CALIFORNIA COMMUNITY COLLEGES

TIPS News

Technology in Education

TELECOMMUNICATIONS INFRASTRUCTURE PROJECT STATEWIDE

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Effectiveness of Technology Mediated Instruction

@ONE Technology Training Project Interviews Faculty

Robert Breuer
Graphic Design Department, Las Positas College

@ONE faculty recently sought out pioneering faculty who are effectively using technology mediated instruction (TMI) to find out more about their successes.

Many of those in the pioneer group had technical expertise before they attempted to integrate technology into their instruction. However, many of those interviewed required training in the new technologies, and all entered new territory as they began to develop instructional materials.

Pioneers who have achieved success with TMI (including those with online courses), often give credit for success to strong administrative support. Susan Adrian of Mission College stresses that administrators must offer faculty encouragement and sufficient autonomy, since development requires letting people loose, with trust, to do the massive development work.

With increased focus on using technology in instruction, it may well be that faculty now transitioning to TMI may not meet the same resistance faced by the pioneers who first sought to integrate technology into instruction. However, the experience of the practitioners clarifies the

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California Community Colleges

MEGACONFERENCE

On behalf of the Board of Governors and the California Community Colleges Chancellor's Office, we extend an enthusiastic invitation for you to join us at our eighth annual conference. The conference theme this year is: *California Community Colleges: Serving Students, Communities and the State in the New Millennium*. Our focus will be the role of the community colleges as active players in the social and economical success of the State, on ways to enable our system to fulfill its mission of ensuring that all of our citizens have an opportunity to better themselves through postsecondary education, and that our 107 colleges continue to make a defining difference in the social and economic success of California.

This year's conference highlights include a wide range of workshops providing information on the latest technological/educational materials and strategies, various pre-conference meetings, district and college showcases, and outstanding keynote speakers.

March 21-March 24, 1999
DoubleTree Hotel, Monterey, California

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TIPS online *http://video.4c.net/TIPS*

COMMENTARY

Technology-Based Instruction: Proceed Without Systematic Planning At Your Own Risk

Dr. Allison Rossett
San Diego State University

In 1994, Rebecca Barr and I published an article in *The Community College Review*. In it we looked at curriculum and planning at a community college, focusing on the strategies employed by vocational and arts and letters instructors. While up front planning has always been important to educators, it is even more critical today, five years later. Why? Technology is almost too good for our own good. Both potent and seductive, technology can lure instructors towards it, allowing them to be distracted from their ongoing and pivotal role in education and performance improvement.

> *"For those eager to see more learner centered options, where time and place are reduced to bit players, technology does have much to offer."*

Threaded discussions is an example that comes to mind. I was immediately attracted to the opportunities afforded for continuous reflection, discussion, and community building. In my initial view, all I needed to do was to seed the discussion with questions, a case, or a problem, and my graduate students in educational technology would do the rest. Not exactly. Not only do my students haltingly participate, and they're not the only ones, they don't like it unless they are truly geographically distant. Much of the literature puzzles on this topic

For those eager to see more learner centered options where time and place are reduced to bit players, technology does have much to offer. But there is a down side that deserves our attention. In the good old days, effective instructors in the classroom fixed any lessons that had bad aim, and encouraged students whose interest flagged. When people are learning on the web, however, who is around to tweak the lesson, add an example, coach a slower student, or tailor a case or problem?

When the programs miss the target, users can and will elect to disappear, taking advantage of the freedom afforded by technology-based training. There is literature (see Williams (1996), for example, in David Jonassen's *Handbook of Research for Educational Communications and Technology*) that questions the ability of all to profit from independent learning, pointing to students who have had school success as most able in independent circumstances. Currently, technology-based learning programs are available with whatever

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TIPS on Accessibility

Closed Captioning

Edward Breault
Video System Engineer, De Anza College

The De Anza College Television Center recently faced a challenge that many other community colleges with TV production facilities may also be facing: how to provide closed captioning services for hearing impaired students who are enrolled in distance learning classes. This article is intended to help other colleges to understand the technology and issues about closed captioning.

Closed caption services have the potential to benefit an estimated 24 million Americans with hearing disabilities, and approximately 27 million others in the United States who are learning English as a second language. Colleges face many challenges to comply with the Americans with Disabilities Act (ADA), which mandates an "equal opportunity for the deaf and hard of hearing to participate."

Closed captioning systems add hidden text to a live video program or a videotape recording. A built-in decoder is used to view the hidden text on a television. The text is displayed as pop-up text or continuous roll-up lines of text that are superimposed over the television picture. The hidden text information displays who is speaking, what their spoken words are, as well as other descriptive items, including sounds. Decoders have become a standard feature in most televisions and videotape recorders built after 1993. Separate external decoder boxes are available for devices that do not have built-in decoders.

The two main types of closed captioning services are on-line and off-line. On-line captioning adds the hidden text to live or real-time video events, including live classroom closed captioning for students or live distance learning programming. Off-line services add captioning to a prerecorded videotape program. Off-line captioning services are available from off-campus service providers. Be prepared to pay in the range of $10-20 per video minute in addition to the cost of the videotape, and allow a week or two turnaround time to complete the job.

Both captioning services can be offered by a college with the purchase of a few pieces of electronic equipment, a software package, some basic technical support, and funding for a real-time reporter. A basic electronic equipment package includes a personal computer (around $3000) with special captioning software (around $4000) and a video encoder box (around $3000) for adding text to the video programming. The certified real-time reporter or captioner supplies a stenographic writing machine that connects to the computer to translate his/her short hand key strokes to English text.

A real-time reporter must possess many specialized talents to record a live event. Real-time reporter skills include the ability to accurately translate stenographic short hand into English text (minimum of 220 words per minute), a mature dictionary to provide an accurate translation over a variety of different topics and subject matters, the ability to synopsize what is being said if writing the text verbatim risks an inaccurate English translation, and an understanding of the cultural needs of the deaf or hard of hearing viewers. These skills set a real-time reporter apart from other similar service providers, such as a court reporter. The cost of this service ranges around $100-125 per hour, usually with a minimum of three hours. Additional time may be required to allow the reporter time to enter the event, participants' names, titles, and/or other special terminology that will be used during the event.

resources

To learn more about closed captioning services and equipment vendors, visit one of the following web sites:

www.linkelectonics.com/htm/techcc.htm
www.captionmax.com
www.rapidtext.com
www.caption.com
www.imagelogic.com
www.cpcweb.com

4CNet Video Connection FAQ

frequently asked questions

part two

Network v. ISDN Connections

Q: Will districts have the capability to connect to both the current CCC ISDN network or the 4CNet network during the implementation/migration phase?

A: 4CNet will have a Primary Rate Interface (PRI) installed and operational in three locations: CSU Hayward, CSU Sacramento, and at the 4CNet NOC (Network Operations Center) in Los Alamitos. The Hayward and Sacramento bridges are able to handle 12 each 384K or 8 each 768K end points, while the 4CNet NOC bridge has 24 each 384K or 16 each 768K end points, where an end point is defined as a codec, another MCU, a Universal Conference Control (UCC), or a voice-only call-in. Campuses will be able to dial in and out via the 4CNet bridge and be connected to other 4CNet sites with dedicated connections. This ISDN connection will need to be scheduled and initiated by the 4CNet NOC, through the Video Scheduler. (See question about video scheduling elsewhere in this FAQ.)

A campus choosing to implement the network-only connection model will have direct ISDN connection capability until the network connection upgrade is installed in their PictureTel Codec. Through ISDN, the campus will be able to connect to the network by dialing in to one of the 4CNet bridges. Once the upgrade is installed, the campus will have ISDN connection capability (in and out) through the 4CNet bridges, and direct connection to the network.

A campus choosing to implement a dual connection (ISDN and Network) will simply add direct network connection capabilities to their current ISDN capabilities upon upgrade of the campus PictureTel Codec. It should be made clear, however, that Telecommunications Technology Infrastructure Program (TTIP) monies are to be used for the T-1 connection only, and that each district is responsible for any costs related to a upgrading to dual ISDN capability.

Non-4CNet Conference Connections

Q: Once a CCC campus is connected to the 4CNet backbone, will all conferences go through the backbone?

A: If a campus chooses to use their 4CNet connection exclusively for video, then all videoconferences would use the backbone in some way. This could mean use of the backbone for connecting to another California Community College location, or use one of the 4CNet ISDN link points for connecting to a non-4CNet conference center. If a campus chooses to maintain an ISDN connection in addition to the 4CNet video connection, then videoconferences for that campus may be set up independent of 4CNet.

Q: How will non-4CNet conferences be treated?

A: Non-4CNet videoconferences will be handled in a number of ways. Campuses using the backbone would connect to campuses off the 4CN system using one of the 4CNet ISDN links or the 4CNet Sprint Meeting Channel connection which provides connections to any Sprint Meeting Channel room around the world. Districts making non-4CNet ISDN calls will be billed back to the district at cost. A campus maintaining a dual ISDN connection could, use a dial-up means to set up any conference.

Q: Will the backbone provide multi-point bridging out of the state of California?

A: 4CNet is able to offer the Sprint Meeting Channel that provides worldwide coverage at cost. We will also be able to bridge via the PRI connections at the three 4CNet Lucent bridges currently in place.

Q: Is the backbone for videoconferencing exclusive to the CCC and CSU?

A: Yes. However, other institutions like the University of California also use the backbone indirectly for videoconferencing traffic. Often, the UC cam-

puses will connect the Northern and Southern California UC connection points to 4CNet, and utilize the 4CNet coastal or inland route to transport video traffic between the northern and southern parts of the state.

Q: Can persons outside the CSU and CCC systems participate in videoconferences?

A: Yes, via the Sprint Meeting Channel or ISDN to the 4CNet bridges, as indicated above.

Q: Does 4CNet's videoconferencing system provide gateways to H.323 or other IP-based video standards?

A: Presently, 4CNet supports the H.320 videoconferencing standard in order to ensure that appropriate Quality of Service (QoS) for video is available, regardless of data traffic on the network. However, 4CNet does plan to provide support for H.323 gateways in the future.

4CNet Resources and Demand

Q: Will 4CNet's backbone be ready and able to handle the demands videoconferencing will add to the system?

A: Absolutely. The backbone upgrade now underway has been designed to not only meet the increasing data needs of all 4CNet participants, but to meet the needs for video bandwidth as well. As was the case with the 4CNet data connection plan, the required backbone in a given area will be upgraded before any CCC campuses are connected, to assure the availability of sufficient bandwidth for videoconferencing.

Q: What will our functionalities be during the transition/installation period relative to ISDN conferencing?

A: Currently, 4CNet has three Lucent video bridges installed, which have ISDN gateways to allow ISDN/channel mixing. Two additional video bridges have been funded, and will be brought online when needed.

4CNet Videoconference Scheduling and Procedures

Q: What special procedures or guidelines are in place for participating in videoconferences over the 4CNet videoconference network?

A: 4CNet has established Videoconference Guidelines based upon the CSU systemwide experience in using videoconferencing technology. Those guidelines are available on the 4CNet web site at *http://www.4c.net*. The effectiveness of this powerful medium is dependent upon the staff that maintains and operates the video conferencing centers and equipment at each campus. To realize the best possible results from videoconferencing, it is imperative that all staff involved in the system follow mutually established guidelines and procedures.

Q: Are there required hours of operation for campus videoconference facilities?

A: While there are no required hours for availability, campuses are encouraged to make videoconferencing facilities available for use during the normal business day, 8 am to 5 pm, Monday through Friday. Facilities may also be made available on evenings and weekends.

Q: How are conferences scheduled on 4CNet?

A: 4CNet maintains a video conference scheduler that is made available to network members via the Web. The current scheduler can be viewed at *http://www.video.csu.net*. 4CNet is currently considering other scheduling packages to increase the robustness of scheduling services on the network.

The scheduling of videoconference rooms and 4CNet bandwidth is on a first come, first serve basis. However, to insure that instructional uses of the video conferencing equipment have priority, administrative conferences may not be reserved earlier than two months in advance of an event. The ability to schedule conferences over 4CNet is limited to designated site coordinators and technical contacts.

The full text of the 4CNet Frequently Asked Questions can be found on the 4CNet web site at: http://csu.4c.net

Young Fans Are Faithful Viewers

Kaye Baucom-Huffman
Internet Strategist and Multimedia Consultant

When it comes to interactive electronic field trips via satellite, teachers know better than to try to pull a fast one on young students at Sallie Curtis Elementary School in Beaumont, Texas.

"Our students love H.E.B. (H.E. Butt Grocery Company) 'Satellite in the Classroom'," said D'Ann Douglas, a fourth grade teacher, who is also in charge of technology in the school. "I guess you could count on one hand the number of programs we've missed in the last four years. We have a second grade gifted-and-talented class and the kids never allow their teacher to forget a H.E.B broadcast. In fact, they've learned how to get on the Internet to check the schedule themselves, so they know exactly what the upcoming program is, what day it's scheduled and what time it airs. They don't miss a show!"

Douglas points out that Sallie Curtis' young fans and teachers have been faithful viewers of H.E.B. programming since the early days of the five-year series. "In the beginning, teachers would take children to the library because that was the only room in the building wired for satellite reception. We would have as many as 110 students in the library at one time watching the broadcast. When we were told that our buildings would be wired for a computer network, the teachers asked that outlets for the satellite be wired into the rooms as well."

"I think the programs produced by H.E.B are wonderful,' Douglas praised. "All of the broadcasts are so interesting. They keep the children's attention because the shows are about subjects they're interested in. Teachers here use the programming in different ways. Several teachers introduce the subject to the students prior to the broadcast and the children try to come up with questions they would really like to have answered. They write down their questions and then check them off as they listen for their answers. Then at the end of the segment when the toll-free number comes up for call ins, the kids are ready to phone in with questions they know have not been answered."

"So many of the 'H.E.B. Satellite in the Classroom' shows have been relevant to things we study," continued Douglas. "For example, our fifth grade planned a field trip to the Museum of Natural Science in Houston. The students were particularly interested in seeing one of the IMax productions shown at the museum. Prior to our trip, we were fortunate to watch the H.E.B. program called 'Take It to the Max,' which demonstrated how these films are produced. That made our field trip even more special. It's nice to have that type of programming available because it encourages kids to be interested in many different subjects."

The electronic field trips have been such a successful learning experience for students at Sallie Curtis Elementary that the principal and teachers are investigating distance learning Spanish classes for their curriculum.

"Our students are very much at ease with the technology," said Douglas. "So, we try to mentor teachers who may be apprehensive about satellite technology on ways they can use it in the classroom. We may find a teacher who may decide that television in the classroom is just not the way they want to teach and that is their choice. But many times students will change that attitude. Once a reluctant teacher sees that the students are interested and the quality of the programming is good, then the technology provides another teaching tool. It's something you do in addition to your regular class–it does not take the place of your teaching."

ON THE WEB
Satellite Education

- *Satellite Education Resources Consortium*
  Combines resources of state and local departments of education with public broadcasting to design, produce, and deliver educational programs.
  -http://www.serc.org

- *Cooperative Satellite Learning Project (CSLP)*
  The CSLP is a business/government/education partnership, focusing on space sciences and engineering.
  -http://www.cslp.edu

- *PBS Adult Learning Service Online*
  Online catalog of telecourses, audiovisual resources, and videoconferences available via satellite from PBS.
  -http://www.pbs.org/adultlearning/als/

- *TEAMS Distance Learning*
  Satellite distance learning provider of instruction for the elementary grades. Also providing online resources for parents, teachers, and students.
  -http://teams.lacoe.edu

Technology Mediated Instruction

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importance of an administration/faculty partnership. In some cases, this may require educating those with leadership responsibility (both in administrative and faculty positions) in the ways TMI differs from traditional pedagogy and the ways technology can enrich student learning.

As the interviews with these TMI pioneers further reveal, access to and accessibility of technological equipment remains a challenge. Practitioners reported various strategies they employed to meet this challenge. Several tailored their instructional approach and materials to the resources available on their campuses. Others wrote grants to secure extra funding or lobbied locally for better resources.

The focus on resources reveals a pragmatic concern shared by pioneers in the field. If faculty are trained to use new technologies and spend time developing materials, but cannot implement them because of lack of resources, TMI will not become a widespread pedagogical approach. Faculty, who have shown faith in technology's potential and worked hard to translate that potential into their classrooms, may not be willing to update their skills and courses without assurance that students will reap the benefits.

@ONE interviews reveal that administration, trainers, and practitioners acknowledge that given present resources, community college campuses cannot support widespread faculty transition to TMI.

What It Takes To Make TMI Succeed

- Multimedia requires a sufficient number of classrooms outfitted for presentation software, web access, and data projectors.
- Interactive materials, web, or e-mail supplements require a wired infrastructure and a sufficient number of computers to meet student access needs.
- Faculty (both full-time and part-time) and students need e-mail access.
- Online courses require a wired infrastructure and easy access for faculty (full-time and part-time) to computers; in addition, students need easy off-campus alternatives to web-enabled computers.

As technology and instruction become more closely integrated, technical support teams (to upgrade and maintain equipment in labs, classrooms, and faculty offices and to address faculty and students' questions and concerns about technology) become a critical component of student success.

Additional Recommendations

- Form teams of faculty, administrators, and technical staff to address problems and devise solutions.
- Involve faculty in facility design.
- Support increases in technical support, including a help desk staffed to answer faculty/student questions.
- Make sure infrastructure and equipment are adequate, user-friendly, and reliable.
- Provide faculty and students with e-mail access.
- Have a systematic plan for upgrading equipment and responding to technical problems.
- Faculty practitioners reported four areas of concern:
  - the lack of incentives for faculty to invest the time necessary to transition to TMI
  - the lack of adequate and available training
  - the lack of support in developing TMI materials
  - the lack of support in the implementation phase

All of those interviewed, including those who needed little or no training, commented on the significant time commitment course development requires. The majority reported that their campuses offered inadequate compensation for the time spent (and many found it necessary to seek extra funding).

During the academic year, faculty find that they must meet the ongoing responsibilities of the traditional classroom, campus duties, and professional duties, while managing to find time to learn new technologies, develop materials, and pilot materials. In addition, faculty who required training reported that mastering new technologies, determining how best to apply them to a particular discipline or content area, and then developing or adapting materials required concentrated effort and ongoing commitment.

Determining the right way to apply technology to enhance instruction within a discipline is the challenge as technology begins to further permeate college campuses.

Throughout the 107 community colleges statewide, faculty are coming closer together through the media of emerging technologies. As faculty, the @ONE project provides one good place to connect, one place to find support and information on technology training. Take a few minutes to visit *http://one.fhda.edu* and join the @ONE eCommunity.

Commentary

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scope, sensitivity, and trajectory their designers built in when initially introduced.

All this brings us back to analysis because that is where instructors can gain the wisdom they need to anticipate their students' reactions to the technology-based materials. During analysis, we define and tailor efforts. Hard decisions must be made about the nature of the audience and need, the heart of the subject matter, what's in and what's out, identifying which information resources, not education, are appropriate, and how ready, willing, and eager the students will be.

What sources should we turn to as we attempt to make these decisions? What questions should we ask? What strategies should we use to gather this data? Should we do analyses that vary depending on the nature of the subject matter or student? Where can we shave time off the planning process? Is it really education and training that will make a difference?

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Contribute to TIPS *News*

TIPS News focuses on projects funded by the California Community Colleges Chancellor's Office that involve technology in education. *TIPS News* also features other issues concerning distance education in California, including videoconferencing and online learning.

If you have an article suitable for publication in *TIPS News* or are interested in writing material for publication, contact:

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