teaching style.

Course Introductory Synchronous Session and Video

At the very beginning of the semester, an initial synchronous session was conducted to prepare the students for the course. This synchronous session used the BigBlueButton web conferencing platform with instructor and students using webcams to encourage a sense of community. During this session, the instructor would share the screen when reviewing the syllabus and showing the class the LMS course site. This session was deemed very important to set the tone for the course and familiarize the students with the module structure and assignment flow. The session was recorded so that students could watch multiple times if there were questions that later arose. Finally, a module page was created that stated all of the course ground rules and expectations. All students were required to read the page and accept its terms prior to proceeding to the first course "session" (i.e., module).

Course LMS Structure, Flow, and Assignment Philosophy

Moving a course from a traditional on-campus classroom setting to blended or online formats requires creating a "virtual classroom experience." This case study used the Canvas LMS to develop a course shell that served as this virtual classroom. This shell was then segmented into unique modules for each of the seven weeks in the semester. Maintaining a consistent organization allows the students to quickly become familiar with the structure and reduces the likelihood of missing content or assignments.

Each module was created with its own unique topic (e.g., Module 1: Break-Even Analysis) with a reference to the corresponding chapter in the text. The modules then contained submodules with the following content.

Module Overview

This submodule provides an explanation of what the student can expect to learn during this module. In addition to an overview of the topic, this section contains: learning objectives; the dates active; instructions for accessing learning material; a listing of the weekly assignments; how communications will occur between the student and instructor, other students, and the course content; and assignment deadlines with links to the assignment details. Students must review this page and then indicate that they have marked the section as "done" before proceeding through the virtual gate to the next submodule.

Module Online Exercises, Documents, Excel Files, and Videos

After completing the "Module Overview" section, the student enters this submodule where the active class session takes place. The organization of this page resembles the flow that occurs in the classroom. For example, the module covering break-even analysis was further divided into two parts: (1) profit model and (2) purchase-or-lease model. These parts were further broken down into sections containing the model overview and examples. These learning chunks were designed to make it easier for the student to assimilate smaller bits of information at any one time and reduce the likelihood of being overwhelmed or confused. In the classroom, we may cover the theoretical development of the profit model before illustrating with an example, and that is the spirit of what this approach replicates. A document containing instructor-created notes is provided so that the student has full access to the material that may have been written on a traditional classroom board. Links to any supplementary documents and Excel template files are also provided so that the student does not need to leave this module during the lesson.

A key approach tested in this case study was the extensive use of instructor-created videos. Each module learning chunk was accompanied by at least one tutorial video created using the Panopto video capture program. These videos were made for all course content to ensure that the instructor fully explained all of the material presented to the student. For this course, it was deemed important for the students to not feel as if they were enrolled in a self-paced independent study course. Due to the high number of MBA students returning to school after a large time gap since undergraduate studies, many students needed significant review of the mathematical fundamental concepts and had limited prior exposure to Microsoft Excel. In addition to providing course instruction, the videos allowed the students to connect better with the faculty teaching the course. To help the students manage time and retain focus, videos were kept within the seven (7) to 33 minute range, with the majority running for approximately 15 minutes. As part of the online virtual class session, videos were created that walked the student through complete solutions of all computational problems that would have been performed in a face-to-face setting. These students were then requested to fully replicate these online virtual class exercises before proceeding to any homework problems. Similar to the "Module Overview" submodule, this section required the student to mark the page as complete before advancing through the virtual gate to the next portion of the module.

Module Learning Deliverables: Homework

After completing the virtual classroom exercises, the students would work on the homework. The homework assignments were

designed so that students were encouraged to complete all virtual classroom exercises to ensure success. This approach applied the philosophy of repetition and practicing problems to reinforce key analytical processes. Correct answers were provided in advance to alert the student if the work was incorrect. This approach also encouraged the students to contact the instructor for direct assistance and individual tutoring to clarify any errors in the solution process. Detailed solutions to every problem were then unlocked after homework submission to ensure that the students reviewed their work and were exposed to the correct solution process for all homework problems.

Quizzes

The on-campus approach of administering two exams covering about three module each was replaced with seven quizzes, one dedicated solely for each module. The students took each quiz immediately following the respective module so that the material was fresh and could be more easily recalled. Although there was a deadline so that the course pace was controlled and students would not fall behind, the quizzes were not timed. The goal of this was to encourage students to fully learn the module's content and be tested on it before advancing in the course. Information recall was easier and the untimed structure allowed students to put extended effort into doing well and ensure the learning of course objectives. Another goal was to restore confidence in the students and reduce the likelihood of feeling overwhelmed.

Case Study

The final assignment was a case study analysis in which students were asked to identify examples either in their careers or in the news where organizations had used the analytical tools covered in the course. This assignment did not involve any mathematical computations, but was intended to encourage interest in the overall field and make the concepts relatable to each individual student's interest. A greater motivation for applying the course concepts in practice was gained by the students.

3 OBSERVATIONS

Students in the online classes performed as well or better than those in the on-campus course sections. The quality of work performed on the multiple online quizzes was at least as high as on the more comprehensive in-class exams, and feedback from the students was very high. The students commented positively on the course shell organization and both the quantity and quality of the instructor-created Panopto tutorial videos. These videos were especially useful for those students returning to school after an extended hiatus because they provided a review of foundational material and served as a Microsoft Excel tutorial to those who were not proficient using spreadsheet software. There was also a high correlation between those students who fully watched the videos, replicated the video exercises, and contacted the instructor for assistance when needed, and overall course success.

The primary teaching objective was to ensure the learning of quantitative analysis for all students in the course. Many students were initially unsure of their mathematical capabilities, but quickly developed confidence throughout the semester. This improved confidence may be the most encouraging observation that suggests quantitative business courses can be effectively taught using blended and online formats.

4 CONCLUSIONS

The blended and online course structure presented in this paper worked very well when tested in an MBA quantitative analysis course. This model allowed a course that was not traditionally thought of as a candidate for blended or online learning to be effectively converted to this format. This success was due to designing an effective course shell using a modern LMS, creating tutorial videos for all course content, and ensuring that assignment flow facilitates learning through repetition, smaller information chunks, and confidence building. This model worked very well for MBA students across various educational and professional backgrounds, whether transitioning directly from undergraduate studies or returning to school after a long hiatus.

For those courses that may not require blended or online formats, the findings of this case study also apply to assisting with traditional on-campus teaching. Due to the overwhelmingly positive feedback regarding the organized LMS course shell and tutorial videos, it is recommended that instructors use this approach when teaching on-campus sections to help with course navigation, allow for "extended office hours", and help students review material covered in class. These initial steps would also allow for a similar future conversion of the course structure by slowly transitioning to blended and then fully online formats.

5 REFERENCES

Grandzol, J.R. (2004). Teaching MBA statistics online: a pedagogically sound process approach. *Journal of Education for Business*, 79(4), 237-244.

Hiltz, S.R., & Turoff, M. (2005). The evolution of online learning and the revolution in higher education. *Communications of the ACM*, 48(10), 59-64.