TEACHER TRAINING AND COLLEGIAL SUPPORT

Preparing Pre-service Teachers for Rural Teaching through Interactive Television and Problem Based Activity

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INTRODUCTION

This project integrated interactive television links with small rural schools and problem based tutorials in consolidating the concept and skill development of final year preservice teacher education students. The Faculty of Education class hosting this project focus on curriculum planning and preparation for teaching in multigrade rural classrooms. Using interactive video technology, students observed and reflected upon the teaching, problem solving activity and decision making processes displayed by practicing teachers in rural locations and then discussed with those teachers the thinking behind the activities observed. Associated problem based tutorials reinforced the practice and understanding of these teaching processes through student interaction with teaching scenarios common to multigrade teaching contexts. The project team is not aware of any projects incorporating both problem based activity and interactive television in the pre-service preparation of teachers.

BACKGROUND

Traditional approaches to teacher education have incorporated on-campus, face-to-face instruction, complemented by occasional forays into schools for classroom practice teaching sessions, demonstration sessions or a combination of microteaching and child studies or associated activities. Students actively seek and value first-hand teaching experiences during their teacher education program. Many researchers and students believe that participation in teaching experiences is the most important source of preservice knowledge about the teaching profession.

To make teacher education courses as meaningful and relevant as possible, this project presented real-life teaching situations as examples of best practice. In past offerings of the class, attempts have been made to bring this real-life element into the program through the use of problem based scenarios focusing on day-to-day dilemmas faced by the practicing teacher. This project extended the problem based activities that evolved from work done by the project team and their students over the last two years.

In the past, a series of scenarios have been generated by students based on their practice teaching activities in rural, multigrade classrooms. Student-led debriefing sessions have involved collegial, cooperative problem solving of the scenario problems. The variety of solutions generated for

each scenario have integrated theory and practice from previous study in the pre-service course.

Student feedback prompted an expansion of the time spent in problem based learning (PBL) activities. Additionally, interactive television linkages were introduced to enhance the student teachers' understanding of concepts and skills central to effective teaching. The incorporation of interactive technology increased both the real time involvement of student teachers in their chosen profession and their access to best practice. This dual focus upon a problem solving approach to teaching immersed the student teacher in situations derived from real teaching environments, encouraged the collegial analysis of problem situations and the sharing of solutions and various perspectives on a single teaching situation.

INTENT OF THE PROJECT

Previously, the concept of distance education incorporated the dissemination of information away from a central location and the provision of instruction from one teaching location to remote, multiple sites where student learning was to occur. The unique aspect of this project was the concept of using distance education technology for the instruction of internal, on-campus students. That is, by simulating a window of a classroom, students in this regional university experienced the realities of day-to-day teaching in several rural locations. By analyzing examples of 'best practice' from a variety of rural schools, students involved in this project experienced distance education in reverse to the normal definition of the term. It is expected that through an emphasis upon school based activity, the practice of recognised and desired teaching skills and the increased use of problem based learning involving interactive television, a more relevant and meaningful preservice teacher education course incorporating the development of competencies in reflective decision making will result.

This project intended to increase the use of problem based scenarios and, with access to interactive television linkages, introduce a 'live' component of the scenario approach through the observation of teachers working in multigrade classrooms. Immediately following the teaching session, students reflected on and discussed the observed activities with the classroom teacher via the audio-visual hook up. Discussion topics with the classroom teacher related directly to program objectives and included reference to grouping techniques, classroom management, resource organisation and utilisation, approaches to, and selection of, content to be learned, assessment and record keeping techniques, utilisation of teacher aides and/or parents in the classroom, and references to the politics of small school community involvement.

At the conclusion of the project, pre-service teachers were more thoroughly prepared for rural teaching experiences, displayed competence in skills related to effective teaching in multigrade classrooms, and exhibited control and comfort during involvement in the decision making and problem solving aspects of teacher behavior. Additionally, teaching resources developed through this project included descriptions of viable, cost effective, interactive television links, a video library of multigrade rural teaching sessions, refinement of the process and the materials required for using problem based scenarios in teacher education courses, written articles on the process for publication in refereed journals, and a series of seminars ready for presentation to colleagues at University of Southern Queensland (USQ) and elsewhere. It is intended that the development of a teaching text using problem based activity in teacher education courses will be completed during 1995.

PROJECT LIMITATIONS

The technology used in this project has physical limits. Initially, 'line of sight' contact restricts both the distance and variety of remote schools that can be incorporated into the project. Unless expensive satellite technology is incorporated, this limitation will remain. Additionally, dependence upon sensitive video and audio linkages over long distances carries with it the possibility of both human and technical malfunctions. Appropriate training for those involved in broadcasting is a prerequisite to successful transmission. This technology is currently in use in Queensland and in other parts of the world. However, during this trial of the viability of this technology to pre-service teacher education and in order to guarantee that no interruption to the learning program of pre-service teachers occurred during the project as a result of technical malfunction or access to equipment, alternative arrangements were made to substitute video taped sessions and telephone or radio links with participating teachers for the interactive component of the project. Few problems occurred at the student end of the project, or in the problem based component, as all organisational arrangements were within the control of the Project Team.

INDICATION OF SIGNIFICANT POSITIVE IMPACT ON STUDENT LEARNING

Feedback from students involved over the past two years has indicated strong support for the problem based learning approach. Students have indicated that analyses of such scenarios have consolidated their understanding of rural contexts and allowed them greater professional comfort at the prospect of teaching in rural schools. Further indication of the worth of such an approach has been in the form of student suggestions for greater use of such techniques based on their content relevance to actual day-to-day teaching activities. Robert Ciscell (1993) reports that, students consistently indicate that education professors offer limited information about teachers' professional problems.

A survey of nearly 500 Michigan State University students enrolled in an introductory education course suggested that education coursework offered limited knowledge about the day-to-day life of a teacher (Book, et al, 1993).

Results of research conducted by Feletti, et al (1988) substantiate both the reactions of students at USQ regarding the value of problem based approaches and the need to increase day-to-day content relevance in pre-service courses.

This project produced evidence that the interactive television linkages produced relevant first hand teaching situations which could be analyzed and discussed spontaneously with the multigrade classroom teacher and complement the scenario activities developed from Australian teaching contexts.

MONITORING AND EVALUATION PROCEDURES

Problem based learning provided frequent opportunities for assessment of students' abilities to apply reflection and analysis to teaching situations. Successful utilisation of these skills necessitated a synthesis of all previously experienced situations and application of reflective and analytical abilities to new contexts.

Monitoring and evaluation procedures for this project included gathering data from each of the participant groups. Students enrolled in the unit analyzed the effect of the technology on their understanding of rural schooling and the contribution of the problem solving approach to the practice of teaching competencies in the area of teacher decision making, classroom management, preparation and analysis.

Teachers involved in the video transmission of their own teaching activities examined and evaluated their professional comfort with the technology; the perceived effectiveness of their contribution to the education of their pre-service colleagues; the resulting enhancement of their teaching skills; the impact of the intrusion of the technology on their own classroom effectiveness; and the effect of the project on their own student's learning environment.

EVALUATION DATA SUMMARY

Evaluation data focused upon both the problem based learning and the interactive television components of the project. Data for the evaluation of the PBL activities were obtained from two questionnaires completed by the student teachers participating in the project. The first questionnaire sought to establish the student teachers' receptiveness to PBL and the positive benefits student teachers derived from participation in such an approach.

The purpose of the second questionnaire was to determine whether PBL activities had positively effected the teaching competencies of the student teachers. It also investigated the student teachers' perceptions regarding the degree of relevance of the PBL scenario topics to the actual practicum experience. This questionnaire was completed during the final week of the student teaching activity.

Findings from the two questionnaires indicated a high degree of receptivity to PBL as an effective learning and teaching tool. This was apparent with more than 80% of the students strongly agreeing with the statements that as a result of PBL, they had developed an understanding of the types of situations that might be encountered in small, rural schools, and that the use of scenarios as a teaching strategy helps to promote a positive attitude towards the subject being studied.

The questionnaires also revealed that PBL facilitated students' confidence in their learning, and that the use of the PBL scenarios promoted student initiative in and responsibility for their own learning. 89.6% of the students indicated that most of the topics addressed in the PBL sessions would be of benefit in their final practicum and in their future teaching career.

Questionnaires were also used to evaluate the interactive television (ITV) component of the project. Responses were gathered from all participants including the student teachers, the classroom teachers, and the technical crew.

Feedback concerning the learning benefits of ITV was extremely positive from all participants. More than 90% of the student respondents identified four particular benefits. The most significant of these was the unification of 'theory' with 'practice'. Another important benefit was the acquisition of valuable insights into teaching in rural, multi-graded classrooms. The student teachers also commented on the unobtrusive nature of the observation process as well as the immediate feedback gained from the interactive discussions with the teachers at the conclusion of each broadcast.

Both participating teachers and the principals of the school believed that the ITV process was an effective way for student teachers to observe multi-grade classrooms in rural schools. Both teachers felt that they were able to satisfactorily demonstrate general aspects of teaching as well as aspects of teaching which are particular to a rural, multi-age classroom. Both felt that participating in the interactive broadcast had positively affected their own teaching skills. Benefits they perceived included such aspects as personally experiencing and learning about the new technology,

and being able to reflect constructively on one's own teaching skills and the level of pupil learning.

Each of the technicians involved believed the concept of the project to be worthy of further development. They rated the trial project "a complete success". Each group of respondents raised certain issues which, if addressed, would enhance future development of this innovative educational process. Central to these improvements was the concept of an uncluttered approach to the use of the technology. The suggestion that future projects remain uncomplicated in terms of technology and personnel, with simplicity of operation and implementation as essential goals was central to the idea of maintaining the educational value of the project rather than allowing the technology to take-over. One idea which needed to be more thoroughly explored was the use of commercial microwave links in order to emphasize the advantages of high broadcast quality, stereo sound, and low maintenance, despite the higher, initial establishment costs.

The principal, both classroom teachers, and almost all of the student teachers indicated the main emphasis for future improvement should be concerned with the extension of the classroom broadcasts and the interactive sessions at the end of each broadcast. They felt that this would create a wider view of life in a multi-grade classroom and include a greater variety of curricula and social aspects of multi-grade teaching.

Additionally, both teachers suggested that prior to broadcasting, videos of the children at different stages during the year be taken so that student teachers could gain insights into the children's prior learning experiences. This would also enable student teachers to see how the broadcast lessons articulated with the overall teaching program for the year. Similar to this suggestion was a request from student teachers that more information be provided about the children being observed.

OUTCOMES

As a result of the successful completion of the first offering of the unit incorporating this project, descriptions of the interactive techniques refined in the process will be disseminated through the publication of a variety of papers and presentation of seminars on the topic. In addition, a book will be prepared for publication as a pre-service teacher education text based upon the concept of a problem based approach to teacher education through the analysis of scenarios developed from real teaching situations. A video library of edited classroom activities will be available for individual scrutiny by students and as a supporting resource for textbook activities. The combined techniques of PBL and ITV will become integral components of the Faculty's Bachelor of Education pre-service award and the university will incorporate the technology as a viable delivery technology for campus wide use.

FINANCIAL SUPPORT

In addition to the initial grant from the Consortium for the Advancement of University Teaching (CAUT), a federally funded agency, the Faculty of Education at the University of Southern Queensland has provided support for this project in previous years through the provision of both financial and human resources to support the development of the problem based component of the study and the provision of materials for its development to this stage. Additionally, Faculty research grants over the last two years have supported the development of a focus on research aimed at understanding and refining approaches to the provision of educational services appropriate for the rural community.

Further resources from the University's Instructional Media Department were provided in the form of technological assistance, expertise and access to hardware necessary for the project's success. The Open Access Support Centre (Brisbane) of the Queensland Department of Education contributed technical expertise and advice on the development of the interactive component of the project and also provided expert time and hardware support for the duration of the project.