A Community of Learners

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I STOOD AT THE PODIUM, looked out at the crowd attending the Georgia Conference on College and University Teaching, and posed the question "Who was the best teacher you ever had in college, and why was that person so effective?" There was a slight murmur in the group of almost 300 people as one person yelled "Was that a rhetorical question?" It was a good rhetorical question, but my intent was to get responses from participants. I wanted colleagues to reflect on this question for a few seconds, then share with the larger group the memories they had of their outstanding professors and the ways in which they helped them learn.

"My professor acted as a role model and made me want to learn more!" was one response. Another person said "My professor took time out of a busy schedule to talk to me and act as both mentor and facilitator." Yet another member of the audience pointed out that he and other students would converge on a specific faculty member's home and discuss issues brought out in class. The boundaries of his course extended well beyond the classroom walls. One brave soul told about the worst teacher she ever had, and how that experience helped her become the teacher she is today. I asked her what approach was used. "Just lectures — and I will never do that to my students," was her response.

The purpose of this annual conference hosted by Kennesaw State University was to help us become the most effective teachers that we can be. We came to this conference to learn from one another. Faculty members from Georgia and a few other states shared with others the philosophies and pedagogies that work for them. The teaching conference and this edition of *Reaching Through Teaching* are avenues of exchange that help us become more effective in what we do. Many articles were written by colleagues who presented at the conference. Other articles were written by faculty members who have information to share with others.

Why do we attend teaching conferences, read articles, and try so hard to improve our teaching? Faculty members' rewards do not come easily or quickly. We do not measure our successes by the numbers of students taught during the year or the numbers of grades handed out.

Our "course evaluations" have meaning when students walk down the aisle at graduation and feel as though we are walking with them because we contributed to their educations. We are rewarded when we find that our graduates have reminisced about the "good old days" and that we are a part of their anecdotes and their fond memories. Because of how we teach, and what we teach, we want our students to talk about us, and to remember us because we made a positive impact on their lives. Ultimately, we strive to improve our teaching because we want our students to learn and to be excited about learning.

New Chalk in the Biology Classroom

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"I HAVE TO MISS CLASS TOMORROW. Are you just going to lecture?" It was an innocent question from a student during spring quarter 1995. She simply wanted to inform me politely about her impending absence, not cause me to wrestle with my notion of appropriate pedagogy. Many students had asked me this question in the past eight years, but this time it prompted me to think more seriously about my teaching. Like most science faculty, I received no formal training in instruction. I patterned my classroom style after that of my favorite professors and tried to emulate their technique. I never questioned whether my class performance could be improved by different pedagogy.

In 1995 I was aware of the emerging instructional technologies creeping into the classroom. Popular and professional journal articles referred to these newer teaching tools, but I dismissed the articles as "techspeak." I had a nagging feeling that I should learn more about the new equipment, but I was a technophobe, not a technophile. Fortunately, my rescue from technophobia came with a small amount of initiative. I applied for and was selected to participate

in *Connecting Teachers and Technology*, a faculty development workshop sponsored by the Office of Information and Instructional Technology. The workshop was an eye-opening experience. I returned to campus armed with enough confidence to overcome my electronic anxiety and filled with the excitement that comes with the prospect of improving instruction and enhancing student learning.

Some of the new technologies seemed to fit the needs of my *Biology 112* class, the second course in an introductory biology sequence for non-science students. Students in *Biology 112* have just completed the first course in the sequence, and they arrive in class on the first day with characteristics typical of non-majors: they possess a relatively high level of anxiety about science; their primary goal is to satisfy the core requirement (for many this means that they simply want to make a passing grade or make a C); they represent the videogame generation, accustomed to visual stimulation and often characterized as possessing short attention spans (Eakin 1995); they are less motivated than traditional biology majors and many possess minimal computer skills.

By infusing technology into this course, I wanted to enliven the classroom environment, promote visual learning, enhance computer literacy of students and foster independent student learning. I changed the course from a traditional "chalk and blackboard" atmosphere to a multimedia environment that employs the following "new chalk" *(sensu* Henshaw 1997) techniques:

Electronic Lectures

Lectures became "electronic slide shows" presented with a computer. Creating each presentation with PowerPoint software, I enriched concepts with images imported from various CD-ROM sources and the World Wide Web. I used a Macintosh PowerBook 540c laptop and an In-Focus 580 RGB projector to project on-screen text and graphics.

Videodiscs

Each class period I interfaced videodisc images and animations with the PowerPoint presentations. Connecting the videodisc player to a separate input on the RGB projector permitted me to rapidly switch from images and text on the computer to images, figures and animations on videodisc.

CD-ROM

Students elected to purchase interactive CD-ROMs that became available with the second edition of *Biology: Concepts and Connections* (Campbell et al. 1997). Not available with the first edition, the CD-ROM now comes packaged with the new text. This CD-ROM contains engaging tutorials, pictures, interactive animations and tests that parallel concepts presented in each chapter of the textbook.

Computer-based Tutorials

The Information Technology staff at NGCSU installed computer-based tutorials (*BC Tutor*, available free to the adopters of the textbook) on desktop computers in two computer labs. *BC Tutor* provides multiple choice questions that are cross-referenced with specific modules and figures in the text. The tutorial questions are different from those provided in each chapter review section of the textbook.

E-Mail

To make E-Mail an integral part of the course, I created an electronic mailing list that allowed me to send E-Mail to all students simultaneously. In order to promote class discussion and minimize note-taking, I provided students with expanded outlines of each syllabus topic before introducing the topic in class. It was a simple procedure to switch to "outline view" in PowerPoint, copy the text from a presentation, then paste this text directly into an E-Mail message. I held short workshops outside the normal class period and showed students how to extract files from E-Mail, then edit these files with a word processor. Students also used E-Mail as an electronic forum and submitted questions about lab or lecture topics outside the confines of the traditional classroom. Keeping the identity of questioners confidential, I posted all questions and their answers to the mailing list. E-Mail provided the means to post assignments, distribute group results from laboratory experiments, and pose "thought questions."

World Wide Web

World Wide Web (WWW) assignments complemented topics discussed in lecture and enhanced opportunities for more active learning. Students used the web to view images, watch animations and read about issues relevant to lecture topics. Students also used tutorials on the web linked with the home page of their text as well as tutorials linked with home pages of other publishers. As a side benefit, students discovered that the internet is a multifaceted resource that rapidly provides materials not readily accessible in the recent past.

The response of students to this new approach to instruction has been extremely positive. They enjoy the visually enriched classroom. The electronic presentations, computer-based tutorials, CD-ROM and WWW provide a more interactive learning environment than their previous biology class. Although the new technology is not a panacea for education, the benefit of these new tools is evident.

The excitement of this new approach has been personally rewarding and rejuvenating. Although the initial time investment in converting to multimedia can be extensive (see Goolkasian 1996, Gotsick and Gotsick 1996, Kieley 1996, Solomon 1994 and references cited therein), multimedia offer an opportunity for a fresh perspective on teaching and learning. Certainly the

"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