

TIPS

News

Telecommunications Infrastructure Project Statewide



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Special Pricing For Videoconferencing

Charles Mawson
Analyst, Instructional Resources and Technology, CCCC

Jackie Siminitus
Pacific Bell Education First, StakeHolder Relations, Education and Libraries

In 1997, California Community College Chancellor Tom Nussbaum approved the Chancellor's Office Technical Advisory Committee on Videoconferencing's recommendations to accept an offer by Pacific Bell to provide PictureTel equipment through the State of California Contract at a very favorable discount.

The Chancellor's Office recently negotiated with Pacific Bell Network Integration for 50 or more PictureTel Venue 2000 Videoconferencing Sys-

tems with a single 32" Color Monitor on a rollabout cart at a significantly reduced price, approximately \$7,000 below the California State Master Videoconferencing Agreement for State and Local Agencies. This special pricing is available for orders placed *on or before June 30, 1998*. The Venue 2000 Videoconferencing Systems include a codec (coder-decoder) that operates at up to 384Kbps and at up to 30 frames per second. The PictureTel System also includes an Inverse Multiplexer, NT1's (ISDN

conversion conversion unit), installation, first year maintenance, shipping, and project management.

PictureTel's Venue 2000 is a complete, standards-based system that makes high-quality videoconferencing better than ever. The Venue 2000 has a rich feature set, room for expansion, and excellent

(continued on page 5)

Connecting the System's People

Virginia McBride
Mt. San Antonio College
Project Director, "Connecting the Campuses"

With the deployment of 4CNet, what awaits refinement are collaborative/programming strategies which will permit the system's people to truly work together. Anticipating this problem, the California Community Colleges Board of Governors established as one of its Basic Agenda items for 1997 that "the human infrastructure of the California Commu-

nity Colleges (CCC) must be enhanced, better organized, and better utilized" within the system. The question is how to do this cost-effectively with broad-based involvement.

"Connecting the Campuses," a Chancellor's Office Fund for Instructional Improvement project, accepted the challenge. Targeting the entire system's involvement, the

(continued on page 5)

• In This Issue •

- The Global Classroom.....2
-videoconferencing in action
- Using Compressed Video For Learning.....3
-advice and techniques for bringing video to the classroom
- Innovative Learning In A Web-Based Environment.....4
-virtual classroom course template
- Online Learning Resources...4
-www resources for distance learning online
- Distance Ed Glossary.....7
-useful terms for understanding distance education (Part Two of Two)



**California Community Colleges
Telecommunications Infrastructure
Project Statewide (TIPS)**

Editor, Layout, Design, and Webmaster:
Chris Palmarini
530-895-2988
PalmariniCh@butte.cc.ca.us

Subscriptions: **Bonnie Roberts**
530-895-2341
RobertsBo@butte.cc.ca.us

Technical Support: **Scott Roberts**
530-895-2362
RobertsSc@butte.cc.ca.us

Project Coordinator: **Robert Ellsworth**
530-895-2344
EllsworthRo@butte.cc.ca.us

Project Administrator: **Dr. Fred Sherman**
530-895-2433
ShermanFr@butte.cc.ca.us

CCCCO Coordinator: **Charles Mawson**
916-327-5902
cmawson@cc1.cccco.edu

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Address all inquiries to:

Chris Palmarini
TIPS Editor
Butte-Glenn Community College District
3536 Butte Campus Drive
Oroville, Ca 95965
ph: 530-895-2988 e-mail: video@4c.net

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• Articles appearing in this newsletter plus other relevant news may also be accessed on the World Wide Web at:
<<http://video.4c.net/TIPS>>.

The Global Classroom

Bonnie Easley
Coordinator of Instructional Technology and Distant Learning Projects,
L.A Harbor College

Los Angeles Harbor College (LAHC) was fortunate to be one of the two California Community Colleges to be selected as a demonstration site for Pacific Bell's Education First Initiative. From 1994 to 1997, LAHC and West Valley College had the opportunity to develop videoconferencing applications while being supported by this program. This collaboration resulted in several videoconferencing projects, and provided stimulation and ingenuity both culturally and educationally in a "global classroom."

In 1995, LAHC brought its 10 year relationship with Barnsley College in Yorkshire, England to a new level of interactivity by utilizing "real time" videoconferencing to rehearse scenes before the two companies of actors (one from the U.S. and the other from England) toured together, first in one country and then in the other. As actors from the two companies played roles interchangeably, the ability to rehearse together as if they were in each other's presence gave them the edge needed for flawless performances.

Another example of the global classroom was an event which brought the expertise of Shakespearean lecturer David Eades, Principal of Barnsley College, from a lecture hall in England to the other side of the world. The audiences of students, faculty, and staff experienced another dimension of time and space through the interactivity of videoconferencing as well as a sense of the 8 hour time difference (early evening for Barnsley and the beginning of the day for LAHC). Mr. Eades'

topic, "The Timelessness of Shakespeare," transported the two audiences from the 17th to the 20th Centuries, touching on literary and social issues that are as current today as when the great bard wrote.

Most recently, another partnership has been formed with Cornwall College in the very southwestern tip of England. In the Spring of 1997, two LAHC employees traveled to Cornwall to participate in a U.K. League for Innovations Conference. There, in an astounding finale, 3 LAHC actors in California were directed live, in "real-time," by Cornwall's Theater Director in a scene from MacBeth in front of an audience of 200 teachers, administrators, and Governors. The effect was phenomenal. Through the Conference, we learned that the British are in the process of major educational reform; it became apparent they are very interested in emulating the U.S. Community College System.

Currently, the LAHC theater students are collaborating with Barnsley College Theater students writing, producing, and acting in one-act plays. For example, the Barnsley students will fax a student-written script over and the LA Harbor students will act it out the way they "think" it was meant to be. That act is video taped and, through videoconferencing, transmitted to Barnsley. The students begin to work together to refine the scene. This is an excellent example of how the global classroom works for student interaction.

A second collaboration this spring involves Child Development instructors at LAHC and the Nursery

(continued on page 6)

Using Compressed Video for Distance Learning

Jodi Reed, M.A.
Pacific Bell Education First Fellow

Merry Woodruff, M.A.
Consultant

Part One of Two

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In the past, distance learning with two-way video was out of reach for many institutions. Recent innovations in telecommunications technologies such as ISDN and compressed videoconferencing systems have lowered equipment and transmission costs, making two-way video feasible for small colleges, businesses, classrooms, libraries, and even homes. Unfortunately, access to the latest videoconferencing technology does not guarantee a valuable learning exchange.

While compressed video holds great promise for expanding the classroom experience, it also amplifies poor teaching styles and strategies. With this in mind, instructors considering use of compressed video will need to understand and work with the advantages and constraints of the medium to ensure a quality telelearning experience. In particular, instructors should plan to devote greater than normal effort toward preparation and development of instructional strategies that actively engage learners. The planning process and learning curve may seem excessive at first, but the shift from "knowledge disseminator" to "learning facilitator" is likely to enhance learning for both local and remote students. This article provides a path for instructors to develop and implement effective telelessons that employ the potential of two-way compressed video.

Understanding the Medium

Advantages of Interactive Videoconferencing

Establishes a visual connection among participants. Since a teacher can see and hear remote learners in real time, he can use conversation and body language to enhance communication. Frequent interaction increases understanding and encourages more personalized instruction. Interactive teaching strategies such as questioning and discussion can also help engage and motivate learners by making them active participants.

Enables connection with external resources. Remote experts can help validate understanding, provide feedback, and introduce practical examples. This real-world connection can greatly improve motivation, especially if students participate and the expert interacts at an appropriate level.

Supports use of diverse media. Photos and color graphics look great on video and can help convey a difficult concept or simplify instructions. Room-based systems usually include an attachable document camera that allows transmission of a high-quality still image. This feature can be used to show objects as well as photos and graphics, and many instructors also project "slates"--simple text displays with a few sentences (usually instructions). Slates are an easy way to shift learner focus from the video screen to a learning activity.

Document sharing facilitates collaboration and feedback. Some systems allow application sharing, allowing users at each site to see and edit a document. This kind of sharing encourages collaboration and real-time feedback.

Working With Technological Constraints

Compressed video behaves differently than the video most of us are accustomed to. Understanding and working with these differences can help improve a videoconference. In general, compressed video must transmit information via a smaller "pipe" than a televised broadcast. The camera and microphone take in more information than the "pipe" can handle, so the video and audio information must be processed by a piece of equipment called the codec (coder-decoder) before it can be transmitted. Incoming signals are decoded by the codec before they are sent to the monitor and speakers. All this processing takes its toll on the resulting picture and sound, and usually results in some of the following features.

Video "ghosting" or "image softness" is the codec's way of compensating for rapid information flow. One way the codec compacts information is by reducing frame rate (number of video images per second), which can make

Teachers who use two-way video must challenge basic learner preconceptions and set new expectations to maximize learning.

(continued on page 6)

Innovative Learning In A Web-Based Environment

Roxanne Baxter Mendrinios
Library Systems Administrator, Foothill College

Support for library and curriculum integration of electronic resources is of growing importance. The twelve community colleges that make up the Community Colleges for Innovative Transfer (CCITT), a nationwide consortium, were interested in developing the Virtual Classroom, a template for web-based distance learning classes.

In my role as Co-Principal Investigator for the CCITT's National Science Foundation (NSF) Project in Remote Sensing, Image Processing, and Geographic Information systems, I was able to bring together a team of experts, including a graphics designer, web programmer, and myself as a library systems and curriculum

designer, to develop the Virtual Classroom web-based course template.

As a part-time instructor in Computer Science, I teach three distance learning classes over the Internet. They include an introductory telecommunications course, an introductory internet course, and an intermediate internet course. Each course integrates the electronic resources of the Foothill College Online library, which includes full-text databases and Internet resources. Students have access to the web-based

Library catalog, full-text databases, Internet tools and search strategy tips, and other instructional resources. The web address for Foothill College's Online Library is: <http://www.foothill.fhda.edu/foothill/LRC/LibHomeA.html>

I have had students from as far away as the Netherlands, England, and South America. The students are extremely positive about using the Virtual Classroom template, and they thank me for their library and search strategy experiences.

With the growing proliferation of online distance learning courses, there is a need for faculty and students to be comfortable and proficient at accessing the resources of the library remotely.

Remote online library access

should be a part of every distance learning course which requires research. The need for students to have a basis for information literacy in accessing, retrieving, evaluating, synthesizing, and applying information to solve problems is not only important for on campus learning but for learning anywhere and at anytime.

In addition, I have included a section on Instructional Resources on our web page. Working with faculty from various disciplines, a graphic designer and I have incorporated the

Internet web site addresses used within the specific curriculum to be accessible by students in one location. In this way, students have a central place to access the informational web sites important for their discipline. The Online Library supports, integrates, and becomes central for instruction. 

The need for students to have a basis for information literacy in accessing, retrieving, evaluating, synthesizing, and applying information to solve problems is not only important for on campus learning but for learning anywhere and at anytime.

ON THE WEB *Online Learning*

• **California Virtual University:**

"California's leading colleges and universities are working together to create the world's virtual university -- with courses, degree programs and other services.

-<http://www.virtualu.ca.gov>

• **The NODE- Ontario's Network for Learning:**

"The NODE is a network linking post-secondary course and program developers, faculty, administrators and learners interested in technologically-mediated teaching and learning."

-<http://node.on.ca>

• **Web Course Tools Evaluations:**

A series of evaluations of distance learning technologies and tools.

-<http://www.distlearn.pp.asu.edu/webtools>

• **The Pangaea Network:**

"The Pangaea Network is a learning community of communities, one that serves colleges, schools, companies, associations and businesses in a shared environment.

-<http://www.pangaeanetwork.com/default1.htm>

Connecting

(continued from page 1)

project team, working collaboratively with Latitude Communications of Santa Clara, chose a combination of telephone and computer technologies to reach directly to the desktop. Participants, using tools at their fingertips, could stay in their offices, dial-in to the conference by telephone, and connect to web sites through their networks.

In September 1997, the project team held its first statewide conference. In a three-hour span, participants, who were technologically savvy decision-makers at 30 sites, heard and saw presentations from several vendors and higher education representatives. Developing this conference took approximately two months. The content focused on the collaborative technology needed to make the system work, and on similar uses of the technology at the University of Minnesota and Rio Salado Community College in Arizona.

From December 1997 through March 1998, under the guidance of Cristina Mora-Lopez at the Chancellor's Office, several one-hour

virtual conferences have covered a variety of Distance Education topics.

One conference, attended by approximately 50 sites hosted by Distance Education Coordinators, provided an update on the deployment of library systems, status of "pilot student-services" applications, wording of legislation related to distance learning, 4CNet progress, issues related to disabilities, and other related topics. This conference, which took about 6 weeks to develop, showed how "timely" information could be delivered quickly throughout the system.

A second conference allowed Larry Toy, Director of System Advancement and Resource Development for the CCC Chancellor's Office, to explain the status of the California Virtual University (CVU). A diverse collection of participants interactively shared concerns and problems regarding the CVU. This conference of approximately 80 sites, also took about six weeks to develop, and showed the system's potential for collaboration in decision-making and problem-solving.

By March 1998, the conference had grown to 85 registrations. Dur-

ing March's interactive hands-on presentation, David Diaz of Cuesta College took participants to his web site, the campus web site, and a web site in Hawaii. Using the telephone keypad, participants who were concerned about web-development issues, raised "electronic" questions ranging from equipment he used to the possible theft of David's electronic efforts. This conference, taking less than four weeks to develop, demonstrated the system's capability for building upon innovations while avoiding duplication of efforts and repetition of mistakes.

Regardless of the "head-count," each conference costs approximately \$30/hour/site for telephone "connections." Web-site access was through campus-based Internet connections, so no additional line costs resulted. In other words, aside from the planning and development costs, a one-hour, highly interactive conference of 100 sites statewide would cost approximately \$3000. As the project team learned from its mistakes, development time dropped dramatically and site-participation grew and improved. ☺

CCC Vide Conferencing

(continued from page 1)

performance.

H.320Plus is PictureTel's implementation of the ITU-T, H.320 standards-based video compression algorithm. It supports advanced features such as freeze-frame graphics, far-end camera control, data interface capabilities, and excellent audio quality.

In a related development, Pacific Bell Education First Advocates are working with the Chancellor's Office and @ONE, a California Community

College Distance Learning Staff Development Consortium, to develop customized workshops with a focus on web-based and videoconferencing applications for California Community College faculty, librarians, and staff. ☺

•For more information on CCC and videoconferencing, contact Charles Mawson at: cmawson@cc1.cccco.edu or 916-327-5902, or see the TIPS website at: <http://video.4cnet/TIPS/resources>

•For more information on Pacific Bell Education First and videoconferencing, see your local Pacific Bell Account Manager, contact Vivian Goldschmidt at 714-284-2420 or visit the Pacific Bell Knowledge Network Explorer at: <http://www.kn.pacbell.com> and <http://www.kn.pacbell.com/vidconf>

Global Classroom

(continued from page 2)

Program at Cornwall College. In a series of videoconferences, students will participate in “story telling” techniques and discuss aspects of multiculturalism in an urban U.S. city and a rural British town.

Faculty are often more willing to participate in this new technology if they start small; by offering instructional modules as opposed to a full class, they are able to ease in to it and see how it feels. Most have indicated that they do not want to be a “talking head.” The technology does lend itself more to interactivity which would almost preclude large audiences. However, it is a terrific medium for an eminent speaker to address any

group, anywhere, at anytime.

The “rule of thumb” we at LAHC have been using is simply this: Is this an opportunity for students to view or participate in an activity or event which might be otherwise unavailable to them without this technology? Since in most cases the answer is, “No”, the second part of the formula would address whether their educational and cultural experiences would be enhanced and enriched by the experience. The answer to that would be a resounding, “Yes!”

Watching the joy, excitement, and enthusiasm of the students as they interact with the British students has been gratifying and rewarding. It

seems that much of the excitement comes with talking to students and faculty half-way around the world. Conversations often turn to questions of weather, movies, food, and dating; a variety of universal and common denominators for all people in all places at all times.

Rather than thinking we may be on the brink of some new and dynamic form of educational presentation, perhaps for now educators should just think in terms of our humanism and how good it feels to meet with and collaborate with colleagues and students in a truly global setting.



Compressed Video

(continued from page 3)

rapid motions appear jerky. The codec also drops resolution to compress information, which can make an image fuzzy or chunky. To reduce these effects, reduce the amount of visual information flux. Avoid rapid motion, wear plain clothing, and hang a pastel curtain behind participants to reduce extraneous visual information.

Audio delays can occur because it takes about a second for information to compress, travel, and decompress. Videoconferencing novices usually experience a few awkward crossed “go ahead” conversations due to this time delay. Since there's no way to prevent the delay, learn to finish thoughts in a single statement with an obvious conclusion. Listeners should avoid interrupting and use visual cues (like nodding) instead of verbal affirmations (like “uh huh”).

Audio “clipping” or echo might take place if your audio system isn't properly configured. If you are experiencing audio problems, reset the echo canceler (if you have one) and reduce background noise. You should also check your equipment documentation for volume and microphone placement guidelines. Depending on equipment, use of headsets and external speakers can also improve audio quality.

Working With Human Factors

Another part of understanding two-way compressed video is understanding how it is perceived by its users and how these perceptions influence interaction within this medium. Try to keep the following human factors in mind as you explore telelearning via two-way video.

Videoconferencing etiquette must be established by the users. Most people have not experienced videoconferencing and do not communicate as they would in a face-to-face situation. Two-way videoconferencing is unlike one-way television, but many people have a difficult time changing ingrained habits and preconceptions produced by years of experience with television. The behaviors we associate with television -- “channel surfing,” “spacing out,” “vegging” -- are not optimal learner behaviors. Teachers who use two-way video must challenge basic learner preconceptions and set new expectations to maximize learning. Fortunately, good two-way video instructional strategies are also good classroom instructional strategies. 

•Part Two will include *Instructional Strategies, Planning a Lesson, Guidelines for Using Audio-Visual Aides, and Evaluation.*

Distance Education GLOSSARY

Part Two | to Z

As distance education becomes more prominent on the college campus, more and more instructors and students are becoming involved in both the technical and educational aspects of distance education. It is important to understand distance education related terminology if the instruction and delivery is to be understood by all persons involved.

I

Instructional Television Fixed Service (ITFS): Microwave-based, high-frequency television used in educational program delivery.

Integrated Services Digital Network (ISDN): A telecommunications standard allowing communications channels to carry voice, video, and data simultaneously.

Interactive Media: Frequency assignment that allows for a two-way interaction or exchange of information.

Internet: An international network of networks primarily used to connect education and research networks begun by the United States government. **Internet Protocol (IP):** The international standard for addressing and sending data via the Internet.

L

Listserv: An e-mail program that allows multiple computer users to connect onto a single system, creating an on-line discussion.

Local Area Network (LAN): Two or more local computers that are physically connected.

M

Microwave: Electromagnetic waves that travel in a straight line and are used to and from satellites and for short distances (i.e., up to 30 miles).

Modem: A piece of equipment to allow computers to interact with each other via telephone lines by converting digital signals to analog for transmission along analog lines.

Mosaic: An example of browser software that allows WWW use.

Multimedia: Any document which uses multiple forms of communication, such as text, audio, and/or video.

Multi-Point Control Unit (MCU): Computerized switching system which allows point-to-multipoint videoconferencing.

N

Netscape: An example of browser software that allows you to design a home page and to browse links on the WWW.

Network: A series of points connected by communication channels in different locations.

O

On-Line: Active and prepared for operation. Also suggests access to a computer network.

Origination Site: The location from which a teleconference originates.

P

Point of Presence (POP): Point of connection between an interexchange carrier and a local carrier to pass communications into the network.

Point-to-Point: Transmission between two locations.

Point-to-Multipoint: Transmission between multiple locations using a bridge.

PPP: A software package which allows a user to have a direct connection to the Internet over a telephone line.

Protocol: A formal set of standards, rules, or formats for exchanging data that assures uniformity between computers and applications.

S

Satellite TV: Video and audio signals are relayed via a communication device that orbits around the earth.

Serial Line Internet Protocol (SLIP): Allows a user to connect to the Internet directly over a high speed modem.

Server: A computer with a special service function on a network, generally receiving and connecting incoming information traffic.

Slow Scan Converter: Transmitter/receiver of still video over narrow band channels. In real time, camera subjects must remain still for highest resolution.

Synchronous: Communication in which interaction between participants is simultaneous.

T

T-1 (DS-1): High speed digital data channel that is a high volume carrier of voice and/or data. Often used for compressed video teleconferencing. T-1 has 24 voice channels.

T-3 (DS-3): A digital channel which communicates at a significantly faster rate than T-1.

Telecommunication: The science of information transport using wire, radio, optical, or electromagnetic channels to transmit receive signals for voice or data communications using electrical means.

Teleconferencing: Two way electronic communication between two or more groups

in separate locations via audio, video, and/or computer systems.

Transmission Control Protocol (TCP): A protocol which makes sure that packets of data are shipped and received in the intended order.

Transponder: Satellite transmitter and receiver that receives and amplifies a signal prior to re-transmission to an earth station.

V

Video Teleconferencing: A teleconference including two way video.

U

Uniform Resource Locator (URL): The address of a homepage on the WWW.

Uplink: The communication link from the transmitting earth station to the satellite.

W

World Wide Web (WWW): A graphical hypertext-based Internet tool that provides access to homepages created by individuals, businesses, and other organizations.

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This guide was developed by Allison J.L. Touchstone Engineering Outreach, University of Idaho

"Web Integration 101"

Mary Schrader Lasica
Pacific Bell Education First, Education Advocate

Planning to attend Tech Ed 98? If you are an instructor that is familiar with some of the incredible content on the Web but not sure of what step to take next, attend a pre-conference workshop called "Creating Web-Based Activities Using Filamentality."

This workshop, provided by Pacific Bell Education First, allows an intermediate Web user to build a web-based activity for use in classes without learning HTML. If you come prepared with URLs (web addresses) in your discipline, you can spend the three hour hands-on workshop building an activity such as a hunt or sampler. If you organize staff development on your campus, use this session as a preview for staff development available free to Pacific Bell customers around the state.

For more information about the workshops available to your campus, contact Mary Schrader Lasica, an Education Advocate for Pacific Bell, at (916) 972-4362 or lasica@pacbell.net.

ON THE WEB TIPS *Online*

• *PictureTel Troubleshooting Guide*

-Selected materials from the PictureTel Administrator's Guide to assist you with troubleshooting common problems.
Contact Charles Mawson at the CCCCO for further assistance:
cmawson@cc1.cccco.edu or 916-3275902
-http://www.video.4c.net/TIPS/resources/pictel_trouble.html

• *Community College Video Phone Book*

-A complete and current listing of all available videoconferencing systems.
-<http://www.cccco.edu/ESED/Ir&t/TNT/VIDEO/video.htm>

• *List of CCC Distance Education Coordinators*

-A complete and current listing of all available videoconferencing systems.
-http://video.4c.net/TIPS/resources/distance_ed.html

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