



A Hassle-free and Inexpensive Way to “Videotape” Class Lectures

As a teaching and learning enhancement tool, taped lectures are essential, for a number of reasons. First, they can be used as remedial material for students who attend lectures but miss important segments due to note taking. Unfortunately, many students are hesitant to ask questions or seek clarification on lecture segments that they may have missed. Second, even though students may be able to take copious notes, they may not be able to assimilate the material immediately. This can be particularly true in class lectures in which vast amounts or complex material is covered. Third, taped lectures may be used as resource material for or supplements to courses offered in distance-learning or degree-completion programs.

The idea of creating taped lectures is often dropped because of the problems that come with video production and the difficulties that viewers (students) may have in replaying the tapes. From the video-creation standpoint, the resources that will be required to tape lectures include videotaping equipment and a camera person, at the very least. Then, there's the video editing, which may take much more time and more resources than taping the raw footage. From the students' standpoint, the taped lectures can be viewed only in places that have a video player and television. Even when such viewing equipment is available, simply searching for specific parts within a videotape can be challenging, frustrating, and quite time-consuming!

Overcoming the Video-Production Dilemma

There is a way to overcome these difficulties without investing too much money in equipment and without relying

on professional video personnel. Digitizing lectures can be done using screen-capture software called Camtasia. This software is a screen camcorder (Camtasia Recorder) and a video-production tool (Camtasia Producer) rolled into one. Camtasia Recorder acts like a video camera, capturing everything that is on the computer monitor, including mouse movements and clicks, plus it records audio using a microphone. Originally marketed for use by computer-training experts for commercial purposes (e.g., developing professional-looking video instructions and video-based troubleshooting, enhancing paper-based and online documentation, and documenting the use of custom or commercial software applications), Camtasia Recorder can be used in combination with a digital pen and tablet as a classroom technology. Instructors can use it to record lectures, complete with notes and narration.

Camtasia Producer is a nonlinear editor that can produce standard Audio Video Interleave (AVI) files or streaming formats. When used together, the recorder and the producer create crisp, sharp, exact images of screen activity. The quality of the digitized screen images is far superior to that of the video image projected by regular video-produced tapes. This excellent video-image quality is a result of a unique video *codec* (compressor/decompressor) used by Camtasia.

A Firsthand Experience

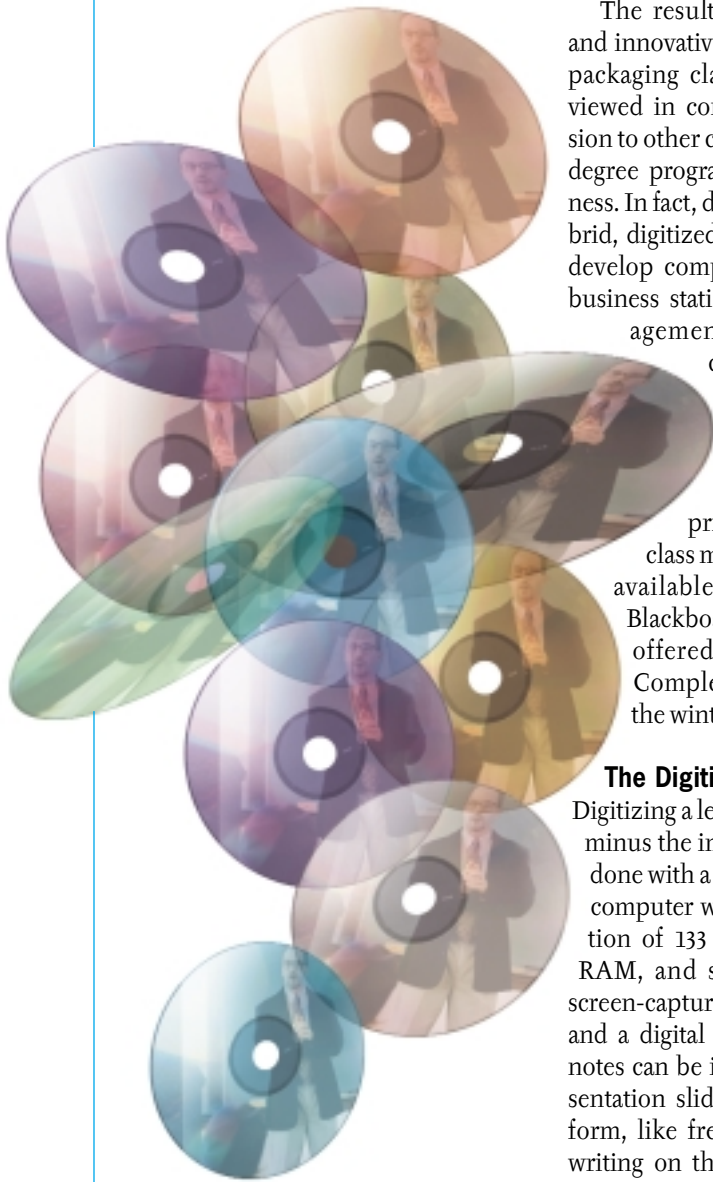
In the winter term of 2001, I taught business statistics as an experimental half-and-half, or hybrid, course for the Business Degree Completion Program at Southern Oregon University. The students in this program are mostly non-traditional students who have full-time

jobs and families but are coming back to school to earn a degree. The hybrid concept relied mainly on Blackboard, online course-delivery server software, as a way to communicate with the students and disseminate written class materials. The class was scheduled to meet five Saturday mornings every other week. Using the screen-capture software, I digitized the lectures that I would have delivered during the days that the class did not meet. Half the digitized lectures were created in my office while the other half were recorded during my live lectures in the regular section of the same course. The files were burned onto CD-ROMs, which were then distributed to the students. The digitized lectures could also have been made available through Blackboard for online access, but since all the students in the class were given the lectures on CD-ROMs, there was no need to do so.

The experimental hybrid class was a success from a delivery standpoint. In a comparison of the midterm scores of the students in the hybrid class with the scores of the students in another section taught in the traditional method, the students in the hybrid class performed just as well as the students in the traditional class. This suggests that the students in the hybrid class were not disadvantaged by not being physically in class for the lectures; the digitized lectures apparently provided a comparable substitute. Further, this hybrid class format seems to work well for the distance learning population or the nontraditional students who cannot make every in-person lecture.

The students in the hybrid class relied heavily on the digitized lectures to keep up with the class material. They felt that having the digitized lectures not only allowed them to be “in” the class but also

helped them get through the class successfully. Surprisingly, a number of students expressed preference for the digitized lectures over the regular lectures. One student commented: "The digitized lectures were invaluable, particularly since we covered so much material in a single class session. It was enormously



helpful to be able to replay lecture material and visually see the material you were presenting at the same time. Personally, I would have been lost without the aid of the AVI files." Another student loved the flexibility provided by the digitized lectures: "It gave me the freedom to study, take the quizzes and tests on my schedule . . . the CDs were a godsend, without them I would have been lost." An unintended, and unexpected, positive result from the

use of the digitized lectures was the higher-than-normal end-of-term student evaluations I received from the class—my highest in thirteen years of teaching the course! I could surmise only that the digitized lectures contributed significantly to my more favorable student evaluations in the hybrid class.

The results from this experimental and innovative approach to creating and packaging class lectures are being reviewed in considering possible expansion to other core courses in the business degree program of the School of Business. In fact, due to the success of the hybrid, digitized-lecture course, a grant to develop complete hybrid curricula for business statistics and operations management classes (both are core courses in the business degree program) was awarded. The refined hybrid courses will feature the digitized lectures as the primary means of delivering class material, which will be made available mainly on the Web via Blackboard. These courses will be offered in the Business Degree Completion Program starting in the winter 2002 term.

The Digitizing Process

Digitizing a lecture with audio and notes, minus the image of the lecturer, can be done with a few simple requirements: a computer with a minimum configuration of 133 MHz CPU speed, 32 MB RAM, and sound card, inexpensive screen-capture software, a microphone, and a digital pad and pen. The lecture notes can be in prepared form, like presentation slides, or in extemporaneous form, like free handwriting (similar to writing on the blackboard). The digital pen-and-pad combo acts as digital blackboard and chalk.

Digital recording of lectures can be done either within the confines and comfort of an office or within a live environment, during a classroom lecture. Classrooms that are equipped with LCD projectors are ideal for live recording. The raw digitized lectures can then be cut, spliced, and fused using the audio/video editing software bundled in Camtasia. The final digitized lectures can

be burned onto a CD-ROM for mass distribution or can be stored in a file server for Internet or Intranet anytime access. The final product can be produced in various formats, playable using popular media players such as Windows Media Player and Real Player. Digitized lectures saved as AVIs result in the best-quality screen-capture images and audio outputs. The downside is that they hog storage space. A one-hour lecture can easily eat up as much as 50 MB of disk space. If file size is a concern, as it will be if the files are intended for Web access, they can be produced using formats such as Microsoft Advanced Streaming Format (ASF), Microsoft Windows Media Video (WMV), or RealNetworks RealMedia (RM). A digitized lecture file produced in any of these formats can occupy as little as 5 percent of the space required for the same file produced in AVI format.

Conclusion

In addition to the reasons already mentioned, digitally produced lectures are ideal for supplementing courses in which demonstration of the use of commercial and educational software is an essential learning component. These courses may include, but are not limited to, programming, software application (spreadsheet, word processing, and presentation), digital arts and imaging, digital music applications, and CAD/CAM use. Another area in which digitized lectures will be quite useful is distance learning, especially courses that are totally Web-based. Digitized lectures produced in streaming format can easily be made available on the Web for anytime, anywhere access. Students in these online courses will be able to virtually "attend" class lectures wherever they are and whenever they need to. Undoubtedly, digitized lectures could become an increasingly popular teaching and learning tool.

René Leo E. Ordoñez, Ph.D., is Associate Professor of Business at Southern Oregon University, where he teaches Applied Business Statistics, Production Operations Management, and Applied Business Research. He also manages the School of Business computer lab and its multimedia-equipped classrooms.

