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ABSTRACT

This paper evaluates the use of interactive video for teaching graduate-level deaf education courses. Graduate students in teacher education, including 10 urban and 3 rural students, were enrolled in 2 different off-campus courses taught from the University of Kansas. Students in both classes responded to a survey near the end of the course and to a postcourse survey. In both 15-week courses, interactive video instruction was initiated in the 12th week. Instructors responded to a similar survey. The following year, rural students enrolled in one of the same interactive video courses responded to a postcourse survey. Students generally agreed that the camera and monitor were not distracting and did not make them feel self-conscious, that asking questions during class was not difficult, that the professor didn't spend too much time attending to the other group, that audiovisual materials were presented adequately, and that concentrating was not difficult. Rural students changed their opinions about the use of interactive video in a positive direction in a short time. Responses to the instructor's survey were favorable and demonstrated high agreement between the two instructors. This study concludes that the use of interactive video was successful in offering deaf education graduate courses to students who otherwise would not have the opportunity to enroll in graduate courses. Contains survey results. (LP)

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Deaf Education

Using Interactive Television

After studying the technologies available in the state, the University of Kansas Medical Center personnel determined that compressed video, also referred to as interactive video, offered the most cost-effective approach for medical and educational contact with rural and remote areas of the state. Compressed video was selected because special networks (e.g., dedicated leased lines or fiberoptics) were not required. Instead, compressed video utilizes commercial common-carrier telephone services available in Kansas, nationally and internationally. The K.U. Medical Center program operates on the state KANS-A-N network using the equivalent of six simultaneous long-distance telephone (voice) calls. Thus, compressed video provides the opportunity for virtually unlimited access throughout the state of Kansas. The system provides two-way interactive audio and color video communication between two or more locations. Currently between 8-10 sites can utilize the system.

The KUMC terminal is a fixed camera-recorder-transmitter installed in a conference room at the hospital. The system includes a camera-recorder-transmitter mounted on a rotating platform that permits it to be directed to individuals or small groups seated in the room. The system has a fully interactive audio/video link that permits face-to-face conversation and visual evaluation of material (e.g., videotapes, transparencies, book pages, evaluation tools, etc.)

The technology provides rapid, high-resolution audiovisual transmissions. Using this technology, KUMC educators can talk with, listen to, and see their students and colleagues throughout the state. A video recording can be made at either end of the system, including two-way audio. The system's capability to facilitate educational offerings and conference discussions is immense.

Practical questions have focused on whether or not this system is a satisfactory alternative to "real" lecture and demonstration with students. Is it functional for the professor, and is it acceptable to the

student?

METHODS

Subjects

A total of 13 graduate students, registered in two different courses, (taught by two different professors) and enrolled in the deaf education program at a Midwestern university in the fall, 1992, served as subjects for the study. Group I consisted of eight urban students and two rural students. Group II consisted of two urban students and one rural student. Both classes utilized simultaneous communication during instruction and social interaction.

All subjects who participated in the present study had earned an undergraduate degree. One also held a masters degree. Subjects ranged from 22 to 53 years of age. All but one were males: one was deaf. Six were married. Two had small children. Subjects were enrolled in 3 to 18 hours of graduate hours of study, including one or both of these courses. Eight students were employed in addition to attending school (four as teachers) and worked 10 (four subjects) to 40 (four

subjects) hours a week. Rural students lived in towns of 5,000 to 20,000 citizens and indicated that they could not have taken the course if it had only been offered on the main campus. As it was, rural students drove 5 to 160 miles to attend the course at the site with compressed video capabilities nearest them.

Procedure

Subjects enrolled in the fall, 1992 courses provided responses to Leiker scale ratings ranging from 0 to 5 (5 = strongly agree) for questions on a Tele-Education Evaluation tool developed by Allen (1992). Rural subjects responded to 16 rated and one open-ended question; urban subjects responded to 15 rated and one open-ended question. An additional five questions (i.e., 18-22) were rated or answered only after the final interactive video class. Group I responded to the survey in weeks 13 and 14 (of a 15 week course schedule), after having initiated the use of interactive video in week 12. Group II responded to the survey in weeks 12,13, and 14 (of a 15 week course schedule), after also having initiated the use of the interactive video capabilities

in week 12. Instructors (n=2) provide responses to Leiker scale ratings ranging from 0 to 5 (5=agree) for questions developed by the author that paralleled those asked on the Allen (1992) instrument.

In the fall, 1993, three new graduate students enrolled in one of the courses reported in this paper. The course was offered to three local students and three rural students using compressed video. At the termination of the course, the three rural students were asked to complete the demographic and post survey that the students enrolled in the course the previous year had completed.

Results

Subject ratings were averaged a) across courses, b) comparing courses, and c) with regard to the perspectives of rural subjects agreement on questions 2,3,4,5,10,13 and 14, giving program means between 1.1 and 2.0. That is, subjects <u>generally agreed</u> that the camera and monitor were not distracting, that being on "TV" did not make them feel self-conscious, that it wasn't hard to ask questions during class, that the professor didn't spend

too much time attending to the "other" (rural or urban) group, that the audiovisual materials were presented adequately, and that they didn't find it difficult to concentrate.

The average of all subjects on questions 11 (it was harder to participate in discussions than compared to the standard classroom) was also a rating of disagreement (mean of between 2.1 and 3.0).

The average of all subjects on questions 11 (it was harder to participate in discussions than compared to the standard classroom) was also a rating of disagreement (mean of between 2.1 and 3.0).

The average of all subjects on questions 6 and 15 was a rating mean of agreement between 3.1 and 4.0. The rating of Question 6 judged seating to be comfortable. The rating of Question 15 indicated that the televideo equipment did not interfere with learning.

Five questions were rated in high agreement (with program means between 4.1 to 5.0). That is, subjects generally agreed that the course material was covered well, that the lighting was good, that they could hear

well, that the instructor was well-prepared, and that the visual aides used were useful. See Table 1.

Table 1 about here

When Group I (Deaf Studies) and II (Methods of Teaching Elementary Students Who are Deaf and Hard-of-Hearing) were compared, ratings indicated agreement of nine questions: 1,3,10,14 (1.1 to 2.0), 11 (2.1 to 3.0), 6 (3.1 to 4.0) and, 7 and 9 (4.1 to 5.0). Responses to six questions differed (by one category in all cases). These were 4,5,8,12,13, and 15. See Table 2.

Table 2 about here

Group I and II pre/post ratings using interactive video showed agreement in the ratings of nine questions 2,3,10,14 (1.1 to 2.0), 11 (2.1 to 3.0), 6 (3.1 to 4.0) and 1,7 and 9 (4.1 to 5.0). Responses to six questions were rated differently (by one category in all cases). These were 4,5,8,12,13, and 15. Overall, Group II indicated more satisfaction with the televideo class than did Group I subjects.

Responses of rural subjects were compared to those of urban subjects in Group I. Agreement was demonstrated in the ratings of 12 questions: 1,2,4,5,6,7,9,10,13,14, 15, and 16 (See Table 4). Subjects rated four questions differently. These were questions 1 (course material covered), 7 (lighting), and 13 (manner AV was presented). These questions differed by one category in all cases (See Table 4).

Table 3 about here

Responses of rural subjects were compared to those of urban subjects. Group I showed agreement on the rating of 11 questions: 2,3,4,5,6,8,9,10,12,14, and 15 (See Table 4). The subjects rated four questions differently. These were questions 1,7,11, and 13. These questions differed by one category in all cases (See Table 4).

Table 4 about here

Responses of rural subjects were compared to those of urban subjects, within Group II. Agreement was

demonstrated on the ratings of 12 questions (See Table 5). The subjects rated four questions differently. These were questions 3,8 (ability to hear), 11, and 12 (usefulness of AV). These questions differed by more than one category in all cases (See Table 5).

Table 5 about here

Responses to the instructor's survey demonstrated high agreement between the instructors (See Appendix B). They rated questions 1,2,3,5,9,11,12, and 12B in exact agreement. Their ratings differed by one on all other questions except #6 (seating was comfortable). Instructor A strongly disagreed with this statement; Instructor B gave the item a menial response.

The responses of three female rural students enrolled in the Deaf Methods course in the fall, 1993, were asked to complete only the post course survey. These responses were highly similar to those from rural students provided in the previous year. Student 1 was a teacher of gifted students, who had completed 27 hours towards certification in deaf education. She drove 35

miles to attend the course at a site located approximately 150 miles from the host site. The other two teachers had completed six hours in the deaf education program and drove 30 and 35 miles, respectively to attend class. One of these sites was 100 miles and one was approximately 400 miles from the main campus. All three students indicated some difficulty with asking questions, participating in discussions, and using audiovisual materials as compared to a traditional course. Two students indicated that they felt somewhat self-conscious being "on TV".

Discussion

Teaching core courses that are essential to become a certified teacher of the deaf using interactive video technology was a successful experience for the graduate students enrolled in two courses taught from a Midwestern university. Overall, subjects rated questions requiring a low rating with a 2.0 - 3.0 rating, indicating satisfaction, and questions that required a high rating with a 3.1 - 5.0 rating, also indicating satisfaction.

Students in Group I (Deaf Studies) were more self-

conscious about being "on T.V." and about asking questions than those students in Group II. Group I had more technical problems with sound than Group II and found the audio-visual materials less useful. They also had problems with the audio-visual screen. In general, Group I students were able to learn slightly better than Group II students using the televideo classes, but both groups gave high ratings to the format (X = 4.1 to 5.0).

Rural students in each separate class, as well as averaged across courses, change their opinions about the use of the televideo technology in a positive direction within a short period of time (Tables 3,4,5). They gave slightly lower ratings (3.1 to 4.0) to being able to learn from the televideo courses compared to traditional classrooms than did the overall group (4.1 to 5.0). Yet, one rural student commented that, "The tele-education connection helped me a great deal. It made me feel more a part of the course...It worked very well for me." Another commented, "Taking the course in this manner was much better than a correspondence course format. Being able to directly speak to the instructor and other

students was a crucial part of the class for me."

Two books that instructors new to this technology may find useful are:

Lochte, R. (1993). Interactive television and instruction. Englewood Cliffs, NJ: Educational Technology Publication.

Willis, B. (1993). Distance education; a practical guide. Englewood Cliffs, NJ: Educational Technology Publications.

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Allen, A. (1992). Tele-Education Evaluation. The University of Kansas Medical Center. 39th and Rainbow Blvd., Kansas City, KS, 66160-7605.

Table 1 Group means for questions across courses (Group I + Group II)

Rating Possibilities	Questions
0 - 1.0	
1.1 - 2.0	[2], [3], [4], [5], [10], [13], [14]
2.1 - 3.0	[11]
3.1 - 4.0	6*, 15*
4.1 - 5.0	1*, 7*, 8*, 9*, 12*

[ ] low rating indicated satisfaction
* high rating indicated satisfaction

Table 2
Agreements and Disagreements
For Group I and Group II

Agreements

2	14	1
3	11	7
10	6	9

Disagreements

Rating Possibilities	Group 1	Group 2
0 - 1.0		[4] [5] [13]
1.1 - 2.0		
2.1 - 3.0	[4] [5] [13]	
3.1 - 4.0	8* 12*	15 *
4.1 - 5.0	15*	8* 12*

[ ] low rating indicated satisfaction
* high rating indicated satisfaction

Question 4: Group I was more self-conscious about being "on T.V."

Question 5: Group I had a harder time asking questions

Question 8: Group I could hear less well

Question 12: Group I found the audio-visual materials less useful

Question 13: The video-screen presentation was worse for Group II

Question 15: Group I was able to learn better than Group II in the televideo class

Table 3
Pre-Post Agreements
and Disagreements
for Rural Subjects Rating in the Program

Agreements

1	5	9	14
2	6	10	15
4	7	13	16

Disagreements

Rating Possibilities	Pre	Post
0 - 1.0		
1.1 - 2.0		[3],[11]
2.1 - 3.0	[3],8*,12*	
3.1 - 4.0	[11]	8*,12*
4.1 - 5.0		

Question 3: The presence of the monitor became less distracting

Question 8: Ability to hear improved

Question 11: Ability to participate in discussions worsen

Question 12: Audiovisuals become more useful

Table 4

Pre-Post Agreements and Disagreements
for Rural Subjects Ratings
for Group I (Deaf Studies)

Agreements

2	5	9	14
3	6	10	15
4	8	12	

Question 1: Course material was better covered

Question 7: Lighting improved

Question 11: Ability to participate in discussion decreased

Question 13: The manner of presenting audiovisual materials worsened

Table 5

Pre-Post Agreements
and Disagreements for Rural Subjects
Rating for Group 2 (Deaf Methods)

Agreements

1	5	9	14
2	6	10	15
4	7	13	16

Disagreements

Rating Possibilities	Pre	Post
0 - 1.0		
1.1 - 2.0	8*,12*	[3],[11]
2.1 - 3.0		
3.1 - 4.0	[11]	8*
4.1 - 5.0	[3]	12*

Question 3: The presence of the monitor became less distracting

Question 8: Ability to hear improved

Question 11: Ability to participate in discussion decreased

Question 12: Audiovisuals became more useful

TEACHER RATING

Use 1 - 5
disagree agree

Instructor A			Instructor B
5	1.	Covered material in the televideo class to the same degree that you'd have covered it in a traditional class.	5
2	2.	The camera distracted you.	2
1	3.	the monitor for the other class distracted you.	1
2	4.	Being "on TV" made you feel self-conscious.	1
1	5.	You had a hard time asking questions.	1
1	6.	The seating was comfortable.	3
4	7.	The lighting was good.	5
4	8.	You could hear the o[illegible]r class ok.	5
5	9.	You felt as well-prepared as you would have if you had been teaching in the traditional format.	5
4	10.	You did not spend too much time dealing with the outreach course.	5
3	11.	You felt it was harder for both groups to join in on discussion.	3
5	12.	You use audiovisuals.	5
5	12B.	You found audiovisuals useful.	5
2	13.	Presenting audiovisuals in the video-screen was worse than the chalkboard usual overhead.	3
1	14.	You found it difficult to concentrate.	2
2	15.	It was hard to interpret.	1
2	16.	It was hard to understand the signing of the rural site.	NA