"new chalk" has much to offer both the professor and students in the classroom.

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Using Information Technology and Independent Work to Enhance Student Learning

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THE COMPUTER INFORMATION SYSTEM STUDENTS at Clayton College and State University have recently learned to create their own personalized multimedia resumes on a CD-ROM. They used Macromedia's Director software to create a multimedia CD-ROM containing a portfolio of their academic and personal achievements and included all forms of media: text, images, audio and video. What made this such an interesting assignment was the fact that they have never used multimedia before and had to learn a great deal about it in order to complete their project.

The unique aspect of this project was the independent learning requirement. The students were on their own from the beginning. The end product of the project was the creation by each student of his or her own personalized multimedia CD-ROM which contained a portfolio of educational, personal, and business topics. The overall goals were (1) to develop a useful product, (2) to learn and apply multimedia concepts and techniques, and (3) to work together, but to prepare an individualized product. They learned a great deal from this "forced" exposure and now have a state-of-the-art resume as a memento of their Computer Information System education.

A typical software development methodology was used to design and construct their story. First, each student had to become familiar with MACINTOSH hardware and multimedia authoring software. Then, he or she had to assemble their own multimedia components—for example, digitized photos, video clips of interest, and digitized background music. Next, they combined those pieces into a "story" using multimedia authoring software. Finally, they had to design a menu interface for the "CD-ROM resume." The information was burned onto an individualized CD-ROM by a campus multimedia technician.

The typical resume had an opening video clip of the student welcoming the user to the portfolio. This was followed by a menu of options which included a textual version of the resume, scanned copies of class project results, personal photos, such as family or campus shots, and letters or video clips of personal recommendations from teachers or employers. This variety of media types required that the students had to make

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, qualitative 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