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Research Report

Student Satisfaction: A Distance Learning Model for Training Teachers of Students with Visual Impairments in New York State

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Since 1920, the Hadley School for the Blind in Winnetka, Illinois, has provided distance learning (via correspondence courses) to individuals who are visually impaired (that is, are blind or have low vision) and their families to support the acquisition of specialized skills and to attain the knowledge needed for full participation in life (Wolffe, 2001). Although distance learning has been in existence since 1920, its application to the preparation of teachers is more recent. In 1998, 44% of all institutions of higher education offered distance education courses, and the number continues to rise (Huebner & Weiner, 2001).

The implementation of a distance learning model for preparing teachers of students with visual impairments is the direct result of a national shortage of such teachers and the limited accessibility of teacher preparation programs throughout the country (Cooper

& Keefe, 2001). Although distance learning is not a new model of service delivery in the field of visual impairment, it is in a constant state of development and refinement as new technologies evolve. Of the 37 universities who train teachers of students with visual impairments, 31 responded to a questionnaire regarding distance education (DeMario & Heinze, 2001). The results indicated that 16 universities provided distance education in at least one or more courses, with an average of six to eight courses offered using one of the various distance education models, such as teleconferencing, audio, chat rooms, and web broadcast. In 1972, the Instructional Technology Council (ITC, 2001) defined *distance education* as opportunities for learning away from the traditional classroom with the assistance of multimedia communications, including video, audio, and computer combinations, to allow people in many locations to access information.

A variety of models of distance education are implemented throughout the country. Williams, Paprock, and Covington (1999) define several of these models:

1. Audio conferencing: interactive audio communication between persons at two or more locations.

2. Asynchronous communication: communication that is sent and received at various times without

the person needing to be present and is retrieved at the person's convenience.

3. Synchronous communication: communication that is simultaneous. The person sending the information interacts electronically in real time with people at various locations.

4. Video teleconferencing: real-time interaction, with video images transmitted digitally to two or more locations. This technique requires a wideband transmission facility.

5. Web-based training: the delivery of computer-based training to many audiences through the World Wide Web.

6. Computer-based training: training that uses a computer to deliver instruction electronically to many users and that has interactive capabilities.

Although each of these models has strengths and weaknesses, the model used for this study was video teleconferencing. This model afforded students the opportunity to meet with each professor weekly via the teleconference and to participate with other classmates in a live environment.

The New York State Department of Education, Office of Vocational and Educational Services for Individuals with Disabilities (VESID), the New York State Department of Education, Office of College and University Evaluation, and the City University of New

York at Hunter College identified a need to prepare a greater number of teachers of students with visual impairments, especially in rural areas. Many school districts had reported a shortage of teachers to serve these students in their districts.

On the basis of a needs assessment conducted by the New York State Resource Center for the Visually Impaired, individuals in the Buffalo region were identified as candidates for the Hunter College program, which would grant them advanced certificates and certification as teachers of students with visual impairments through a state-supported Intensive Teacher Institute. This group of eligible teachers, who already had New York State certification in general or special education, participated in a distance learning program through video teleconferencing for three semesters, obtaining a total of 18 credits. VESID paid the tuition of the students to attend the program and provided funds for Hunter College to establish the courses in a distance learning format. The on-site students attended most of their classes at the Hunter College School of Social Work, which has a state-of-the-art distance learning facility. The remote-site students attended classes at a similar facility at Genesee Community College in Batavia, New York. At the Hunter College on-campus site, students were enrolled in the Advanced Certificate Program, Master's Degree Program in Teacher of the Blind and Visually Impaired, or the Rehabilitation Teaching/Orientation and Mobility Program. All the

students, both those on-site and those at the remote site, were admitted through the Hunter College Graduate School of Admissions Office.

A "site facilitator" was present at the remote site for every class session. The facilitator had a doctorate in special education with an emphasis in visual impairment; was certified as a teacher of students with visual impairments; had experience conducting pre-and in-service training related to visual impairment; and was responsible for handing out materials, collecting assignments, and ensuring that the class sessions ran smoothly at the remote location. Communication and coordination between the instructors of the courses and the site facilitator were critical to ensure that both sites were receiving the same information. Faculty-student interactions occurred during classes, through e-mail correspondence and open phone lines before and after class.

The video teleconferencing model gave the faculty, on-site students (at Hunter College), and students at the remote site (Genesee Community College) the ability to interact with each other simultaneously and to discuss course content and materials. The intent of our questionnaire, which was administered at the end of each semester, was to determine whether the distance learning model of video teleconferencing was an effective vehicle for preparing teachers of students who are visually impaired.

Technical assistance for faculty

The Hunter College distance learning location was equipped with front and rear six-foot projection screens and cameras for the instructors, with infrared tracking (which tracked the instructors as they moved about the room), two cameras for the students, and a camera for documents. A computer was also available to transmit and project PowerPoint slides and web sites. An electronic white board gave the instructors access to a high-tech version of the traditional chalkboard for highlighting specific visual information. The Genesee Community College distance learning room was equipped with front and rear television monitors, two cameras for the room, and a camera for documents.

Each location also had a telephone and access to a fax machine. Both facilities were equipped with Integrated Service Digital Networks X (ISDN) capability, which is a worldwide network of digital telephone lines that allow videoconferencing to take place by compressing the video and audio signals and transmitting them to national or international locations. Highly trained technicians were present at both sites for all the classes.

Using this multimedia environment required the reformatting of traditional materials. Many hours of preparation were required by each instructor to plan for the presentation of materials. The instructors also needed to have a backup plan or alternative method for

delivering the materials when technical difficulties occurred. This backup plan often included videotaping the lecture at the on-site location for later viewing by the remote-site students.

Technical assistance for all the instructors to teach in this new environment was provided by the Distance Learning Center at Hunter College. The instructors used PowerPoint presentations, highlighting the key points of each session; slides of eye diseases; and videotapes demonstrating children who are visually impaired engaged in activities, and provided curricular materials at both sites for hands-on demonstrations and manipulation. The electronic board was used to clarify major components of each session. Handouts were distributed simultaneously at both sites. The remote-site students received handouts through e-mail or photocopies mailed in advance of the session to the site facilitator.

Sequence of courses

The advanced certificate courses, which were offered through the distance learning model in fall 2000, were Educational Implications of Visual Impairments and Education and Rehabilitation of Individuals with Blindness and Visual Impairments. In spring 2001, the students enrolled in Curriculum for Learners with Visual Impairments, Communication Skills for Learners with Visual Impairments, and Principles of Orientation and Mobility for Teachers of Learners with

Visual Impairments. In fall 2001, the students took Practicum: Visually Impaired and did not use the distance learning model for this course. Visits to each practicum site were made by the practicum supervisors in each location.

Methodology

At the end of both the fall and spring semesters, the on-site and remote-site students were asked to complete a form, entitled Student Evaluation of Distance Learning, which consisted of 10 questions using a Likert-type scale, ranging from 1 to 4 (strongly agree to strongly disagree), with statements regarding the experience each student encountered during each course. The same cohorts of students who enrolled for the full program were enrolled in two courses held on the same night in the fall 2000 semester at both the on-campus site and the remote site. The audio and visual connections between the two sites were established for the first class session and continued for the second session. Students completed one evaluation form at both sites for the two fall 2000 courses.

During spring 2001, three courses were offered. The students at the remote site continued to attend their classes at Genesee Community College in the same distance learning room. Two courses were offered at the same Hunter College site as in the fall semester, and the orientation and mobility course was offered at the main campus of Hunter College in a distance

learning room. The students completed a separate survey form for each course offered at each site.

In the fall 2000 semester, 24 students were enrolled in two courses, 12 at the on-site Hunter College Distance Learning Center and 12 at the remote site at Genesee Community College. In the spring 2001 semester, 20 students remained in the program, 9 at the on-site location and 11 at the remote site.

Results

In the fall semester, the technical difficulties that occurred were related to audio and visual connections between the two sites. Clearly, the technical difficulties affected the students from the remote site. Seventy-five percent of the students from the remote site had difficulty seeing the lectures, and 83% had difficulty hearing the lectures. Despite these technical difficulties, the majority of the students were comfortable with the amount of interaction they had with other students and would recommend this distance learning model in the future.

At the end of the fall semester and before the start of the spring semester, the technology at the Hunter College site was upgraded with new cameras and audio equipment that provided echo cancellation on every microphone in the room. This audio upgrade contained components that matched the equipment at the Genesee site and provided for increased compatibility.

In the spring semester, each class was analyzed individually. In general, it appeared that the technology improved between the fall 2000 and the spring 2001 semesters, but that the quality of the auditory output was still an issue for the remote-site students. For the curriculum course, almost half the students at the remote site and half the students at the on-site location felt comfortable with the interaction among students, whereas a much higher percentage were comfortable with this interaction in all the other courses. In addition, the curriculum course had the lowest percentage of students who recommended it as a distance learning course.

Question 4 of the survey for the orientation and mobility course asked about the value of the use of videotapes for class. The remote-site students were split 56% (agreed) to 44% (disagreed) on the value of the videotapes, whereas all the on-site students agreed that the videotapes were valuable. Additional information is presented in Table 1.

Discussion

The widespread use of various distance learning models for preparing teachers of students with visual impairments is becoming more and more prevalent as the need for certified teachers in this field continues to increase across the country. Although the model of video teleconferencing that was used in this study provides students with real-time interaction with each

instructor, the complexity, cost, and technical difficulties make it difficult to replicate. In addition, a minimum number of students must be available in at least two geographic locations to allow this model to be cost-effective.

Despite audio and visual difficulties, this group of students had a positive reaction to this model. The fact that a significant number of students said they would repeat this model indicates that distance learning does provide an alternative way of preparing teachers in the field. In fact, the students at the remote-site location were more favorable toward the model than were the on-site students, who experienced fewer technical difficulties. This finding may be due to the inaccessibility of on-site teacher preparation programs in visual impairments in these remote areas.

One suggestion for another model of distance learning, which addresses larger and more geographically separated groups of candidates, may be hybrid online distance learning. In such a model, the majority of the course work would be offered online, with several weekend visits to the on-site location for hands-on demonstration lectures with instructors or combined on-line instruction with video teleconferencing for the demonstration sessions. For the practicum experiences, candidates would continue to benefit from supervised visits.

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