

Rich Media >> Get Rich Quick

By Matt Villano

The word “rich” means different things to different people. Bill Gates can rightfully be called rich, with an estimated net worth of \$50 billion. But in the world of academic technology, perhaps the most common use of the word “rich” is in conjunction with “media.” Rich media has become synonymous with just about every type of interactive technology, from collaborative whiteboards, video conferencing, and real-time online tutorials, to Web-based meeting software. These applications have emerged as the centerpieces of distance education programs at colleges and universities across the country.



The landscape of interactive technology continues to evolve, yet few colleges are employing truly ‘rich’ media. Here’s how yours can be one of them.

However, as these interactive technologies continue to evolve, experts say that only a handful of schools are employing rich media that is truly rich. “A lot of what is available through rich media today is a copy of what we already have in face-to-face education,” says Rich Mayer, a psychology professor at the **University of California- Santa Barbara** who has studied rich media for the last decade. “What we need is media that truly promotes learning—media that takes what already goes on in the classroom environment and makes it that much better.”

Redefining Med School with Rich Media

Technologists at the **University of Vermont** have answered this call with authority. In August 2003, the university’s College of Medicine—where all incoming medical students receive a laptop when they arrive on campus—unveiled a new integrated medical curriculum that revolutionized the way medicine was taught. Instead of separately teaching subjects such as gross anatomy or the nervous system, the school reorganized its curriculum to embrace a more holistic and interconnected approach.

Under the new system, for instance, students would learn about the physiology of the heart while they dissected one. According to Jill Jemison, eLearning manager for the College of Medicine, the idea was to build a new curriculum that enables students to see, at all times, the medical relevance of every action as it relates to patients.

University officials dovetailed the debut of their new curriculum with a new technology component that revolved almost exclusively around rich media. Working within the

confines of a learning management system from **Blackboard** (www.blackboard.com), IT staffers developed a bevy of new interactive technologies designed to incorporate real-world learning from real-life doctor/patient situations. This effort began with exam-building software from Respondus (www.respondus.com) that enables faculty members to upload existing or new question pools from word processing programs, and combine those with audio or video files in the **Blackboard** system, to deliver Webbased tests. All questions are approved by a committee, and all questions correspond to 900 “competencies,” or learning objectives that UVM faculty have identified as central to what it takes to become a doctor.

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Will video enhance this lesson? Does an audio file add anything other than bandwidth? By asking questions like these, Bloomsburg University educators get students to think critically about how to apply the technologies they’re learning, and how to apply those lessons to field experiences in their internships and beyond.

“The way we do it, all learning activities are informed by this giant database of what someone needs to know,” Jemison explains. “When you take a step back and think about how we’re using this technology to make sure our people are qualified, I’m not sure we can get media richer than that.”

But there’s more. In addition to creating and distributing exams with the help of interactive technologies, UVM’s approach also uses rich media to make sure no one is cheating. Thanks to technology called Secureexam from Software Secure (www.softwaresecure.com), the school administers Web-based exams in a secure environment that literally locks down all other computer functions until the test is complete.

In order to make sure students take exams in a controlled environment, testtaking students must report to proctored exam rooms and log on to their laptops. Secureexam’s browser automatically populates part of the exam password, based on its encryption technology; for added security, the rest of the password is supplied by the proctor. The technology even facilitates off-site exams, too. Thanks to the lockdown browser approach, all that the students need in order to take the test outside of the college’s Burlington campus is a computer room and a proctor.

The final piece of UVM’s rich media puzzle comes in the form of SearchLX, a powerful search tool from Learning Objects (www.learningobjects.com). The tool enables students and faculty members alike to search all of the content in the Blackboard learning management system. Jemison bills it as a “stellar” review tool for students, giving them access to files in a variety of genres: written words, audio, video, and more. She notes that the review tool is particularly useful for some of the image-based disciplines such as histology and micropathology, both of which boast beautiful image sets.

In the case of surgery rotations, the tool also enables students to use their laptop or PDA to call up a video of a surgical procedure just seconds before they perform the actual procedure, learning as much through first-hand emulation as through plain old study.

“Given that we are a medical school, our faculty members are faced on a daily basis with innovations in revisiting science,” Jemison says. “Rich media allows for that kind of innovation by innovating itself, and by reassuring users that they’re getting even more than they possibly could under the old system.”

The Incubator

UVM’s rich media applications are blazing new trails in modern-day rich media usage. And at **Bloomsburg University** (PA), academic technologists affiliated with the university’s Institute for Interactive Technologies (iit.bloomu.edu) have staked their careers on making sure rich media products get even richer. Through this program which began online in 1997, educators work solely with distance education students interested in developing the next wave of rich media. In the process, they employ the latest and greatest forms of rich media and interactive technologies, says IIT Assistant Director Karl Kapp.

The program’s rich media immersion begins with homegrown audio sensor software that allows instructors to engage in two-way audio communication with their students. Next, with the help of Javabased Symposium conferencing software from Centra (www.centra.com), instructors can also break their classes into groups, and students in those groups can interact in real time through collaborative whiteboards.

To further enhance communication between students and instructors, IIT utilizes ECP Connect, a program from Interwise (www.interwise.com) that manages data and voice conferencing. It has also employed the new Breeze product from Macromedia (www.macromedia.com), which essentially is designed to enable users to participate in online meetings and conferences where they can share presentations, view videos, conduct polls, chat, and more. “This combination of technology enables us to quite literally sketch out ideas as they materialize,” says Kapp. “The notion of doing that online is simply revolutionary.”

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While Breeze is the newest component of IIT’s repertoire, the real highlight of the program is its commitment to rich media applications that incorporate real-time video as a learning tool. The school’s reliance on digital video conferencing is nothing unique, but in addition to broadcasting video-over-IP along with voice and text, IIT also incorporates Macromedia’s Captivate software to record an instructor’s onscreen mouse movements for those hard-to-follow instructional lessons. With the help of this step-by-step learning

tool, IIT offers rich media classes in many of the products actually used to create the rich media: Dreamweaver, Flash, and Authorware from Macromedia, as well as Photoshop from Adobe (www.adobe.com), and more.

The IIT program is a one-year endeavor, followed by an internship or dissertation at program completion. In addition to the abundance of technological knowledge, the program also strives to impart to students something about the theory of rich media. Here, Kapp says the emphasis is distributed in every class where educators are encouraged to help students uncover which specific applications of rich media are truly rich. Will video enhance this lesson? Does an audio file add anything other than bandwidth? By asking questions like these, Bloomsburg University educators get students to think critically about how to apply the technologies they're learning about, and how to apply those lessons to field experiences in their internships and beyond."



AT UMV, RICH MEDIA applications are changing exam process, medical study, and more.

At the end of the day, there's no better way to teach students about interactive technologies than to use interactive technologies," says Kapp. "Everything about our program—from the subject matter to the lessons themselves—is designed to embrace the richness of rich media completely."

Alternate Approaches

At the Wharton School of the **University of Pennsylvania**, technologists have explored different types of innovations in interactive technologies for synchronous communication, but one of their most successful undertakings operates asynchronously, as faculty members and students see fit. These rich media efforts revolve around a collaboration program

called Webcafé, a glorified bulletin board designed to facilitate collaborative study partnerships, as well as extracurricular project planning for activities in and around the Philadelphia community.

The effort began back in 1998, as a portal for students in only 25 select classes. By 2003, every student in the school's 450 business and management classes was given the opportunity to use it. Today, Webcafé is open to all students and faculty members, plus some staff, with 7,500 concurrent users at any given time. Rob Ditto, senior IT project leader, says Webcafé has become one of the most commonly used technologies on Wharton's campus, second only to e-mail.

To use the system, users simply log on with a standard Web browser, from wherever they might be. Behind the scenes, Webcafé runs on software from EMC Documentum (www.documentum.com), an enterprise content management tool that helps users create and share any number of files, including digital text documents, engineering drawings, still images, audio and video files, and many others. Ditto says he wrote a separate program that enables students to upload assignments to a secure server, and allows faculty members to exchange comments with students in a secure environment that stores the comments as part of a gradebook database. The software also features more lifestyle-oriented collaboration spaces, which students use for more practical purposes such as

maintaining a database of summer sublets, or voting on which stocks are the best bets for investment.

“For both students and faculty members, this simple approach really does enhance everyday goings-on around Wharton,” says Ditto. “We found this was the best way to build upon what happens in our classrooms.”

Because it is asynchronous, the Wharton solution addresses one of the most prevalent stumbling blocks for rich media: bandwidth. Generally speaking, most interactive technologies sap gigabytes of network bandwidth, so institutions that run mission-critical applications on the same network may not have much bandwidth left for the rich media apps.

Another element of the bandwidth issue revolves around student connections: Streaming connections require 150 Kbps of bandwidth, or roughly onethird of standard DSL line throughput. Short of requiring all students to have a connection of minimum speed, there’s no foolproof way for a school to ensure that all students are connecting at speeds that enable them to follow instructors in real time. In most cases, when bandwidth is an issue on either side, at least some students will experience five- or 10-second delays, effectively rendering the benefits of rich media useless.



BANDWIDTH PROBLEMS don't impede distance educators at Villanova, simple workaround works.

To ensure that bandwidth isn’t a problem for their students, technologists at the College of Engineering at **Villanova University** (PA) have whipped up a blend of old-fashioned technology and even more archaic transportation. At the end of every distance education class, IT staffers help faculty members wrap class materials into Zip files, usually no larger than 150MB. Next,

depending on a student’s connection, the staffers either make these Zip files available for standard download, or they burn the files onto a CD-ROM and then spend \$5 or \$10 to overnight it via the US Postal Service. With this approach, Seán O’Donnell, director of Distance Education, says that instead of downgrading quality to serve the lowest common denominator, the school is able to respond to the individual needs of students with all types of connections.

“We’re ready for anything,” he boasts. “But believe me, if you’re a distance education student paying for one of our distance education classes, you wouldn’t want to go into the race with a Pinto, you’d want a Porsche.”

Stumbling Points

As O’Donnell explains, schools can work to eliminate bandwidth as a problem for rich media on campus. One obstacle that has established itself as a more formidable challenge to the development of rich media is “educator comfort.” According to IIT’s Kapp, educators in fields such as engineering and science are comfortable enough with technology to explore new products as they come out. However, in fields such as English

and history, where educators don't rely on technology nearly as much or as frequently, Kapp says faculty familiarity with rich media drops dramatically, necessitating a learning curve that can debilitate a push for change.

In the latter cases, Kapp says faculty members are most likely to use rich media to do nothing more than mimic the experience in the classroom. While these educators might go through the trouble of hooking up a streaming video feed during lectures, the application won't offer anything beyond this feed itself, a poor use of rich media, by any standard.

One way to increase educator comfort levels with rich media is to make it easy for instructors to take advantage of the technology as a way to supplement what goes on in class. At **Drexel University** (PA), for instance, the school's IT department launched what they call a "Rich Media Drop Box" to automate the process of digitizing content to be used with interactive technologies. The system hinges upon command line encoders from Sonic Foundry (www.sonicfoundry.com), which cost about \$20,000 apiece.

To use the system, faculty members drag and drop text, audio, and video files into a special folder on the school network; the files are then transported to an encoding farm, where they are converted into digital content that can be used in just about any rich media environment. Access to this encoded content is through RSS syndication. According to John Morris, Drexel's coordinator of Academic Technology and Web Services, the school processed more than 400 objects during a recent 10-week pilot program with 10 faculty members.

"Once the faculty members learned that this made it easy for them to digitize content, the Drop Box was something that really resonated with our faculty members," he says. "One way to ensure rich media is rich is to make it accessible for everyone."

Even with accessibility bases covered, rich media presents two other sizable challenges for colleges and universities looking to increase interactivity across the board. First is security—Villanova's O'Donnell and a number of other rich media experts say that a surprising number of students fall victim to issues pertaining to firewall controls. The problems arise because at a time when identity theft and other security threats are at an alltime high, few students have their personal firewalls configured to allow incoming data to stream unchecked.

What's more, when students log on to a rich media application, and their operating system asks them if they want to allow the stream through the firewall, many students decline because they are afraid of leaving their machines vulnerable to attacks from elsewhere on the Web.

Perhaps the biggest challenge with rich media is the way a school uses it to support human cognition. Mayer, the UCSB psychology professor who also authored the recently released *Cambridge Handbook of Multimedia Learning* (Cambridge University Press, 2005), has studied the cognitive science since 1995, and insists that there's a huge difference between a technology-centered approach and a learner-centered approach.

In theory, Mayer says that rich media can be a valuable tool. In practice, however, he insists that few, if any, schools actually use the technology the way they should. Looking

forward, Mayer notes that in order for rich media to be more than just a fad, inventors must devise a way for users to rely upon rich media for something that extends and amplifies the ordinary classroom experience without detracting from it at all.

“We’re not even close to seeing rich media that, for lack of a better word, is rich,” he says. “The technology has the opportunity to revolutionize learning, but if it’s developed poorly, we will turn off more people than we attract.”