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ABSTRACT

Providing inservice education for rural special education personnel is often a problem. Educational technology offers inservice and preservice education at rural sites and brings the "rural context" to university classrooms. This paper presents three models that employ technology to prepare personnel to serve rural children with disabilities. The Department of Special Education at the University of Utah developed a model for delivering teacher education at a distance. The four basic components of this program are: (1) recruiting local rural teacher candidates; (2) identifying and training master educators for on-site facilitation; (3) utilizing telecommunications technology for communication and course delivery; and (4) designating a distance education coordinator. Kansas State University developed electronic delivery of an internship course required for certification in special education. Students must have access to a computer and the Internet, and communicate with instructors, advisors, and each other utilizing E-mail. Using the FirstClass System, students access materials and instructions developed by the instructors, and leave completed assignments on the server for faculty and other students to view and provide feedback. This delivery system is particularly appropriate for highly individualized and self-directed courses, such as this internship. KSU also developed a series of multimedia training modules about child and family issues. These interactive modules combine the benefits of hypertext and hypermedia and are easily transportable to rural settings. Compared to traditional instructional methods, the development of interactive multimedia instruction is complex, labor-intensive, and expensive, but has the advantages of timeliness, flexible training periods, effectiveness, and multiple applications. (Contains nine references.) (TD)

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TECHNOLOGY AND RURAL SPECIAL EDUCATION: MODELS AND METHODS FOR PREPARING TEACHERS

Because of the context of the rural setting, providing immediate and up-to-date information and in-service education for rural special education personnel is often a problem. Rural factors may also present problems in recruiting and retaining special education teachers in rural areas. Finally, there is a documented lack of special preparation for teachers who serve in rural areas. These special rural issues in serving students with disabilities and their families suggest the need for preservice and in-service personnel preparation to be delivered to rural areas so rural districts and cooperatives can " grow their own" special education personnel.

Many approaches have been used to provide professional development opportunities for educational professionals in rural areas. Not all rural professionals are able to leave work to travel to university or centralized agency settings. Bringing the "expert" or instructor to the rural setting is expensive in terms of travel time and the distance and terrain difficulties in some remote rural areas. The lack of a critical number to make in-service training cost-effective at the local level often means that training is not delivered in a timely manner. Educational technology provides solutions to these problems by offering effective and efficient in-service and preservice education at rural sites and by bringing the "rural context" to University classrooms.

Educational technology such as interactive multimedia has been proven to be an effective teaching tool and the use of technology in distance education and teacher preparation have been demonstrated to be cost-effective and effective. Delivering training and information via distance education, whether by live interactive programming or multimedia programs at local sites, has proven to be an effective and efficient method of educating rural personnel.

This paper focuses on two models which employ technology to prepare

personnel to serve rural children with disabilities:

1. distance technology for preservice and in-service education; and
2. interactive multimedia for staff development.

Distance Technology. Model #1.

Using evaluation data gathered during a six year implementation period the Department of Special Education at the University of Utah has developed a model for delivering teacher education at a distance. Four basic components frame the Distance Teacher Education model and support its continued development:

1) teacher trainees are recruited from local rural school districts and prepared at the local site;

2) master special educators from rural communities are identified and trained to provide local support and facilitation for the program;

3) available telecommunications technology is utilized to assist with the delivery of instruction and provide interaction with the campus faculty as well as other rural students; and

4) a distance education coordinator be designated within the department for the purpose of overseeing all activities and personnel involved in delivering graduate teacher education at a distance. See Figure 1.

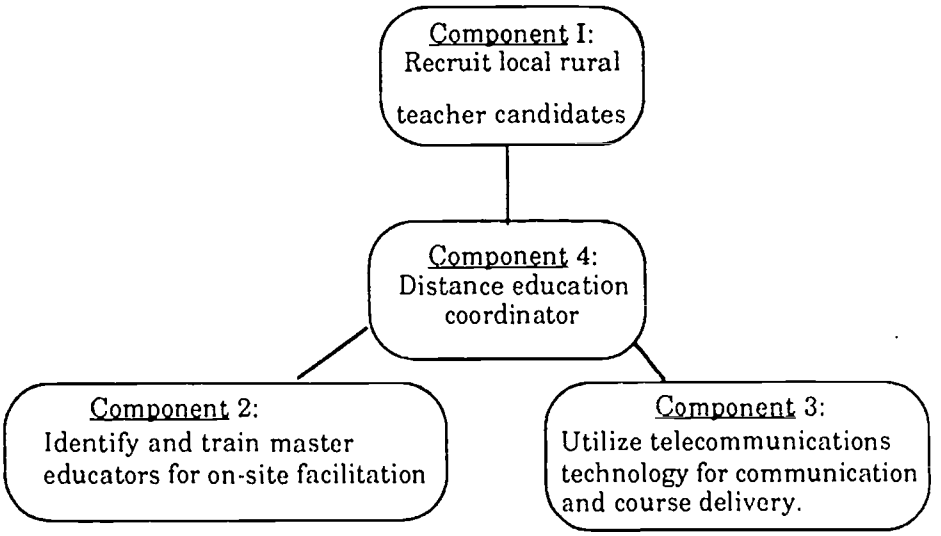

Figure 1. Distance Teacher Education Model Components

Recruiting teacher trainees from local communities has been identified as an important alternative strategy for dealing with the ongoing problem of retaining qualified personnel (Lemke, 1995; Marrs, 1984; Sebastian, 1991). By recruiting and preparing locally, over 80% of the teachers prepared through this project are still teaching in their rural communities (Graduate Council Review, 1991).

Rural master special education teachers (the second model component) are identified in each region and trained on campus to assist with the teacher preparation program at each distance site. Identified as Distance Teacher Education facilitators, these master teachers serve as an extension of the faculty and provide immediate on site support for students in the program. Having in place at each distance site a qualified facilitator is both a unique and critical component of the Distance Teacher Education model developed by the Department of Special Education.

The third component of the model focuses on the use of multiple applications of technology for the delivery of course content and the ongoing support of students at each rural site. Instruction is offered directly to each rural site as well as on the University of Utah campus using a combination of the following approaches:

1) Line on site: Some courses are offered on site by faculty from the Department of Special Education. Program developers determined that courses requiring hands on experiences (such as the course in educational assessment) were more effective when faculty traveled to the rural site to teach a cohort of students. Courses are offered on site in a rural school district using both "block scheduling" (students attend classes over several days) or over a Friday/Saturday instructional format.

2) Interactive television: A few classes are offered using interactive television taught live over the Utah Education Network (EDNET) an interactive television system. Receive sites for the EDNET system are located in most of the rural high schools in the state. Trained EDNET personnel along with the Department's distance education facilitators support these classes at each remote site.

3) Video tapes courses: Prerecorded video taped courses, identified in the department as "Professor Plus" are used most often to deliver courses in each rural site. With this approach regular on-campus courses are video taped in a studio with the professor and campus students. All required course materials are organized and packaged for delivery along with the video tapes to t he distance site. A distance education facilitator (the "plus" of this approach)

coordinates learning activities, leads class discussions, supports students' completion of assignments, communicates with the campus professor, and handles all program management tasks at the site. Each "Professor Plus" class is also supported with interactive television seminars broadcast over EDNET during the quarter the class is offered at the rural site. These broadcast seminars provide distance students with direct assess tot he campus professor to ask questions, prepare for exams, and discuss course related issues.

4) Field based activities: All field studies and student teaching activities are supervised directly by university faculty at each distance site. Distance Education facilitators (master special educators) from each of the rural regions provide additional supervision for students. As a result, students participating in the program, who are often teaching on "emergency authorizations" receive clinical support from both university faculty and distance facilitators directly in rural special education classrooms. In addition, field studies seminars are often broadcast over the EDNET system to bring together cohorts of students at several rural sites to discuss issues and problems encountered in their special education classrooms.

5) Campus course work: Distance education students come to the university campus for advanced graduate studies courses, graduate seminars focusing on rural special education service delivery issues, and courses in the allied field requirement area. Most of the campus experiences for these students occur during times when local school districts are not in session (during summer break and the first two weeks in July, for year round schools) as well as during scheduled Friday/Saturday time blocks. The campus experience allows time for faculty to meet with students to provide program advising, facilitate graduate committee meetings, as well as provide monitoring and other supportive activities. Housing and travel assistance for students has been provided by local school districts, the Utah State Office of Education, and when available, from federal stipends.

The coordination of the Distance Teacher Education program is provided by the fourth component of the model, a designated department level program coordinator. This position is held by a tenure track faculty member who is responsible for facilitating all distance education activities that are offered through the Department of Special Education. This includes, recruiting and advising distance

students, identifying and training distance facilitators, coordinating video taping activities along with developing the EDNET schedule for broadcast courses, working with campus faculty as they develop courses for video and live broadcast, evaluating all program activities, and managing budgets for both external and internal resources. The program coordinator is assisted by a clinical instructor who has the major responsibility for supervision of field based activities and student teaching experiences at each of the distance sites.

Distance Education. Model #2.

A one-hour internship course is required for endorsement for full certification in Special Education from Kansas State University. Students' certification remains provisional until the internship is completed. This internship is intended to be the capstone course for work toward certification and is taken when all other course work is done, often during a teacher's first year in the classroom. The course is delivered electronically.

The purpose of the internship is to provide an opportunity to utilize skills that may have been difficult to use during practica experiences, such as collaboration, classroom management, and parent involvement. Each student evaluates her/his own experiences and makes decisions about "practice gaps". Each develops a plan to use and document specific skills in employment settings.

Although this course is primarily self-directed, students work collaboratively with advisors and course instructors. Phases of the course include initial informal assessment, goal development, plan development, and documentation as needed for each student. Instructions for class organization and participation are sent to students as they complete their course work. They enroll through Continuing Education or on campus and all course work and communication is done electronically.

Students in the internship class must have access to a computer and the internet. The College of Education provides communications software, if needed, and students may borrow modems from the Department of Special Education. Students who live near campus may use the computers in the College of Education. Students will utilize E-mail to communicate with instructors, advisors, and each other. FirstClass is the system used for the course. FirstClass integrates group conferencing with cross-platform person-to-person messaging and offers workgroup collaboration features. The system works with both network and remote access, therefore, external access to FirstClass systems is possible. FirstClass provides the following in one integrated solution:

Complete office electronic mail

Workgroup conferencing for electronic discussions, filesharing and collaboration

Access to critical corporate data from existing databases

Remote access and online information services

Using this system, students access materials and instructions developed by the instructors and located on the system server at the College of Education. Materials developed include a self-assessment based on state teacher competencies; a goal planning format for selecting 2 or more competencies to improve and devising an action plan to develop the skills; and a set of instructions for developing a portfolio for demonstrating the competencies.

Students leave developed plans and materials on the server for other students, instructors, and other faculty to view and provide feedback. Instructors or students may put research articles on the system for the class and may post information about speakers, in-service education, or conference information. With prior arrangements, groups or individuals may interact live on the network. Scheduling difficulties have prevented live interactive class sessions to date. Instructors and advisors are always available by telephoneand e-mail.

The use of electronic communication for this internship in special education has proven, so far, to be difficult for some students to use because of initial problems with the system and students' inexperience with technology. However, students voice their appreciation of being able to accomplish the goals of the course without formal class periods and without the necessity of driving to the University. The technology not only is appropriate for distance education but also for courses that are highly individualized and self-directed, such as this capstone internship.

Interactive Multimedia.

Interactive multimedia instruction has the capacity to meet the educational needs of rural educators and reduce the problems of timeliness and travel. The technology combines the educational benefits of hypertext and hypermedia and is easily transportable to rural settings. Hypertext is a valuable interactive approach for presenting text and graphic information by allowing users to jump from a given subject to related ideas. Text and graphics are presented in non-sequential manner and connected using several types of links. Learners may study a subject area or idea in depth, move around among ideas, and repeat or review ideas.

Hypermedia is an extension of hypertext. It incorporates other media besides text and graphics, such as illustrations, video, diagrams, animation, and computer graphics. Learners can branch from topic to topic as they see fit, going into more

depth in one area or jumping to another related, but different subject, virtually instantly. Text, illustrations, animation, video and other aspects of multimedia are combined, controlled, coordinated, and delivered on the computer screen. Using video, key concepts can be presented in a variety of ways and a variety of visual stimuli can be used. Experts and instructors at great distances from the learner can be used and video can provide opportunities for learners to view video representations of authentic situations and problems.

Interactivity provides for active engagement of the learner rather than assuming the learner is a passive observer of a fixed procession of sights and sounds (Lynch 1992). Interactive multimedia is used to simulate practice reality using various modalities. The interactivity of hypermedia and hypertext instruction allows the learner to try a variety of interventions and moves a video or text sequence to logical conclusions, based on the learners actions. Learners can repeat sequence, obtain feedback about choices, and try responses or interventions they would never do in real life (Seabury & Maple, 1993). It provides a private, non-judgmental learning environment where the learner controls the pace, can back up, repeat, ask for further assistance, and receive objective, non-intrusive feedback (Lynch, 1992). Because the interactive multimedia program is non-linear, the learner can explore the content, and create individualized paths.

At Kansas State University, the Rural Child Welfare Project developed and produced a series multimedia training modules about child and family issues (Thurston, Verschelden, and Denning, 1996). The project, Building Family Foundation, was a collaborative project the Department of Special Education and the Social Work Program at Kansas State University, and the Kansas Department of Social and Rehabilitation Services. Building Family Foundations was a multidisciplinary, collaborative process. The key members of the development and production team for each module were: Subject Matter Expert (SME), Instructional Designer (ID), Computer Programmer, and Graphic Designer. In addition, there was the video production team, which included camera operators, producers, directors, and editors. The development of a strong team of experts and the collaborative work of the development and production teams were critical to the successful outcome of project.

When compared to traditional instructional methods, the development of interactive multimedia programs is complex, labor-intensive, and expensive. The five and a half year project had a staff of 16 full or part time employees, including students in special education, social work, and educational technology. The process of

developing each module included agreeing on competency-based objectives for each module, designing instruction, graphics, video and audio, producing the videotape from which the videodisc was pressed and programming. Alpha testing and extensive beta testing preceded the delivery of the instructional technology to field sites where they are being used for in-service education and staff development. Each module took about 2 years to 3 years from conceptualization of objectives to field placement. Several modules were in the development and production stage at the same time.

This project can serve as a prototype for dealing with issues and making decisions and commitments involved in the collaborative development of interactive multimedia. Placing interactive multimedia at a distant site overcomes the technological barriers commonly associated with distance learning while offering all of the advantages of local instruction with the exception of ready access to an instructor. The use of this technology for delivering education is especially appropriate for rural areas because it can be used in local offices, is self-contained, uses specific educational methodology based on the characteristics of adult learners (Knowles, 1973), and takes into consideration the range of users' skill levels with technology and in content areas. The ability of users to control the instructional process and to record their progress allows remediation when necessary and the option to move ahead when the competency is reached or the information is assimilated. Interactive multimedia instruction has the advantages of timeliness, flexible training periods, effectiveness, and multiple applications and will play a vital role in the future of providing education in rural areas.

This paper has described three distinctive delivery systems for preparing rural professionals to work with children with disabilitite and their families. Each uses sophisticated technology to deliver education to rural residents and each demonstrates effective and efficient distance education for rural professionals.

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