

Using Webcasts to Model Technology Integration

By Debra Sprague

The inclusion of technology into preservice and inservice teacher education has become a necessary and important component in most, if not all, teacher education programs. Many State Departments of Education, including the Commonwealth of Virginia, now require teachers to pass technology competencies in order to maintain certification or become certified to teach.

The National Council of Accreditation of Teacher Education (NCATE) incorporates technology into five of its six new standards and requires colleges of education to include plans for integrating technology into their conceptual frameworks (Wise, 2000).

The ideal way to prepare teachers for incorporating technology into classrooms is by integrating technology-based learning environments into the college curriculum, with university faculty modeling usage (Sprague, Kopfman, and de Levante Dorsey, 1998). According to Carroll (2000), "Future educators should learn with these modern learning tools integrated into their studies by teachers and faculty who are modeling technology-proficient instruction, particularly in those courses where they acquire the subject area expertise they will use in the classroom" (p. 179). However, a recent survey by the Milken Exchange (1999) revealed that most faculty, whether in colleges of education or in the disciplines, do not model the use of technology in their courses.

Many university faculty members do not know how to effectively integrate technology in their courses. Although they may have basic computer skills, there is a sizable gap between personal technology use and use in teaching. It is much easier to learn basic computer applications, which are often covered in workshops, than to find - or even know where to seek - effective models of technology use that will improve learning.

A concerted effort will be needed to move faculty use of technology into a variety of advanced learning applications that can improve education. Such an effort is currently underway in many universities throughout the country funded by the U.S. Department of Education's Preparing Tomorrow's Teachers to Use Technology (PT3) Program.

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Preparing Tomorrow's Teachers to Use Technology Grant Project

In June 2000, the Graduate School of Education (GSE) at George Mason University (GMU) was awarded a PT3 grant by the U.S. Department of Education. The goals of the three year project are (1) to fully integrate technology in the instruction of preservice interns, (2) ensure that preservice interns are skilled in and have experience with integrating technology into K-12 classroom instruction, and (3) disseminate broadly the resources and best practices this project develops for integrating technology in preservice teacher preparation.

This project involves two major components. First, GSE faculty members are paired with K-12 teachers in a one-to-one mentoring relationship in which the teachers serve as mentors to the faculty. The K-12 teachers are chosen from three local school divisions: Arlington Public Schools, Fairfax County Public Schools, and Prince William County Public Schools.

The teachers are chosen based upon their effective use of technology to support the learning of their students and are matched with faculty based on content area and grade level. These teachers are providing models for the effective use of technology, are demonstrating various software and web-based programs that can be used in education, and are assisting the GSE faculty in redesigning their teacher preparation courses.

The second component of the grant, and the focus of this article, involves the development of a series of Webcasts (live streaming video sent over the Web). These Webcasts focus on various technologies and the ways in which these technologies can be used in the K-12 classroom. The Webcasts may be viewed live or downloaded from the project website (<http://www.techmentor.org>).

Defining Webcast Technology

Webcasting is a revolutionary emerging technology and a key component to the project. By using the power of the Internet and a digital video camera, it is now possible to broadcast videos that before required a high-end television studio, a transmitting tower and a government license. Webcasting replaces the production equipment found in such studios, including multi-camera switching and special effects such as animation. Webcasting provides the power to simulcast live events such as corporate meetings, newscasts, conferences, classroom training, trade shows or even a talk show.

What this means is that any live event can be videotaped and sent out over the Web in real-time. Because these events are sent over the Internet live, the technology is interactive so that the viewer can ask questions of the presenter in real-time and get immediate responses. Someone watching the Webcasts could send the presenter an e-mail message asking for clarification of a statement. The presenter could then respond to the question on camera and provide an immediate answer.

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Currently five Webcasts have been completed and are available on the project website. The Webcasts have been completed on the following topics:

1. Inspiration Software
2. Internet Search Engines
3. Website Evaluations
4. KidPix Software
5. Television and Video

The Webcast curriculum is developed by teachers from the three partner school districts and is broadcast by Kidz Online. Kidz Online (<http://www.kidzonline.org/>) is a non-profit organization whose mission is to teach all children about the technologies that will play a major role in their futures. Kidz Online uses a "kids teaching kids" education model. Each Webcast developed by this project follows the same format.

First, the technology is explained and the presenter demonstrates how to use it. For example, the Webcast on Inspiration goes through, step-by-step, the process for creating a web or mind-map using the program. Second, the presenter discusses curriculum ideas for using the program in a variety of content areas and grade levels. This discussion comprises the majority of the Webcast. Ideas are included for use in Math, Science, Social Studies, and Language Arts. These curriculum ideas are supplemented with pre-recorded video of students using the technology to complete class assignments.

Accessing Live Webcasts

In order to access the Webcast, the viewer needs access to the Internet and a software program that will allow for the viewing of video. The most common programs include RealPlayer by Real (<http://www.real.com/>), QuickTime by Apple (<http://www.apple.com/>), and Window's Media Player by MicroSoft (<http://windowsmedia.com/mg/home.asp>). To view GMU's Webcasts live, Media Player is needed.

A person wishing to access a live Webcast should point their browser to <http://www.kidzonline.org/techmentor/> and, 15 minutes prior to the start of the Webcast, click on the 300 & 56k at the bottom of the page. This will automatically launch Windows Media Player and the Webcast will appear. If you wish to be informed of the dates and times for future Webcasts, please send an e-mail message to the author at dspragu1@gmu.edu.

Sometimes it is difficult to access the live Webcasts. This is caused by too much traffic or firewalls on school computers. It is a good idea to test the computer system prior to trying to access the Webcast. Anyone wishing to test the computer system in advance can view the archived streaming video at <http://www.techmentor.org/Claspy.htm>. If there are problems, please call 571-203-8990 on Wednesdays or Fridays between 11 AM and 5PM for technical support.

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Downloading Archived Webcasts

All of the Webcasts are archived on the project website. Viewers have the option of choosing to watch the videos in QuickTime or Windows Media Player (the first Webcast on Inspiration is in QuickTime and RealPlayer formats). Media Player requires more hard drive space and takes longer for the video to download. However, it provides a better resolution and a higher quality of video. QuickTime should be used if the viewer is using a dialup connection or if space is a concern. Also, Kidz Online is in the process of close-captioning the archived Webcasts. To view the closed-captioning, Media Player must be used. To access the archives, follow these instructions:

1. Open up Netscape or Internet Explorer.
2. Go to <http://www.techmentor.org/webcasts.html>
3. Scroll down to Video-on-demand Archive.
4. Click on the Date for the Webcast you wish to view.
5. Click on the software you will be using (Windows Media Player or QuickTime). If you have neither program on your computer there is a link on the website for downloading either of these.
6. Click on the segments of the Webcast you want to view or click on View Entire Webcast if you wish to see all of it. Most of the Webcasts are between 45 minutes and an hour in length. This will launch the program you are using and download the video. Then you can watch the video in the same way you watch television.

Assessing the Effectiveness of Video as a Training Tool

Since Webcasts are an emerging technology, no research on the effectiveness of Webcasts as a training tool has been conducted. However, we can extrapolate effectiveness by looking at the research on instructional television and video.

Instructional television refers to video that "is transmitted by satellite to a school where it is either recorded and used when convenient or used immediately and interactively through a combination of computers and television" (Clark, 1998, p. 290). Early research studies on instructional television showed that children learned effectively from instructional television under the right conditions (Chu and Schramm, 1967). These included the use of subtitles, repeated showings of the instruction, and being placed in motivating conditions.

A more recent study compared the learning of a story from two communication methods, reading and television viewing. Middle school students were evaluated in terms of recall, inferential learning and mental effort. The results revealed that although students invested more mental effort in reading, the students who viewed television experienced more long term recall and inferential learning

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(Beentjes and van der Voort, 1993). Further studies discovered that television viewing resulted in greater comprehension while reading text was related to greater vocabulary building (Braunlich and Cennamo, 1996; Podszebka, Conklin, Apple, and Windus, 1998). It should be noted that each of these studies recommended further research to determine the effects of exposure to print vs. television media and the combination of both mediums.

A study conducted by Clevenson (2001) revealed that using video as a means to communicate with parents resulted in higher student achievement on school science fair projects. In this study parents were provided, in both text and video form, information on helping their children complete a science fair project. The instructions were broken down into specific steps parents could do to assist their children. Those students whose parents viewed the video format scored significantly higher on the science fair project than those whose parents viewed the text information. The level of parent help provided to the student was not a significant factor in this study.

Research has also been conducted to determine the effects of combining video and text. When closed-captioning is added to video, studies have shown an increase in the vocabulary of second language learners (Fisher, Flood, and Lapp, 1999) and an improvement in learner motivation (Shea, 2000).

Studies conducted with adults have shown that video can be just as effective or better than other forms of instruction, especially in the transfer of procedural knowledge (Atherton and Buriak, 1998). The research also indicates that video is even more effective for adult learners when combined with computer-based technologies (Moore, 1987; Dillion and Kincade, 1990).

Based on these finding it appears that video is an effective technology for providing instruction. Combining video with closed-captioning and interactivity, as is possible with the Webcasts, may result in further learning. There are plans to test this hypothesis once the Webcasts are fully developed and the closed-captioning has been completed. In the meantime, teachers and faculty who are currently using the Webcasts as part of their instruction have expressed their opinion on the quality and effectiveness of this technology:

"I came across your Webcast archives and thought the clips were very well done! I'm teaching a Computer Applications in Education class for teachers and was wondering if I'd be able to share your project resources with my students. I'm going to introduce concept-mapping soon and thought the Inspiration video segments would really illustrate the importance of visual representation tools. Dan Redding did a great job!" – faculty member at the University of Tennessee.

"Hurrah! I just went in and checked out the start of Inspiration - How wonderful! I think that we will be adding this to our regularly visited sites - I can think of so many ways it can be useful! For teachers who 'miss' training parts, or those who want to refresh revisit and remind themselves of what they have learned, for those who can't come to training but want to learn something specific ... My goodness, I think that this will probably become an important link for our grant website too!" – faculty member at the University of Houston – Clear Lake.

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Conclusion

The current funding of the PT3 grant used to develop these Webcasts is scheduled to end June 2002. The Graduate School of Education at George Mason University and its partners plan to continue to develop Webcasts as long as there is funding. Topics for future Webcasts include: multimedia/hypermedia in the classroom, use of simulations, diversity issues and technology, and online communities. If you wish to be notified of future Webcasts please contact the author at dspragu1@gmu.edu.

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