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ABSTRACT

This series of one- and two-page abstracts highlights a variety of innovative approaches to teaching and learning in the community college. Topics covered in the articles include the use of Hollywood films as a tool for teaching history; displaced homemaker programs; the relationship between teaching and scholarship; helping students write for the real world; incorporating art assignments in science classes; increasing written output among academics; low-cost/high-impact marketing; the practicality of the liberal arts major; learning biology through writing; the instructional skills workshop as a mechanism for instructional and organizational renewal; the START program (Success through Attrition/Retention Techniques) at Jefferson Community College (Kentucky); the partnership exam at Ashland Community College; the "high tech" classroom as a theater for the mind; teaching critical reading as a way of teaching critical thinking; the Faculty Mentor Program at Austin Community College (Texas); writing as a way of learning; implementing a community college wellness program on a shoestring budget; in praise of exhibits; teaching mathematics as a language; beating the high cost of microcomputers; the New Mexico Junior College Part-Time Faculty Program; transitions from the classroom to consulting; bringing faculty together with the "Faculty Forum"; getting students to think; writing in the quantitative classroom; mid-course evaluations; the laboratory practical final; and tips for teaching excellence and student motivation. (UCM)

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INNOVATION ABSTRACTS VOL. IX NO. 1

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HOLLYWOOD FILMS AS A TEACHING TOOL

I teach history, and I have a problem. Actually, I have two problems. For one thing, my students have a preconceived notion that history is dull because it deals only with events long ago and faraway, and that the discipline is fundamentally irrelevant. In addition, my students have inadequate writing skills which need to be improved. Rather than simply complaining about this state of affairs, I have developed a project which seeks to bring an immediacy and interest to historical events and which further attempts to get students writing about something which interests them. Specifically, I use Hollywood feature films to enrich and enliven my classes in a project that could easily be adapted to other disciplines.

The films I have chosen either portray major historical events, such as *Inherit the Wind* (the Scopes trial) or *All the President's Men* (Watergate), or have major historical events as background, such as the Civil War in *The Birth of a Nation* or the Russian revolution in *Reds*. Furthermore, these films must be available on videocassettes which are cheaper to buy than reel-to-reel films are to rent, and which moreover allow students with busy schedules to see the film at their leisure.

The project works like this. A student views the film, either using the videocassette at the college or renting one for a nominal fee, or he sees it on cable television. The student then reads an essay I have written which sets the film in historical perspective, critiques information in the film, and suggests parallels with other historical events. The student chooses a topic from a list I provide, topics which run the gamut from traditional book reports, to small and large research projects, to interpretive essays. Moreover, students are encouraged to develop their own topics. Each topic involves pre-arranged credit. Therefore, the student either receives credit for the paper, and so completes his contract, or he does not. I mark the papers and permit students unlimited rewriting within two weeks towards the end of the semester.

The project has many advantages. My students are more visually than print oriented, and so react favorably to films in a way they do not to print material. Moreover, in critiquing a film, students utilize skills they already possess and hone life skills. Equally important, they are developing new skills of writing and research, a task they will do more cheerfully if they are interested in a topic in the first place. Finally, instructors need not be film specialists, nor even familiar with the film, because they grade the project papers on the basis of knowledge they already possess, such as how a good paper should look.

This project can be used in classes other than history, of course. For example, *The Grapes of Wrath* could be used to investigate how a film differs from a novel. One student in fashion design researched the costumes in *Beckett* (and found them inaccurate), while another interested in acting used Marlon Brando's performance in *On the Waterfront* to discuss the method school of acting. A music major did an excellent paper on the "Pineapple Rag" after seeing *Ragtime*. The project has even been used with success in computer science; a colleague in that field has students look at *War Games* and research what kind of computer could have been used.

Some students interested in specific areas which I can cover only briefly in a survey course have used the film project for further study. Thus, women's studies are addressed in the essay on *Adam's Rib*, a Spencer Tracy/Katherine Hepburn vehicle, while Indian history is important for *Fort Apache*.

The project has met with great success. Once students understood that the use of films was not an invitation to sloppy work, they came to appreciate the chance to explore a topic they chose on their own. Some told me with great pleasure of the conversations their viewing of the film engendered with their families, and everyone agreed the project had sharpened their critical viewing and writing skills. Finally, no one who saw films like *The Deerhunter* or Chaplin's *City Lights* ever again thought of history as being dull!

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DISPLACED HOMEMAKERS: BUILDING THE BRIDGE TO EDUCATION AND EMPLOYMENT

The burgeoning number of displaced homemakers presents community colleges with a contemporary issue in which they can play a significant role.

— In 1978, 14.3 million women were divorced or separated.
— The number of divorces tripled between 1968 and 1981.
— 10.3 million families had as their principal support women who were divorced, separated, widowed, or never married.
— One-third of today's generation of children are likely to live in homes headed by women who are receiving welfare benefits.
— The average age at which women are widowed in the United States is 56, a full nine years before they would be eligible to receive social security.

The typical displaced homemaker suffers from low self-esteem, insufficient education or training to be employable, and a myriad of survival issues to be solved in communities with limited resources. The national philosophy of community colleges responding to community needs places community colleges in a primary role to assist displaced homemakers from dependency to economic independence through their educational training programs and resources.

Skagit Valley College has been providing services for disadvantaged and single parents for 12 years. For the last four and a half years, the college has provided services specifically for displaced homemakers and is one of more than 400 in the nation which provides counseling, career and life planning classes, workshops, training, and job placement assistance to the displaced homemaker population.

The Skagit Valley College program offers the following services:

1. Nine career and life planning classes annually which include 50 hours of structured coursework focusing on transferable skills, the world of work, career decisions, and job search skills.
2. For widows, transitional classes which focus on career and life planning, grief, loss, and legal issues.
3. Individual career counseling, educational advising, and job placement assistance.
4. Weekly support groups focusing on transition from homemaker to training or employment.
5. Workshops on self-esteem, employment opportunities, assertiveness, time management, and special interest issues.

Because of limited employment opportunities in remote rural areas, the program provided a special course to aid displaced homemakers in creating their own employment through a home-based business. The course included the pros and cons of business, types of businesses, licenses and permits, record-keeping, marketing strategies, business planning, and taxes.

The program serves approximately 400 displaced homemakers annually with a professional staff of one and a half individuals. The breadth of our services is made possible with the aid of student volunteers and interns (from two-year and four-year colleges and graduate programs), many of whom are former displaced homemakers themselves. Seventy percent of those participating in the program enter educational programs after completing the intensive career assessments component with well-defined career goals.

Displaced homemakers are not often aware of community college resources; therefore, a program must conduct extensive outreach activities such as media campaigns, presentations to community organizations and agencies, wide dissemination of brochures and flyers, reader board announcements, and door-to-door contacts. Previous participants and agency personnel often refer new displaced homemakers to the program due to the quality of the program services and the established results achieved by the participants upon completion of the program—an 89% successful placement.

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Suanne D. Roueche, Editor
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INNOVATION ABSTRACTS VOL. IX NO. 2

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GLADLY WOULD THEY LEARN AND GLADLY TEACH

"Gladly would he learn and gladly teach." Everyone who has ever had a course in early British literature is familiar with Chaucer's portrait of the clerk in the Prologue to *The Canterbury Tales*. The "scholar-professor" is equally devoted to learning and teaching students. Although his image is something of a cliché, there is in it a necessary truth about the vital interaction between scholarly learning and the teaching of students that we seem to have lost sight of today. In American higher education we have come dangerously close to divorcing these two dimensions into the isolated enterprise of basic research and relegated it to the university; on the other hand, we have come close to insulating the craft of teaching from the scholarship that nourishes it, by identifying certain colleges, community colleges in particular, as "teaching" institutions, with the implication that scholarship is irrelevant to teaching excellence. My purpose here is to raise to critical importance the issue of the relationship between teaching and scholarship in the community college and to argue for the revival of scholarly activities at the community college. The arguments are made in the belief that scholarship, rightly understood, is an indispensable adjunct to excellent teaching.

An Important Relationship

The relationship of teaching to scholarship and research is confused because we have not clearly defined and differentiated the concepts of research and scholarship. A concept of scholarship different from the concept of basic research is appropriate to community colleges and is necessary if community colleges are to encourage faculty to engage in such activity.

Cowley defines research as "the effort to discover new facts or to recover lost or forgotten facts: It is the empirical element in the quest for understanding the nature of the universe and of man." This definition of basic research includes the very specialized and sometimes esoteric discovery of knowledge. This kind of research is not for community colleges and is best left to the universities.

Cowley's definition of scholarship, on the other hand, could be expanded to be very useful to understanding the breadth and depth of scholarly activity necessary for community college faculty. "Scholarship is the organization, criticism, and interpretation of facts and thoughts of facts; it is the rationalistic element in the pursuit of understanding." This concept of interpretive, rationalistic scholarship is necessary to understanding the results of basic research, to organizing facts and information for quality teaching, and to maintaining the currency in one's teaching field. Perhaps most importantly, it is necessary for maintaining enthusiasm for teaching and love for one's academic discipline or technical specialty. Cowley's concept of scholarship can be appropriately applied to each of the traditional academic disciplines and to each of the technical fields. The concept includes both rigorous library and laboratory work as well as practical work experience.

A Program to Encourage Faculty Scholarship

In the belief that faculty scholarship is essential to quality instruction in a comprehensive community college, Montgomery Community College recently developed a program to encourage faculty scholarship. The college states that scholarly effort is important and encourages faculty to engage in scholarship by providing some reassigned time to engage in scholarly activity. According to the *College Policies and Procedures Manual*, faculty are given support for the following:

1. To conduct or complete the scholarship and writing for a paper or publication.
2. To prepare or complete a work of scholarly synthesis or opinion.
3. To participate in a performing arts activity, such as directing a professional community play or conducting an orchestra.
4. To create or complete an artistic work, such as a painting or a musical composition.

Community College Leadership Program, The University of Texas at Austin, EDB 348, Austin, Texas 78712

5. To perform discipline-related work in a public or private setting as a nonpaid consultant or intern.
6. To hold a major office in a discipline-related local, state, or national professional organization.
7. To develop knowledge of state of the art developments in the technologies areas by participating in nonpaid work in a public or private setting.
8. To update teaching and professional competence through the reading of an extensive bibliography of works at the cutting edge of the discipline, as part of a preplanned program.

In academic year 1985-86, the first year of the program, 34 faculty members from 12 different departments will be engaging in scholarly activities. In the biology department, for example, there is a research project on computer analysis in nutrition, a development of a laboratory manual for human anatomy and physiology (submitted in outline form to a publisher), and research concerning spontaneously arisen mutant forms contained in Drosophila melanogaster. In Health and Physical Education, a faculty member is preparing a research paper on nutrition and physical fitness for the working woman. Chemistry projects include the development of a laboratory manual for Organic Chemistry, work at the National Bureau of Standards on the analysis of acid rain, and development of computer software on chemical nomenclature.

In the Art Department, a professor is investigating palette reconstruction useful to painting conservators of 18th century paintings, and another professor is investigating the use of water-base silkscreen and stencils. Yet another is developing slides for submission to the Society of North American Goldsmiths for consideration for the distinguished artist category. Another professor in the Visual Communications Technology department is preparing a show of cibachrome prints for gallery display. In Speech and Drama, a professor is developing a self-paced instructional module for students of Hispanic backgrounds.

Several English faculty are preparing annotated bibliographies, one on women's biography and another on integrating composition with traditional American literature courses. One professor is researching fiction written by American authors on India, and another is working on a chapter of a book on iconography in Shakespeare's *Cymbeline*. In Philosophy, a faculty member is completing work on a book on "movements of the mind." One Sociology professor is doing research in Mayan archaeology and another is serving as an appointee of Governor Hughes on the Task Force on Victim Services. It is hoped that faculty will both use this program to renew their interest in scholarship and to rekindle their enthusiasm for teaching. One faculty member who has strongly supported the need for scholarly activities believes the relationship is not necessary only to provide substance to one's teaching but also to maintain enthusiasm for one's profession.

Conclusion

In conclusion, to be truly good teaching colleges, community colleges must have faculty who are good teachers. Good teachers are those who are experts in pedagogy or *how* to teach, are experts in their discipline or technical field and therefore know *what* to teach. They must be current in their teaching field, and they must be enthusiastic about both their teaching and their discipline. The excellent community college must recognize the dimensions of and the importance of the scholar-teacher and provide opportunities for and encourage participation in scholarly activities, while continuing to emphasize excellence in teaching.

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INNOVATION ABSTRACTS VOL. IX NO. 3

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THE COMMUNITY/COLLEGE CONNECTION: HELPING STUDENTS WRITE FOR THE REAL WORLD

Research argues convincingly that language learning occurs most successfully and efficiently in real social contexts. In a college/community interactive project, our college tried to provide such a context for our students' learning—the real life context of our local business community.

Too many of our students' writing tasks displayed an unacceptable tolerance of errors and deficiencies in argument and content. Students were not inclined to develop convincing and useful content in their assignments. Their writing didn't sound right; it was often stiff and awkward—even pompous—as they tried to imitate the "voice" of a business community they knew nothing about, and as they simultaneously repressed and devalued their own voices in response to years of error-centered English teaching.

Like many career writing instructors, we had exhausted alternative teaching approaches. We knew the futility of haranguing our students about how effective writing enhances one's chances of career success and personal growth. We had also come to realize the serious limitations of emphasizing composing strategies. The case-study approach (e.g., the student is asked to role-play an accountant faced with a specified, problematic writing task—like a collection letter) was only another decontextualized "fiction." And we had long given up curricula that amounted to merely a list of writing genres—good-news letters, bad-news letters, sales letters, memo reports, and so on—that were unconnected to each other and to a real world.

Realizing the need for a context-specific learning environment, we moved the classroom into the community and initiated two community-based assignments: a formal report written for business clients and an article for publication. We introduced both during the first week of classes and assigned students to groups so that they would complete these writing tasks as "teams."

Before classes began, we invited members of the business community to participate as "real-life" clients for our students' formal report assignment. (The Chamber of Commerce was particularly helpful in identifying potential clients for us.) In their first meeting with these clients (to whom we had in effect contracted them), our teams of students negotiated suitable topics. Tasks ranged from gathering information for an industrial saw company on the nature of the lumber industry in the southeastern U.S. to helping the owner of a gym evaluate all available means of advertising. The reporting assignment automatically generated other communication tasks such as the information-gathering interview, confirmation letter and memo, and interim progress report. This assignment culminated with a wine and cheese party (a conventional occasion in the business community) where clients and students celebrated a job well done.

The second assignment invited the community-at-large to be "real-life" readers of our students' journal, *Community Focus*. We asked the students to develop article topics which had both major, global significance and immediate, local relevance. A variety of suitable subjects was suggested: e.g., barriers to inter-provincial trade, mega-market merchandising, rent controls, airline deregulation, de-institutionalization of the care of the handicapped, and the high cost of liability insurance.

The results have been encouraging—students have become engaged in these interactive, real-world situations; have developed a sense of themselves as members of the business community, have behaved responsibly about their commitments and deadlines, and have not needed us to remind them of the purpose of their writing tasks, the importance of drafts and revisions, and the necessity of writing in standard English. The classroom has developed into a busy, dynamic workplace.

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A DAILY DOSE OF REALITY

During the fall semester of 1985, Bakersfield College hosted a conference featuring Dr. Tom Peters, co-author of *In Search of Excellence* and *A Passion for Excellence.*

After Dr. Peters' presentation, the Kern district administrators met to discuss ways to implement some of the practices described in Peters' remarks. Our discussion group talked about implementing the idea currently in successful practice at Castle, Inc., a hospital supply company cited in *A Passion for Excellence.*

Three mornings a week each executive at Castle finds a 5x7 yellow sheet of paper on his/her desk titled "Daily Dose of Reality." Listed on that sheet is (1) the name and phone number of a customer who bought a new piece of equipment and (2) the name and phone number of the person who uses the equipment.

The objective is threefold:

1. to let their customers know they are important to them,
2. to uncover problems before they become major irritants,
3. to give management a daily reminder of where the real world is—with the customer and field representatives.

The following is our modification of this idea.

Once a month, District Data Processing provides Bakersfield College with a randomly selected list of ten (10) names of students, with phone numbers and class schedules. The Administrative Council has agreed to call each of these students and share the results with appropriate personnel on campus.

Bakersfield College adopted Castle's goals. They became:

1. to let the students know they are important to us,
2. to uncover problems before they become major irritants,
3. to give administrators a "daily" reminder of where the real world is—with our students and faculty.

Many administrative jobs do not provide many opportunities for student contact. The "Daily Dose of Reality" provides administrators with opportunities to increase their contact with students. As well, administrators have the opportunity to get information firsthand from students and pass it along to the appropriate faculty members, counselors and staff. Of the more than 300 students contacted thus far, 99% of the responses are about positive experiences at Bakersfield College. In some cases, the opportunity to speak directly to a student about a specific problem has hastened its solution—as administrators can and do directly intervene.

Most students are very surprised by the call, but appreciate the gesture. The "Daily Dose of Reality" has provided us with an effective staff development activity and student retention strategy in one!

Frank Gornick
Dean of Students

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INNOVATION ABSTRACTS VOL. IX NO. 4

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SCIENCE AND ART: A CROSS DISCIPLINE APPROACH

During 1985, anatomy, botany, and microbiology were redesigned to facilitate right-brain dominant learning processes. Most art majors had previously met with disappointment and/or failing grades prior to the cross discipline approach. This unique teaching style was initiated to promote artistic and scientific success for art students, but could be modified for any discipline.

Art assignments were substituted for traditional hour exams. Factual science knowledge was tested weekly, via short quizzes. The students attended lecture, which emphasized the cognitive information needed to complete their individual art assignments. All lecture material stressed both scientific and aesthetic values. Laboratory periods were a mixture of art and science. Some art assignments required "hands on" laboratory experience to master science techniques needed to complete art assignments. This abstract describes and summarizes three semesters of instructing art students in the "hard" sciences.

SCIENCE AND ART: Description of cross discipline approach

Anatomy (artistic emphasis)

This class stressed a conscious relationship between size, skeletal position and where on the human form the bones produced surface relief. Male and female models were utilized for surface structure demonstrations. The live model bone prominences were used for sight recognition of major skeletal bones during weekly quizzes. Each bone, or group of bones, was drawn by the students. The drawings facilitated recognition of bones for quiz identification and gave the students an appreciation for how the bones affect body form. Weekly drawing assignments were individualized. Each assignment included factual information related to how the bones affect body shape and muscle contours.

Assignment examples:

> NOTE: Scientific jargon was used for all assignments, requiring students to understand terms and concepts presented in lecture. Art students translated this jargon into drawings and paintings; i.e., science became art.

1. Use the human head as a measuring device and draw to scale. the outline of a human from right side, coronal plane view, lateral from midline.
2. Create a primitive-man conflict scene emphasizing the usage of long, short, flat, and irregular bones as weapons.

Botany (artistic emphasis)

Botany was approached from the morphological and anatomical aspects. Emphasis was placed on the internal anatomy and cellular detail of plants. The students used plant cells as abstract forms to generate realistic drawings of plant tissues, or botanical apparitions. The traditional laboratory was converted into a working laboratory for the art students. Both botany and art instructors were available to discuss how their respective disciplines would affect the assignment. The laboratory time was also used for instructor-student discussions concerning the method of presentation best suited for each assignment.

Assignment examples:

1. Generate a botany textbook cover. The theme can involve artistic license, along botanical lines, or actual botanical material.
2. Draw a housefly using only tracheids, collenchyma tissue, sclereids, parenchyma tissue, vessel elements, sieve-tube elements and sclerenchyma tissue as body parts.

Microbiology (artistic emphasis)

Microbiology proved to be the most difficult subject to teach. Both anatomy and botany are extremely visual sciences that artists readily grasp. In microbiology the students often could not visualize an abstract concept. However, developing communication channels and rapport turned this difficult "abstract" science into a subject matter that could be visualized and characterized. Most importantly, the art students felt *comfortable* with difficult subject matter. In fact, their art work helped the traditional students to better comprehend abstract concepts.

Assignment examples:

1. Characterize a bacterial plasma membrane with cytochrome system in situ.
2. Draw a microbiology scene depicting each of the following: (a) infection, (b) sudden death, (c) abortion, (d) diarrhea.

Conclusions

Initial results, aesthetic and cognitive, of a more holistic approach to science teaching were gratifying. We found that students attended class regularly, were interested in homework, learned new techniques, approached difficult subject matter with a desire to learn, and gained an appreciation for a discipline that most art students possibly would learn to dislike, or at best find only casually interesting. The realization, ART IS SCIENCE, SCIENCE IS ART, generated analytical thought processes within the parameters of science and art not usually associated with the art classroom. Students actually seized these new ideas and became art/science enthusiasts.

A majority (73%) of the art majors earned an A or B in all three classes. No students earned a D or F in any of the subject areas. In most cases (82%) the science grades improved the art majors' GPA when compared to semesters they were not enrolled in science.

The spin-offs from this type of teaching are numerous: art students find themselves doodling botanical thoughts; microbes creep into their designs; conversations about art assignments are studded with scientific terms. Self-discipline and adherence to detail in science art assignments increased exactness and crispness in other art class projects. As teachers, we sensed the beauty of science through the art students' imaginations: a word is translated into a vision; abstract concepts can be observed as well as explained.

Art students find themselves becoming friends with "science" students, asking them for advice about an "art" assignment. One student was accepted into an out-of-state degree art program based on his art-science portfolio. Another student wanted to know how many more hours were needed for a biology major, with thoughts of teaching art and science in high school.

We are convinced; students enjoy classes that mesh disciplines. Once over the initial fear, art students seem to accept scientific discipline as a part of the course requirements; yet they are free to use artistic discipline in their work. The key to success is building rapport, making individual assignments, giving students freedom to use their art knowledge to formulate ideas and help determine how a concept will be done artistically. We believe the essence of teaching is captured using these teaching methods. A comment often heard in these types of classes is "Mr. Wranosky, what's next?"

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INNOVATION ABSTRACTS VOL. IX NO. 5

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WHY DON'T I TEACH IN A "GOOD" SCHOOL

This is my 14th year of teaching in two community colleges. The first was in rural Virginia with about 1200 students. The present one is in Nevada, it has almost 9000 students and is still growing. Although very different in size and location, these schools have much in common with each other and all community colleges.

As I've talked with other community college faculty, it has become apparent that we share many things. We share enjoyments and frustrations and a strong belief in the value of what we do; but we often feel misunderstood. I'd like to describe why I've chosen this particular career, why it is the most exciting work I can imagine, and why I believe community colleges are the true vanguard of higher education.

I didn't get a Ph.D. in chemistry so that I could teach in a community college; I wasn't that far-sighted. I got my degree because doing chemistry was about the most fun I could have—at least in public. My first job was in industry, because I thought I might do interesting work and earn a reasonable amount of money. Both of these assumptions were true, but I rapidly decided industry wasn't for me, partly because of regulations denying us such things as sharp-pointed scissors "because we might hurt ourselves." In my present job, chemistry is still fun and my work is amazingly interesting, but I have trouble earning a "reasonable" amount of money. I spend 18 to 20 hours a week in the classroom, 5 to 6 hours with individual students, 20 to 30 hours making and grading tests, homework, labs and quizzes, additional time setting up labs and attending the never-ending committee meetings, and I sometimes wonder if we should be allowed sharp-pointed scissors.

The title of this paper came to me in 1971. I had resigned my industrial job, had decided I wanted to be in higher education, and realized that if I *really* wanted to teach, the place was in community colleges. One of the people I asked to write a letter of recommendation said, "Yes, you'll be a great teacher, but why don't you apply to a 'good' school?" Since that time I've been asked some version of that question at least once each semester. My colleagues report that they've been asked similar questions, and students often express the same feelings.

According to a recent ACS survey of two-year colleges, 39.6% of chemistry instructors in two-year colleges hold doctorates. In some quarters there has been a reluctance to hire these people. In 1971 the problem was described in *Community College Review* as the "Trojan Horse Phenomenon." More than 10 years later, the argument was still being made that Ph.D.s from traditional disciplines would become unhappy and frustrated in community colleges and try to bring about changes harmful to the two-year school. Questions such as "With your background, will you be happy here?" or "Are you just using this as a stepping-stone to another college or a university?" seem to reflect not only an effort to get excellent instructors but a feeling of being an inferior institution.

Reflecting upon my own choices and career in this context, there are several points I would like to make.

1. The community college and its students are unique.
2. Teaching in such a school has benefits that should be sought by many (including Ph.D.s) and acknowledged by all.
3. The outstanding faculty member in the community college has qualities that should be sought by *all* educational institutions.
4. Perhaps instead of "stepping up" from a community college to a university, a natural progression in a talented teacher's career might be the reverse.

Consider the first point: Why is a community college unique?

It accepts students without regard to academic rank in high school or test scores.

It adapts and adjusts its programs to community needs.

It is comprehensive, maintaining a wide range of programs to meet diverse community needs.

It provides a lifelong learning experience for all, from post high school age to the elderly.

A recent essay contrasting a university and a community college likened a university to a beautiful Ming vase and a community college to a well-designed kitchen utensil. The "typical" community college students are older, working, goal-oriented, and are upgrading or changing skills. They often lack the background necessary for college work as well as confidence in their ability to learn. In many cases they're the first of their family to go past high school. The "typical" community college student is about as atypical as you can get. These students are able to relate what they are studying to other experiences or jobs. They often interact with their teachers not only as students but as friends. When they see evidence that they can achieve at a high level, their subsequent achievement and self-confidence increase dramatically.

Regarding my second point, what are the benefits that should attract a talented teacher? The community college and its students offer an almost endless challenge. As I read recently, "Open almost any door . . . a door to an industry, a business, a school, a government agency, a home . . . and you will find a need for further education and training. It is at community colleges that the most advanced teaching strategies are implemented, not just investigated and compared." I wanted the challenge of conveying some of the usefulness, beauty, and a wonder of chemistry to students with widely different motivations and abilities. To do this has taken an appreciation of diverse and changing educational goals, use of a great deal of curricular variety and innovation, skill in guidance, tact, and patience.

My third point is that an outstanding faculty member in such a school has unique qualities. Consider some of these. Part of the joy I get every day comes not from coping with content, but how to get it across. "Too many college and university teachers confuse talking with teaching." In a community college chemistry classroom, you simply cannot do that. We must avoid the old definition of professor: "Professors are people who talk in other people's sleep."

Another question I'm often asked is about research. Do I do any? If not, do I miss it? How can I stay "current" without it?

My response is that we all must be scholars. This is as true in a community college as it is in any other educational institution. Good teachers make it a point to be current.

My fourth point gets to the core of why I enjoy teaching at a community college. To convey current knowledge to a well-prepared student is relatively easy, but to teach successfully the same concept to a student with (perhaps) limited background is a real joy. Such challenges make it possible to think of community colleges as elite schools that attract master teachers and scholars, and as places to strive for in one's career development.

To return to the title of this paper, the question really has two parts: First, why do I teach? I teach because I enjoy it. It's hard work, but there's sheer pleasure in teaching people things they didn't know or couldn't do before they came to my course. And I always learn something from each new class.

Do I teach in a "good" school? If you mean do we have high entrance requirements and accept only those students who are better prepared, who have more money and less pressure from family life and a job, who've already shown that they learn well, the answer is no. If you mean do we have a stimulating, creative environment where flexibility and responsiveness to innovations and the needs of the students are possible, a place where beginning students who *really* need and actively seek your help come to improve themselves, where interaction on an individual basis is possible, and where students who may lack background and confidence can, with good teaching, succeed sometimes beyond even *your* wildest dreams, a place where your best talents are really needed, the answer is definitely yes.

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INNOVATION ABSTRACTS VOL. IX NO. 6

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INCREASING WRITTEN OUTPUT

There is a tremendous mystique surrounding the process of writing, a mystique left over from those days in Mr. Hawthorne's high school English class where we found ourselves counting and recounting the number of words we'd managed to eke out of our not so fertile imaginations, hoping to have enough to satisfy the theme requirements. The process seemed so difficult then that most of us developed a real aversion to it and shrouded it in myths about the creative process.

Fortunately for us, research is now suggesting that those myths are not necessarily true. Dr. Robert Boice at SUNY-Albany has been studying the writing process in academics and reports that there is hope for most of us, after all (1982, 1983, 1984). He had great success making some simple suggestions to his fellow faculty who had been experiencing difficulty in meeting their writing deadlines. Although the procedures were aimed specifically at written output, a simultaneous increase in creative ideas was observed as well. We have combined his suggestions with some from the literature on enhancing creative thought to produce an expanded set of suggestions for those interested in increasing their written output.

1. **Keep an idea notebook.** Many people believe that creative ideas can't be forced to occur at will; they just come to us at the most inconvenient times. We have all had the experience of having a brilliant idea occur to us just before going to sleep or in the shower or on the drive to work, only to forget what it was when we sit down to write. The most obvious way to tap that spontaneous creativity is to provide a long-term storage medium other than our rather shaky and overloaded memory. The medium most often recommended is the idea notebook. Most busy people already carry some sort of calendar with them to keep track of appointments and obligations. It is a simple matter to add a section to that calendar which allows the recording of these random ideas in brief form for later work.

2. **Set aside a regular time and place to be creative.** Even though many of us believe you can't force creativity, in reality researchers report that many creative people do just that. Their results indicate that the creative output of these people is more a result of regular hard work and persistence than large bursts of inspiration. Many successful people also create a special environment in which to work, an environment which becomes associated with that work and eventually comes to elicit it. I can speak from personal experience on this one. I have now spent so much time sitting at a Macintosh writing with Mozart playing in the background that simply assuming that position begins the flow of ideas and makes my work a lot easier. There are many very valid psychological bases for this phenomenon, but underlying them all is the assumption that creative behavior is really no different from other behavior. And just as we can learn to drive a car automatically, we can learn to be productive writers and thinkers in the presence of certain cues.

As to the place requirements, the conditions don't have to be away from your regular office. All you need to do is make the environment slightly different from your regular interruptable work environment. Close the door. Use a special desk lamp. Play a particular type of background music. Sit at a different table. Any of these small changes could be enough to serve as the stimulus for writing or thinking. The only requirement is that those conditions be used only when you want to work, not for anything else.

The amount of time you spend is another myth to overcome in increasing output. Many people are defeated by the mistaken notion that they must have large blocks of time in order to get anything meaningful done. While that may be true initially, once the habit of regular writing or thinking is developed, it becomes easier to get a lot done in short blocks of time. And certainly, it's a lot easier to put aside 30 to 60 minutes than three to four hours. In fact, for many people experiencing writing blocks, the shorter time periods are better because they help overcome that awful feeling of having to sit for hours and be frustrated. You know it will be over in 30 minutes, and you can stand almost anything for 30 minutes.

3. **Set a regular page or idea goal.** One of the most successful of Boice's techniques was the establishment of goals for each writing period. Faculty participating in his studies were asked to write a minimum of three pages in each of five writing periods a week for a total of 15 pages a week. They kept

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graphs of the number of pages produced in each period. At the same time they logged all the creative ideas they had had since their last writing time and graphed that number as well. In fact, with some of his more blocked colleagues, he required that they stop writing once they had reached their goal, even if they had more ideas. Any additional ideas were jotted down and used to stimulate writing during the next period. Boice found that the charting of output had a very positive effect on most participants, giving them an immediate feeling of accomplishment as opposed to the delayed success we experience only at the completion of a long project.

4. **Use the buddy system.** Although Boice had a lot of success with charting progress, he was far more successful when some external contingencies were applied to monitor progress. He used several different systems at various times. For example, in one case, a group of faculty formed a small support group which met on a regular basis (sort of like Weight Watchers) to compare progress. In another case, Boice himself was the monitor and met with each participant for ten minutes once a week to review what they'd done.

5. **Overcome your writing blocks.** Even if you succeed in setting aside time and setting up a monitoring system to keep track of your output, you may still face occasional problems in getting started writing. If so, there are some additional suggestions gleaned from Boice's work and the work of others who specialize in writing, such as Peter Elbow, which may be of help.

One thing that often overwhelms us as we begin a writing project is the sheer size of the task. The thought of launching into a multi-chapter proposal or report can be intimidating. Therefore, for example, break a paper into steps such as an outline, a set of main points, a unit around each main point, a conclusion segment, and finally an introduction. Once all the segments are written, editing pulls them all together and comprises another unit of work.

Another suggestion to get the writing going is a procedure called "free writing." This is particularly helpful when you are staring at a blank page and can't decide how to begin. The procedure involves setting a given time period, like ten minutes, and simply writing down anything that comes into your mind, including "I can't think of anything." The objective is to not lift your pen from the paper, but to write continuously, allowing the free flow of ideas to stimulate you without the need for revision. Each idea generates more ideas and breaks the block of not knowing where to begin because you can begin anywhere. Once the specified period is over, you can go back and edit what you've written or use the ideas generated to create a more coherent piece.

A third suggestion to help blocked writing is to not write at all, but rather to talk into a tape recorder about what you would say if you could write. Then you produce a transcript of those thoughts and use that transcript to form the basis for a written piece. You might be able to do a similar thing by free associating to a live person who would jot down notes on what you said.

A final way to help you get started each time you begin working during your scheduled writing time is suggested by Boice's studies. He suggests that at the start of each session, you begin by rewriting the last page of the previous session's output. This helps to re-establish the mind set you were in when you stopped the time before.

In summary, the biggest block to our writing and creativity may be the myths with which we have surrounded them. It appears that with a little psychology, many of those blocks can be overcome and our output increased. This should be good news to all faculty members whose lament is "I never have time to write or think!"

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INNOVATION ABSTRACTS VOL. IX NO. 7

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LOW COST/HIGH IMPACT MARKETING

Prospecting

A program without jobs for its graduates will ultimately have no jobs for its instructors. Even in a Just in Case college, where it may take years for the message to seep through, programs which are training students for non-existent jobs cannot be justified. If we lived in a world with unlimited resources, perhaps anything could be justified, but we do not. Indeed, our world, specifically including our colleges and institutes, has no other future than one with less resources. Thus, programs which can justify themselves in terms of real demand, like the institutions which house them, have the best chance to survive.

A program head looking for ideas to promote her program may feel like a prospector searching for gold: she knows there are some ideas out there; she just has to find them. If she is a networking sort, she calls her colleagues in other colleges but probably finds them looking too. If she knows a useful troublemaker, he may generate a few ideas, some fanciful and perhaps some practical. If she has a scholarly bent, she may look into the literature. She will find a lot on marketing, but almost all of it is developed in the context of the private sector. She looks a little further and finds some articles and books on educational marketing. But hopes for gold disappear when she discovers that the work on educational marketing, virtually all American, is based on finding students rather than jobs.

In any case, marketing probably depends more on attitude than technique. If you really believe—as distinguished from your public rhetoric—that your program is designed to serve the needs of employers, and if you can understand what they want, you are most of the way. On the other hand, if you think that you know best, and employers are only to be placated on formal occasions like advisory committee meetings, technique will be of no avail. No matter how skillful the promotion, it will fail if it's not backed up with a program which meets the needs of employers.

Mapping the Territory

A strategist would probably consider how the market can be viewed—as aggregated, segmented, or disaggregated. Or, in non-technical terms, dealing with all employers the same way, breaking employers into groups for marketing purposes, and approaching each employer as a unique entity.

This kind of approach is probably used by a geologist, but a prospector prefers more tangible techniques, particularly those which can be implemented on a tight budget.

Of the four techniques outlined below, the first and second are most suitable for a collaborative effort, preferably the whole institution. The third and fourth can be implemented by a program on its own.

The Dig

a. TIP SHEET

The tip sheet is a regular one-pager of story ideas with the names of college staff to call for more information. The TIP SHEET is distributed to each newspaper, magazine, radio, and television station in the region. The TIP SHEET is based on current and, wherever possible, upcoming events. For example, if a major industry layoff is expected, one of the college administrators may have a comment on retraining. If a major report is due on staffing problems in jails and penitentiaries, the head of the law enforcement program could be named as a source.

The TIP SHEET is relatively easy to put together and inexpensive to do. However, the payoff in publicity would be significant, because the TIP SHEET would be so convenient for story editors.

b. THE EMPLOYER BLITZ WEEK

This is a simple but powerful mechanism to revitalize the image of not just a program but the entire institution. The idea is to obtain the name and address of every single employer in the city or region and, during BLITZ WEEK, have a staff member visit every one of them. Staff could provide basic information on the college and its programs, obtain feedback on the image of the institution, and ensure that there is follow-up on any specific questions from the employer. More important than

anything, however, is the symbolic message that we care enough to come around to the employer's turf and see how we are doing.

In large cities with two or more colleges, BLITZ WEEK may have to be a coordinated effort. However, this could increase the impact.

c. CALLING AN EMPLOYER

This is even simpler than Employer Blitz Week. All known employers for a specific program are listed and then divided up among instructors. Each instructor then is obligated to call a key person at that company at least once every two weeks. This would likely mean that no instructor has to make more than a couple of calls every day on the average. Sometimes the instructor will visit the person at the company site. In any case, even a small program with perhaps five instructors would be contacting 100 employers every two weeks with an average of two calls per day per instructor. Debriefing sessions could be held every couple of weeks, and the program head could follow up on any significant threat or opportunity.

d. WINNERS

Most people who become successful today are university graduates. Virtually everyone who gets anywhere in community and technical colleges are university graduates. But even we—the last who should forget—do not always remember that some of our past graduates have gone on to great success. Some have risen in companies, others have started companies, and still others have acquired a taste for learning and have become prominent researchers and scholars. And do we trumpet their success? We could. Names and pictures and accomplishments of our WINNERS could be widely displayed in our communities and in various media.

Strike It Rich

Colleges and their programs do have a choice on what marketing mechanisms to use, but they do not have a choice on whether to market or not. Monopolies have a captive market and usually learn that they do not have to be responsive if customers have no other choice. But community and technical colleges do not have a monopoly, even if they act like they do. Competition is increasing and coming from every direction. Programs which do not market their graduates will wither away, and institutions with too many such programs will fail.

The role of marketing in Just in Case institutions varies. In the most traditional college, there is no marketing at all or, if there is, it is in student recruitment. Most of these traditional colleges have inched forward, putting only their toes in the water, and proudly announced that they have an industry liaison coordinator. This is clearly a move forward; but the question is, from a Just-In-Time perspective at least, what are the other 100 or 500 staff members doing? What can one do to open up doors if the other 500 are still in the coffee room?

Marketing is integral to the Just-In-Time College. Indeed, every staff member at a JIT institution has marketing as part of his role. This is reinforced by gainsharing, the process whereby everyone's income is partly a function of the institution's success. Marketing would be so integral that it would not be discussed in terms of *whether* but only in terms of how it can be improved.

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See *Innovation Abstracts*, Vol. VIII, No. 7, for a full discussion of the Just In Case and Just-In-Time concepts.

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INNOVATION ABSTRACTS VOL. IX NO. 8

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THE PRACTICALITY OF THE LIBERAL ARTS MAJOR

Current trends indicate that by the year 2000 the average person will change careers at least twice during a lifetime. How does the entering college student prepare for career mobility which has never before been necessary? Our fathers decided what they wanted to do in life, which was very often what their fathers had done—went to college or apprenticed themselves, and pursued the same career until retirement. Our mothers assumed one of the nurturing roles in society, if they assumed a role outside of the home at all. Things have certainly changed. No longer is life so simple.

Adaptability and lifelong learning are now the cornerstones of success. What direction does a person take to prepare for a lifetime of change? The one degree which provides training which never becomes obsolete is the liberal arts degree; it teaches you how to think. It also teaches you how to read, write and speak intelligently, get along with others, and conceptualize problems. For the first time in several decades, the liberal arts degree is coming to the forefront of the employment field.

Growing ranks of corporate executives are lamenting that college students are specializing too much and too early. What corporate America really needs, according to chief executive officers of major corporations, is students soundly grounded in the liberal arts—English, especially—who then can pick up more specific business or technical skills on the job. Few students, however, seem to be listening to this message. Today's best selling courses offer evidence that students want to take courses that provide direct job related skills rather than the most basic survival skills in the workplace: communication and thinking skills. They want courses they can parlay into jobs—and high paying ones at that. Certainly, we can understand this mentality when we consider trends indicating that this generation will be the first who will not be able to do better economically than their parents. They don't want to leave anything to chance. Historically, the liberal arts degree was good insurance for a poverty level existence. Students are looking to history to provide some answers it simply cannot give. They would do well to examine the present.

One of the big problems in the liberal arts community is that we do not market what we have to offer. Students very often fail to see the practicality of studying Shakespeare as preparation for a career in the business community. Perhaps some of us have locked ourselves in the ivory tower a little too long extolling the virtues of a liberal education as preparation for citizenship and life only to the neglect of it as preparation for career or careers. Education for education's sake is noble but impractical to today's college student who is facing a competitive and rapidly changing job market. They want and deserve to know how their courses will help them get a job. We as educators owe them some answers; we must be accountable not only for learning but also for providing information regarding the transferability of classroom skills into the workplace.

In an attempt to provide answers, we conducted a research project in the Dallas metroplex last year, assuming the role of the liberal arts graduate seeking employment in the fields of government, banking, business, and industry. Using informational interviewing as our method of job hunting and obtaining data, we conducted twenty-five interviews with a diversity of executive officers, ranging from personnel directors to the chairman of the board of an exclusive department store and the state governor. We wished to validate, through practical and current research, that not only does the liberal arts degree provide the best preparation for a lifetime of change, but it also provides a plethora of employment opportunities. We do not claim our research to be all encompassing, but we do feel its practicality was rewarding. We gathered data as to how the liberal arts major should present himself on paper and in person, where her best chances for employment are, and what he can do to augment the liberal arts degree. We were able to draw several conclusions as to how the liberal arts community could better prepare students for professional mobility.

The liberal arts degree is marketable.

Ninety percent of those interviewed responded they would hire a liberal arts major for an entry level position which could lead to the executive suite if the position itself were not executive level. The chairman of the board of a major department store in Dallas responded to the question, "For what position would you

hire a liberal arts graduate?" with a direct, "Any position in the company." When asked if a buyer wouldn't need to have special skills, he replied, "Taste is acquired or learned, and the liberal arts major could certainly learn this skill on the job." This interview is typical of the responses.

Skills acquired with a liberal arts background are most desired by employers.

We were not at all surprised to learn that the skills cited as the most desirable in an employee are those skills acquired from a liberal arts background. The cited skills are listed below in order of importance.

1. Oral communication
2. Written communication
3. Interpersonal
4. Analytical thinking
5. Critical thinking
6. Leadership

Although these skills are not solely acquired through the mastery of an academic discipline, the discipline serves as a vehicle for developing or refining these skills.

Liberal arts majors can enhance their credentials.

Adaptability and lifelong learning are the cornerstones of success in today's complex and rapidly changing society. No longer can the person who is steeped in one academic discipline, but knows nothing about anything else, meet today's demands. Based on the data we accumulated, our recommendations for the liberal arts major are the following:

1. A basic knowledge of accounting
2. Computer literacy
3. Second major in a business field
4. Multiple minors
5. Advanced degree in another field

The key here is adaptability and diversity. Contrary to what most people believe, the higher a skill level an individual can claim, the more marketable he is. About those individuals who complain that they are "overeducated" we can only assume that they are marketing themselves on the wrong level. "Overeducation" is a term whose time will not come in the foreseeable future. The problem many individuals will face is a narrowness of education rather than "over-education."

Unlike Aristotle who is believed to have known everything there was to know at the time he lived, it is impossible for us to deal with the voluminous amounts of information which are produced daily. The lifelong learning which we have alluded to will not always be acquired through the traditional sixteen-week college course. We in the community college need to provide a smorgasbord of opportunities for individuals who wish to increase their mobility and options.

The time has come to rethink what education really is and how it relates to the functions of society. Perhaps what a liberal education does for an individual, which is more important than anything else, is to prepare him for more learning. The liberal arts background equips one with thinking skills; and those, coupled with the desire to learn, are the best preparation for career and life that any of us can possess.

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INNOVATION ABSTRACTS VOL. IX NO. 9

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LEARNING BIOLOGY THROUGH WRITING

Students need more practice in writing and critical thinking. Carol Booth Olson, Director of the Thinking/Writing Program at the University of California at Irvine, says that "while students have little difficulty forming opinions and making judgments, an alarming number of students lack the ability to explain and defend these opinions and judgments in writing. Research suggests that they are simply not given enough practice in undertaking critical thinking and writing tasks."

With these concerns in mind, we sought to change the instruction in our beginning biology courses. Our students were to be assigned a number of short essays that would require them to understand the material in a reading assignment and respond to a question in which they must analyze some part of that assignment. In addition, the essays were designed to (1) give students practice in writing, (2) train them to answer essay questions, and (3) show them that writing is important in courses other than English. Larry Kirkpatrick and Adel S. Pittenbrigh's, "A Writing Teacher in a Physics Classroom," (1984) stimulated the development of a new version of the *lecture quiz.*

Previously, general education biology students were given a 15-minute quiz every other week, and biology majors were given a quiz each week. Now the biology majors have the *traditional quiz alternated with a one- to two-page essay* based on a question given them four days prior to the due date, and the general education students are given *one or two essay questions to be completed prior to the date of the quiz.* On the day of each quiz, the students face two possibilities: either their essays are collected and graded and no in-class quiz is given; or a quiz is given and the essays are collected, but not graded. Several quiz points are given to any student completing the essay. This encourages students to write the essays *and* to study the rest of the material. (Not only do the "take home" essays free more time for class lecture and discussion, but they provide some very entertaining reading.)

Students receive the format for answering the questions with the first assignment. They are directed to write their answers as though they were explaining to a fellow student who had not understood the assigned reading. The answer is to begin with a key sentence that makes a broad statement about the answer that is to be more fully explained in the *body* that follows. The body is to expand upon and clarify the key answer and include specific examples from the lectures and/or from their reading where appropriate. As the semester progresses, the students are required to include more analysis and evaluation in their responses. The questions are designed to force the students to consider how different parts of a reading assignment are connected or how material can be applied to a new situation (e.g., designing a new drug). The more conscientious students often seek other sources of information, such as library references or their local pharmacist. (Sample questions for the two classes are listed below.)

Several acceptable answers for each essay are posted to demonstrate to students that there is not just one way of answering each question and to allow them to compare their work with others'. A grammatically poor composition receives less credit than does a well-written one, but the grading emphasis is on the coherence and logic of the arguments presented. Positive comments to those well-written parts of the essay are instrumental in building students' confidence in their ability to write successfully.

Note: (1) Requiring these essays does not increase the amount of time the instructor spends grading. Instead of a quiz of five or six short answers, there is normally a single page from each student. (2) Given the nature of the essay questions, there is a greater diversity among the answers. It is much more enjoyable and entertaining to read these essays than to correct a more traditional quiz. [To those instructors who are content with machine-graded exams and quizzes, it should be said that instituting this type of writing assignment will increase the time commitment to grading. However, writing is such an integral part of learning that it is difficult to imagine a respectable transfer course that does not include some writing assignments and/or essay exams.]

The essay assignments serve the general education students and the biology majors in different ways. The general education students' performance on essay exam questions has improved. It was first apparent

that the number of questions left blank or answers consisting of a few disconnected sentence fragments was reduced significantly; now the answers are more organized and easier to read. Performance on questions that require more elaborate answers (involving more synthesis and analysis) has distinctly improved. While it is more difficult to see a significant improvement in the writing of the biology majors (most had above average writing skills when they entered the class), their essays generate more class discussion, give them experience in evaluating problems and formulating cogent arguments, and give them writing practice.

Just as we cheer our children and encourage them to practice while they are learning a new skill, students at all levels need encouragement and practice if they are to develop superior writing and thinking skills. Writing is a way of actively engaging the students with the subject. It forces them to more carefully classify the material and consider its various ramifications. The thorough analysis of a problem is best completed when the results are expressed in a written form. All of this requires practice.

SAMPLE ESSAY QUESTIONS

General Education Biology

1. Use examples from the voyage of the *Beagle* to explain how Charles Darwin used inductive reasoning to support his concept of natural selection.
2. During the breeding season, male antelope exhibit a very stereotyped fighting behavior. Through this fighting they establish dominance among themselves and breeding rights. Use the activities of the nervous system and the current model of instinctive behavior to explain how such fighting begins.
3. Your firm Zooeapon (Zoological Weapons) Inc. has been hired to develop a drug for use on the U.S. Army's ultrasecret strike force, the Silver Squirrels. These are a special breed of attack squirrel, trained to scurry into unmanned enemy tanks and quickly chew through the power and communication cables. The drug must stimulate the squirrels into a fighting (chewing) frenzy. Describe where within the nervous system this drug will act and how it will change the activities of the synapses at these sites. The drug will have to act at more than one site, and you must consider the autonomic nervous system as well as the brain.
4. You have been hired by the government of Peru to develop a domestication and breeding program for gulls as a new food source for the Peruvian Indians. Evaluate the feasibility of such a program based on the animal's behavior, feeding habits and reproductive strategy.

Biology Majors

1. Evaluate the following statement. Organic evolution is the single most important unifying concept in biology today, yet it is only a scientific theory, not a law.
2. There are rumors that the U.S. Navy has contracted with Zooeapon (Zoological Weapons) Inc. to breed giant attack planaria for use against enemy ships. This camouflaged flatworm would sink these ships either by wrapping itself around the ship or by sucking a hole in its hull. Evaluate the feasibility of such a weapon based on size, waste removal, and so on.
3. Vertebrates have evolved an acquired immune response that provides specific reaction to a particular infection. Explain the nature of this response, and describe one hypothesis as to how an individual can provide responses to so many different kinds of molecules.

John Greening
Biology Department

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Suanne D. Roueche, Editor
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THE INSTRUCTIONAL SKILLS WORKSHOP: A MECHANISM FOR INSTRUCTIONAL AND ORGANIZATIONAL RENEWAL

The Instructional Skills Workshop (ISW) is an intensive four-day workshop conducted by community college instructors for community college instructors. Normally conducted during four consecutive six-hour days, each workshop can accommodate from four to eight participants and is usually co-facilitated by two previously trained college instructors.

Day 1 of the workshop has two goals: One—to start developing a trusting, helping atmosphere through introductions, a get acquainted exercise and modelling of the giving and receiving of feedback; Two—to lead the participants through the planning of a ten-minute mini-lesson that they may choose to give on Day 2.

On Days 2, 3 and 4, the instructors teach one another. On each of these days, each participant conducts a ten-minute mini-lesson and acts as a learner while the other participants give their mini-lessons. The mini-lessons are videotaped, either by one of the workshop facilitators or by one of the participants. The instructor receives immediate feedback for 20 minutes following her/his mini-lesson. The first seven minutes of the 20-minute feedback segment is for reflective writing on guided feedback forms. During the next 13 minutes, the learners share their experiences in the mini-lesson with the instructor. The feedback session focuses on three questions:

1. What did the instructor do to help you learn?
2. What did the instructor do, if anything, to hinder your learning?
3. What suggestions do you have for more effective instruction?

THE MINI-LESSON CYCLE

Set-up for Mini-Lesson	10 minutes
Mini-Lesson	10 minutes
Written Feedback	7 minutes
Feedback Discussion	13 minutes
TOTAL	40 MINUTES

The Mini-Lesson

Each participant prepares and delivers three ten-minute mini-lessons during the workshop. Mini-lessons should deal with topics that will provide new learning for the mini-lesson learners and be a complete instructional segment. The instructors should not ask their learners to play a role (i.e., imagine that you are in the third month of a class dealing with quantum mechanics).

The mini-lessons are constructed around five lesson basics:

1. The *bridge in*—explains the value of the lesson to the learner: what's in it for him/her?
2. The *objective*—what must the learner do? under what conditions? how well?
3. The *pre-test*—a test determines if the learner can already accomplish the objective.
4. *Participatory learning*—the learner learns as actively as possible.
5. The *post-test*—the final test determines if the learner has indeed learned.

It is a real challenge to fit the five lesson basics within the ten minutes allotted for instruction. The onus is on the instructor to critically edit the lesson plan. It is not uncommon for instructors to labour for three hours in the preparation of a ten-minute mini-lesson—while those same instructors can prepare a 50-minute class in about an hour!

Why limit the mini-lesson to ten minutes? After all, classes are normally at least 50 minutes. The ten-minute time limit forces strict editing and concise planning. Also, there is more than sufficient data

generated during ten minutes of instruction to provide for a few reinforcing pieces of feedback and a similar amount of growth producing feedback. If the lesson was longer, the feedback could not focus as well on a few teaching strengths and areas for growth. (It is not necessary to completely overhaul the instructor after a mini-lesson or during a workshop. The aim is to identify a few areas for improvement and to give the instructor the confidence to work toward that improvement.)

Instructional Skills

Workshop participants are encouraged to experiment with unfamiliar techniques during the workshop. The learning is experience-based. For example, if an instructor has never used buzz groups, he/she is encouraged to incorporate the technique into a mini-lesson. The instructor will receive immediate feedback on the effectiveness of the technique and concrete suggestions for improvement.

The essence of a good feedback session is summarized in the workshop handout material:

> The feedback session is not an analysis of or discussion about a lesson! Rather, it is the process of helping a teacher in his or her own professional growth. The content of the process is specific, behavioral feedback based on our own personal experience with the work that the teacher has just done. The dynamic of the process is our own sense of caring for the teacher as a person.

Workshop Facilitators

The Instructional Skills Workshops are conducted by regular faculty members who have been trained to be workshop facilitators. Facilitator Training Workshops (FTWs) encompass the regular ISWs and add an additional layer of feedback during each mini-lesson cycle. The added 20 minutes is used to provide feedback to the facilitator-in-training. An additional half day, Day 5, is also incorporated into the FTW to cover workshop implementation issues. Several settled-in faculty members have found these adventures in adult, peer group learning to be rewarding and revitalizing. Facilitating Instructional Skills Workshops for their peers provides an added avenue for personal growth and fulfillment.

After the Workshop

After the workshop, the tremendous sense of team that developed among the participants during the workshop continues. It is truly a risky business exposing your teaching skills to fellow teachers. It is through the risking of relationships by trying new techniques and sharing feedback that closeness develops, so in this sense the ISW is a beginning. Throughout the teaching year, workshop participants visit each others' classes, often equipped with a video camera, and then meet afterwards to debrief each other on their experiences. Through this collegial interaction, interdepartment rapport within the college is established.

Scheduling Workshops

ISWs are normally scheduled during the time allocated for professional development in the full-time faculty member's contract. When four full consecutive days are not available, alternative workshop formats are used. An ISW requires 24 hours; any combination of hours and days yielding this time is feasible. The following formats have been used:

1. two consecutive full-day Friday-Saturday blocks;
2. six weekly meetings of four hours; e.g., 9:00 a.m. to 1:00 p.m. on Tuesdays, or 3:30 p.m. to 7:30 p.m. on Thursdays.

The Instructional Skills Program

Over 2,500 faculty members have participated in the Instructional Skills Program. About 250 faculty have been trained to facilitate ISWs, and another 50 have been trained to train facilitators. Through their participation in the program, experienced instructors have renewed their interest in teaching, first-time instructors have acquired classroom survival skills, and colleges have been able to address the changing needs of their teachers and students.

Earl G. Bloor
Planning & Research Officer

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INNOVATION ABSTRACTS VOL. IX NO. 11

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CEF TO A GOOD "START"

Retention—the watchword of the eighties! How to keep the students we have is a major concern of colleges and universities these days. We know that three of ten students who begin college never finish and that the greatest number of those who drop out do so during the first year. Faced with these kinds of statistics, combined with a shrinking population base from which to attract students, we've all become increasingly concerned with retention.

Jefferson Community College has been involved with an extensive retention effort since 1978, when our first major enrollment drop occurred. Our successes in that area have been many and varied; but like everyone else, we continue to look for better ways to serve our students.

We discovered that during the calendar year of 1985 at least *2500* students who applied to the college did not come to register. While this represents about 30% of our application total (just at the national average), it is nevertheless an appalling figure. It seemed that these applicants represented a perfect group for some extra effort. After all, they had already expressed interest in JCC by applying.

We turned to an investigation of our own admissions procedure and discovered that it was not to our liking. It did not lead toward closure in the admission/registration process. After the student's application was filed, she/he received some information from the admissions office and then a letter from an academic program—if the applicant's major was housed within one of the programs which routinely contacted their potential students.

We have been admonished again and again by experts in developmental studies and by authors in the advising literature for failing to establish human contact with our students. Our guilt was obvious! We had a need to correct this behavior, and out of this need came our newest program, START (Success through Attrition/Retention Techniques).

The plan for START is very simple. We make a personal contact with *every* student who applies—either in person, by phone, or by mail. If the student applies in person, he/she sees a START advisor immediately. If the request comes by telephone, the student is connected with a START advisor. If the application is mailed to the college, the START advisors contact the applicant by phone. If, after several tries, we are unable to contact the applicants, we send them letters asking them to contact us.

What do the START advisors do? The most important thing they do is to give our prospective students a name and a face which are representative of Jefferson Community College. Then no longer are we a logo or an ad; we have become human beings. The START advisor, in addition to welcoming the applicants to JCC, supplies necessary admission/registration information, including an orientation time, general financial aid information, ACT or CPP test and schedule information, the student guide, parking options, choice of an academic major, and so on. Students who indicate a choice of major are then referred to the appropriate office to make an appointment for specific academic advisement.

Does it work? The START program began in August. During the first two weeks of operation, the START advisors made over 1100 contacts with prospective students, either in person or by phone. As a result, our new student enrollment rose by 4.8% this fall! In addition, START advisors contacted prospective students who applied for the fall semester but did not register. We found many reasons for their change in plans, but the exciting news was that 51% of those contacted were so impressed by our taking the trouble to follow up that they indicated they will be registering this spring. Personal contact is the key!

Nancy L. Hoover
Academic Advising Services

For further information, contact the author at Jefferson Community College, 109 East Broadway, Louisville, KY 40202.

PHONING FOR STUDENT RETENTION

Using the Central Oregon Community College "Follow-up Desk" model, Palomar College developed a pilot project directed towards greater student retention. The focus of the program was to improve student attendance, which is basic to academic success at a two-year college. Faced with data showing large numbers of students dropping out sometime within their first year of college, the project attempted to make student retention a greater focus.

To counter student non-attendance, a "Phoning for Student Retention" (PSR) desk was set up at the college. The basic idea behind this phone calling program, carried out by both full- and part-time faculty, was to contact students (not parents, spouse, or roommates) who miss class and encourage them to return.

The Program

Faculty were briefed on the program's function and given instructions via periodical memos. Interested faculty were involved in one of two ways: (1) called a PSR assistant every day or weekly and reported the names of their students who had missed two consecutive classes, or one where appropriate (a PSR-assigned faculty member working the project desk calls the student and tries to encourage him or her to return to class); or (2) called their own students who had been absent and reported the details of their calls on a standardized form, allowing data to be collected for statistical purposes.

The PSR phone callers worked from a set script; and calls were made between 7:00 to 8:15 a.m. and 5:00 to 6:30 p.m., Monday through Friday. The callers spoke directly with the students and asked if the school could assist them in returning and remaining in class. If, after a morning and evening phone call, a student was not reached, a questionnaire was mailed.

The program began in mid-February, and the greatest phoning activity was during the third, fourth, and fifth weeks of school. Faculty were frequently advised of the program's progress, and their response to the activity was one of positive enthusiasm.

Program Results

Close to four hundred students were contacted during the twelve-week period that the project was active. Over thirty-five percent of the students returned to class. NOTE: The project is uncertain if the exact number returning was due to the phone call or the mailed questionnaire.

The most frequent reason for not attending class was a conflict with work (33%), followed by illness or personal reasons. Only four students indicated dissatisfaction with instruction. Of the students (surveyed by questionnaire) who were asked why they dropped, 75% stated that they planned to return to Palomar next semester or in the near future.

Program Cost

Roughly $3500 was spent on this project. Nearly 75% of this amount was spent on hourly compensation for the twelve full- and part-time faculty members calling for set periods of time. About $200 was spent on printing and postage. Note: (1) Many hours were donated by the Admissions Office in identifying phone numbers from the main frame computer for the program's use. (2) A counselor assistant from Counseling Services staffed a call-in desk, where faculty members could report the names of students who should be contacted. (3) The Student Service classified help was donated to the project.

Conclusions

The PSR program served students and helped faculty identify the reasons for student absences. This awareness helped teaching and counseling faculty work successfully together toward a common goal. The success of the program is due to faculty involvement and ownership: the idea originated in the Office of the Vice President of Instruction, and the Faculty Council took leadership in its implementation.

This was a non-punitive program that allowed faculty to personally contact students and to express concern. Students reacted favorably to an instructor calling and saying "We Care!"

Stan A. Levy
Reading Program

Brenda Montiel
Music Department

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THE PARTNERSHIP EXAM

Last spring semester as I was readying my thoughts for the mid-term exam in a remedial Algebra course I was teaching, I considered how I would score and evaluate over 50 papers AND prepare for an exam in a Data Structures class I was taking. As is my custom, I gave the students a list of sample problems as review to work during class so that I could field their questions. I suggested that they work in pairs for discussion and learning.

As I observed the great eagerness with which they took on this task, it occurred to me—what a great way to GIVE the test! With 50 students, cheating is extremely difficult to control. If they were in Noah-Numbers, there wouldn't be a reason or an opportunity to cheat. (And all students seem to know by instinct the voice volume level appropriate for such an endeavor.) When I remarked to them in closing the class that this would, indeed, be the format procedure for the exam, their eyes widened in disbelief—like, "Is she coming off the wall or what?" I assured them that I was quite serious about my plan, explained that it would be an experiment, and added that "solo flights" would be allowed. The pairs would turn in one organized worksheet for the same grade for each partner. This meant that partners had to come to an agreement about the accuracy of the solution.

Students developed their own methods of sorting themselves. Those who seldom attended or prepared for class were left to fend for themselves. The workers chose not to share their expertise with the drones. The most overwhelming aspect was the atmosphere of work in action which, in a school situation, may mean that learning is taking place.

As the semester progressed, each pair found whether or not that pairing would work out. If it was not a good match, partners switched or went it alone. Some planned study strategies together. All had their own style, such as both working the problems, then comparing or deciding who was best at what type. But however it was managed, the students were the decision makers, and few, if any, complained about grading or problem difficulty level (even though it was generally agreed upon by the students that the problems selected were more diffcult than on a "traditional" test in my class).

That was last spring. I continued the experiment for the rest of that semester. I tried it again in summer school. I am trying it again this fall. The only test where the procedure has not been allowed is for the divisional competency test given at the end of the course. That will be an area in which I can measure the degree of success of this testing procedure. It will be awhile before my data is ready for revelation, but the response, the sharing, the comradeship demonstrated by such statements as "How did WE do?" have been my encouragement to continue.

To a veteran teacher who has heard years of disparaging remarks about mathematics, it is, indeed, heartening to see students begin a test with genuine hope, to work at that task diligently and cooperatively and, yes, to show evidence of some enjoyment. In my opinion, the thought of cooperative learning holds many implications for individual growth and a sense of community that seems to be disappearing in today's world.

In the words of an ancient sage, "Come, let us reason together."

Barbara Lester
Mathematics/Data Processing

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Editor's Note: This strategy is the subject of another *Innovation Abstracts* issue ("Tandem Testing," Vol. VIII, No. 29). The authors of these articles are not acquainted but agree that this is a terrific idea and that "its time has come."

THEATER FOR THE MIND: A "HIGH TECH" CLASSROOM

How far should we go in using high technology in the classroom? Does the "Sesame Street" generation demand that teaching methods be dazzling and fast-paced? Electronic aids make a whole new system of instruction possible. But is it worth it?

Any instructors who have fussed with a broken film loop, a burned out overhead lamp, or a cassette player that chews up tape are not very anxious to put their whole delivery system into the hands of machines. Can we depend on new technology?

And how about cost and depreciation? The best equipment and newest technology is over-priced; and as soon as we can afford it, the system is obsolete.

But wait! We could have said the same things about supersonic transportation, the venture to the moon, color TV, and defense missiles. If these improvements were worthwhile enough for transportation, homes, and national defense, why not for education? Why not do the best our technology makes possible?

Envision a "high-tech" classroom—students file into comfortable, adjustable, padded seats. Note taking is not necessary, since every important word is recorded by voice command and a hard copy is available after class. Therefore, individual desks are not necessary, but small folding desktops would accommodate those who wish to make individually-inspired notes that the discussions might generate. Overhead spotlighting on students' desks would allow attention to be focused in front on the instructor but still provide enough light for note taking.

The lecture/discussion involves a master teacher who constantly interacts with every student in the classroom by way of a touch-sensitive response system. This could be a full keyboard at each student station or a multiple choice pad of at least five buttons.

The instructor has a variety of teaching devices at his/her disposal. On the wall there could be a large flat-screen monitor with high resolution that displays color graphics and text, fully readable by every student in the classroom. A permanent computer helps the instructor coordinate a variety of experiences.

During the instructor's lecture times, main points can be punctuated by an o short video sequences, color graphics, or still pictures on the screen. The instructor may pause for " " response by students on their response pads. The results could be simultaneously flashed on t. ..een and recorded by the computer. Student responses could be used for evaluation purposes, for feedback to the instructor, or for discussion. The immediate result and its impact on learning are self-evident.

Examinations take on a whole new dimension—immediate feedback. Questions can be stated on the screen, presented with graphics, punctuated with sound, described by picture, and then answered by the student. After a reasonable length of time, the instructor and the students know the results and continue to the next question.

Besides cost, the greatest objection to such an investment would probably be the aforementioned frustration that faculty have had with AV equipment in the past. The difference is that today we finally have dependable, practically maintenance-free, electronic devices that can be integrated into a complete system. Before now, there has always been a mechanical device that often broke down or a slow part that cut down the response time.

Another objection might be the training necessary for faculty. Something this exciting will make that problem non-existent. Many faculty are already scrambling to integrate the computer into the classroom. Grants are being given and workshops offered for this purpose. If such a classroom existed on the average campus, the biggest problem would be "Who gets to use it?"

I am convinced that if we think of the classroom of the future as a "theater for the mind," the cost, the development, and necessary problems will all be worth it. The combination of technology and the human expert in front of the class can stimulate the mind toward heights that the 21st century will require.

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INNOVATION ABSTRACTS VOL. IX NO. 13

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TEACHING CRITICAL READING AS A WAY OF TEACHING CRITICAL THINKING

Teaching critical reading of current literature in a discipline is a tangible way to help students develop critical thinking skills while introducing them to the salient issues of that discipline, its intellectual conventions, and its norms for determining truth. And it need not take up much class time!

Writing to Read

This past year, with the help of one of Oakton's writing instructors, I created a series of five writing assignments designed to help students develop the ability to critically read political articles that appear in newspapers and popular magazines—the types of writing that students will be exposed to for the rest of their lives. Each of the first four assignments focused on a specific skill:

1. distinguishing fact from opinion;
2. determining the author's point of view;
3. detecting fallacies; and
4. comparing and contrasting articles which take different views on a single issue.

These assignments culminated in the fifth paper which required the students to integrate the materials learned in the course with the skills they had acquired in the previous papers, using them to critically evaluate a given article.

As someone who is determined to cover everything on an already overcrowded syllabus, I felt it was important for me to accomplish all of this without taking class time to teach these critical reading skills I wanted the students to learn and develop. My solution was to write a series of papers that would teach the skills required for each assignment, a total of about thirty-five pages. They are bound by the college printshop and offered for sale at cost in the bookstore as one of the required texts for my course. The students read the lessons and assignments, consult with me on an individual basis, and write their papers.

An Illustration

The following example should help illustrate the process. The first paper requires the students to distinguish facts from opinions in an article taken from one of the texts, *Annual Editions: World Politics*. The assignment begins with an explanation of how political scientists decide whether or not something should be considered a fact. I then point out that some facts are central to the author's argument (and therefore need to be proven) while others are incidental. This leads into a discussion of the difference between facts that the author assumes are common knowledge for his readers (and which he therefore does not bother to prove) and facts that he needs to prove because they are not common knowledge. I use this opportunity to point out to the students that their fund of common knowledge may well be smaller than the author's anticipated audience, necessitating that they check other sources to make sure that the author's observations are generally accepted as fact. (I also try to comfort them with the promise that if they do all their work for the course they will know more than the average reader by the end of the semester.) The lesson concludes with an explanation of how to distinguish between facts and opinions that are disguised as facts. In this context I discuss interpretation of historical events and how authors often express their interpretations as if they were fact. I then give the students a few hints on how to detect such unwarranted assertions. Never one to miss an opportunity, I also use the occasion to discuss schools of thought within the discipline and their role in advancing research and knowledge.

At this point I move into a discussion of opinions. This section is much shorter since I can build easily on what I have said about facts. I do, however, spend some time trying to give opinions their just due by discussing the value of the well considered opinions of the experts, and how these opinions should not be dismissed just because they are not facts.

The actual assignment follows the lesson, spelling out in detail what the student must do and the criteria by which s/he will be evaluated. For this first paper the amount of actual student writing is small (it increases with each assignment). The student writes a brief sentence or two summarizing the main point of the article and then quotes a specified number of passages. For each passage s/he cites its location; indicates whether it is fact or opinion, is central to the author's argument or incidental, is proven or not, is within the student's fund of common knowledge or not; and explains why s/he is or is not convinced of what the author has said.

Benefits of a Model: Lessons and Assignments

This pattern of lesson and assignment, including hints and side comments about the discipline, is repeated for each of the remaining four assignments. There are several benefits to this very specific assignment. First of all, it is clear to the students what they need to do, and this clarity improves their chances of doing it right. And in the doing they pick up critical reading (and, I believe, critical thinking) skills. Almost as important, the specificity of the assignment gives me concrete standards by which I can evaluate the papers.

I have never felt so confident of the grades I have given and the comments I have made as I have with these sets of assignments, in part because *I know what I am expecting* (much more so than in the past when I simply said, "Go write a research paper; and if you don't know what that means, ask your English teacher"). I also know that the students have had every opportunity to do the assignment correctly and well because the lessons and assignments have been so clearly presented.

Student Response

Finally, the response of the students has been surprisingly positive. I expected them to grumble about having to do five papers (and they do), but after each one they marvel out loud at how much they have learned and how much more carefully they now read the newspaper and weekly news magazines. This, of course, was the desired outcome!

William M. Taylor
Department of Political Science

For further information, including copies of the assignments, contact the author at Oakton Community College, 1600 Gold Road, Des Plaines, IL 60016.

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FACULTY MENTORS: NEW ROLES, NEW RELATIONSHIPS

Part-time faculty are a valuable resource for two-year colleges. Their growing numbers and responsibilities at Austin Community College led us to look for ways to facilitate their orientation and adaptation to the role of community college instructors. With these thoughts in mind, we designed and implemented the Mentor Program.

Typically, an experienced faculty member acts as a mentor to new part-time instructors. However, other faculty may be assigned to the program: e.g., an instructor teaching a course for the first time, new full-time instructors, or instructors who need additional assistance in the delivery of instruction.

The problem this program addresses is significant. Most participants assigned to a mentor are new part-time instructors. For most part-time faculty, especially those teaching at night and at off-campus centers, contact with other ACC staff is very limited. Instructors may, through an entire semester, have contact only with Division Chairpersons, Department Heads, Campus Deans and Site Managers. Contact with other faculty, especially those teaching in the same department, may be virtually non-existent. It is this concern, as well as others, that led to the implementation of the Mentor Program.

The Mentor Program facilitates the orientation and adaptation of new faculty members by teaming them with an experienced faculty member, from the same department or division, in a *non-supervisory* relationship. Faculty mentors are full-time instructors or experienced part-time instructors, with special knowledge or skills, willing to assume this important support role.

The mentoring relationship is designed to extend over one semester and is characterized by flexibility and mutually agreed upon objectives. The Mentor Program is *not* supervisory or evaluative. Guidelines for the program include (1) a planning meeting during which time the new faculty member and his/her mentor establish mutual agreement on the objectives of the program and (2) a work plan for accomplishing them. The objectives should reflect the following outcomes:

1. understanding the administrative requirements of his/her job (i.e., grade and attendance reports);
2. discussing the use of a course syllabus;
3. learning about instructional resources (i.e., LRS, Student Services, Faculty Development);
4. modeling a positive example of the teaching role for the new instructor;
5. becoming familiar with departmental student evaluation systems.

In addition to setting objectives, a schedule for additional contacts is agreed upon. While each relationship will be different and is structured to meet the needs of the individuals involved, there are certain suggested program elements: e.g., visits to observe each other's classes, periodic telephone conferences, other personal conferences, tours of college facilities, and scheduled meetings with other staff.

Mentoring brings added duties and responsibilities to these selected ACC faculty, both part-time and full-time. A nominal honorarium is offered to faculty mentors. And while it certainly does not repay the time and effort mentors invest, it does symbolize the value the institution places on the mentor's willingness to act in this capacity.

While there is always room for improvement, the Mentor Program has proven to be one of increasing value to our growing institution. It helps a multi-campus, multi-site college function with ever-increasing numbers of part-time faculty. Program policies demonstrate concern for the new faculty member's professional life and offer recognition to the faculty who serve as linchpins for the success of the program—the mentors.

Mimi Valek
Instructional & Staff Development

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SEEKING EXCELLENCE? ASK THE STAFF.

The pursuit of excellence is currently a popular topic in corporations and educational institutions. Many companies and colleges have gone to considerable effort to inquire about the "secrets" other companies and colleges use to achieve growth, increase productivity and profits, and improve employee morale. Rather than depend on stealing ideas of successful practices from other colleges—which we are not above—we decided to have our college search for excellence among our most important resource—our staff! *Faculty* were asked to submit ideas for improving their courses and programs in departmental five-year plans. The *physical plant staff* developed plans through a Quality of Work Life program. *Administrators* and *support office staff* attended separate workshops at which they were asked to make suggestions for the improvement of the college. The results were overwhelming!

Of particular interest were the workshops for the office staff. A steering committee—workshop leaders and staff representatives—was established to plan and promote the workshops and coordinate follow-up activities. At the first workshop, the union president for the employees welcomed the group, and the college president spoke about the importance of the support staff to the college. The workshop's objectives were discussed, and the participants were divided into eight groups and asked to participate in a creative brainstorming exercise: an attempt to generate ideas for the improvement of the college from their perspectives.

Ideas were collected and reviewed by members of the steering committee and then organized around the topics of training, internal communication, orientation, job exchange and recognition. These topics were announced in advance of the second workshop, participants selected the topics they wanted to discuss, and the various groups discussed the topics and developed action plans. The following recommendations were generated:

1. to include office staff in the faculty and staff meetings prior to the beginning of each new semester to learn more about events, activities, and plans for the college
2. to create a clerical directory—describing the responsibilities of each office—to assist those who answer the telephones
3. to develop an orientation for new clerical employees that includes a buddy system
4. to involve them in the development of a student aide training and recognition program
5. to start a job exchange program that would help them better understand the inter-relationships of people and responsibilities of various offices
6. to begin to develop a clerical procedures manual
7. to develop a recognition system for the clerical employees
8. to develop a pad of college maps (similar to those used by motels to help guests locate their rooms) to give students and guests, helping them locate classrooms and offices on campus

While the college profitted from the good ideas that were generated, the greatest benefit was the *change* in all those who participated. The staff worked hard to plan the workshop activities; consequently, the workshops were *theirs*. It is interesting to note that most of the recommendations were not about what others should do for them but about what they wanted to do for themselves. As some of their recommendations have been implemented, office staff have become involved in the faculty and staff meetings, become recognized as full-status employees of the college, and have gained confidence in their abilities to tackle a wide variety of problems.

We have discovered that the fine, talented, competent, concerned people who constitute our support staff are better able to do their jobs if we let *them* decide how best to do them. Their personal pride in improvements and innovations is obvious. So when we ponder actions for college excellence, WE ASK THE STAFF!

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President

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Suanne D. Roueche, Editor
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WRITING: A WAY OF LEARNING

The *Maricopa Writing Project*, a summer faculty development program, was designed to increase the involvement of community college instructors in writing across the curriculum. Faculty from a variety of content areas participated in this project, which was based on the assumption that we can improve student performance through offering instructors new options in teaching methods and classroom activities. We asked them to learn about and consider using writing in their courses in ways that enhance student learning.

The premise underlying the project is that writing is a way of learning, that students achieve more when their classroom activities and homework assignments include writing. They learn *more*, as writing demands their active involvement in finding meaning in content material and gives them a greater understanding of it; they retain their learning *better*, as writing imprints it more thoroughly in their minds; and they learn it *differently*, as they gain a personal connection to what they are learning and make their own sense of it in ways that go beyond recognition or recall of facts and into application and creativity.

The Maricopa Project borrowed from the work of the National Writing Project, an extensive movement (now more than 100 sites) which has been widely praised as the most successful effort ever initiated for improving the writing skills of students across the country. The Writing Project model is a workshop/seminar that brings practitioners together to focus on writing as a teaching and learning tool: as they study the process of writing, these teachers share already successful classroom practices and techniques and devise new ones. Engaged in such activities, they become a working community of writers who discover how writing allows them to grow and develop—to connect with their content material, with their own thinking, and with each other.

The faculty members in the Maricopa Writing Project, meeting for a two-week demonstration project, undertook these tasks:

1. First, they investigated the literature that describes the relationship between writing and learning from both theory-research and practice-based perspectives.

   Since teachers in other fields were not necessarily trained in educational theory and may have had little structured contact with writing beyond their own required English courses, their understanding of the writing process is often limited to think of writing as a teaching tool or assign writing to their students for primarily learning purposes. Reviewing recent materials about writing substantiates the value of writing to learners.

2. Second, they reviewed publications in their specific fields, looking for innovative techniques using writing in their content areas. Then they presented their most significant findings to the group for discussion.

   Many community college faculty have not been able to stay current with the literature in their disciplines. Once they achieve the educational level appropriate to their fields, they may lose access to the university library. From then on, they generally read only those journals to which they subscribe—often without the depth of study more time could allow. As well, many faculty are not able to attend conferences often and seldom develop presentations; some may become fairly isolated in small departments. Given the opportunity to discover and share information, the project participants become aware of the tremendous wealth of possibilities for writing-for-learning.

3. They shared their own previously successful classroom practices with project colleagues and developed new instructional plans for the fall semester.

Community College Leadership Program, The University of Texas at Austin, EDB 348, Austin, Texas 78712

Although college is a place of extensive interaction, most faculty know very little about what their colleagues do in the classroom. Instructors "invent" their own approaches and techniques that often turn out very similar to the ways they were taught. These faculty value opportunities to see how others operate and to learn from each other.

4. And they did some writing—to experience the achievements and challenges (and frustrations) of writers at work, as seeing growth in their own writing is the most persuasive reason for encouraging their students to write.

   People who haven't written in a while have forgotten how *demanding* it is—they need to realize that before they assign overly-ambitious projects to their students. They have forgotten how *threatening* it is—and they need to remember to create assignments that enable students, not discourage them. Most importantly, they need to recall how satisfying writing is—how useful it is in studying and learning and how much it can build confidence.

At the end of the project, faculty became available as resources for Writing-Across-the-Curriculum programs in their colleges. As a result of their very positive experience, they are quick to encourage others on their campuses to try using writing and to give them some ideas about how to do it; in effect, they serve as "witnesses" to its value for students and for teachers. They bring new enthusiasm to existing programs that renews their commitment to improved learning through writing; to campuses without programs already in place, they bring the impetus for a confident beginning for such an effort.

We would like to see the Writing Project continued as an annual program that would invite district-wide participation of faculty from every teaching field. We believe it would greatly benefit teachers who are interested in encouraging the development of their students' general learning strategies, teachers who realize that a lack of skill in critical thinking is probably their students' greatest shortcoming. Knowing that those who continue to respond to problems and situations with automatic or unconscious reactions will not become independent thinkers and purposeful learners, these faculty welcome information about effective techniques for helping students develop these important skills.

We also think an annual writing project would serve those faculty who want to help students meet the expectations for advanced work. Many teachers recognize that their students will have difficulty in upper division studies—and they want to help those students develop skills that will increase their chances of success. These instructors know that students who can command a useful repertoire of writing strategies and techniques have a significant advantage.

The Maricopa colleges are committed to student success, and we believe that this kind of *faculty-developed, faculty-implemented project* can contribute immeasurably to that success. When 25 faculty participate in a summer writing program, well over 3000 students will be affected in just the following semester. Over a five-year period, as many as 30,000 students could learn how to purposefully use writing to improve their learning. Even more could benefit when involved and enthusiastic faculty share their techniques for using writing across the curriculum with their colleagues. The Writing Project, established as an annual program, would extend and renew this work each year.

This year's project was articulated with the Greater Phoenix Area Writing Project, the local branch of the National Writing Project which serves the teachers of the public school system of Maricopa County. The plan for our local program was endorsed by the Executive Council of the Faculty Association—reemphasizing the faculty's value for writing and their belief that students truly need to be adequate writers. It is quite reasonable to believe that their future success may depend upon their ability to control language—in other words, to write.

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IMPLEMENTING A COMMUNITY COLLEGE WELLNESS PROGRAM ON A SHOESTRING

You find yourself at your college president's traditional autumn party, a rite intended to kick off the new academic year. Moving through the crowd, shaking hands, smiling, and taking an occasional sip from your drink, you eventually find yourself facing the president. He notifies you that he is appointing you to chair the school's Wellness Committee—effective the next day. You are honored and confused: honored because you've been asked to direct a significant new program at the college, but confused because you don't know why you were chosen or what a wellness committee does.

What next? The following day you begin researching the characteristics of a wellness program. You phone a colleague at another institution, who answers your plea for names, statistics, demographics, quotations, and examples of other programs. You visit the library and find out that the term *wellness* was coined in the 1950s by a Southern physician named Halbert Dunn. You learn that wellness is generally defined as "the maintenance of balance between the energy fields of the body, the mind, and the spirit as they move through a continuum of change in the energy field of our environment." You're informed that wellness has five major characteristics: (1) it is concerned with the whole person, (2) it considers human beings to be perfectible and willing to take responsibility for their own condition, (3) it is a process rather than a product, (4) it is dynamic and concerned with positive well-being instead of the mere absence of disease, and (5) it is participatory and democratic.

Despite having this new information, you convene the first meeting of the Wellness Committee with trepidation. Fortunately, however, the other members of the group turn out to be creative, motivated, and knowledgeable. Together, you decide that your activities in the year ahead will proceed according to a systematic eight-part plan:

1. Defining the purpose of the wellness program
2. Establishing short- and long-term goals and objectives
3. Deciding on a target population
4. Developing and maintaining administrative support
5. Conducting an assessment of interests and needs
6. Identifying methods of publicity
7. Acquiring financial support, facilities, and human resources
8. Executing the program and evaluating its results on an ongoing basis

Now you encounter your first big obstacle: a scarcity of money. The president tells you you have $700 in your budget for the whole year, which isn't a lot. Immediately you realize that whatever your committee does must be as efficient and purposeful as possible to take full advantage of its limited funds. Fortunately, you have the full moral support of your administration.

The Interest Inventory

The wellness committee's first economy-minded project is to administer a written interest inventory to its first year's target population: all the school's faculty, staff, and administrators. This inventory yields a profile of how people on campus currently spend their time and of other activities they would be willing to explore. It also becomes the basis for all the subsequent plans of the Wellness Committee.

The Fall Fitness Fair

You hold a Fall Fitness Fair on the floor of the college's conference center in conjunction with numerous community health and safety organizations. The Red Cross, Society for the Prevention of Blindness, American Cancer Society, County Health Office, American Heart Association, and many other agencies set up booths at the fair with elaborate equipment and lots of free educational handouts. Their representatives discuss health issues with passers-by and conduct medical tests which would otherwise cost several times the $10 fee charged at the fair.

The Fitness Fair drives home the point early on that employees who pay timely attention to their physical condition are apt to be happier, absent from work less frequently, and more capable of contributing to the

college than those who are less aware of the significance of wellness. Furthermore, insurance costs borne by the college are likely to be lower if employees undergo periodic medical check-ups and take part in such health-promoting activities as relaxation training, aerobics, and the like.

Release-Time Programming

After the successful Fitness Fair, your president decides to endorse a release time policy as an inducement for employees to join the wellness activities you will sponsor. Under this policy, the college releases employees from work for up to an hour and a half each week to participate in authorized activities which fit into six wellness dimensions which were first formulated at the University of Wisconsin at Stevens Point: social, occupational, spiritual, physical, intellectual, and emotional.

Your committee compiles and distributes a list of authorized wellness activities which includes workshops on stress management, parenting, assertiveness training, cardiopulmonary resuscitation, time management, holistic lifestyling, smoking cessation, loneliness, nutrition, and other similar topics; participation in swimming, aerobic dancing, jogging, canoeing, volleyball, biking, and other physical exercise; and brown bag luncheon lectures and discussions on wellness-related topics led by respected community figures who donate their time.

Almost all the authorized wellness activities your committee identifies are already funded, supplied with adequate space and equipment, and well known throughout the college community. Associating these activities with the Wellness Committee and providing release time to take part in them, therefore, lends an air of importance and respectability to participants at the same time that it contributes to the credibility of the committee itself.

Incentive Awards

Simultaneously with distributing lists of the authorized wellness activities, your committee also announces incentive awards for those who respond to its programs. With half your budget, you purchase a variety of ribbons, t-shirts, and small trophies with which to reward people for their participation in wellness events throughout the year, based on a point scale you have devised and publicized. A small prize—a cash award, plus dinner with the president of the college at a local restaurant, is offered for the best wellness logo design for your t-shirts. Attractive certificates will also be given out at the end of every semester to participants who complete four activities in any one of the five wellness dimensions, one activity from any four different dimensions, or a semester-long authorized wellness education program such as CPR.

Publicity

A third of your meager budget is set aside for publicizing events you plan to conduct throughout the year. Sign-up sheets for many of the events will need to be distributed around campus, flyers and placards should be posted strategically, notices of especially important workshops and discussions may have to be printed in the college newspaper, and videotapes can be recorded of some of the sports mini-tournaments held on campus so that participants will have an opportunity to watch their own performance. A college-wide wellness party in September of the following year may also be publicized, at which the tournament videotapes will be screened in order to generate renewed enthusiasm after the summer vacation.

Ensuring a Promising Future

Running a creditable wellness program with minimal funding is possible, but acquiring a better financial base over the long run is both practically and symbolically necessary. Expanding your target audience and the number of activities you offer will cost money. Eventually the responsibilities of your committee will multiply to the point that a totally voluntary group can no longer handle them effectively, and the time will come to lobby for a paid leadership position to coordinate the committee's broadened programs. A wellness program which starts on a shoestring can become one of the central themes of life and work at your college, something which heightens the morale and performance of everyone who partakes of its offerings.

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IN PRAISE OF EXHIBITS

Why don't we go all out for well-done and relevant exhibits, displays and skill demonstrations in our colleges? The need is clearly there. Around the country students are being criticized for lack of knowledge and general ignorance. Great ideas, events and personalities of the past go unappreciated. Most of us have heard about or experienced firsthand the disturbing educational inadequacies of students in general. On September 23, 1985, *Newsweek* magazine published a biting article by Jaime M. O'Neil in which he revealed the devastating results of a general knowledge test to his community college students. Some answers: Eisenhower was a president in the 17th century, Mussolini was Russian, Mark Twain invented the cotton gin, Christ was born in the 16th century, and Montreal is in Spain. We can lament such foolish responses and ignore the whole matter or make use of available exhibit space to help remedy the problem.

Exhibits are by no means a final answer, but they can accomplish part of the job. Not only would our students stand to gain, but the community at large could find well-done exhibits worth a trip to the campus. Hallways and open spaces are available for displays, models, wall hangings and exhibition cases.

The means are readily at hand. There are many traveling exhibits and displays for loan. The visual and experiential world has moved to our doorstep. Sight and sound are combined as never before. At the same time models of things great and small abound. Polaroid is making remarkable full-sized reproductions of masterpieces. Laser beams and the psychedelic experience beckons. As for demonstrations, who doesn't want an opportunity to show off a skill, a novelty, an idea?

On walls, in corridors and around the campus, students could, for example: spin a large globe and find Angola, inspect a history time line, study enlarged photos from the Great Depression, see a loop video on a topic of their choice, appreciate a special holiday, watch a jeweler at his trade, look at a display of book jackets from the library, check on their health, listen to music or a voice from the past, review the daily news, fill out a form asking for special information, use a computer. get a print-out, try a new skill, observe models of nineteenth century inventions, admire American art, sign up for a club and make arrangements to exhibit their own accomplishments.

The start-up need not be fancy or expensive. Contacts can be made for exhibits and things can be acquired gradually. Storage space and security would be minor administrative factors. Perhaps a part-time curator could be found.

Exhibits can be made to fit into any theme or special event. They can also be used to introduce a theme. I could leave the matter there, but some things I can't resist suggesting.

1. a large, flat map of the world
2. a time line
3. a large globe—placed in a corridor
4. a bench where skilled people can demonstrate their work
5. bookcases with new material, including donated magazines and books
6. display cases in every corridor

Cathedrals in the Middle Ages were meant to impress and inform people about events in Christianity. Now I suggest we start out on a similar venture in making available exhibits on the wonders of the world and achievements of humankind.

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TEACHING MATHEMATICS AS A LANGUAGE

The acquisition of language is both unconscious and conscious. As a child, in the unconscious mode, one comprehends the spoken language and visualizes its meaning. Assuming normal physical and mental development, and, when ready, a child enters the conscious mode to speak, read and write the language.

My own ignorance about language development became apparent when, in attempting to learn a second language, I discovered that I never knew how I learned the first! In my teaching of mathematics, I had been ignoring the "language" that I was expecting my students to learn. When giving lessons on "word problems," I was expecting my students to read and write before they could comprehend, visualize and speak. The acquisition process had been reversed. And since I cannot remember the last time my students felt "fluent" in mathematics, I assessed this reversal and now offer the following instructional suggestions.

Method

The teacher could view the student as a beginner to the vocabulary and structure of the language of mathematics and permit a "silent period" to develop listening comprehension and readiness to speak (the unconscious mode).

Instruction might point out the vocabulary, parts of speech, symbolism, grammatical rules and sentence-producing skills necessary to speak the language of mathematics. Once in the conscious mode, the student could be encouraged to speak, when ready, and "rewarded" with positive reinforcement.

Once the forms and patterns of the language are established orally, the student should be able to begin to read. The student is well into the conscious mode when he/she writes the language—as writing is but a mere record of speech.

For example, a lesson on solving linear equations: During the "silent period" it could be suggested that solving an equation is like unwrapping a package—i.e., if the bow was the *last* item on in wrapping, it will be the *first* item off when unwrapping. The required vocabulary might include:

NOUNS - equation, solution, variable
ADJECTIVE - linear
VERBS - to equal, to solve
SYMBOLISM - equal sign, lower case letters for variables, operation signs, grouping symbols
RULES - Addition/Multiplication Properties, Distributive Property, Order of Operations

The associated application problems could be handled similarly. The instructor must be even more willing to allow the student to linger in the acquisition (unconscious) mode where the necessary visualization and comprehension of abstract concepts takes place. For example:

Let your students *hear* the language first—speak to your students; read aloud to them.

Let your students *speak* the language—permit thinking aloud or brainstorming in groups as a way to bridge the unconscious and conscious modes.

Let your students *read* the language—help them to make the necessary association between what they have heard and spoken as they begin to read. For example, six more than a number, like Sue is six years older than John, translates as x + 6.

Let your students *write* the language—encourage students to think, say and write anything within reason that lifts the haze of abstraction.

Outcomes

As instructors of mathematics, we must be as diligent in helping our students acquire second language proficiency as is any other foreign language teacher. When competency in a subject is measured in terms of aural, oral and written capabilities, teaching mathematics as a language is as important as teaching about the subject itself. And as did I, perhaps students will end up learning as much about their first language as they did about the second!

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BEATING THE HIGH COST OF MICROCOMPUTERS

Financial dilemmas face many institutions. The need for increased staffing, upgraded facilities, and a desire to keep pace with technological advances in instructional equipment are all high priorities that, unfortunately, must compete for the same limited resources. Quality education comes with a high price tag, and each institution must develop strategies for meeting the needs it has identified as being most pressing.

Although we had always made an effort to remain current at Manatee Community College, we had come to recognize we were rapidly falling behind with respect to microcomputer technology. While we did have several computer science laboratories and a word processing laboratory, the number of student stations were no longer meeting the demand nor was the equipment even near "state of the art." Offices lacked word processing capabilities and many faculty, by their own admission, were computer illiterate.

The microcomputers which we had available were not MS-DOS compatible, an operating system which had become an industry standard for business applications. Fortunately, these microcomputers would still be of use in learning laboratories if upgraded systems were purchased to replace them.

The cost of replacing all of the microcomputers on campus, even with the educational discounts and state contract prices available, was far in excess of the monies at hand. Complicating matters further was the college's need to place computers in other areas, in addition to upgrading those it had in operation.

We learned that some schools and businesses reduced their expenditures on microcomputers by purchasing clones. (See *BYTE*, *PC Magazine*, or any other computer oriented publication for numerous vendors of what the industry refers to as IBM clones, microcomputers that are almost identical to IBM's standard setting PC. Vendors of these computers are highly competitive, making IBM-compatible microcomputers available at substantially reduced prices.)

Our college decided to take the *clone route* one step farther by purchasing all of the components necessary for the assembly of our own microcomputers. For those less knowledgeable about microcomputer technology, this may conjure up memories of assembling an old short-wave radio, soldering resistors and capacitors together with multi-colored wires and other mysterious parts. While some technical sophistication is essential, the actual assembly requires nothing more than a screwdriver and an hour's worth of time.

The *assembly* itself was done by a cadre of volunteers made up of faculty, administrators, staff, and student aides. Once trained in the assembly, the team was able to quickly build a unit, test it out, and deliver it.

By assembling the computers yourself, options abound as far as the configuration of your system. Decisions need to be reached as to how much internal memory is needed. Most systems boards on the market will hold up to 640k. The type of monitor and printer to be used with the computer need to be determined in order to select the appropriate interfacing cards. The computer system which we assembled had 256k of memory, two floppy disk drives, graphics capability, a high resolution amber monitor, parallel printer port, and a standard type keyboard. The total cost per system ran slightly less than $700.00, a cost savings which we estimate to be $500.00 per computer. Also, by purchasing the computers in component form we were able to choose the most reputable brands of disk drives and monitors.

Each of the components came with a one-year warranty from the vendor and, to date, the repairs and service have been minimal. When a defective component is identified, either upon initial testing or at a later date, the part is swapped out with a new one, usually in a matter of days. One member of our computer science faculty serves as a resource person, troubleshooting any defective equipment and identifying the source of the problem. Because the failure rate has been almost non-existent, this arrangement has not been too taxing. The equipment is relatively new, however, and whether this arrangement remains satisfactory is yet to be determined.

Having solved the problem of cost, the college needed to *address the resistance* that many faculty and staff had towards computers. As a result of internal surveys taken by the Computer Planning and Review Committee, we learned that a high degree of computer illiteracy existed on our campus. Many employees

knew that computers could help in their routine day-to-day tasks but did not have any idea where to begin. Even those that resisted, we believed, did so because they were intimidated by a technology they did not understand. After all, we were dealing with individuals who were experts in their fields. How disconcerting to be placed in the position of having to assume the role of novice all over again!

Training and support for our staff was a requirement for the integration of computers on our campus, but more than that, we wanted to insure that the staff would "buy into" the idea of increased computerization. And "buy into" is exactly what they did!

By negotiating with our vendor, it was agreed that our employees would be able to purchase all the necessary computer components for the same price that the college paid. Options were made available for those wishing a system configuration different from that of the college. Furthermore, our assembly team agreed to put these personal computers together at no charge. The *opportunity to purchase* a computer at such a reduced price was just too good an opportunity for many of our staff to pass up. In fact, over fifty individuals participated in the college's purchase plan.

Many of the individuals who purchased a computer openly admitted that they did not know what they would do with it; but they realized that if they were ever going to buy one, this was the time. It is also interesting to note that it was not uncommon for staff members to come by and watch their computers being assembled. Seeing the process was a demystifying experience and enabled individuals to learn firsthand what many of the computer terms really meant.

With computers built and in place, all that remained was the *training component*. A decision had been made to select certain software packages to be used on the campus. With common software, secretarial transfers or exchange of information would be less complicated and would not require retraining or complex data translation. Any approved software packages at the college would be supported in the sense that training sessions would be made available and that there would be resource personnel identified for troubleshooting.

Software packages were identified for each of the three most common uses of microcomputers: word processing, spreadsheets, and database management. For each of these uses, an entry level and a heavyweight software package were identified. The software was ordered, and training sessions were planned. The training took place in one of the college's computer laboratories, with each "student" at a microcomputer. Training sessions met two hours per day for three days per week and were offered twice for each software package. Duplicate scheduling allowed for maintenance of office operations by dividing the attendance of key personnel between the two scheduled sessions.

Although heavyweight software packages have been identified for those individuals who eventually outgrow their entry level software, to date everyone seems satisfied with his/her software. As applications grow, it is only a matter of time until many of our staff begin to reach the boundaries of the more elementary packages and need more sophistication. For these number crunchers and word churners, training will be available.

The final phase of introduction of microcomputers to the college was the founding of a *campus users group*. While in a fledgling stage, this organization has been designed to bring the users of the equipment together to share their ideas, projects, and accomplishments with each other. This group has representatives from all areas of the college with experience levels ranging from novice to expert.

Looking back one year, one would never have believed the advances our college would be making with respect to microcomputers. Going the route of the clone required risk taking, administrative support, a high degree of faculty and staff involvement, and support from our board of trustees. But we plan to add more computers to the campus, integrate business applications software into our computer science curriculum, and maybe even offer a course in how to assemble and use a microcomputer. The enthusiasm is high, asked if we would do it again, the answer would definitely be a firm and resounding "yes."

John F. Rosen
Dean of Academic Affairs

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ON THE VALUE OF SIMULATED REALITY

Readers may remember Terry O'Banion's "On the Value of Reinventing the Wheel," (*Innovation Abstracts*, Vol. VIII, No. 9) which reached my desk the week I was writing this article. You will recall that Dr. O'Banion defended the instructor's effort to create a resource which, although similar in appearance to other published materials, works for him or her in the classroom. Restating O'Banion's justification for duplicating the wheel, we find that by creating our own model we take responsibility for it and become obligated to make it work. We learn from our mistakes—the process of creation then is what makes the tool work, not the object produced.

We are inundated with published objects from which to select course materials, but usually none seems ideal for our particular use. This is because we are not owners of the process. The object works for the innovator because he or she owns the process For this reason, the innovation I present to you, although highly valuable to me, may not seem plausible to you. But the experiences associated with implementing this innovation are worth sharing.

Teaching accounting at Kalamazoo Valley Community College, I have discovered that learning occurs best when students *are actively engaged* in the learning activity. But it has been obvious to me that the problem assignments and practice sets so often used in accounting courses often fail to explain and develop the concepts I wish to teach. Student experiences with these assignments never quite translate to productivity on the job. And since training students to be productive in the workplace is our primary mission, I turned to the question: "What else could I try?" "Simulate the workplace," the Accounting Muse whispered, "and create jobs for students here; let them make their mistakes in school before real productivity is lost." That's not a new idea, I thought. But I quickly began reinventing the simulation wheel!

A Simulated Industry

I turned to developing the idea of incorporating a simulated book-publishing industry into the classroom. Many hours of thought and many more hours to develop systems and forms to support this simulated book-publishing industry were required. [The reader will have to be imaginative, for in retrospect I cannot imagine where the time came from. But as teachers are aware, no matter the number of hours involved in pre-planning, the students, once they are into the simulation process, find only the quirks which we failed to consider.]

A class of 40 cost accounting students eagerly grasped the idea of running a business. Compared to the rudiments of repetitious, random problem solving which normally occurs in the accounting classroom, the simulation idea was an exciting adventure. Six individual corporations were formed. The students analyzed the availability of orders in the marketplace (a product of my imagination). Decisions were made to invest in plant and machine capacity: choosing among various color presses, binding equipment, and photoplate makers was necessary. It was gratifying to see so many people thinking about solving problems—even though they were not real. Their urgency seemed a matter of life or death, yet life was not at stake, only the pride of being number one in the profit and loss column. Was this simulation of reality in America? You bet it was!

The weeks rolled on; materials were purchased, books produced, sales made, and commissions paid. Quickly, it was time for books to be balanced and income statements prepared. Life was humming along just like Reagan's economy. Teaching was not just enjoyable; it was exciting!

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A Simulated Monster

And then unanticipated problems began to appear. I should have anticipated how large they would grow, for they turned out to be real world problems with which we are all too familiar.

Students had learned how to beat the system and make money without doing the work I had planned. The companies with the strongest leaders became the most successful. Those without leadership achieved little. Company politics crept into the program. Employees became frustrated by problems in working with one another and/or by being chastised by co-workers. Some resigned. Resigned! That meant they had dropped out of class. We had yet to open the text. And that was another problem. We needed to cover material in the text which was not integrated into the simulation.

Students did not have time to be students, work real jobs, and take on the work of simulation as well. Despite their interest, we were in trouble.

Another difficulty I experienced in the simulation is analogous to the problem we see on a broader scale between education and the "real world" workplace. Each student in the simulation chose a job within his/her company: materials manager, cost estimator, bookkeeper, president. (Job titles and duties were created and described by the students.) Therein lay a major problem: the real workplace usually finds an employee doing one task or job, but in school our interest lies in teaching the whole. Each student is to learn about all of the jobs in the organization. Therefore, I realized that my simulation must be changed to involve a rotation of duties and perhaps a redesign of the organizational structure to one that would insure that each student contributes. This mistake was perhaps the one which made the simulation process most valuable to me!

Grades were to be assigned to each group as a whole, based on success in the marketplace and on evidence of participation. But students could not relate to the success or failure which depended on a group effort. Each insisted on being graded on individual participation. Finger pointing as to who was responsible for corporate performance became nasty. Real world, yes, but this was not the appropriate place to try and explain the effect that the value of the whole versus the indifference of the individual makes in the larger scheme of order in which we all participate. I ended up grading somewhat individually, basing my decisions on documented effort.

Conclusion

I began the project trying to reinvent a standard wheel; I ended up with a simulated monster that reflected reality too brightly. The reality I once felt was necessary for these students to experience seemed questionable after the simulation experience. How valuable was it to them? Their displays of enthusiasm and dedication to making the simulated economy run for twelve weeks were gratifying, but the wear and tear on the hearts and minds of the ones who worked hard but came in last anyway seemed to outweigh the good.

Will I use my wheel again? Maybe and maybe not, but the process of putting it together will be with me always. And that is what I find most important!

Jeff Henderson
Accounting

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A PART-TIME FACULTY PROGRAM THAT WORKS

Financial considerations have forced many institutions to rely heavily upon part-time faculty services. At New Mexico Junior College, about fifteen percent of our credit classes and one hundred percent of our non-credit classes are taught by part-time faculty. We designed a staff development program to serve these instructors; our experiences with its development and implementation may be useful to others.

Identifying Potential Part-Time Candidates

The size and demographic composition of a district will determine the best methods of identifying part-time instructors: large urban districts may find newspaper ads effective; urban/rural districts may rely on more personal contact with the community. But the business and professional community in any district can furnish most of the credit part-time faculty the college requires.

Civic clubs are excellent sources of contacts, and local TV and radio talk shows get the word about the college and its services out to the general public. As well, checking local papers for announcements regarding transfers of new employees to the district is also helpful.

Hiring Procedures

At NMJC, we review credentials and interview selected candidates. While the process may not be as exhaustive as for some full-time positions, it is thorough enough to assure that each person is well qualified. Prior teacher training and experience are pluses. In many areas, such as engineering or business management, prior professional teaching experience will be rare, but current field experience may offset the weakness in teaching expertise. Yet once we are assured that the "what" to teach expertise is in place, we can deal with the "how" to teach.

In-Service Training

We do not debate which is more important in a teaching situation—the "what" or the "how." The college has approved the "what" (or course content) and selected a person to teach it; then the "how," or methods, becomes the critical issue. We (1) schedule regular class visitations; (2) monitor the class through institution- and student-generated evaluation forms, and (3) schedule in-service workshops to deal with such issues as classroom management, teaching adults, records management, student evaluations, and syllabus/lesson plan development. It is the goal of these workshops to begin with instructors where they are and enhance their skills.

An orientation session is held at the beginning of each semester on a Saturday morning, 9:00 - 12:00. Everyone is welcomed back; full- and part-time staff members are introduced. Personnel records, various college forms, information about available support services and procedures for using them, and college emergency procedures and policies are reviewed.

The significance of the part-time faculty role to the mission of the college is emphasized. Time for questions and informal socializing concludes the first session.

This kick-off session includes all credit and non-credit part-time faculty. Workshops follow this session and are divided into two categories: for those professionals who have had formal teacher training and those who have not. This logical division permits each workshop to focus on an appropriate instructional agenda.

At least one in-service workshop is held each semester. This permits in-depth coverage of support services, lesson plan development, and classroom management. Part-time faculty surveys are administered to allow them some input to the selection of program items. Their involvement with this selection procedure strengthens their "feeling of belonging" to the institution.

Our full-time faculty and staff provide the in-service training without compensation. Attendance is not compulsory, but it is strongly recommended.

Support Services

This is an extremely important aspect of any part-time faculty program. It is not enough to list all available services and pay lip service to them. They must be delivered on a day-to-day basis. Part-time

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faculty have other career obligations, limited time to be on campus, and normally are not as well trained for their duties as are full-time faculty. And when they have a question, need a problem solved, or require assistance or advice, they need it "now." All services must be convenient and well understood. This is not catering to a special group, but rather it is meeting a special need. Past surveys have indicated that part-time faculty on many campuses feel removed and "left out." Good support services will alleviate many of these feelings. And it is especially important not to promise what you cannot consistently deliver.

The following is a brief description of the tangible support services our office provides for part-time faculty:

- Part-Time Instructor handbooks, grade books, and reference hand-outs.
- Orientations and workshops each semester to assist part-time instructors in preparing for their classes (in-service training).
- Mailboxes for on-campus instructors and mailing services to off-campus instructors.
- Typing and/or copying of instructional materials, textbook orders, and supplies.
- Mailing services for part-time instructors to their students.
- Mailing of updated roll sheets and mid-term/final grade sheets and assistance in collecting these by given deadlines. (Copies are kept on hand in the event that instructors must report their grades by telephone.)
- Updated/current telephone and address listings on all part-time instructors.
- Current files on all part-time instructors (application, retirement forms, resume', transcripts, evaluations, correspondence, etc.).
- Current semester log book of P-T instructors, classes taught, location, classroom visitations, average attendance of students in classes, support work for part-time instructors.
- Distribution, collection, and tabulation of course and instructor evaluation forms. (Note: These forms are kept on file.)
- Updated campus information for part-time instructors.
- Message services from students to part-time instructors.
- Providing a place for part-time instructors to bring questions and problems, or just to visit (important for morale).

Typically, not all part-time instructors will avail themselves of these services for the first month or so. A conscious effort must be made to assure them that their using these services is expected and welcomed. Occasionally, a part-time instructor will come in with a smile and say, "I did not know you would do this for me."

The staff who provides these special support services must be especially cooperative and patient. Our secretarial staff is outstanding, always willing to go that extra mile to accommodate part-time instructors and make them feel welcome. It takes dedication and a desire to be helpful; our staff attempts to convince the part-time instructor that they want to be of assistance and that they have the expertise to provide it. This atmosphere is essential to an ongoing program.

Conclusion

This program is working for us at New Mexico Junior College. We hire good people, offer them a solid support program, and continue their professional training. It is cost-effective and assures quality. Hiring and forgetting is not an alternative.

Wes Fortney
Extended Day Coordinator

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TRANSITIONS: FROM THE CLASSROOM TO CONSULTING

Imagine your college or university offering a graduate-level course designed to help you do outside consulting work. The course is free, offered in-house, approved by administrators and the union, and applied toward salary lane movement. Is this a dream? Not at the College of Lake County (CLC).

In the fall of 1984, our Vice President of Educational Affairs sanctioned and funded the Professional Growth Center (PGC) to organize activities which would improve and enrich faculty's level of instruction. Within the last three years, the PGC has developed and offered a range of courses from Computer Literacy to Writing Across the Curriculum and Critical Thinking. Ten different faculty have taught more than two hundred of their peers.

In the spring of 1986, the position of Instructional Consultant (IC) was established to assist in developing an overall strategy for achieving instructional excellence, identifying specific techniques for enhancing classroom instruction. An IC's responsibilities include building a collection of literature and media for an approved focus of study, conducting a needs assessment for the proposed study, sharing skills and expertise with faculty and staff, assisting in identifying instructors using innovative techniques, and helping to produce a catalog of instructional ideas and materials.

Candidates for IC are identified through application or nomination. Each must be accompanied by a recommendation from the appropriate Dean. The PGC's Coordinator and Advisory Committee review applications, sending their recommendation to the Vice President of Educational Affairs for final approval.

Last fall, I was selected as IC. My focus of study was to develop a partnership model for uniting CLC's faculty with local business and government resources. Specifically, I would target commonalities, areas of shared interest, and mutually beneficial junctions. Strategies to develop the proposed model would include surveying faculty to determine their partnership needs, contacting business and government agencies to identify areas of expertise and willingness to participate, construction of a "Faculty Guide to Local Business/Government Partnerships," and distribution of the guide with explanation as required. What does this partnership model have to do with the title of this abstract, "Transitions. . ."? That's the curious part; read on.

A questionnaire (What can local business/government do for you?) was administered to one hundred seventy full-time faculty during faculty orientation week. Twenty-four percent (n=41) responded. An analysis of the responses revealed an extraordinary demand for consulting work. Here was my dilemma. Should I reconsider my original proposal? I'd have to start again from square one: confirming the need, assessing administrative support, resubmitting my refined proposal to the PGC. Besides, this course would be different: satisfying faculty's *economic* needs. I thought: More work?,$?!!

Square One: contacting seven key administrators to assess their support for a refined PGC course that would better prepare full-time faculty for outside consulting work, while enriching their classroom presence. The highest ranking administrator expressed support for the course, if it were aligned with the mission of CLC's Center for Economic Development as well as relevant union and college guidelines.

I submitted a refined proposal, along with a report on the enthusiasm level of key administrators, to the PGC's Advisory Committee. After a personal presentation to the committee, "Transitions: From the Classroom to Consulting," was born: a course designed to help full-time faculty find, negotiate, and complete outside consulting assignments which were personally, professionally, and economically rewarding and consistent with union guidelines regarding outside commitments.

Literature was reviewed; relevant trade associations were contacted. All faculty expressing an interest in consulting work on the questionnaire were contacted for specific input. This research, plus my industrial experience planning, researching, and developing educational programs, provided the course's infrastructure.

"Transitions . . ." broke down into five instructional units. marketing, demand analysis, professionalism, special considerations, and face-to-face contact with practicing consultants and prospective clients. The

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marketing units consisted of presentations on developing a skills inventory and promotional strategy, consideration of the College's Center for Economic Development as an alternate channel of distribution, and preparing pricing/collections policies. The unit on demand analysis included a session on spotting opportunities and developing client dependency as well as how to apply for government and private grants. Professionalism centered on imaging and interpersonal relations. Special considerations covered legal and insurance issues, marketing CLC, and resources. Two sessions were devoted to panel discussions with practicing consultants and prospective clients from government, industry, and education.

Faculty were required to complete three written assignments from a list of twelve options (one for each of the presentations) and a written course evaluation. No credit was granted to anyone missing more than one class or failing to complete the written assignments. Each class lasted two hours from 3 p.m. to 5 p.m. on Tuesdays and Thursdays during February and was divided into two equal segments with one short break. The two sessions with practicing consultants and prospective clients were each two hours with refreshments.

It was immediately apparent to me that I was not the best person to teach any of the five major units or twelve subunits. My role was facilitator: staffing, coordinating, and attending to the administrative details including prep with each presenter, reminders, introductions, thank you notes, certificates of appreciation, refreshments, and evaluations. Nineteen people, most from outside the college, made presentations. Each presenter developed and distributed an outline of the topic for consideration Our reference librarian, who presented the unit on resources, developed a 100+ page bibliography. All offered their services *pro bono* with one exception. A CPA/attorney received $50 for each of two presentations.

Twenty-three faculty, representing a range of consulting interests from nursing to business ethics to welding, enrolled in the course which was promoted in a series of three graphic flyers put in faculty mail boxes. Each flyer stressed the course's economic payout: for example, "What's Professor Einstein's formula for succe$$?" and "Thinking about crui$ing in the fast lane?" "Answer: Transitions . . . ."

Positive comments about the course in written evaluations stressed its pace and organization, the variety of topics and presenters, practical applications, and the opportunity to challenge preconceived notions about consulting. Negative reactions included the irrelevance of the written assignments, traditional classroom environment, and relative quality of some of the presentations. Suggestions for improving the course included scheduling the sessions at alternative times, more information about marketing yourself, offering an annotated bibliography, increasing the course's length, and bringing back graduates of the course to discuss its practical benefits.

Thirty-eight percent of the respondents said they would use CLC's Center for Economic Development to secure consulting work, while forty-three percent answered they planned to secure consulting assignments on their own. One hundred percent of the respondents said they would recommend the course to other CLC employees: *the bottom line*!

This semester CLC's IC, an instructor from our Engineering/Math/Science Division, is working with faculty to design and write demonstrations and lab experiments in the field of Microcomputer-Based Laboratory Systems (MBL). These systems utilize the microcomputer's measurement and data analysis capabilities, while reducing the drudgery of taking and analyzing data. His work includes developing computer hardware and software for use in the measurement of camera shutter speed in our photography classes and redesigning hardware and software for use in monitoring CLC's solar collector.

PGC's future plans include adding two new IC positions in the Fall term, developing mini-research grants for faculty, and preparing streamlined packages for individualized instructional development.

"Transitions . . ." has been invited back for an encore!

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BRINGING FACULTY TOGETHER

Looking for a way to promote teaching excellence and increase faculty commitment? At Santa Fe Community College in New Mexico, faculty are involved in a new program that accomplishes both of these goals.

Both full- and part-time faculty come together in a "Faculty Forum" each semester to discuss issues of immediate interest in an open-ended and relatively unstructured meeting. No administrative agenda or predetermined set of expectations is set ahead of time so that faculty may more freely exchange ideas.

The Faculty Forum has effectively promoted group problem-solving, familiarized faculty with other college programs, and provided an opportunity for faculty to interact with their peers. As teaching strategies are discussed, instructor creativity becomes infectious. Instructors challenge themselves to try new and different teaching methods and to be more innovative. They encourage one another to excel, discussing different approaches and sharing new ideas. It's exciting to watch this enthusiasm spread! Faculty experience a deeper commitment to teaching and a greater sense of "ownership" from this participation.

The Faculty Forum is organized by the college's academic division. Faculty within the Business and Occupations Division meet together, as do those in the Arts and Sciences Division and those in the Developmental Studies Division. Full-time faculty are required to attend. Part-time faculty are strongly encouraged to participate; and if they do, they are eligible for credit for salary advances in the Professional Development Plan. Higher credits are awarded for this activity to encourage as much participation as possible.

The Forum is alternately scheduled for afternoons and evenings, as well as for different days of the week to allow as many part-time faculty as possible to join in. The division heads chair the meetings, providing a relaxed structure to encourage open conversation. They may begin the Forum by asking questions that initiate a free exchange of ideas, supporting faculty interaction and promoting discussions of immediate academic interest. Topics have ranged from grading standards and homework assignments to the Honors Program and mnemonics.

Secretarial support for each Faculty Forum is provided to record discussion topics and plans. These records subsequently serve as a resource for planning future staff development activities.

Part-time faculty in two-year colleges have been characterized in the literature as second-class citizens and stepchildren. Involvement, inclusion, and attention help mitigate these inherent difficulties. Santa Fe Community College believes that by providing experiences for faculty to learn from one another in professional activities, a vital sense of belonging to the academic community is supported. As one new faculty member reported in her summary of this experience, "As always, the opportunity to share problems and concerns with other faculty members helps dispel some of the feelings of isolation which are an occupational hazard." Likewise, a division head commented: "The Developmental Studies Division is a more cohesive group as a result of the unstructured time spent in the Faculty Forum."

While the Faculty Forum is only one of the many professional development activities at Santa Fe Community College, it is one of the most popular and effective supports for teaching excellence.

Beatrice Davis, Coordinator
Staff & Organizational Development

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MICROWAVE PROBLEM-SOLVING

"If only I had had more time to think through the situation, I know I would have made a better decision." How many times have you made or heard a similar comment? How many of us have not developed skills in quick problem-solving? To help develop this skill in our students, we modified a model used by medical emergency training which we termed "Microwave Problem-Solving."

Methodology

Microwave Problem-Solving is a very simple instructional technique: Stop at any point in your lecture and give a 30-second scenario of a possible problem, usually not related to the lecture, but related to overall course content. Allow the students two to four minutes to write their solutions to the problem. (Students are not graded on their answers.) Follow the writing with a short discussion, either in small groups or as an entire class. Sharing several of the solutions that students recorded and discussing the various solutions are valuable elements of this technique.

We have found that both traditional and non-traditional students profit by this method: Traditional students frequently bring to the discussions a theoretical frame of reference for their solutions, while non-traditional students tend to incorporate past experiences that may not have been learned in the classroom. Both student types develop a broader foundation to problem-solving as they react to this strategy. They (1) learn to think through problems to reach solutions logically and quickly; (2) develop a conceptual framework from which they will respond to future problems; and (3) receive an opportunity to think through possible problems that may occur.

Application

Course content in which we have utilized this technique has focused on pre-school classroom management and the selling of fashion merchandise. Following are examples related to these subjects.

Example: *Pre-School Classroom Management*

> The class has gathered for "morning circle." A 4-year-old girl has a difficult time sitting still and is disrupting the children next to her with her wiggling, kicking, and touching of other children. You have already tried the techniques of setting her apart from the group and having her sit next to the teacher. Neither of these techniques has been successful in eliminating the disruptions. What technique would you try next?

Example: *Fashion Merchandising*

> You are a sales associate in a woman's clothing store. A middle-aged lady approaches you over her lunch hour and wants help pulling together several outfits for under $300.00. But that's not all! The customer tells you she is on a weight-loss program and has lost 40 pounds. She intends to lose 20 more pounds and feels it will take her several months to do so. She needs a well-coordinated, small wardrobe to begin a new job the following week. The job involves extensive public contact. How would you guide her in her purchase?

The "surprise" element of the "Microwave Problem-Solving" teaching technique makes it unique, and it further serves to keep students alert to the process and content of the lecture/discussion. Most importantly, it accomplishes the overall goal of students learning to think through problems and reach solutions quickly.

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Home and Family Services

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INNOVATION ABSTRACTS VOL. IX NO. 23

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GETTING STUDENTS TO THINK

Sometime past midterm, I ran into one of my older students in a restaurant. We had become comfortable with each other by that stage in the course. The term-beginning battles over perception and demand had softened—enough so that he told me then what his initial perceptions had been of my class.

They hadn't been favorable. "Man, I didn't know what you wanted. Everything I brought in you chopped to pieces. Then one night I realized: He's not just being a _____; he's trying to make us think."

Trying. That's the key. But how do you get your students to think? Or do you expect them to think? Perhaps this is the beginning, then. You must *expect* thinking in order to get it. Hand back work that had no real effort in it. Do not accept superficial or silly ideas. If you think they have not thought, tell them that as diplomatically as you can. Let's be truthful; we have a few students who simply lack the capability to think. But many can be awakened and can deliver if we make the demand. Be ambitious. Expect.

But, of course, you have to get them started. They're not used to thinking in class. A good start is asking the right questions. By *right*, I mean questions that will get their brains exploring—not just questions that will simply get them to your own answers.

I find this hard to do. It's easy to slip into old ways. I have been guilty of asking the narrowly defined question, something a colleague of mine called the "gaucho."

"What is distinctive about Argentina?" the teacher asks.

The class has many answers: the pampas, the history, the population mix.

"No, no, no!" the teacher shouts them down. "Gauchos!"

This is not getting them to think; this is fill-in-the-blanks. Students pick up on it very quickly and will not often risk themselves again.

Asking The Right Questions

There are basically two kinds of questions, questions of fact and questions of interpretation. Questions of fact are not thinking questions. You might, however, ask fact questions to get students to notice details that might lead to theorizing.

"Which direction is the train going?" I asked a class once about Stephen Crane's story, *The Bride Comes to Yellow Sky*.

When they answered, "West" (their third choice, if I remember correctly), I asked them another question: "So what?"

This isn't a "gaucho," though. I was steering them—steering them into discussing Crane's theme of the dying frontier. We often have to steer—by getting students to note those details they might have overlooked, by asking them to stop and examine significance.

A more ambitious kind of interpretive question is the open-ended one, one for which you yourself don't have a good answer or one where you keep your good answer to yourself.

I take an image out of Dante, but I do not decipher it. I ask the class what they think. I sit back and wait. My busy graduate-school brain works overtime. "I know, I know," it shouts. We teachers were great students (at least in our disciplines). We like having answers. Also, we were taught that teachers have the answers. Are we doing our jobs if we keep our mouths shut? I say, "yes." We are in fact not doing our jobs if we too often open them.

Keeping Silent

In an honors course I helped team-teach, I developed a plan whereby all the rubber-lipped professors would agree to keep quiet for ten minutes. It was painful, listening to that silence. But the students did come up with ideas. Teachers can't fill all the voids. If we expect serious thinking, we must learn to listen. When we learn this, it takes pressure off us. We don't have to be the architects of all the thinking in the class. My students do come up with wonderful angles on Dante. It makes me humble.

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Again, make sure that you really are asking an interpretive question, a question for which you expect different answers. You'll have to teach your students that you're serious about listening. The first few times you ask a question like this, they will busy themselves looking for your answer rather than coming up with their own answers. Don't give in. Be a facilitator for answers.

Summarizing Statements

A graduate professor of mine had a method that I've tried to emulate. When someone shared a thought in class, she would summarize the point being made. Her summaries of my particular points were so brilliant and articulate that I'd glow with pride at my "genius." Listening to her, I was inspired on to further heights. This is what we need to do for our students—inspire and encourage their thinking, not overwhelm them with ours.

Providing Options

Give your students, as much as possible, the option of choosing what to think about. No group is more guilty than my fellow English teachers for pushing esoteric, off-the-wall subjects. Do not misunderstand me. As a colleague put it, "Relevancy is over-rated." Often, she says, we use it as a gimmick to get students interested. But problems directed to particular audiences—audiences other than you, the professor—and those problems from their business or personal lives that they might work on, can bring to our classrooms more of our students' natural wit and common sense. Students do, after all, maneuver themselves through very complex situations, most of the time successfully.

Conclusions

The ideas and skillful maneuverings that come out of my Business English course, as students grapple with pertinent individual and career problems, teach *me*. My students deliver much more than I would think to demand: in-depth feasibility reports for new businesses they are thinking of pursuing, detailed analyses of office management difficulties that they are living through and experiencing, creative new perspectives. I remember, in particular, one rough-hewn young man's articulate and astute reading of a difficult personnel problem—this from a guy whom one might have been tempted to write off at the beginning of the term.

Given their heads, students use them. They can think. If you can tap into that ability, class will be more fun and much more productive—for all of you. The teachers we remember most fondly are the ones who got us to think.

It's hard work getting students to think. Almost as hard as thinking itself. But it's worth it!

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WRITING IN THE QUANTITATIVE CLASSROOM

While many of us believe everyone should be quantitatively oriented in habits of mind, the fact is that few of our students will become quantitative specialists, such as decision scientists, mathematicians, chemists and physicists. Most will work in jobs requiring only rudimentary mathematical skills.

Nevertheless, because it always takes two to communicate, we need to focus our pedagogical attention on techniques that will enhance not only the future quantitative specialists' skills, but also the vast majority who will use the specialists' skills. Writing in the classroom can simultaneously increase understanding of quantitative modeling and communication ability.

Students learn best when they are not mere passive receivers of information but active makers of meaning. A mind must work at assimilating what we have to impart. And the simple fact is that writing requires—and rewards—the paying of a kind of attention that not-writing doesn't. To write is to create a structure of meaning.

How can a faculty member incorporate writing as a mode of learning into normal instruction without slowing down the course and perhaps even omitting necessary material? And how can it be done without having to process so much student prose as to require retaining a room in the State House for the Bewildered? Following are some examples of methods that have been successful in helping students learn through writing without requiring excessive classroom time or evaluation efforts.

1. The teacher stops the lecture 10 minutes before the end of class and gives students five minutes to write a summary of the class for their personal use. Five or six students are called on to read their summaries during the last five minutes. These students should know about this beforehand.
2. Weekly writing addressed to the instructor and other audiences are equally effective. Examples of these weekly exercises are letters home about quantitative techniques and concepts; memos to project heads; and short status reports to an immediate supervisor. Different audiences invite the student to choose new ways of explaining classroom topics and to see more of the subject matter by viewing it from different perspectives.
3. As an alternative to discussion in class, ask each student to write a question and distribute these questions to class members. Allow five minutes for written responses and return the answers to those who posed them. Writing a question forces a student to organize thoughts into a coherent expression. Writing an answer requires the student to review the class presentation, organize it into a logical pattern, and then impart that information to others.
4. One may also conduct a "silent conversation." At the beginning of class, pose an important question related to the day's (or a previous) reading. Each student writes a response anonymously for five minutes; then students pass their papers around so that everyone reads what each has written. In a class of 30, this takes about 15 minutes. Students then write again for five minutes, explaining what they know now that they did not before. The "silent conversation" can also be grafted onto a short lecture. Although the instructor will have less time to speak, he or she will be working with fertile ground and can expect more crop per unit of lecture sown.
5. A common complaint among students is, "I don't know why I didn't do well on the exam—I studied for hours." Perhaps all 10 hours took place the night before and represent the total time spent on the course. Quantitative topics are cumulative, building on foundations established by preceding discussions. A solution to this problem is weekly writing journals that encourage students to review classroom activities more frequently than just the night before the exam. A student might address two topics each week posed by the instructor. For example:

    - With what concept did you have most difficulty this week, and what was the nature of this difficulty? What are you doing to resolve it?

- Choose a problem or a question that you worked hard on but didn't get, and explain your confusion about it.
- Choose a problem or a question from a homework assignment that you felt particularly proud of yourself for solving or answering, and explain how you did it.
- Make a point about a controversial issue in decision science, then make a counter point. Which one do you believe, and why?
- What was the funniest thing that occurred in class this week?

Common to these exercises is a weekly review of the course, which reinforces the classroom experience. Even the last question requires the student to review each class and select some event to discuss. Journal assignments may be designed so that credit is automatic upon completion, without formal grading by the instructor. Appropriate comments and reactions appended to the journal assignments by the instructor can still provide powerful motivation for students.

A longer writing assignment can help students improve their understanding of quantitative methods and to practice writing. For example, a case study can be presented, with a few kernels of relevant information deeply planted within a field of verbiage. The student must identify a problem, develop alternative solutions, examine those alternatives in light of a set of criteria, crunch some numbers, and reach a conclusion. If the assignment is extended to include a report to management, the solution must be understandable and persuasive.

Here are the germs of other writing projects, shorter or longer at the instructor's option, either graded or given automatic credit.

1. An opinion article of about a thousand words, suitable for publication in the "My Turn" section of *Newsweek* on how a quantitative technique might have facilitated a decision discussed in a previous issue. (In case you get some really fine pieces, work with the student on them and let them be sent off; accepted pieces receive around $1,000).
2. A critical review of all or part of a course textbook, directed at the instructor, or to future students (peers) explaining what the rough spots are and how to overcome them.
3. Memoranda to classmates explaining successful methods and "tips" for studying and mastering specific aspects of the course material. These could be collected and "published" for the benefit of the next class as a study guide.
4. For an advanced class, a critical review of an entire issue of a recent journal in the field, addressed primarily to peers and secondarily to the instructor. Each student could be assigned a recent issue of a different periodical to make a brief oral report or to prepare duplicates of a typed report.
5. An entry in a papers competition sponsored by national and regional associations. Recognition of one's work is often a strong motivation, but the cash awards that often accompany the recognition provide extra incentive.
6. For an advanced class, each student or group of two or three students could be assigned a problem currently important in the discipline. The problems may simply be things *you* would like to know about but do not have time to research.

Although writing assignments take time to invent, they can save teaching time in the classroom and evaluation time in the office. Effective assignments can be small or large, reviews or extensions, light-hearted or serious. Not every assignment need be instructor-evaluated to be a useful learning tool.

Education is a journey into the unknown, an endless process of discovery. My format here is directed toward expedition leaders searching for equipment to make the quantitative sojourn more successful. I suggest that salient among such tools are pen, paper, and the organizing minds behind them.

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MID-COURSE EVALUATIONS: A USEFUL OPTION

Evaluation of courses by students is a topic that generates much heat (and occasionally even a little light) among teachers. Whatever the concerns about using such evaluations for administrative purposes, many teachers agree that information provided by students often may be quite useful in considering improvements in how the course is conducted.

The usual pattern is to have students complete a short questionnaire the last day or two of the term. While this may produce useful information, any improvements that may result fall upon only future students, not those in the given course. This disadvantage can be overcome by conducting an evaluation three or four weeks into the term, after students have become fully acquainted with the general pattern of the course and its procedures. The instructor may be able to institute some modifications that lead to more effective learning, thus benefiting both teacher and student.

Mid-course evaluation can be done in a variety of ways, including a traditional questionnaire. Other possibilities are videotaping and studying instructional segments, conferring with a committee of representative students, seeking feedback from individual students, and discussing specific questions with the class as a whole: e.g., Are the office hours sufficient? How can handouts be more useful? Are library reserve materials accessible? What suggestions do you have for improving recitations?

Whether one uses a personal or an impersonal approach, some problems attendant to most evaluation procedures remain. Some students are reluctant to speak openly for fear it will reflect on their grades. Others give totally bland ratings, regardless of their true feelings. While anonymity can work for validity, it can also work against it: some feel so free to open up that one gets completely off-the-wall responses.

One recently developed method, known as "Small Group Instructional Diagnosis," can help overcome some of these problems. The central feature of the method involves an outside party coming into the classroom and collecting data on three general questions: 1. What do you like about the course; what is going well? 2. What improvements do you think can be made? 3. What strategies can you suggest for bringing these about? (The third question is a vital one, though rarely found in course evaluations; it gives students an opportunity to realize that some changes may be difficult to make.)

In the SGID technique, students meet in small groups to try to reach some consensus on the above questions. This process helps temper hastily-considered or outlandish comments. Results are reported verbally to the moderator and clarified further, as necessary. (The course instructor is not in the room.) This procedure helps insure individual anonymity. When fully employed, SGID includes consultation between instructor and evaluator both before and after data collection. A very important dimension of the process is the discussion that the instructor holds with the class after the results of the evaluation have been received and considered.

The SGID process requires about 25 minutes of classroom time—a few minutes more than the usual paper-and-pencil evaluation. Those who have tried it consider the additional benefits well worth the extra time and recommend the method highly. It does require a person who is familiar with the process and who has a minimal facility for working with small groups. It often can be accomplished by two instructors helping each other. Shortened versions, using some of the key elements, are possible for those who prefer simpler arrangements.

Teachers who want to improve their courses stand to gain significant benefits from mid-course evaluations by students, no matter what system is used. Moreover, involving students in this process at a time when it can still make a difference in their instruction can only result in gaining increased confidence and respect from them.

Linc. Fisch

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ESSAY TESTS

Students superficially prefer multiple guess and truesy-falsey tests. In fact, excuse the pun, they prefer to memorize facts so that they can perform well on what is essentially only a test of how well they can recognize and recall. While the argument can be made for tests that test only facts, so-called objective tests carry with them a series of assumptions which may or may not be valid for a specific course.

Assumption 1. There are facts that should be/have to be memorized.

Assumption 2. The facts are discrete and only minimally related to each other and to processes.

Assumption 3. The logic of the field, or at least the way students learn, is inductive.

Assumption 4. Knowledge is not developmental.

Assumption 5. Objective tests are reliable and therefore valid tests of learning.

Assumption 6. The "material" is in the book or the words of the teacher; and if the student learns it well, he or she will "know" it.

Assumption 7. Objective tests are less likely to be misinterpreted (read: challenged by the students).

Assumption 8. Processes of searching for ideas/concepts are unrelated to learning the "material."

Assumption 9. Objective tests are less culturally biased and are a better gauge of raw knowledge than essay tests which require standard English answers.

There are other reasons teachers give multiple choice tests, but the truth of the matter is that students learn better and the learning sticks better if they have to actively pursue it.

Essay tests are not easy; they require specific activities of students. I recommend these learning activities to my students early on:

(1) Students must choose not only the questions to answer, but also the best way to answer those questions. (2) They must read, think, and write. (3) They must argue a point and support their argument. In most cases, there is no one correct answer. Some answers are more right than others. (4) They must use proper terminology. (5) They must use the language of the field judiciously. (6) They must study text, lectures, films, and outside materials—not just read/look at them. (7) They must search for concepts, ideas, processes, and generalizations. This means using material other than the *World Book* (that was all right for junior high school, but not for college) and the study guide. The new *Britannica*, an encyclopedia and a dictionary of the field, other texts, and material related to the subject all have to be examined. Any material on reserve in the library must be read. (8) They must read to answer the questions—not just read to find the answers. (9) When all else fails, they must ask. Ask the librarian, and ask the teacher. (10) They must remember to ask the right questions. The questions have to be specific enough so that they can be assisted with something other than, "Well, did you look . . . ?" (11) They would do well to write note cards (with footnotes), just as though they were writing a research paper; then they must put answers together into a complete essay. (12) They must make sure their answers are not "I think" or "I feel" responses unless the teacher specifically asks. (13) They must answer concisely, but support their answers fully with descriptions, examples, and data. If there is a controversy about the information, they should summarize both sides.

Students must learn that what they think they know or how long they studied is not important. The key to success on an essay test is *how well the question is answered.*

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THE LABORATORY PRACTICAL FINAL, OR AN ALTERNATIVE TO MORE OF THE SAME

A practical laboratory exam tests student skills in performing the procedures and operations learned in the laboratory. The practical exam, while common in vocational courses, is less prevalent in chemistry and other science courses, where written laboratory final exams (usually similar to the lecture exam) predominate.

I first used a practical exam for a laboratory final while coordinating the freshman chemistry labs at East Texas State University (ETSU). It was our belief at ETSU that laboratory and lecture purposes differed: the laboratory was an extension and supplement to the lecture. In the laboratory the student should apply the concepts and theories introduced in the lecture while simultaneously developing laboratory technique. The development of manipulative skills, planning operations and organization of lab time is expected to occur in the science laboratories. Our purpose in using a laboratory practical was to evaluate the student skills developed in the chemistry lab.

The laboratory practicals that I have used test students' manipulative skills along with their application of the data obtained. Over the past fourteen years I have used practical laboratory exams in both general chemistry classes and chemistry classes for non-science majors at three very different institutions; a regional college, ETSU; a rural community college, Northland Pioneer College; an urban community college, Pima Community College.

The administration of a laboratory practical is cumbersome, and this has probably limited its use. The practical exam should be limited to four to six exercises with twenty to thirty minutes allowed for each exercise. Five exercises with twenty minutes per exercise has been the optimum. In my system, each cluster is set up with three to six identical work stations. The students at the cluster will each do the same exercise, then move on to the next cluster. Every twenty minutes the students at cluster I move to cluster II; those at II move to III, etc., until each group has been at each cluster. In this manner, a laboratory with five clusters, with six stations each, can accommodate a class of thirty students in 100 minutes. (The key to setting up the practical exam is in preparing each station such that all the equipment needed for the exercise is present.) In a typical final laboratory period of 180 minutes, one can conveniently administer the practical final and check the students out of their lab drawers. This format has made the use of a laboratory practical possible as a part of the normal laboratory schedule.

As a part of the practical final, I have used exercises such as, acid-base titrations, formula of hydrate, densities, chemical reasoning, heats of solution, empirical formulas and others. The exams are prepared with a minimum of explanation and are given as open-book exams. The students are expected to use their experience and knowledge. In the acid-base titrations a double burrette apparatus is used, and usually more than half the students will complete three titrations in a twenty-minute laboratory period. In the formula of a hydrate exercise, the number of waters of hydration is determined by driving the water off and monitoring the mass change. A chemical reasoning exercise is always included. This requires the student to use results of chemical reactions to identify an unknown. Usually the students are not familiar with the specific reactions that are used; however, they will have done one or two similar exercises during the semester. The equipment is set up ready to do the exercise at each station. Equipment set up may be tested separately. Each exercise is designed to measure a specific skill or set of skills. The exercises given are sufficiently sophisticated to challenge the students, yet appropriate for a twenty-minute time slot.

I have received some personal satisfaction in finding that some students can use the skills and thought processes learned in the laboratory for solving new problems. For example, attached to an exercise to determine the density of a liquid was a question, posing a problem where one needed to know whether the

liquid would float on a lake. I assumed that the students would reference the density of water and then answer the question. However, one student proceeded to experimentally observe that the liquid float on water and used the results in her answer. In another case, using the double burrette apparatus, one third of a class started to use the equipment to back titrate, a common practice for those with titration experience but one that had not been used by these freshman chemistry students. In both these instances the students adapted the experimental equipment to formulate a new attack on a problem, building on their base of experience.

I believe the laboratory practicals to be effective, acceptable and in most cases a proper alternative to the present practice of written exams in most science course laboratories. The laboratory practical provides a final that measures the skills learned in the laboratory. It separates those who know the procedures from those who have depended on partners or their neighbors.

Student response has also been positive. In my most recent class, 72% stated that the exam was fair. About half of those who stated it was fair also said that it was frustrating and rushed. This response indicates to me that the exam does push students to their limits (frustrating and rushed), but the students have confidence in their ability to obtain answers. In general, those students who come prepared for the lab and make an effort to achieve in the lab do well on the exams. The students who state that it is unfair are generally those who do well on the paper-pencil exams as opposed to the application portions of the course.

Some Sample Laboratory Practical Grade Distributions

General Chemistry		Chemistry for Non-Sciences Majors	
Scores	**Frequency**	**Scores**	**Frequency**
<-64	0	<-64	XXX
65-69	XX	65-69	XXXXX
70-74	X	70-74	XXXX
75-79	XXXXXX	75-79	XXX
80-84	XXXXXXXXXXXXXXXXX	80-84	XXXXX
85-89	XXXXXXXXXXX	85-89	XXX
90-94	XXXXXXXXXXXX	90-94	XXXXX
94->	0	94->	X
Totals	52		29

It is my contention that the laboratory practical is a realistic and appropriate exam for science laboratories. It tests directly the skills and knowledge that are to be developed in the laboratory. It tests skills that one assumes are being developed but are not tested in any other situation. And it is not redundant inasmuch as it does not test the same skills as the lecture exams.

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PROVING THE CRITICS WRONG

Our campus faculty community is fairly progressive. However, where teaching is concerned, conventional wisdom dies hard. As Charles Cole (1983) has pointed out, for a group of peole who often champion unpopular causes, faculty members are remarkably resistant to changing their assumptions about teaching. Three years ago, a new system for teaching extension classes came into being; COMNET involves teaching to multiple sites in Utah and Wyoming. [I have described involvement with my first class in an earlier *Innovation Abstracts*, Volume VIII, Number 23.]

Two commonly held beliefs about this system have been frequently expressed and represent prevailing conventional wisdom among faculty: (1) the learning experience for students over COMNET is bound to be inferior to the face-to-face, in-person course; and (2) student course evaluations for these classes are bound to be lower. So if you are up for promotion or tenure in a department where teaching counts, you would be well advised to avoid teaching a COMNET course. (Of course, if you are in a department where teaching doesn't count, you would be better off doing research and also avoiding such a course.)

Having taught two courses over the COMNET system and having felt I made some improvement each time, I was determined to make my third attempt a superior course. I was scheduled to teach a master's level Current Issues in Instructional Technology course during Winter Quarter 1987. I decided to give it my best shot and to prove the critics wrong.

I used all the tricks I could muster. Some of them are offered here for your consideration:

1. *Use a structured workbook, giving week-by-week assignments.* Students, especially in distance education courses, appreciate having clear structure to a course, including requirements spelled out in writing.
2. *Use teaching assistants to lead group discussions.* T.A.'s generally only operate the equipment and monitor tests at each site. Part of the initial hiring requirements for T.A.'s was teaching experience, and many took my request that they lead discussions very seriously. To accompany each student worksheet, I prepared a set of expected answers and instructions for T.A.-led discussions. The first twenty minutes after roll call in class each week was scheduled as discussion time. During this time, the various sites worked independently, checking with me individually by phone if a problem occurred.
3. *Hold teleconferences with experts.* This aspect of the course took considerable prior planning. In eight of the ten weeks in the course, we held a one-half hour telephone interview with experts from all around the country. Often, these experts were the authors of articles that students had read that week. Half the time was allotted for presentation, the remainder for question and answer, usually one question per site. One week's interview was with the author of the text, another week with a prominent author from the M.I.T. LOGO Group, another with a member of the President's Commission on Instructional Technology in Salt Lake City. The most prestigious expert was Dr. Harlan Cleveland at the University of Minnesota, discussing the thesis of his book, *The Knowledge Executive* (1985). Two interviews were with young entrepreneurs with utopian visions for education and technology, one from Wyoming and the other from Maryland; each had gone into business and then lost money when the idea didn't sell. These sessions with the experts were tremendously stimulating, but in no case was I able to offer any honorarium.
4. *Study topics requiring self-examination and introspection.* For students who had been experiencing distance education for a full year, what could be more appropriate than an examination of issues in distance education? Students read about the British Open University and similar experiments in the

U.S.A. For extra credit, many students rented the video, *Educating Rita*, a variation of the Pygmalion theme, a story of a British working-class woman who experienced the Open University and found herself changing as a result. Students understood well the conflicting time demands of job, children, spouse and college classes. We talked about those conflicts.

5. *Use assignments in the local setting.* In the section on telecommunications, students were required to search out and attend one class provided by telecommunications other than the COMNET system. This was something of a gamble, as I really did not know if enough of these projects would be available in outlying sites. As it turned out, a variety of these classes were available, and the point was made that they were increasing in popularity.

6. *Build the human element to overcome the technology's limitations.* As a course requirement, all students were to give short presentations, using at least one visual. I worked hard to keep classes interactive with high levels of participation in discussions. Because COMNET allows the instructor to originate the class from any site, I traveled to two of the sites I had not visited previously, taught the course, and was able to interact personally with two groups of students.

My final idea might seem to have undercut my experiment. I convinced students and faculty to meet on one Saturday, in person, at a central location (Salt Lake City), a four-hour trip for some of the students. As a group, we took a field trip to a videodisc courseware production facility, held a seminar with departmental faculty and over thirty students, and then held the two scheduled classes in person. It was a full day for all concerned and was the first time many of the students had met others in the program in person. I had the distinct pleasure of taking all of them to lunch, compliments of the University Extension office.

Would a critic of distance education be convinced by this demonstration? Probably not—I had obviously broken some of the rules of the test by convening a central meeting of participants. I will say, however, that as I taught the last class via teleconference from Lewisburg, Pennsylvania, I was satisfied with the outcome of the course. It had cost me a lot of work, including a week of Christmas vacation, getting organized. Student achievement and motivation were high. And the course evaluations . . . let's just say that I will certainly use them as evidence when the time comes for a promotion.

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TIPS FOR TEACHING EXCELLENCE AND STUDENT MOTIVATION

I. ATTENDING: motivating students by creating a classroom environment which fosters prompt and regular classroom attendance.
   1. Have a roster of student names the first day of the semester with which to check attendance.
   2. Learn students' names quickly, especially those students reticent about class participation: establish a seating chart; ask students to say their name before responding in class.
   3. Gather pertinent personal information about all students during the first class session: name, phone number, program, concurrent courses, goals for class, etc.
   4. Provide clear and detailed course objectives, class procedures, policies, and grading criteria the first class meeting.
   5. Stress the importance of regular and prompt class attendance: hold conferences with students who miss class regularly; encourage attendance by giving points for attendance, holding unannounced quizzes, or discussing test content frequently.
   6. Implement "telephone intervention" techniques: phone students who miss first and second day classes or who miss more than three classes.
   7. Use ice-breaking techniques to make students feel at ease in class and during interaction with other class members.
   8. Be enthusiastic, prepared, interesting, and organized for each class.
   9. Show an interest in all students and not neglect less-skilled students.
   10. Begin and end classes on schedule.
   11. Utilize all class time, beginning with the first class.
   12. Collect and respond to all assigned work (not necessarily with a grade).
   13. Return quizzes and exams promptly.
   14. Institute gatherings between students and instructors outside of class time: luncheons, parties, discussion groups, etc.
   15. Ensure classes are covered by a qualified substitute in the event of instructor absence.

II. RECEIVING: utilizing teaching strategies which spark students' imaginations and interest.
   1. Encourage students to take notes: write an outline of the key points of a lecture on the board or overhead transparency; ask students to copy the outline of key points and leave space under each heading for additional notes.
   2. Pace the rate at which presentations are delivered; use a variety of teaching techniques/aids.
   3. Try not to speak constantly: allow for periods of silence to let students digest ideas and to check student comprehension; a brief silence after asking a question results in a greater number and more thoughtful responses.
   4. Repeat and respond to student ideas to let the class members know that what they say is valuable.
   5. Implement structured and unstructured group discussions to encourage student involvement and idea-sharing.
   6. Make incorrect statements to check students' attention and comprehension, but remember to clarify incorrect information.
   7. Use unexpected/eccentric behavior as a teaching strategy: wear unusual clothes, adopt an offbeat persona.
   8. Keep students alert by moving around in the classroom: don't sit on the desk or constantly hide behind the podium.
   9. Make use of non-verbal clues to strengthen communication: eye contact, facial expressions, gestures, posture, tone of voice.
   10. Use non-verbal feedback from students to see how well they are receiving information.

11. Give students "multi-sensuous stimulation": films, recordings, field trips, etc.
12. Present case studies to spark student interest in course content.
13. Use the physical environment of the classroom to encourage student learning: decorate classrooms; rearrange the furnishings; have students sit in a circle, not in rows.
14. Focus on course content, not on current events or happenings in instructors' lives.

III. RESPONDING: motivating student reponses to other students, course content, and the instructor.
1. Create and maintain a non-threatening classroom environment; give all students the chance to respond without intimidation.
2. Be excited about course content and students' reactions to it.
3. Discuss controversial issues; take a controversial point of view; assign controversial homework to make the class thought-provoking and to foster critical thinking skills in students.
4. Ask thought-evoking, open-ended questions in class.
5. Respond to questions with related questions to evoke responses.
6. Request that those students who participate frequently hold their responses to give less verbal students a chance to respond.
7. Use various quiz strategies including unannounced quizzes to check students' comprehension of course content and to give students feedback on their learning.
8. Direct questions to the entire class and also to individual students.
9. Have students review previous class's content aloud before discussing new ideas.
10. Strengthen student participation by scheduling field trips.
11. Foster student interaction by having students select discussion group leaders or by allowing them input about quizzes and exams.
12. Conference with students who are having difficulty in a course, who are reticent about responding, or who are disruptive.

IV. VALUING: treating students as individuals whose feelings and ideas are valued.
1. Give individual attention to students whenever possible.
2. Promote an "open-door" policy for instructors' offices; be available for "instant" conferences with students.
3. Consider conducting mandatory conferences with all students.
4. Personalize responses to student essays, exams, and homework.
5. Continue personal contact with students outside of the classroom: address students by their names outside of class; collect an interest sheet for each student.
6. Sponsor faculty and student social events, especially early in the semester.
7. Send students without a major to an academic counselor for advice, information, testing.
8. Identify students' other instructors and collaborate with them to aid learning.

V. COMMITMENT: providing role models for students' academic lives and motivating them to learn.
1. Clearly define the course objectives.
2. Set challenging, yet obtainable standards for students.
3. Aid students in clarifying their reasons for taking a class and for being in college.
4. Serve as role models for students by practicing academic integrity: keep promises to students.
5. Know and use current theories and practices in teaching disciplines.
6. Be willing and enthusiastic to confer with students at the students' convenience.
7. Include students' home phone numbers on the course syllabus.
8. Establish a mentor system to aid part-time faculty in their own teaching.

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