

special arrangements with appropriate individuals and use cameras or camcorders to record the information. The next step was the scanning and digitizing processes. Most students concluded the presentation with a final video clip, thanking the viewer for his/her time.

This type of technology-intensive project required the active involvement of a multimedia technician. There were many technical hardware and software issues that could only be handled by someone fully trained in the technology. We had the part-time services of a campus technician who had excellent credentials. He was indispensable and assisted the students in many phases of the project, including some up-front classroom instruction.

Since this was a first-time experience for both the students and the professor, we all learned a great deal. Even though the project grade was worth only 15% of the class grade, the students spent a disproportionate number of hours on the project. There were many different types of work to do, but all persevered, and all

completed the project on schedule. To the person, they were proud of their accomplishment.

The project was a success as measured by several factors. It certainly added pizzazz to a course which had a lot of dry content. The students interacted with each other in their creative lab sessions extensively, but still managed to produce distinctly different results. Even though they complained about the great amounts of time that the project required, at the end they all said that they would do it all over again. What they learned was so important and useful, that they would sacrifice the necessary time again in the future to have a similar experience.

These senior students completed their individual projects during Spring Quarter, 1996. They can now use the copies of their CD-ROM as both a digitized history of their achievements at CCSU and as professional "resumes" to be sent to prospective employers. They invested their own time in order to use information technology to their advantage, and they succeeded in doing this with their own independent work.

Enhancing Faculty Development Opportunities Through Technology

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INVESTIGATING QUESTIONS TO INFORM classroom practice is an important skill for professional teachers. Not only is student learning enhanced by examining factors which impede educational progress, systematic study empowers educators by suggesting alternative instructional strategies to improve practice. Brubacher, Case, and Reagan (1994) maintain that successful teaching requires reflection and motivation to examine classroom events. Good teachers are distinguished by their efforts "after the fact" requiring recognition of responsibility for what happens in their classrooms. Until teachers accept the role of "classroom researcher" leading us to better answers for questions, stagnation is the most likely outcome (Brause & Mayher, 1991). The promise of teacher research for renewing practice and promoting professional growth is an important avenue for improving educational effectiveness at all levels and increasing opportunities for collegial collaborations.

Qualitative research techniques provide supportive methodology for teacher action research. By focusing inquiry in naturalistic settings, seeking understanding and meaning of a phenomena taken as a whole, quali-

tative data collection techniques such as open-ended surveys, videotaped observations, journals, and observational analysis provide important clues for dynamic classroom environments. It seems that teacher researchers have not implemented qualitative techniques fully because of the complexity and time consuming nature of qualitative data analysis. There are several software packages that facilitate qualitative data analysis. Our purpose is to describe our efforts using the qualitative data analysis program NUD•IST in our longitudinal investigation of the impact of stress in preservice, student, and first year teachers.

Study Context

In our work with students entering the teaching field, we have observed that feelings of stress accompany courses in teacher education methods, student teaching, and continuing through the first year of teaching. The purpose of our investigation is to clarify and understand the multiple sources of concern of this population. Working with elementary, secondary, and middle grades teacher education students at Kennesaw State

University, we sampled volunteers as they completed methods classes, student teaching, and near the end of their first professional assignment. Data were collected using two instruments: The Teacher Stress Inventory (Fimian, 1988), and the Stress Rating Scale (VanBrackle, 1993). The Stress Rating Scale provides opportunity for open ended responses about factors which raised or lowered participants' feelings of stress. The resulting qualitative data, important to our understanding of students' concerns, provided insights into the structure of teacher preparation and field experience components of our program. We were faced with a large quantity of data requiring systematic analysis for repeating patterns and themes. After examining qualitative data analysis packages through a current sourcebook (Miles & Huberman, 1994), we purchased the NUD•IST program and began the task of entering and analyzing our data.

Description of NUD•IST Software

Q.S.R. NUD•IST Version 3.05 is a computer package "designed to aid users in handling non-numerical and unstructured data in qualitative data analysis. By indexing, searching, and theorizing, NUD•IST creates an environment to store and explore data ideas, to minimize clerical routine, and maximize flexibility, and to discover new ideas and build on them" (NUD•IST Manual p.1-1). The program searches for words and phrases in the text of the document and will automatically index the database. From the indices of the data base, further analyses can be conducted that reveal the presence of recurring themes and generalizations.

Interactive Demonstration

To demonstrate the capability of the software, participants in our session experienced how the NUD•IST program categorizes and indexes data by using samples from our longitudinal study. Participants were asked to inspect data samples and record important concerns which reduced or heightened stress in their particular sample group. From the charts developed by session participants, a tree diagram was constructed that highlighted the internal structure of the data. Participants identified possible comparisons within and between data groups and longitudinally.

Preliminary Results & Applications of Study

By investigating the field experience portion of the teacher preparation program, we developed some important insights into teacher training curriculum. Our results suggest that field experience must be organized to include authentic practice. Professors can assist students in making meaningful connections to what they observe in classrooms by incorporating opportunities for on campus discussion of classroom events. Encouraging students to construct meaning from those experiences enhances future directions in development of their own pedagogy and practice. It is important to empha-

size to all "students of teaching" the "teacher as researcher connection" which embraces the dynamic nature of the classroom and encourages reflection on practice. Through systematic inquiry of practice, students will be challenged to continually renew pedagogy, instructional strategy and management.

A final consideration emerging from preliminary student responses focuses on the importance of nurturing a dialogue about teaching throughout the teacher preparation program. By reducing a sense of isolation and encouraging students to exchange ideas and feelings, we can support students' development as professionals. In an outgrowth of our preliminary findings, Pool received institutional support for an experiment on her campus. *Social Foundations of Education* was delivered during the Spring Semester, 1997 in a team teaching format. Two Gettysburg College seniors who had completed student teaching during Fall Semester, 1996 provided small group activities and structure for the discussion of field experiences. Their recent experience as student teachers scaffolded thought about pedagogy and practice among our beginning students, advancing their awareness of the role of the professional teacher.

Future analyses of data will examine connections, patterns, recurring themes and generalizations that impact curriculum decisions in teacher education.

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- Note: NUD•IST software is available by contacting Tom and Lyn Richards, Qualitative Solutions and Research Pty Ltd., 2 Research Drive, La Trobe University, Melbourne, Vic. 3083, Australia. Phone: 61-3-479-1311; Fax: 61-3-479-4441. or Email: nudist@lates1.lat.oz.au*