
Distance education: changing formats

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Abstract

Beginning with interactive television transmission (ITT) to an offsite campus at CSU Fullerton, the School of Library and Information Science (SLIS) at San Jose State University (SJSU) has been providing distance education to students in California for more than ten years. While ITT continues to be employed at SLIS, faculty members are moving into Web-assisted and Web-based courses in the Master of Library and Information Science degree program. This article provides background information, the current program, and compares research conducted elsewhere with research undertaken at SJSU. The problems to be overcome and their solutions both proposed and actual are given.

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Introduction

The School of Library and Information Science (SLIS) at San Jose State University (SJSU) has been offering distance education instruction using interactive television for the past ten years. Under the leadership of Stuart A. Sutton, the SLIS at SJSU began to offer distance classes in an interactive video mode as a test to see if a state-wide program in Library and Information Science was possible (Sutton, 1996). The LIS program at the University of California at Berkeley had closed and the University of California at Los Angeles was moved into the School of Education and Information Studies and remained small, thus creating an opportunity for an expanded program at SJSU.

California is the third largest state in the nation and has the largest population. With only two schools, University of California at Los Angeles (UCLA) and SJSU, in California offering programs accredited by the American Library Association's (ALA) Committee on Accreditation, the challenge to provide enough information professionals to meet needs is daunting. Both programs are state-supported with funding from California's legislature. Both are members of systems with UCLA one of nine schools in the University of California (UC) system and SJSU one of 23 in the California State University (CSU) system. The sheer magnitude of offering library and information science education demands a mechanism to move from the traditional classroom into distance education. Three "levels of learning" were available to accomplish this.

The phrase, "first level learning", describes the development of correspondence courses and "second level learning" as multi-media resources with the "third level" the heavy reliance on newer technologies such as interactive television transmission (ITT) and Web-based or Web-assisted instruction. Within each model, varying levels of opportunities arise.

Correspondence courses, first level learning, offer the option to provide course outline and assignments for students with their responses returned for correction and assessment of progress. This is a very slow process depending upon mail delivery delays and student time to complete assignments. Teacher time to review and return comments also varied. Telephone and two-way radio transmission make it possible to have



conversations with the instructor, but interaction with other students is difficult because they are isolated from one another and may also be on a different schedule if they have not returned papers promptly.

In second level learning, the development of audiovisual resources supplemented printed information, increasing the ability to provide instructional materials for students. Audio lectures gave students something to listen to as well as materials to read. Sending videotapes of televised lectures gave students the opportunity to see the instructor and view demonstrations. Yet, the situation remained an instructor providing the information and students as audience. Whether the student understood the content was judged by the answers given on homework or test questions. Verbal communication was possible only between instructor and student or from one student to another. While successful, this level of learning expanded with the development of new technologies.

Interactive television transmission

Development of interactive television transmission and computer interface with the Internet opened the possibility of greater communication providing an expanding definition of distance education:

A method of instruction and learning designed to overcome barriers of time and space by allowing students to study in their own homes or at local facilities, often at their own convenience, using materials available electronically or by mail (Reitz, n.d.).

The possibility of a televised mode of instruction would enhance our ability to offer courses taught by San Jose's full-time faculty to students attending our off-campus facility located at the California State University Fullerton, more than 300 miles from San Jose. While at least two full-time faculty members were located in Fullerton, many classes were taught by part-time faculty teaching in the more traditional pattern of education with teachers in front of their classrooms filled with students. Lecture, textbook, audiovisual resources, discussion and outside readings define course content. While research assignments take students to other locations for completion, the majority of the transmission of information occurs in a room with a live teacher facing a live audience. As technology changed, our classrooms and teaching methods changed.

Our traditional classrooms, allowing use of a variety of more traditional technologies such as transparency and video projection, were upgraded to include connections to the Internet from the teacher station. The computer at the teacher station provided for projection of online databases to the class, Power Point slides, and video. Faculty established e-mail reflector lists that gave students a mechanism to communicate with the instructor and one another over the Internet. Our interactive video distance education classes incorporated these measures, while our traditional instruction also added new experiences to provide different opportunities for learning to both on-site and off-site students.

In order to offer distance education through interactive video, a grant was written for the equipment necessary both to transmit instruction and to equip classrooms with microphones and computers for interaction as classes were being taught. The original grant was large enough to purchase the best system available at the time – a system that had the largest bandwidth known – asynchronous transfer mode (ATM).

ATM seemed miraculous to both the teachers and students, who were accustomed to low technology. In both sites, students had a microphone at their desk and could see both the instructor and students at the distant site. Both students and teacher could converse as if in the same room and the camera would focus automatically on whoever was speaking at the moment. The grant covered not only the equipment and classrooms, but also the high cost of broadcasting.

ATM instruction models

In their use of ITT, SLIS faculty members used the following four models expanding on the first, which was the original model:

- (1) The instructor remains at one site, transmitting to one or more sites from that location.
- (2) An instructor may travel among the sites, transmitting back to the original site throughout the course.
- (3) More than one instructor is assigned to the courses and instructors are located at each site during transmission, a form of a team-teaching model from the traditional classroom.

- (4) An instructor at one site uses mentors at each distance site to answer questions and lead discussions.

One of the strengths of ITT is that each class may be recorded and the tape made available for review at a later time. Students who must be absent for one reason or another appreciate the opportunity to view the proceedings on videotape.

But no matter how high the technology, many students at the distance site would be vocal about their feelings of being "distant", of being the stepchildren. They would always respond better when the instructor was physically present rather than virtually present. In fact, one semester, a few students followed the instructor to the various locations where the broadcast originated just to enjoy a physical presence in their classroom.

When one professor was being considered for tenure and could not afford low student ratings on the teaching evaluations, this instructor opted to teach everyone in the state on television the first class meeting and then gathered the students in a north location and a south location for the remaining class periods. This doubled the instructor's load, but provided the face-to-face contact the students craved. Teacher evaluations were higher.

When grant funds ended, as all grants do, the cost of maintaining an ATM communication link became prohibitive at least for our School's limited classroom use. Only SLIS, a small unit within the 23 campuses of the CSU system, made regular use of this communication link to teach courses, and system-level personnel wanted the high bandwidth for other uses. A lower cost and inferior technology were substituted for teaching.

Reliability and use

When the test of the ATM switch ended, the CSU system requested that SJSU return to Codec transmission and use the system's back-bone, 4Cnet. This meant that transmission was not as smooth. Further, for one full year the network often failed. Classes were taught at night and on weekends when staff at the central center in Long Beach and at the switching centers in San Francisco and Haywood were at minimal numbers. Either

students would appear to be frozen on the screen or the screen would break up into colored tiles. The return to network transmission took anywhere from one minute to 15 and sometimes never, causing faculty to work on alternatives to this form of instruction. Needless to say, everyone was unhappy and, for one year, professors began to refuse to teach on a system that was so unreliable.

Other experiments have been tried using the Codec technology. Theoretically, students with a DSL connection at home would be able to enjoy the class session streamed live into their living-room or office. One semester, two students were connected in this fashion in addition to the two large group sites. The result was not successful because of lag time. The technology was as much disruptive as it was beneficial. We began to look at alternative modes of transmission beyond interactive television so that the loss of instruction with network breakdown would be minimized. The obstacle to overcome was how to teach faculty to use these alternative resources.

A grant from the federal agency, Institution for Museums and Library Services, to SLIS provided an opportunity to help not only our faculty, but faculty in other schools of library and information science and staff development personnel in public libraries and other government agencies. Participants became aware and proficient in the use of instructional technology to teach their courses. Faculty members teaching via ITT learned about additional resources, human and material, that could be added to their courses. Qualified personnel who are located on a single site, the guest lecturer, provide expertise that would not be possible unless students were on a single campus. Virtual collections of resources are developed and become available were thereby widening access to information.

The idea that two-way audio and video could link individuals anywhere in the world for a quality teaching and learning experience will await the time when wide bandwidth is commonly available and less sophisticated programs such as Net Meeting by Microsoft are improved.

A distance video instructor can do many things to make the distance experience more meaningful. It is not wise to try to lecture essentially the whole class time interspersed with questions or a little discussion.

Instructors find that students enjoy the experience more when classroom activities include small group discussions at each site, problem solving, and project work. In this case, the instructor introduces a problem or project and then small groups work "off line", coming together in a reporting mode with group mini-reports alternating between sites. Students chosen to report use available technology to show visuals that have been created or charts/models, etc. and they experience what it is like to be on television. During discussion, if the instructor constantly bounces questions from one site to another forcing interaction across sites, students become more accustomed to talking and listening across the technology. At times, a virtual community arises, and the technology becomes transparent. While the technology is always a barrier of some sort, the way the instructor uses the technology makes the experience move from the "boring" range toward the engaging side of the scale.

Several professors at SJSU still use the television network as a distance mode, but they use it less often than the traditional mode of once-a-week for 13-15 weeks. Many courses now have two to five meetings per semester with the balance of the class being conducted via the Internet. Such a schedule is popular with students who live at a distance from campus or who live in highly urbanized locations and must travel through these areas to attend class. Getting anywhere on the overcrowded highways of California is a major hassle. Using ITT and the Internet presents a challenge to the instructor who must decide what types of classroom activities are best done on television and which can be done on the Web.

Lessons learned

In a study (Stanford, 1997) of our first ITT instruction in library and information science, Stanford compared the use of asynchronous transfer mode (ATM) technology at SJSU with California State University Fullerton (FLRTN). Some classes were taught in the traditional format of three-hour session over 15 weeks, others in a different mode. Students at both locations had positive reactions to sites and comfort level, while the sense of community seemed to be lost. Significant differences occurred concerning

instructors, perceived learning, and reliability of the technology. Overall, the distance experience was not considered that much different from the traditional classroom if the instructor was good. Stanford pointed out that issues to be considered by those developing courses include reliable online syllabuses, allowing for cooperative work among students, use of e-mail for advising and evaluating work, and good materials.

One of two less formal evaluations has been conducted at SLIS. For the first, Dowlin (2000) tested three modes of teaching of a single course in 1998-1999. One was taught with three-hour classes over 15 weeks, the second with six eight-hour days over eight weeks, and the third class was taught by interactive television transmission with two students receiving their instruction in their homes. All students could communicate with the instructor by e-mail and telephone as well as during the class sessions. The instructor found no difference in the quality of student papers.

In a study of computer-mediated communication (CMC), Vrasidas and McIssac (1999) found that interaction between teachers and students and among students themselves remained a key component of both teaching and learning. Moving instruction from the classroom to the online environment increases opportunities for interaction. The constraint of time disappears, and students may formulate responses without the pressure of answering an instructor's question or participating in directed discussion in the classroom.

During the past summer, a core course, Library and Society, was transmitted from San Jose to three other locations in the California State University System: Fullerton, Sacramento, and San Francisco during four weeks. The first meeting on Friday evening and the second on Saturday afternoon were four hours. The third class was an eight-hour day on Friday. The instructor transmitted the first two classes from San Jose and traveled to Fullerton for the third session. At the close of the final session, students were asked to respond to six questions concerning the class (Woolls, 2000).

Students and instructor wish they could see the other classrooms all the time. Bandwidth constraints limit the number of sites that can be visible at one time to two, the instructor's site and one other. If no student activates a

microphone at a different site, the camera usually remains on the last site from which a student spoke. One student did not feel any loss of socialization and commented:

I don't talk to everyone usually because classes are big. Smaller groups make it easier to get to know people.

Another said:

Socializing with students in other locations is a challenge. If it weren't for these distance classes on video, we would never come in contact with students in San Jose, Sacramento, and San Francisco.

One student wrote:

I found it inspirational and motivational to be able to read others' work. This was probably the aspect of the class I appreciated most since I've never had that opportunity before. In this way, the class seemed very advanced and yet very human, a rare combination.

Kazmer recently queried students in the University of Illinois' distance learning Library Education Experimental Program (LEEP) program (Kazmer, 2000). With the exception of a two-week introduction to the program and one visit each semester, instruction includes a variety of computer technologies with which they can communicate with their instructor and other members of the class. Reporting the results of a series of interviews, the author made several suggestions related to student aspects of coping in planning, technology, workload, social issues, integrating life and school, administrative adaptation, and efforts and rewards.

In concert with the Stanford study, Kazmer reported that students want syllabuses for their course; however, LEEP students want it well before the course begins. This may reflect the difference between Web-based and ITT courses. Kazmer found that students need technology training well before classes begin and that:

... both students and instructors/administrators need to think carefully about the technology that is available to them and use it wisely.

One student in the summer SJSU course reported:

Technology was not compatible with levels of software on my home computer, but I did not know at first what the problem was.

Kazmer's students wanted:

... familiar individuals who can provide timely and reliable technology support.

One SJSU student was dismayed when:

I struggled at first without knowing I could get support from the lab on the SJSU campus.

Kazmer also found that interpersonal relationships formed during the residency and continued by e-mail. Distance students appreciate reading e-mail or conducting electronic discussions in their own time frame, allowing them to fit this into their schedules.

Conclusions

Our conclusion, after a number of years of experience, is that interactive television for simultaneous course transmission to a few sites is an effective way to deliver distance education when the bandwidth is wide and the technology is reliable. Scheduling is often a problem (time, site availability, technicians, and facilities). As the California distance network became more and more popular, getting the optimum times for classes required more long-range planning. Difficulty with scheduling actually pushed several instructors away from television and on to the Web. The use of ITT is not a perfect substitute for face-to-face instruction, but it does allow us to have a presence in many locations throughout the state.

With the rapid changes in technology, we will soon have capabilities beyond our wildest imaginations. SLIS faculty and students will continue to use the opportunity provided by distance education to prepare our graduates for their futures.

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