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# Audio Teleconferencing: Creating a Bridge Between Rural Areas and the University in Early Childhood/Special Education

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The implementation of P.L. 99-457 is presenting educators with challenges similar to those faced with the enactment of P.L. 94-142. Public schools are again finding themselves in the position of making significant changes to their service delivery models. With this new law, programs cannot simply be added to the existing curricula, but instead must be developed so that the unique needs of very young handicapped children and their families will be met (Smith, 1988). Therefore, it is of utmost importance that teacher education programs at universities and colleges do all that is possible to prepare qualified personnel. The challenge faced by universities and colleges, then, is how best to serve these professionals.

Over the years, access by non-traditional, site-bound students to educational degree programs has become an increasingly important policy issue for institutions of higher education (Apps, 1985). The issue of providing off-campus educational opportunities for those who cannot relocate and attend classes on centralized campuses is a particularly acute problem for public colleges and universities in the western United States (Nardi & Shaeffer, 1986). The problem of providing access is further exacerbated in Wyoming by the fact that there is a single four-year educational institution in the state and it is located closer to the Denver, Colorado metropolitan area than to 80 percent of Wyoming's population. Small communities of 5,000 people are common in this state of under 500,000 and these are frequently 50 or 100 miles apart.

At the present time, Wyoming serves over 1,000 handicapped children in 40 developmental preschools. Throughout their history, these programs have been funded through the State Department of Health and Social Services. Because they have not been under the auspices of the Department of Education, no state teacher certification standards have been imposed on the center staffs. In fact, the state only recently adopted certification standards for personnel who work with young handicapped children. As a result, the background of developmental preschool personnel range from those with graduate degrees in early childhood/special education to those with two years or less of college. The vast majority of the staff members, however, are individuals who have completed a teacher education program of one type or another, but have little, if any, specialized training in the area of early childhood/special education.

Recent Wyoming legislation mandates that developmental preschools will be identified as intermediate education units so that children will continue to be served in the present locations following the implementation of P.L. 99-457. Despite this, the personnel who work with these children must meet state teacher certification guidelines. The need, therefore, is great to provide opportunities for those people to obtain the necessary coursework in as efficient and expedient a manner as possible so that when P.L. 99-457 is enforced, the state has personnel with both practical and academic credentials to serve very young handicapped children and their families. The prob-

## Abstract

With the enactment of P.L. 99-457, colleges and universities will need to examine and create innovative ways of providing required coursework to help early childhood/special education professionals meet state certification requirements. This paper describes the use of audio teleconferencing as one approach of offering courses to these professionals in rural areas. Specifically, the advantages of utilizing audio teleconferencing and what instructional design and teaching methods were implemented in the delivery of this course are discussed.

lem for the University of Wyoming becomes one of how to provide necessary coursework to early childhood/special education professionals that are separated by large geographic areas.

### **The Delivery Mode: Audio Teleconferencing**

In an attempt to increase the number of sites having access to extension credit courses in a cost-effective fashion, the University of Wyoming in 1983 began to examine alternative educational delivery systems. One model already proven successful for reaching adult students is the use of broadcast courses via PBS stations (Hershfield, 1981). For geographic and economic reasons certain telecommunications systems (e.g., two-way video/audio systems) are not feasible in Wyoming. So as an alternative, audio teleconferencing was implemented at the University of Wyoming.

Audio teleconferencing was selected for many reasons. First of all, audio teleconferencing provides many of the benefits adults seek when they enroll in higher education courses. These include convenience of time and place, courses with academic credit, and a quality educational experience (Julian, 1983). Teleconferencing is also flexible in that it can reach students spread across a large geographical area with the use of simple telephone lines (Fowler & Wakenbarth, 1980). This delivery system is also interactive, allowing for dialog between students and teacher (Kruh, 1983). Teleconferencing can also be considered cost effective because it eliminates personal travel, therefore decreasing costs and travel time for the professor (Kruh, 1983; Raszkowski & Chute, 1983). Finally, teleconferencing provides greater outreach to adult students who would otherwise be unable to obtain upper division college credit (Kruh, 1983; Bronstein, Gill, & Konenan, 1982).

In 1984, the University invested in audio teleconferencing equipment that included a teleconferencing bridge and speaker phone equipment. In the first semester, one course was delivered to three sites. The University of Wyoming has experienced continued growth

in the number of courses offered through the use of audio teleconferencing and the number of students enrolled in these courses. In the last five years, over 30 Wyoming communities have been served with over 35 courses taught via audio teleconferencing.

### **Teaching Via Teleconferencing**

It is generally accepted that teaching via technology is different than teaching face to face (Monson, 1978; Boone & Bassett, 1983; Shaeffer & Griffin, 1986; Shaeffer & O'Donnell, 1987). Obviously, the lack of face to face contact between student and professor has an impact on instruction. The learning community that typically develops in traditional classrooms, however, can also be facilitated in audio teleconferencing classes through the concerted effort of the professor. In fact, a review of the research of teleconferencing literatures suggests that particular teaching behaviors facilitate a successful teleconferencing experience. They include

1. Advanced organization and preparation of written materials for students;
2. Providing students printed materials before each class;
3. Previewing what is to be covered in each class;
4. Repeating and summarizing main points throughout the class;
5. Altering pitch and volume throughout the class;
6. Speaking to individuals, using their names, not to the whole audience;
7. Using various instructional techniques, e.g., question and answer periods, case studies, brainstorming, panels, role playing, interviews;
8. Providing a summary at the end of each session;
9. Personalizing comments to sites or individual students;
10. Utilizing questions to keep students involved; and,
11. Pausing to ask students for feedback about the class (e.g., pacing, quality of re-

ception) (Monson, 1978; Olgren & Parker, 1983; Bronstein, Gill, & Koneman, 1982; Shaeffer & Roe, 1985).

### **Designing the Course**

After assessing the needs of early childhood/special education professionals in the state, it was decided that a course providing a general overview of a developmental early childhood/special education would be appropriate for the initial offering. The video course, *Beginnings: Birth to Age Five* was adapted for delivery. Content includes historical foundations of the field, recent legislative issues, the implications of handicapping conditions on the child's growth and development, and curricula recommendations.

### **Suggested Modifications in Instructional Techniques**

While not unique to this course, there are several modifications that needed to be considered when teaching via audio teleconferencing. First of all, teaching via audio teleconferencing is not the same as face to face teaching! As stated earlier, several modifications in both the behaviors of the students and the teacher are necessary for teleconferencing to be a positive experience for everyone concerned (Monson, 1978).

For the faculty member and students in this course, a major concern was dealing with the mechanism of teleconferencing. Anxiety about the equipment had to be eliminated, or at least minimized. To help alleviate this anxiety, the first evening of class students were instructed in the use and operation of the equipment. Each student was asked to try out the microphone to help break the ice. Students were also informed about the microphone etiquette required of everyone taking the course. This involves each person identifying him or herself before speaking into the microphone and using it for all class discussions. While some students experienced a degree of discomfort with the equipment throughout the course, most students adapted to the use of the microphones after only one or two class sessions and participated freely in discussions.

In addition to adjusting to the use of the

technology while teaching, conducting the class also required special administrative considerations. First and foremost, teleconference teaching requires efficiency in planning. While most teachers like to believe that they are organized, advanced planning is an absolute necessity if teleconferencing is to work. Handouts, references, other course materials, and any in-class activities must be pre-planned far enough in advance so as to insure delivery to the participants in time for each class session.

For both the instructor and students, however, perhaps the most difficult adjustment is adapting to the lack of face to face interaction. Due to this, several modifications in the presentation of material must be incorporated in the teaching of the teleconferencing course. First of all, pacing is critical. Keeping the attention of people located at several sites around the state and making sure that they are *tuned in* requires special teaching techniques. Typically, instructors use facial and body language from students as a gauge to determine whether the instructor *has them* or has *lost them*. In teleconferencing, it is necessary to make sure that the presentation of material is broken up into small enough segments to keep the participants on-task. Talking by any one party for more than 12-15 minutes may become dry to the listener. Giving information in small pieces, then checking for understanding is a must.

The process of checking for understanding in a teleconferencing course is also slightly different than might be observed in traditional classrooms. In a face to face situation, instructors may ask for volunteers, or at least scan the audience for some sort of message as to students' feelings about answering questions. In teleconferencing, it is not as simple. While some instructors may not feel totally comfortable with the procedure, it might be necessary to call on students at random in order to check for understanding. An alternative way of approaching this is by first identifying the student, then presenting the question, and finally, asking for a response after allowing some *think time*. It is even possible to tell the student that you will get back to him or her in a moment for

the response. Allowing students to pass questions to peers at their own or other locations is another successful strategy that encourages participation.

Group activities are an excellent teaching tool for keeping students on-task and they, too, take on new configurations in order to adapt to the technology. For example, through teleconferencing, group composition may vary from activity to activity. It is possible for people at one location in the state to conference with people from another location regarding a class assignment, thereby, allowing for the sharing of expertise and experiences. This activity can be particularly helpful for professionals who have limited opportunity for interaction with peers.

While it is not possible for the instructor to wander among the groups as is frequently done in a traditional classroom, it is possible with the teleconferencing equipment to check on group discussions by *plugging in*. On the other hand, the equipment also allows for the instructor to be *unplugged* so as to insure that students can talk freely among themselves without the intervention of the instructor. As in any classroom, knowing when and how often to plug in or unplug becomes the key.

Instructor language takes on a whole new meaning when it comes to teleconferencing. Frequently, teachers ramble during class discussion and make obtuse connections by leaping from topic to topic with minimal connections. Facial cues from students indicate that they are interested and understand. In teleconferencing, it becomes necessary to focus on the use of language much more because of the lack of visual feedback between students and instructor. A teacher's false starts, rambling explanations, and pregnant pauses while searching for words become much more evident to students. Presentation modes need to be slowed down, with more repeating and emphasis on the salient facts.

In summary, the key to a successful audio teleconferencing course is focusing on what you have rather than emphasizing what you may not have. That is, audio teleconferencing is not face to face, but it is interactive. Exploit-

ing the interactive nature of the technology through the selection of specific teaching methods (e.g., panel discussions, group work, and class discussions) and adequate pre-planning are the first steps in designing a successful course. Evaluation of this particular course points to the apparent success and also areas needing improvement in future offerings.

### **The Evaluation (or Did it Really Work?)**

Using audio teleconferencing as a delivery mechanism for a credit course was not only new for the instructor but also the students. To assess whether the course was successful, student satisfaction data were gathered. A questionnaire was sent to students asking them what they liked or did not like about the instructor's presentation, the delivery mode (i.e., audio teleconferencing), and the course. Students' responses told a good news - bad news story about their satisfaction and are reported in the following summaries.

### **The Instructor's Presentation**

To evaluate the instructor's presentation of material, students were asked to provide adjectives or statements finishing the following phrases: "I really didn't like it when the teleconferencing instructor . . ." and "I really liked it when the teleconferencing instructor . . ." The responses are summarized in Table 1. Two threads can be identified in the bad news; complaints about the amount of time spent on administration type issues and the pacing of instruction. While comments regarding pacing of instruction are similar to those that may be made by students in a traditional course, the excess time spent on administration matters may simply be a by-product of the technology. Considering the instructor is unable to see students, one of the only methods of insuring students are present, ready to begin, and staying on-task is to ask.

Several positive comments were made regarding the instructors teaching style. Again, the good news appears to reflect what could be considered good teaching in face to face situations. Relevance of material, positive teacher attitude, and an open encouragement of discussion are all seen as attributes of

successful traditional classrooms and apparently are also markers of successful audio teleconferencing courses.

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**Table 1: Instructor Presentation.**

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I really didn't like it when . . .

- the instructor spent too much time taking role
- too much time was spent "checking in" on sites
- the instructor took too much time asking questions at each site
- the subject changed too quickly
- lectures too long without breaks
- instructor talked too quickly

I really liked it when the instructor . . .

- encouraged class discussion
  - let us share ideas
  - treated us fairly
  - took time to know us
  - made the assignments relevant
  - made the course personal
- 

### **Taking a Course Via Teleconferencing**

We hoped to assess students' impressions of taking a course via teleconferencing by asking them to complete the following phrases: "What I really didn't like about taking this course via teleconferencing . . ." and "What I really did like about taking this course via teleconferencing . . ." Table 2 summarizes the students' responses.

The two main areas of dislike could be directly linked to the use of technology - that is, the lack of face to face contact and the need to deal with the teleconferencing equipment. In a similar vein, the students likes reflect the strength of the technology. The use of audio teleconferencing affords the student the luxury of taking classes in their home communities while, at the same time, interacting with other professionals around the state. This convenience and the opportunities for communication were mentioned time and time again by class participants.

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**Table 2: Taking a Course Via Teleconferencing.**

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What I really didn't like about taking this course via teleconferencing was . . .

- the lack of face to face contact
- not being able to interact "directly" with other students
- talking into a "black box"

What I really liked about taking this course via teleconferencing was . . .

- sharing ideas with other professionals from around the state
  - the opportunity to take a course in my own community
- 

### **Opinion of The Course**

Finally, Table 3 summarizes the students' overall opinions of the course. When asked to complete the sentence, "What I liked least about the course . . .", the responses had little, if anything, to do with the course content. Instead, the technology itself presented cause for concern such as dealing with equipment and lack of face to face contact.

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**Table 3: Opinion of the Course.**

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What I liked least about the course was . . .

- the use of the microphone
- not being able to see the other students

What I liked most about the course was . . .

- the interaction between the students and teacher
  - the convenience of the class location
  - the course filled a need
  - the course material was relevant
- 

On the other hand, the students' positive reaction toward the course focused, not only on the benefits of the technology (i.e., the convenience of the class location), but also on the methods used (i.e., class discussion among professionals) and

the content (i.e., relevant issues and practical application of ideas).

### Discussion

Student feedback strongly indicates that the positive results of the course far outweigh the negative, such as the lack of face to face contact. Indeed, without using the technology of teleconferencing, many of the positive outcomes of the course would be impossible (e.g., the interaction among early childhood/special education professionals around the state).

This audio teleconferencing course had similar positive results for participants as other service delivery models for rural early childhood/special education professionals using face to face instruction and microteaching (Widerstrom, Domyslawski, & McNulty, 1986). Positive outcomes included "increased communication and sense of collegiality . . . among service providers, state administrators, and university faculty," teachers' needs were met and the program was cost effective in terms of staff time (Widerstrom, Domyslawski, & McNulty, 1986, p. 91). The Wyoming experience indicated that similar program objectives can be achieved using face to face delivery or audio teleconferencing. However, with audio teleconferencing there is less travel for instructors, a wider geographic area can be served, and greater interaction among geographically dispersed professionals in the field is accomplished.

It is clear that the audio teleconferencing course is filling a need for students. They are obtaining credit from the University and are able to bridge geographical boundaries between themselves and fellow professionals. The University continues to receive requests for additional courses and the process of developing them has begun.

We have found from our experience that despite the geographical and population density situations in a rural state, a university has been able to begin addressing the needs of its early childhood/special education professionals. This has been done successfully using a technology currently available to all parts of the

state and has been accomplished utilizing available educational software.

### Future Plans

First of all, it seems clear that this course has helped to serve the Wyoming professionals in early childhood/special education. However, with the implementation of P.L. 99-457, meeting the expanding needs of these professionals will require the delivery of a program rather than the delivery of one course. Currently, faculty from the College of Agriculture, College of Education, and College of Health Sciences are designing a degree/certification program. Courses within this program are being developed so that they can be delivered utilizing audio teleconferencing as well as other delivery modes.

To assist in course development, a systematic evaluation of this first course is being pursued. Every attempt is being made to gather qualitative and quantitative data from students to determine their perceptions of the technology and instructional techniques used by the instructor. This information will be used in the development of future programs and certainly will add to the existing body of knowledge concerning course development.

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