Internet 2 + Web-Based Instruction = Effective Distance Teaching and Learning

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Background and Need for Training

Facilitating the education of a student who is blind or visually impaired or one who has multiple disabilities including vision loss requires that the practitioner utilize utmost the levels of both the art and the science of teaching. Intensive and highly specialized training on such topics as braille literacy, use of abacus and Nemeth code, modification of learning materials and environments, orientation and mobility, and assessing the needs of students who have multiple impairment is required to equip professionals who work with these children. Without the services of a trained Teacher of Students with Visual Impairments (TVI) and or Certified Orientation and Mobility Specialist (COMS), students who have visual impairments quite often find themselves entering their academic, social, and vocational lives without having had an opportunity to master the skills that are specific to their disability and which are essential to independent living. In order to help students develop into productive, successful adults frequent and intensive service by a TVI and/or COMS is an absolute requirement. Unfortunately, there is a critical need for educational personnel who are trained to meet the needs of blind and visually impaired students ages 0-22. By the mid 1980s, the TVI and COMS shortage was critical enough to draw attention from some of the prominent scholars in the field (Tuttle & Heinze, 1986; Head, 1989). In 2000, the National Plan for Training Personnel to Serve Children with Blindness and Low Vision (NPTP) estimated that there was a need for an additional 5,000 TVIs and an additional 10,000 COMS. In 1999, the 33 universities in the United States who have personnel preparation programs in visual impairments produced only 215 TVIs and 78 COMS (Corn & Ferrell, 2000).

The Visually Impaired Preparation Program

Even before the Personnel Preparation Program in Visual Impairment at Stephen F. Austin State University (SFASU) was approached by what would become the Northwestern Consortium (Idaho, Montana, Washington and Wyoming), it had already acquired experience in developing and implementing a distance learning program in collaboration with Texas Tech University. From 1998 to 2000, these two universities worked in conjunction with Texas School for the Blind and Visually Impaired to provide TVI and COMS training across the state. The Visually Impaired Preparation Program (VIPP) program utilized a combination of delivery technologies to provide the classes necessary for completion of a teaching credential in the field of visual impairment in Texas. Essentially, the classes were composed of a once per month meeting over interactive television, followed by independent work on the web, and prescheduled computer chat review sessions. Interactive television (ITV) sessions were provided on Saturdays so that those who were already teachers (a vast majority of the students) would be able to attend. By May of 2000, 194 new prospective VI professionals had registered in the program (Griffin-Shirley, Almon, and Kelley, 2000)

Project VISION—Background

In the fall of 2000, the VI Personnel Preparation Program at SFASU was contacted by a group of vision related professionals in the state of Idaho. This group was interested in getting SFASU to provide distance education classes to a consortium of states in the northwest. It was decided that the SFASU would pursue a personnel preparation grant through the Office of Special Education Programs (OSEP) in Washington, DC. In the summer of 2001, Project VISION was granted $1.5 million over a five-year period, and training actually began in the spring semester of 2002. Twenty-nine students were registered for two classes provided by Project VISION.

Project VISION—Program Characteristics

Philosophy

Based on their three years of experience in utilizing various distance learning methodologies, the faculty at SFASU had become committed to the belief that the curricular content and the learning objectives for the student should drive the
selection of the distance learning technology. Many instructors have tended to design their programs around the newest or most popular technology of the moment rather than allowing the learning objective to drive the selection of the technological platform (Petrides, 2002; Palloff & Pratt, 1999; Chute, et. al., 1999; Cyrs, 1997). Further, faculty members agreed that the pedagogical techniques for teaching via distance education were (and ought to be) completely different than those which are used in a traditional, face-to-face setting.

**Interactive Television (ITV)**

**Availability of ITV sites.** It was determined before Project VISION was begun that some use of ITV would be necessary in order to provide students with an opportunity to participate in class discussions, instruction/student question answer sessions, and group presentations. Preliminary plans assumed that an h.320 compressed video system would be used, but after gathering more precise information, it became obvious that these systems would be prohibitively expensive. Further exploration revealed that SFASU (and many other major universities) had h.323 (Internet II – I2) capability that might be useable at a fraction of the h.320 estimates. In addition to using I2 member sites, it was determined that internet based interactive desktop video could be a viable option. Initially, it was thought that there would be very little difficulty in finding sites to host the ITV sessions since all that was technically required was an interactive video camera and sufficient bandwidth to support video/audio connectivity (presumably a T1 line). Aside from some manageable problems with server gate keeping systems and occasional bandwidth availability, the technology worked very well. The major difficulties with the ITV portion of the Project revolved around the political and manpower issues surrounding site usage. In spite of these problems, however, seven ITV host sites were available by the spring of 2002, and two classes were presented (3 ½ hours of ITV time each on one Saturday per month).

**ITV pedagogy.** By the time Project VISION began, the faculty at SFASU had determined that only those activities that required synchronous interaction should be undertaken using ITV. Further, an entirely different pedagogy was necessary for facilitating class interaction over ITV. Students had to be made to feel comfortable enough to overcome initial reluctance about participating over a televised system. They also had to be actively drawn into the class activities so that they would concentrate on the curricular content rather than on the technology that was used to deliver it. A light and conversational tone was utilized by the instructor, and she made every effort to engage the students on a personal level, attempting to make the students feel that they were sitting in a “real” (traditional) classroom. ITV was also used for group presentations which utilized Power Point presentations, videotapes, and handouts which were downloaded off of the class website. In two cases, these groups were composed of students from two different states who were able to use a variety of distance technologies to design and present their projects.

**ITV backup.** Because the ITV component of the classes was relied heavily on the synchronous participation of all students, it was also the delivery mode that produced the highest level of student anxiety when technological problems were encountered.\(^1\) It was critical, therefore, that students be provided with a reliable backup plan.\(^2\) Three systems were put in place to provide more security to students who were almost uniformly new to the distance learning process. First, a live, streamed video option was made available as a link on the class web site. This site would allow students to watch (although not respond or ask questions) the class as it occurred in real time using a Real Media player on their home computer. Secondly, a telephone conference bridge was provided so that students could call in and participate as the class took place. In one class, a group project was presented over the telephone conference bridge. Some students who had a dedicated computer line in their home chose to utilize both the video stream and the telephone conference bridge so they could watch as well as verbally participate in class.\(^3\) Finally, for those who missed the classes altogether, a videotaped version was both available for mailing and archived on the web.

**Web Instructional Activities (WIAs)**

Since ITV time was limited as much as possible to class interaction activities, some method of conveying basic curricular content to the student had to be devised. The method, Web Instructional Activities (WIAs), was developed by the SFASU

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1 The computer chats were also synchronous, but these were easily logged for anyone having trouble with live participation, and, most importantly, they covered no new material.

2 In point of fact, this happened fairly rarely, although there were two sites (Casper, Wyoming and Helena, Montana) that had chronic access and/or bandwidth issues.

3 There was a 15-20 second lag in the audio feed between the audio feed from the video stream, which made it difficult to keep track of the conversation, and this was definitely annoying, but it made full class possible when winter storms made it impractical to drive to campus.
Learning Activities (LAs)

In any class, students must be given an opportunity to practically apply the knowledge and skills gained through classroom and independent activities. Students in the distance learning program, needed to have this same opportunity to interact on a pragmatic basis with the curricular content. This opportunity was provided in a set of Learning Activities (LAs) which required the students to apply what they had learned in the WIAs. These LAs were posted on the class website, and specific due dates were identified in the class calendar (also posted on the website). LAs were completed by the students and emailed as attachments to the professor for grading by a student assistant. The LAs were returned to their authors with comments, and grades were factored into the student’s semester grade.

Computer Chats

Computer chats were used to provide the students with an opportunity to (1) review material for tests, and (2) review their answers to test questions. Approximately three to four chats were held during the semester in each of the classes. These tended to be very well attended with as many as 17 students joining in. The instructor had very strict rules about how the chats were conducted, including the following:

- The instructor always began the chat with an overview of the agenda for the session.
- Students were then called on to ask a question in the order in which they had entered the chat room.
- The instructor would answer the question, open the floor for answers, or refer the question to another student. Then she would ask if the questioning student had a follow up. If there was not follow up question, the instructor moved to the next student.
- Any student could pass their turn, and since two rounds of questions were usually taken, they would typically have another chance to ask questions that had arisen later in the discussion.
- Any student could ask a question at any time by typing a “?” and waiting for the instructor to call on them.

Program Evaluation

The program was evaluated by the students in a traditional instructional evaluation (dealing with how well the instructor had served the learning needs of the students) and also in a technology evaluation which attempted to assess how well the technology had served as a platform for learning the course content. Students were asked to rate the technological effectiveness in three ways: (1) using a 6 point likert scale to rate the effectiveness of different platforms (e.g. ITV, WIAs, LAs, etc.); (2) to rate each of the platforms as to whether their use should be increased, decreased, or remain the same; and (3) using a 6 point likert scale to rate the overall technological effectiveness of the program. A total of 12 evaluations were received, and not every student responded to every question. However, results indicated that the students were very pleased with the distance education technology and pedagogy used in the class. 72% of the respondents rated the ITV sections of the class either “excellent” or “very good.” WIA and LAs were both rated in the top two categories on 90% of the surveys, and computer chats were rated in the same categories 80% of the time. The use of discussion boards fell into the top two categories on only 66% of the evaluations.

The instructor of both classes also expressed satisfaction with the overall Project performance. In particular, the ITV system produced higher quality results with a greater level of reliability than she had anticipated before the Project began.

Project VISION has made it possible to train TVIs and COMS in areas of the United States where such training was not a possibility a year ago. In addition, it has demonstrated that expertise can be shared by locations that are separated by large geographical distances. It has demonstrated that even very small fields (such as visual impairment) can obtain high quality training in a cost effective manner. Hopefully, it will also have demonstrated how this process can be continued by geographically contiguous state consortia throughout the country which can provide low cost training in working with low incidence populations.
References


Biographical Sketches

Dr. Dixie Mercer is an associate professor in the Department of Human Services at Stephen F. Austin State University. Her specialty is teacher preparation in the area of visual impairment. She has been involved in SFA’s distance learning program for the last 4 years, and currently directs Project VISION.

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