

## Streaming Video: The Bridge between Tradition and Innovation

**N**ew digital media—ranging from user-published blogs and video clips to collaborative wikis, online gaming, and immersive virtual reality—let educators explore the possibility of re-inventing education. Yet as educators' knowledge grows and their access to information expands, their methods of teaching often remain the same. At the same time, incoming freshmen often have no experience learning in a large lecture classroom and rely on their traditional study methods—the ones they used in high school. But these methods are not helpful if a student has difficulty understanding the professor, hearing the lecture, or seeing the material provided.

Digital media can bridge these gaps between tradition and innovation. The Internet can support traditional methods of instruction by capturing lectures using streaming video and thus making the classroom available to students anytime and anywhere. But students need more than a simple duplication of their lectures. They need new study methods.

To address these needs at Case Western Reserve University, we brought together a team of educators and technologists from the department of Instructional Technology and Academic Computing. The thought was to brainstorm ways to tap into the robust institutional infrastructure. We know that students often select our university because of its high-speed network, wireless “digital air,” and innovative learning opportunities and that they welcome the use of technology to support their learning. The result was the birth of MediaVision Courseware (MVCW), a video-centric course-management tool.

### Evolution

MVCW is a tapestry of learning aids, with video at its core. Beyond 24x7 access, students can either view lectures and review sessions in their entirety or locate those portions that they want to review by searching keywords, a visual storyboard, or key concepts. Students also have online access to all course materials—handouts, practice quizzes, homework assignments—linked to a calendar. Adding to its functionality, the MVCW toolset includes online threaded discussions and a gradebook. Future plans include collaboration tools such as file sharing and a desktop videoconferencing feature.

Initially, MVCW took its cue from the searchable streaming-video content of PBS and broadcast sports. We knew that for education to benefit from such a technique, multiple talents and perspectives were necessary. A cross-functional team was created, including instructional designers, educational professionals, video-production specialists, programmers, and an assessment expert.

MVCW was first launched in the fall of 2003 to support a single freshman chemistry course. In both the fall of 2006 and the spring of 2007, fifteen MVCW courses were offered, resulting in 4,000 hours of streaming video. We attribute this growth to the value that MVCW adds both to the faculty in their delivery of teaching and to the students in their consumption of learning.

After a great deal of evaluation and assessment, we created a strategy to scale the process. We soon learned that the technological aspects of the process had to be automated to maximize our resources and to reach as many individuals as possible. Standards were driven by

the needs of faculty and students, with their expectations of flawless delivery of high-quality video and content available in under twenty-four hours.

### Production Value

The quality of the video had to meet the standards of the incoming “digital natives.” This became critical to the production value of MVCW. We ensured that all aspects of the classroom experience and professor's lecture were captured, including projected materials, blackboard, and demonstrations as well as the lecture itself. It was also important that camera operators paid careful attention to video composition and content for easy viewing and comprehension by the students.

### Technical Architecture

A critical strategy in the deployment of any new technology is the ability to evaluate the practical value of existing solutions and how they might be applied based on users' need. When we originally started the MVCW initiative, we first developed a set of criteria on which to evaluate the variety of solutions that were available at the time. One of our most important evaluation criteria was the ability for scalability. Therefore, we set our sights on enterprise-class solutions. It was imperative that our solutions be reliable and of sufficient quality.

In retrospect, one aspect that cannot be overlooked was our ability to integrate several best-of-breed products with some of our own programming in order to provide a comprehensive solution. In addition, the back-end technology behind MVCW runs 24x7 without the need for manual intervention.

## Lessons Learned

Assessment and evaluation have been key throughout the evolution of MVCW to assess its educational value and the quality and efficiency of the technology.

### Attendance

Attendance is the top concern of faculty when considering whether to webcast their lectures, since they fear that class attendance will take a substantial hit if the course is supported with MVCW. We have data, collected over three semesters, addressing this issue.

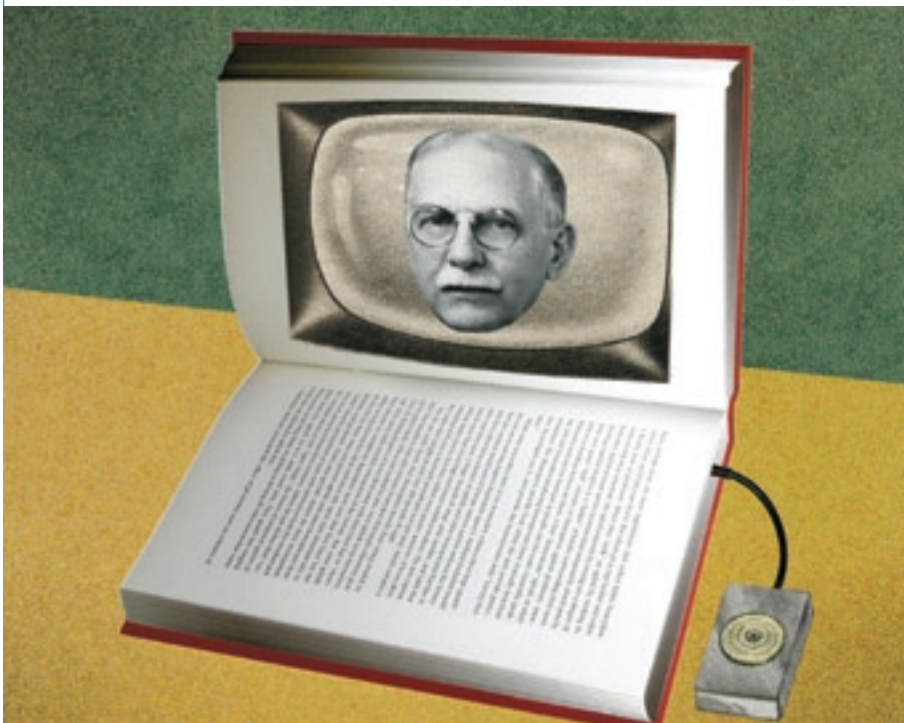


Illustration by Dave Plunkert, © 2007

In several faculty focus-group sessions, participants reported a significant decline in attendance about halfway through the semester, but the cause has not been decided. Students and some faculty reported a natural decline in freshman attendance during the semester regardless of whether the class used video. In a recent student survey, about 70 percent of the 431 students who responded said that the videos were not the reason they missed class.

Interestingly, some faculty have been neutral, if not supportive, of the use of the videos as a substitute for their class. Many are very supportive of student athletes and feel that the videos are perfect for those students who have to miss class because of sporting events. Some have stated: "If I'm not doing anything in the

classroom that makes my students want to come to class, then maybe they should just watch the videos." Similarly, if students want to use the videos and are able to be successful on exams, some faculty ask, "Why not?"

In our surveys, we found that only a small percentage of the students are openly skipping class and using the videos as an alternative. Although students admitted that they used the videos as a substitute for going to class on occasion, the reasons are noteworthy: they reported that they used the videos when

sick, when significant conflicts arose, or when they were unable to attend class (mostly on Fridays) because of travel with a university athletic team.

Students also use MVCW as a review tool. They are most likely to view the videos before quizzes and tests, although some students review the videos on an ongoing basis. For the most part, the students watch half to all of the videos, instead of carving out specific segments. Most students who use MVCW feel that they are doing better in the class because the videos are available to them.

Of the 51 self-reported nonnative speakers in the survey, 80 percent are using MVCW, and the majority of them report that they are doing better as a result. Higher-functioning students (i.e., those that expect to receive an A or B for

the class) use MVCW more frequently than self-reported lower-functioning students. It is unclear why these students who might benefit from focused review are not using it. The question is worthy of further investigation.

### Courseware and Learning

The amount of information available and the pace of learning have increased significantly over the last decade. At times, students feel overwhelmed by the fast pace of the material presented to them. Learning effectiveness is enhanced when students have control over the pace of their learning, either directly in the classroom or indirectly through study and review. Approximately 85 percent of the students surveyed said that reviewing the lectures with MVCW enabled them to control the pace of their learning. One student stated: "Courseware [MVCW] saved my life. It was going too fast, I wasn't getting it. I went back and reviewed the lectures in Courseware, and all in all, I did fairly well."

Confidence in learning has had significant, positive effects on the learning process. Of the 1,345 students surveyed across all semesters, 75 percent reported that they are confident in reaching their academic goals as a result of having the videos for study and review. Similarly, 75 percent of students responded that they definitely did better as a result of MVCW.

### One Last Question

With the success of MVCW, we are now asking (as are others from colleges and universities throughout the country): "How do we maintain and support innovative and emerging technologies once they become an established part of the culture?"

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