



Friday
February 16, 2007

**SUCCESS
IN THE CLASSROOM:
SHARING PRACTICES
THAT WORK**

**The Second Annual
UNM Community
Conference for Faculty
by Faculty**

Abstracts listed alphabetically by author's last name;
not all presenters provided an abstract

Office of Support for Effective Teaching (OSET)

www.unm.edu/~oset

Teaching Interdisciplinary Course Involving Technology: Barriers to Breaking Down Barriers

Edward Angel, Professor and Presidential Teaching Fellow

Departments of Computer Science, Electrical and Computer Engineering, and Media Arts
angel@cs.unm.edu

Although it is widely accepted that the world is depending more and more on technology and that future advances will depend on our ability to take interdisciplinary approaches to problems, what is less clear is how these factors apply to our teaching. Besides questions of how to apply technology to our teaching, there are deeper issues relating to how faculty from multiple disciplines can adapt their classes (or create new ones) that respond to rapid changes in technology and to the changing interests of students who want to enter the new interdisciplinary world.

In this talk, I will discuss my own experiences in starting interdisciplinary courses between the School of Engineering and the College of Fine Arts. These classes are one factor that led to the establishment of UNM's new interdisciplinary Art, Research, Technology, and Science Laboratory or ARTS Lab (artslab.unm.edu). These efforts were a step in breaking down the barriers between Art and Engineering and Science. As UNM develops its proposed Interdisciplinary Film and Digital Media Program, it is a good time to examine some of the difficulties that remain. Rather than addressing the usual (although well justified) complaints about lack of resources, I will address other issues including the structure of the university, the effect of the tenure process, and the responsiveness of the academic community that impact our ability to teach interdisciplinary classes, especially those that involve technology.

Cooperative-Learning Approach to Teaching Large Introductory Classes

Yemane Asmerom, Professor

Department of Earth and Planetary Sciences

asmerom@unm.edu <http://asmerom.unm.edu>

Student engagement in large lecture-based classes is a major challenge. One approach into creating greater degree of engagement is to use cooperative learning, a form of collaborative-learning, in which students work in small groups using learning modules aimed at encouraging critical thinking and discussion. Research on student learning shows that students working in groups tend to gain a deeper understanding of content matter and retain it for longer time than students in lecture-based classes (Johnson and Johnson, 1991;Slavin,1991). Moreover, cooperative-learning leads to greater degree of satisfaction.

For a number of years I have been teaching a section of physical geology [E&PS 101] as a problems-based collaborative-learning class. Typical enrollment is about hundred students. At the beginning of the semester the students are randomly divided into permanent groups of six students. The material for the class is divided into five thematically coherent clusters. For example, one cluster consists of the interior of the earth, igneous rocks and volcanism on earth. At the beginning of each cluster I give an hour-long lecture, highlighting major themes, pointing important concepts and underlying principles. In subsequent classes, I start with a 15 minute introduction to material that will be covered in the next class. Following this, the students work on group modules. The modules consist of short narratives and data followed by questions that the groups answer cooperatively. Some of the modules have hands-on materials, such as minerals and rocks. My TAs and I circulate in the groups answering general questions and clarify issues. At the end of the class they complete an individual closed-book quiz based on material covered in the group module. The students are provided with a reading guide to the textbook and before coming to class they complete an online WebCT quiz on the material for next class. The quizzes are constructed with the aim of directing their reading. Module grades constitute 40% of the final grade.

I have not conducted a formal assessment of the effectiveness of this approach for this particular class. In previous years I taught the same class as a standard lecture-based class. Informally, the students seem to enjoy group work and do better than students in my previous lecture-based classes, as measured by grade distribution and overall interest. The feedback on group work is generally positive. ICES scores do not seem to reflect the differences however. I hope to do formal assessment at some point in order to quantify student achievement and satisfaction.

Johnson, D. W., and Johnson, R.T.,1991, Learning together and alone: Prentice Hall, Englewood Cliffs, N.J.

Slavin,R.E., 1991, Synthesis of research on cooperative learning: Educational Leadership 48, 71-82.

Resources on collaborative and problem-based learning:

Active Learning: Cooperation in the College Classroom, by David W. Johnson, Roger T. Johnson, Karl A. Smith, Interaction Book Co., Edina, MN [ISBN-10: 0939603144]

[The Power of Problem-Based Learning](#), A Practical "How To" For Teaching Undergraduate Courses in Any Discipline, edited by Barbara Duch, Susan Gron, and Deborah Allen, Stylus Publishing [ISBN: 1-57922-037-1]

A simple Google search will direct you to a number of collaborative and problem-based learning centers.

INFORMATION LITERACY: SUCCESS IN THE CLASSROOM AND THE UNIVERSITY LIBRARIES

Carroll Botts, Coordinator of First Year Instruction Services
University Libraries
cbotts@unm.edu

What is Information Literacy? What is Data Smog? Why am I asking these questions?

In 1997 David Shenk coined the term Data Smog; it refers to the idea that too much information can create a barrier in our lives.¹ Today your students have access to more information at their finger tips than ever before. How do they cope with the resulting Data Smog?

Information literacy is the solution to Data Smog! The Association of College and Research Libraries defines information literacy as the set of skills needed to find, retrieve, analyze, and use information.²

Your University Libraries Department of Instruction and Information Literacy can show your students how to avoid Data Smog by teaching them how to access and evaluate information in your academic field. This can include critical evaluation of internet sources, finding materials in the University Libraries, or locating scholarly articles using our more than 300 online databases.

Schedule a class in one of our online classrooms on the University Libraries website at http://elibrary.unm.edu/inst_req.php Sign up today!

¹ Shenk, D. (1997). *Data Smog*. San Francisco, California: HarperEdge.

² <http://www.ala.org/ala/acrl/acrlissues/acrlinfolit/infolitoverview/introtoinfolit/introinfolit.htm>

Understanding How Adults Learn: Research and Information on Multicultural Adult Learning Styles

Patricia Boverie, Professor

Organizational Learning and Instructional Technology

pboverie@unm.edu

Have you ever wondered if you are really reaching all of your students? Do they seem to be bored or not comprehending the material you are presenting? Have you ever wondered if maybe there are other teaching techniques that might help? If you have these thoughts, you are in good company. Truth is that most college professors have never been exposed to good teaching techniques – mostly they teach like they were taught, and so new teaching techniques are seldom explored.

The purpose of this presentation is to present some of what we know about how adults learn. All college students are considered to be adult learners. Understanding the nuances in how they differ from younger learners has been shown to make significant differences in the performance of adult educators. This is especially important to understand at a university that has a higher than average age population of students, such as UNM. This presentation will include three sections, 1) a short discussion of adult learning theory, 2) A discussion of relevant teaching techniques and approaches for reaching adult learners, and 3) discussion and research on multicultural adult learning styles.

Section One:

A very brief history of the development of learning theory relevant to adults will be presented comparing traditional pedagogy to more recent andragogy, the study of adult learning. More an approach than a theory, andragogy takes into account research and practice on how adults learn and the environments that help adults better learn. A comparison between traditional pedagogy and andragogy will be highlighted.

Section Two:

The research on college teaching indicates that most college professors teach in the manner they were taught. This tends to keep teaching strategies limited to lecture/test formats, and reduces creativity in teaching. Advances in our knowledge of adult cognitive development, development of learning theory and practice, and specific research on how adults learn provide us with a) more and better techniques to use in the classroom, b) a better understanding of matching teaching practice to audience, and c) more appropriate, age-related techniques for keeping our audiences interested and motivated to learn.

Section Three:

Research that has been conducted by two students and myself and another faculty member on multicultural learning styles will be presented with recommendations for reaching diverse adult learners. This study looked at three levels of cognitive processing using 206 Native American adult learners and 240 Hispanic adult learners. A discussion on the results and conclusions of this study will be presented.

Bridging the Learning Gap with Wireless

Ann K. Brooks, Lecturer
ASM Department of Accounting
brooks@mgt.unm.edu

Robert J. Tepper, Lecturer
ASM Department of Accounting
rjtepper@unm.edu

Practice, practice, practice! If only students would spend more time with the material! We thought that students would perform better if learning was fun, and plenty of help was available. So we developed a series of initiatives relying upon the wireless network available at ASM (Anderson School of Management). In our presentation, we will talk about the use of in-class exercises that students downloaded from our wireless network, and then worked in class in teams, with one-on-one instructor help if needed. We will also talk about the use of an online homework management system, with wireless being used in class to introduce the students to the system. Although we are aware of numerous technology choices that students can use outside of class, how can those same resources be integrated into and capitalized upon in class? We will then explain how we met our objectives to (1) introduce students to the wireless network, (2) increase faculty-student interaction in large classes, (3) increase the confidence of our students in solving basic accounting problems through the use of “hands on” experience with help readily available, and (4) increase the satisfaction of our students.

Using a Case studies Approach to Teaching Technical Writing

James Clarke Burbank, Lecturer II

English Department

jimbu@unm.edu

Students who take technical writing courses often confront difficulties visualizing the context for letters, memos, analytical reports, proposals or other technical documents. They struggle to understand how they, as writers, relate to readers who have complex motivations. Since virtually all technical documents are written to get readers to take action, it is vitally important for students to use writing as a means of responding to reader needs.

While it is important to teach the various “genres” of technical writing to students, without a sense of the rhetorical demands of writing in the real world technical and scientific situation, students are apt to think of the writing they do for the tech. writing class as just more class “papers.”

One of the most imposing challenges in teaching technical and professional writing is, therefore, how to situate the student in the complex circumstances and constraints of the real world technical writer who must solve problems and respond appropriately and even artfully to readers, and their practical needs.

Using case studies to structure “writing problems” can allow students to analyze, discuss, and respond in writing to complicated communication situations. Case studies can also formulate critical thinking challenges to students. Case study analysis engages students in actively grappling with the ethical and practical dimensions of real world problems.

Engaging Today's Students: Make Your Course "A Path Strewn with Flowers"

John A Caffo, Lecturer II

Department of Physics and Astronomy

jcaffo@unm.edu

Our desire, as teachers, is that students show interest or at least give attention to the topics of our courses. But much of the time their minds are in worlds far away. This is especially true with today's Generation Next students, who at times tend to be very difficult to reach. Their desires, attitudes and actions can interfere with learning. Examples include feelings of entitlement, lack of responsibility, unreasonable expectations, inability to follow simple directions, missing class, arriving late, leaving early, short attention spans and desires to be entertained. Each of us can probably add more examples to this list.

Nineteenth century English physicist Michael Faraday recommended making talks to the general public "A Path Strewn with Flowers". I believe we can use his advice to help reach some of today's difficult students. I will discuss some approaches that I use and look forward to hearing your ideas. At the most basic level, we should approach the students where they are at and then try to draw them towards and into the topics of our courses.

For example, we can bring our personality and life and humor into our classes. I bring up interesting life experiences such as how I met my wife, biggest regrets and mistakes, what I did last summer or perhaps what happened over the weekend. Although class time will be lost with this and other approaches, I believe the adage "less is more" applies.

In my 1 hour and 15 minute classes, we take a 5-minute break. This gives students a mental break, a chance to get back to their worlds and it provides an informal setting for students to approach me about any topic including personal issues. Many of these students simply would not or could not attend normal office hours and would not try to make a special appointment. I am shy and introverted and very private by nature, but I always try to smile when I talk to individual students because I know that others are watching me.

In class, I try to put on a show and do unusual things, even though it goes against my personality. In my physics courses and in my astronomy courses I move around the classroom and try to keep things in short segments like a TV show. I create opportunities to do unexpected things like jump off a chair. I talk about "gee whiz" topics, make every topic sound important and dress in interesting ways (again, going against my nature).

I tell stories. I present the most important topics in introductory physics and astronomy in the context of their history; it would be hard to make up stories so strange and interesting. For example, I put students in Isaac Newton's mind, they know what he knew at a given point, and I ask what would they do next. Step by step, in students make the discovery along with Newton. The Newtonian Synthesis story takes roughly 2 weeks and serves as a platform to present some important facts of physics. Students remember the material better and many wonder what happens next. They have something to look forward to later in the class, the semester or in future courses. Maxwell's discovery of what light is a fascinating two-month story. Last spring, a student from 10 years ago told me she still remembered the climatic class of the Maxwell story. Students become involved with the topics of the course. Physics and Astronomy topics are ideal for this approach. There are so many stories to tell, premises to debunk, and paradigms that will be shown to be wrong. But surely this approach could be used in other content areas.

Use of clickers is another good approach to get students involved in the world of your class. I hope I can hear from you about other things that might work.

Reaching out must be balanced with clearly stated rules of our world such as regular class attendance, no talking in class or working on other homework. Nothing we can do will reach everyone; some students seem to be beyond any reaching out. But some otherwise "unreachable" students will react in very positive ways. Some students will eagerly look forward to class. Life long friends are made. And I look forward with excitement to my classes.

Universities as Facilitators of Community-Based Learning: The Politics of Empowerment

Marilyn R. Davis

Community Outreach Coordinator, Research Service Learning Program

davism@unm.edu

This presentation will demonstrate how an innovative Higher Education Research Service Learning Program connects course curriculum and education theory with democratic community organizing principles to guide students as a group in the development of listening and hearing skills; the ability to respond to school and community based needs and; collaboratively discuss, act, and reflect upon the needs of a community through research and problem-based service learning.

How Online Courses Can Support Student Writing

Jane Erlandson, New Media and Extended Learning

Lisa Gerber, Lecturer, Religious Studies / Philosophy

Our presentation focuses on how we can enhance student writing in online courses.

Online courses are a perfect opportunity to focus on student writing, since all the work is written. We will discuss how to develop writing assignments that act as building blocks for student writing. In addition to traditional papers, instructors can use such things as discussions and journaling to develop the quality of student work. We will also explore the interactive components of WebCT Vista and how they can be used to support good student writing.

Lessons Learned Teaching Basic Animation in Flash™

Nick V. Flor

Associate Professor, Information Systems

Anderson Schools of Management

flor@mgt.unm.edu

One of the most difficult types of courses to teach is the four-week summer course. In such a course, each class runs about three hours, and you must teach four days straight—each day equivalent to a week in a normal semester.

Using equivalent conventional teaching methods, this means you lecture every day for three hours and you give students an assignment that is due the following day. It also means that you are grading and returning assignments almost every day.

Both students and instructors face clear problems when conventional teaching methods are used in a fast-paced summer course. Students have less time to understand the material, as each day is equivalent to a week. Instructors can become exhausted from teaching three hours each day and having to grade assignments daily.

My solution was to switch from conventional lecture-based instruction to drill-based instruction. I define a drill as a problem requiring a creative solution, which a student can solve in five to ten minutes.

My drill-based instructional procedure was as follows:

1. Break each day's material into a sequence of conceptual blocks that build in complexity. Create drills that test the students' understanding of each block.
2. At the beginning of class, drill the students for ½-hour to ¾-hour on the previous day's material. The only exception is the first day, where instead of drills you give them the outline for the course.
3. Next, lecture for ½-hour on the new concepts (see step 1).
4. Finally, give students drills for the remainder of the day that test the new concepts (from step 1). While the students are doing drills, walk around answering questions, giving tips, and correcting wrong solutions.
5. At the end of the week, give the students a homework assignment that encompasses all the concepts for the week.

Using drill-based instruction, summer classes are enjoyable for both instructors and students alike.

I will present examples of drills from my 2006 summer class on Flash™-based animation, as well as sample final projects from this class completed by non-technical students, which support the effectiveness of the drill-based approach to teaching.

Learning in the Neighborhood: Reaching Diverse Learners Through an Online Application

Jean Foret Giddens, PhD, RN, Associate Professor

College of Nursing

Jgiddens@salud.unm.edu

Problem: The lack of diversity within health professions has been identified as a significant problem that contributes to disparities in health care delivery, particularly to minority populations. Nursing education is in a pivotal position to facilitate greater diversity within the profession. Achieving diversity starts with efforts to admit a more diverse student population, however, the highest attrition rate and highest failure rates on the nursing licensure examination continue to be among minority students. Thus, the challenge faced by nurse educators is to design strategies to support the progression and ultimately success on the NCLEX-RN among diverse students admitted to nursing education programs.

Background: Two major factors contribute to high attrition rates among minority students: educational preparation and educational climate. As a group, underrepresented minorities are not well prepared for higher education; consequently many are identified as “at risk” students. Many programs have been implemented designed to improve retention of minority students, however these tend to focus on students as though they are the problem as opposed to addressing some of the limitations in the education system. Traditional approaches to nursing education have limited flexibility for change to accommodate diverse learners. Pedagogical practices consisting of excessive reading assignments and lecture delivered in content-saturated curricula continue to predominate. Changes in teaching approaches are needed to support the needs of diverse learners seen in nursing programs today.

The Neighborhood: A Web-based application. *The Neighborhood* is a virtual Web-based community featuring characters within several households and community agencies. It represents a multicontextual application that facilitates conceptual learning. Household characters represent individuals of various cultural groups across the age, health-illness, and socioeconomic spectrums. Healthcare issues are depicted through these characters representing biophysical and psychosocial issues across multiple environments within the home and community agencies. Community agency characters depict personal and professional issues faced in a number of nursing roles. Character stories (enhanced by photos and video vignettes) are featured on a weekly basis over 3 academic semesters; students access the website at their convenience. As a multi-contextual platform, *The Neighborhood* supports the learning needs of all learners across the entire undergraduate nursing curriculum through links to three well-founded teaching strategies (story-telling, case-based learning, and interpretive pedagogies) representing constructivist, humanistic, and neurophysiologic learning theories. Because learners and faculty have a shared understanding through the character experiences depicted in the stories, the learning experience extends beyond the walls of the classroom, facilitating a different type of teaching and learning environment.

Links to Research and Practice: There is no question that educational research must be done to understand the effectiveness of multi-contextual learning approaches, targeting not only student outcomes, but also changes associated with pedagogical practice. If successful, this approach has the potential to have a profound impact on nursing and other health sciences education. Significant improvements in education systems may translate to greater diversity within the nursing practice and other health professions workforce.

Promoting Active Citizenship—Letter-writing as a simple strategy for moving beyond the classroom to link research with political action.

Constantine Hadjilambrinos
Associate Professor
School of Public Administration
hadjilam@unm.edu

The research paper is a ubiquitous assignment, common to most humanities and social science courses (and many science courses as well), that can be very effective in training students to utilize most of the skills and habits of mind that are necessary for a citizen to participate in a democratic system. Yet, even when these skills and habits are learned well enough to become fully internalized, students remain largely disconnected from the political process—they most often do not become active citizens. Extending assignments such as the research paper (but also class projects, debates, and most of the other strategies used to enhance students' research, analytical, and communication skills) to include writing letters to relevant policy-makers is a simple strategy for teaching students how to engage actively in the political process. Once the student has formulated a reasoned opinion about a policy-relevant topic, he or she is then asked to determine which policy-makers (federal or state legislators, mayor or city councilperson, executive agency administrator, etc.) have the power to act on this subject. The student researches the contact information for the appropriate policy-makers and writes and sends a letter that discusses the student's findings and urges the policy-maker to some action.

Learning How To Study Is The Key To Success

Lorna Joachim, Adjunct Professor of Research in Psychology

Department of Psychology

ljoachim@unm.edu

All across America people are talking about how students are ill-prepared for the academic challenges awaiting them at university... and rightly so! As educators we are distressed by the level of ignorance that students display on a daily basis in core subjects like mathematics, science, literature and history. Be that as it may, we hope that our courses will offset academic deficiencies by broadening minds and stimulating interest. The problem is most students haven't got a clue how to study even the most basic content materials. How can we hope to broaden minds and excite interest if students do not know how to study the materials we give them? This presentation will highlight a few basic study techniques that I have given to struggling students here at UNM; which appear to increase performance in most cases. These techniques show students how to (1) read course materials, (2) take notes, (3) understand course content, (4) assimilate information, (5) utilize office hours and (6) perform better on tests.

Delivering Impact Lectures and Presentations

Len Kravitz, Ph.D.

Exercise Science

lkravitz@unm.edu

Here are 8 key suggestions to consider for delivering impact lectures and presentations to your students.

Key 1: Know Your Students

Try to be aware of the concerns, interests and possible beliefs of your student audience about the topics you are presenting in your course. What are their expectations from you, and how can you best address them?

Key 2: What is the ‘Essence’ of Your Presentation?

Some professors start to ramble, causing their lecture to fall flat. One solution to this common speaking problem is to focus on the ‘essence’ of your presentation. What is the essential information you are discussing or delivering? What are your main points? What actions or directions do you want your students to take? Answer these steps as you prepare your lectures.

Key 3: Ready, Get Set, Stop—Check out Your Presentation Space

In my many years of attending lectures, I have seen countless professors fail to do this one important key to ensure a successful lecture—know your space and equipment. Identify where you will place any lecture aids if you may be using them. Check out the space where you feel any demonstrations will best be seen, and familiarize yourself with the audio-visual equipment and room lighting. All of us have had the (sad) opportunity to observe a professor fumbling with equipment, or demonstrating an concept/idea that no one could satisfactorily see. Remember, not preparing for all aspects of your presentation space (and equipment) may undermine much of your professional credibility in the eyes of your students.

Key 4: Greeting Students

I enjoy being the ‘gregarious’ greeter of students in my classes. Nowhere is it written that the professor should avoid talking to class members before the lecture, yet so many professors do just that. If the time and/or opportunity allows for it, greet members of your student audience before you lecture. In many ways this builds a positive communication bridge with you and your students.

Key 5: Reading Slides

No one wants to come to a lecture to see a professor read his/her power point slides. Take the time to review your materials so that you can deliver you lecture, without just reading it. Also, allow your energy and motivation for the topic to extend to your students.

Key 6: Practice Helps

Great lectures just don’t happen. When you are under-prepared, you will typically be too preoccupied with the wording of the lecture that you may fail to develop that energetic, engaging communication with your students.

Key 7: Is Your Presentation Stimulating?

Most student audiences enjoy varied, stimulating, and attention-provoking lectures, and only through your conscientious attention to details, facts and information will you be able to provide this.

Key 8: Dare to be Different

Observe and learn from your fellow colleagues, but allow your presentation style to be different. Try combining your experience, knowledge, passion, beliefs and creativity to develop the exceptional professional image you want to project.

Recommended Resource for Giving Presentations: www.presentersuniversity.com

Community Building in the Classroom

Nancy Lopez, Assistant Professor, Sociology
nlopez@unm.edu

How do we foster community building and collaboration among classroom peers? How do we create a respectful and democratic classroom community where everyone feels free to share his or her experiences as we engage in boundary crossings (e.g., race, class, gender, religion, ethnicity, sexuality, disability, teacher/student, etc.)? This session will discuss the use of portfolios, journal writing, reflections, rotating small group work and peer-editing of research papers as strategies for building learning communities in the classroom

Writing Summaries to Consolidate Learning

Wanda Martin, Department of English

College students read a great deal of material in unfamiliar disciplines, and too often faculty ask them to respond to, evaluate, or apply what they've read before making sure that students have understood the reading. A little time spent teaching students to summarize their reading will help students hold onto the knowledge they gain by reading, build a stronger foundation for more complex thinking, and enable teachers to know what students really understand. This presentation will offer a five-step process for writing summaries that can be introduced in one class session.

Steps:

- Read the whole piece for “gist.”
- Decide the piece’s purpose or main point.
- Find logical sections.
- Write one sentence that captures each section’s main idea or information.
- Reshape these sentences into a coherent, “topic sentence” paragraph.

Converting Your Brick and Mortar Class into a Virtual Classroom

William Alan Miller, Teaching Lab Supervisor

Physics and Astronomy

wmiller@unm.edu

I will share with you my experience developing a web based course.

Some of the main concerns are:

Content

Converting your course material to html can be a huge job. I was fortunate in that the bulk of the content was already in html. However there was still a lot to do to adapt. What was presented by a teaching assistant in the classroom now had to be something that an online student could wade through on their own.

Assessment

Each Learning module had to have an assessment in order to measure the student's knowledge. Respondus is an easy to use tool for creating quizzes. Creating a complete assessment tool is time consuming but not difficult.

Help

New Media was extremely helpful. At every turn there was someone I could call or e-mail with my questions. Most problems were fixed that day. In the long term there is support to improve your course and make it better each semester. How much help to offer students is difficult to determine. There must be a limit or you will not be able to do any thing else.

There are only 24 hours in a day

The hardest part is when to say enough is enough, I need a day off! With 24/7 instant access it is tempting to be there every hour of the day. The first semester is like taking care of a new born. Learning when to take time off is important. Most students will wait until the last hour to attempt an assignment. Make it clear that they are on their own after a certain point in the week.

Please submit your abstract no later than Thursday, February 1, 2007, as an email attachment sent to gsmith@unm.edu. For questions, please contact Gary Smith (gsmith@unm.edu) or Jim Burbank (jimbu@unm.edu).

Success in the Classroom: Make it Relevant and be a Role Model

Michael Nakamaye, Associate Professor, 2006-2008 Presidential Teaching Fellow
Department of Mathematics and Statistics
nakamaye@math.unm.edu

Professors are usually passionate about their research but often find that their students do not share this enthusiasm. I will discuss two important aspects of encouraging student interest. First, a real effort must be made to integrate every day interests and experience in the classroom. Secondly, professors must realize and utilize the fact that the classroom offers not only a place to share and communicate ideas and information but also an opportunity to lead and inspire by example.

The Challenges and Rewards of Teaching a Linked Course in the Freshman Learning Community

Jeff Nine, M.D., Associate Professor, Pathology, jnine@unm.edu

Susie Sanchez, M.A., Part-time Instructor, English, ssanchez@unm.edu

Hundreds of first-semester freshman are enrolled in the Freshman Learning Communities (FLC) each year at UNM. As part of Freshman Academic Choices and University College, these linked seminar courses have been successful in helping young students integrate into the college environment, as well as giving them an exciting alternative to traditional early level required courses. Taught as a 6-credit-hour offering, the FLC consists of a seminar class (ARSC 198) linked with either an early level English or Communication & Journalism class (i.e. ENG 101). This seminar will discuss the unique challenges, as well as amazing rewards, that come from being an instructor in this setting. We will discuss strategies used that help the classes stay linked and pertinent to one another, and discuss the elements that the students find important to the success of the class. The seminar will be valuable to all those who have either thought about teaching an FLC or have already been a participant in a linked-style seminar class. The presenters have taught together the last three years in the FLC program as part of FLC-608.

Helping Students take Ownership of their Learning –Teaching in the Freshman Learning Community

Bruce Noll, Lecturer, Educational Leadership and Organizational Learning, and Sandy Brantley, Museum of Southwest Biology

banoll@unm.edu

A major part of learning is in the finding one's own voice. That is, taking ownership, the buying-in, as it were, of responsibility. For many young adults this is new territory when they have come from school environments in which they have been told what and how to learn (and recently having been methodically "taught to the test"). Part of our task as facilitators of higher learning is to help young learners see the world anew and interpret their observations through a deeper intellectual lens. In this session we will share some ways we attempt, through the teaching of both science and oral communication, to encourage individual observation, thinking and expression of ideas.

Many students have to be shown that the quest, the seeking, of something is sometimes greater than the finding. And, as we all know from our work, the finding almost always leads to deeper questioning. How do we transfer the thrill of this adventure to younger learners who are so caught up in a thousand distractions of coming to college, being on their own and experiencing so many other new things in life? We who teach all struggle with this and most of us who stay around for very long in this enterprise have found ways to cope. We will share a few things that work for us a good deal of the time.

Looking at the World

Observation, reflection and reporting is a generic activity regardless of the discipline students may be interested in. Asking people to sit quietly and "unplugged" outdoors is a new experience for some. For the entomology course, students are assigned an observation paper in which they spend at least an hour observing and recording insect behavior. What kinds of insects do they see, what are they doing, how do they interact with each other, what's the weather/habitat like? This brings up the difficulty of communicating when you're not sure of the name of the insect or behavior you're watching, so the students have to describe well what they have seen. They then see the importance of needing some "technical" terms in order to communicate better. The assignment develops empathy with animals very different from ourselves and stresses the importance of questioning and observing, rather than just writing reactions/feelings.

Communication theory can be distant and too analytical at first for students. They are introduced to terms such climate setting, context, goals and purpose, and perhaps gain an understanding on some level. To get students to see these concepts in everyday practice they are asked to observe in conversations of their peers how people assert individuality, build a community, develop and articulate a perspective, secure adherence, just a few of the jargon terms we use to attempt to influence, negotiate issues or conduct activities. They are required to observe, identify theoretical constructs and then write a coherent account of what has taken place.

Communicating the World

Our classroom is both a lecture room and a lab, sometimes simultaneously. It often becomes a workshop when we integrate our disciplines, so for us it's important that we attend both class sessions. For instance, in one activity the students work in groups of three (this works out to 8 triads) and each group is randomly given a brief report or article about a new finding on insect behavior or a discovery that has implications for human society (in medicine, engineering, architecture, ecology, eg.). The students are told that each of them will give a short oral presentation on their interpretation of the information given. They are provided with flip-chart paper, colored markers and given about 30 minutes to decide how best to communicate the idea to others. At the end of the time limit the papers are hung about the room and four "poster presentations" are given simultaneously as one person from each group explains to a small audience made up from other group members. After five minutes students rotate and a new member from the triad presents to a new group. So, each poster is presented three times. In the next fifteen minutes the second set of four triads present in the same manner.

The advantage to this activity is that the every student has to stand and informally talk to a small group of their peers, in essence to teach them about a new scientific finding. They are encouraged to be creative and the members of a triad work together to develop the design and content of the poster. Every student is also part of the audience and practices active listening and provides feedback or questions to the presenters.

We stress that there are creativity and discipline in any endeavor, whether it's writing sonnets or analyzing a genetic sequence. Both of us have backgrounds in the liberal arts and in biology which allow us to integrate our disciplines in teaching. Our FLC course is an effort to show students how to approach an unfamiliar subject (and that everyone has unfamiliar subjects), that they can become skilled in different styles of oral presentation and that curiosity about the world is vital to lifelong learning.

Engaging Students with Problem-Based Writing Assignments without Burying Yourself under the Paper Load

Chuck Paine, Associate Professor, Director of Rhetoric and Writing
Department of English
cpaine@unm.edu

The premise of this session is that we can help students develop the democratic/critical skills they need (e.g., observe and report accurately, deliberate constructively with others, propose questions and hypotheses, gather and analyze data, and critique and make arguments) if we integrate into our courses writing and other critical thinking activities that pose interesting problems for them to grapple with.

Using numerous examples from across the disciplines, I hope to convince you that 1) writing activities can be profitably used in *any* course (including large format courses) and 2) many of these activities require minimal or zero grading time.

I'll provide a multi-page handout that details some basic principles for assigning problem-based writing and thinking tasks. More important, the handout provides a rich array of examples of problem-based activities from a wide variety of disciplines— thought provokers for exploratory writing, short (2–3 page) assignments or very short (one-paragraph) “microtheme” assignments, longer formal writing assignments or as options for research paper topics, tasks for small-group problem solving, opening questions for a whole-class discussion, questions for in-class debates, essay-exam questions or practice exam questions. Each participant, I think, will discover at least one example that they can use in their course immediately.

Finally, we'll look at some tips and tricks for handling or completely avoiding the paper load: scoring guides (rubrics) to help you or your assistants grade quickly and consistently; assignment checklists to keep you from wasting time on careless student work; “models feedback” to help communicate your standards; and others.

Some Democratic Skills and their Implications for Teaching
Stephen Preskill, Regents' Professor
Educational Leadership
Preskill@unm.edu

This presentation will be divided into three parts.

1. We will begin with a brief discussion of one definition of Democracy and how this definition has been translated into a set of Educational Goals. In brief, following John Dewey, democracy is less a system of government and more a way of life that demands the participation of every person in the formation of the ideas, values, and practices that shape how people in communities grow together. Democracy also entails a “faith in human intelligence and in the power of pooled and cooperative experience,” particularly when that intelligence and power are enhanced by education.

2. We will then proceed to a brief listing of Democratic Educational Goals that Wanda Martin and I came up with, which in short form look like this:

- **Observe and report accurately**

- **Present his or her own point of view persuasively**

- **Respond to other views constructively**

- **Deliberate cooperatively**

- **Act and evaluate results consistently**

3. We will conclude with a few thoughts on what we as instructors can do to make it more likely that these goals will be addressed in our teaching. Opportunities should be found in small classes particularly for students to observe, report, speak and write, listen and respond, collaborate, take action, and reflect on that action. And even in large classes, where lecture necessarily predominates, lectures can be presented in such a way as to honor multiple points of view, unresolved problems, contested issues, and how understanding grows out of collaboration and shared knowledge.

Using Concept Inventories to Measure Student Learning Gains

Aurora Pun, Adjunct Assistant Professor and Senior Research Scientist

Department of Earth & Planetary Sciences

apun@unm.edu

Are my students learning what I think they should be learning? To assess if my students are learning the concepts I think they should be learning I administer concept inventories in my introductory classes. A concept inventory is a set of conceptually based multiple-choice questions and is a quantitative assessment instrument to evaluate if students understand fundamental science concepts and to determine if the students have misconceptions. Published concept inventories exist for several disciplines including physics, astronomy, chemistry, biology and geology. I administer the geological concept inventory (GCI), which emphasizes fundamental concepts learned in first-semester geology classes, including foundational concepts in physics and chemistry. The GCI has been rigorously tested nationwide (Libarkin and Anderson, 2005).

Administering the GCI provides a means to evaluate learning and teaching effectiveness. I use a variety of teaching methods including lecture, peer instruction with personal response systems ("clickers"), whole class discussions, and small-group collaborative learning activities. I administered the GCI as pre- and post-tests in each of my physical geology (EPS 101) classes over the last three semesters. Comparison of eighty-one individually matched pre- and post-tests indicates that my students are improving in their understanding of fundamental geologic concepts. Mean raw pre-test scores of 37% improved to 58% in post-test scores (gain of 21%). Compared to the national averages of a matched mean pre-test of 43% to a mean post-test of 47% (gain of 4%), my students show a greater improvement in their understanding of basic geologic concepts and correction of misconceptions. Normalized gains for all of the matched tests in my classes is 32%, where the normalized gain is the change in score ($\text{postscore}\% - \text{prescore}\%$) divided by the maximum possible score ($100 - \text{prescore}\%$). This means that my students increased their understanding by 32% of what they could have gained between their pre- and post-tests.

Are the proportionately greater gains a reflection of my teaching style? McConnell et al. (2006) indicate that the use of conceptests (higher-order multiple-choice questions that focus on one key concept of a learning goal) in conjunction with peer instruction is an effective teaching technique that improves student understanding. I, too, use conceptests along with peer instruction in my classes. The McConnell et al. (2006) study showed that the use of conceptests and the GCI resulted in an improvement of student scores on the GCI from pre- to post-test scores. Similar to my classes, the classes in their study showed a greater improvement in overall GCI scores than the national average.

Like the results found in the national study (Libarkin and Anderson, 2005), many students who enter my class with misconceptions are still leaving the classroom with these misconceptions intact. Analysis of matched pre- and post-test questions show that most of my students retain misconceptions about the scale of geologic time, the occurrence of events in geologic history, and the specifics of absolute dating. This trend of misconceptions among all my classes indicates that I must reflect upon my current approaches to the instruction of these topics.

The use of the GCI has provided me a quantitative means of assessing the learning of fundamental scientific and geologic concepts for my introductory physical geology classes. Although my students have shown significant improvement in their understanding of fundamental geologic concepts after the course is over, they still leave with some entrenched misconceptions. Using the GCI has given me specifics in the areas of their misconceptions and provides me with insights to my teaching effectiveness.

References:

Libarkin, J. C. and Anderson, S. W. (2005) Assessment of Learning in Entry-Level Geoscience Courses: Results from the Geoscience Concept Inventory. *Journal of Geoscience Education*, v. 53, no. 4, p. 394-401.

McConnell, D. A., Steer, D. N., Owens, K. D., Knott, J. R., Van Horn, S., Borowski, W., Dick, J., Foos, A., Malone, M., McGrew, H., Greer, L., and Heaney, P. (2006) Using Conceptests to Assess and Improve Student Conceptual Understanding in Introductory Geoscience Courses. *Journal of Geoscience Education*, v. 54, no. 1, 61-68.

Clickers in Large Classes - Turning a Skeptical Professor into a Believer

Jane Selverstone, Professor

Department of Earth & Planetary Sciences

selver@unm.edu

Students in large classes (>100 students) are often reticent to ask or answer questions during class time. A crowded classroom can be intimidating, and many students do not wish to expose their ignorance or misunderstanding of material in front of their classmates. As a result, it can be challenging for an instructor to know whether students “get” the material that is presented in class. By the time an exam or other assessment instrument is administered, it may be too late to go back and correct misunderstandings. Classroom response systems (“clickers”), when used effectively, can allow an instructor to calibrate his or her classroom performance, and can lead to improved student comprehension, increased class attendance, and a greater sense of inclusion and involvement in the class.

I have experimented with the use of clickers in two large sections of EPS 101 (122 & 139 students). Most students are non-majors trying to fulfill UNM’s science requirement. Many students come into the course with little interest in the material, and describe themselves as “unable to do science”. The big challenge is to capture the students’ attention in order to help each student learn to reason from data and to appreciate the importance of science to society.

I initially adopted clickers on the advice of colleagues, but thought that they would be nothing more than a gimmick to appeal to students brought up on video games. I quickly found, however, that the clickers did as much for my teaching methods as they did for the students. I am now able to discover in real time when I am successful at conveying complex concepts, and when my efforts are complete failures. I use 2-3 clicker questions per class period, and write questions that force students to think critically and to synthesize material, rather than simply to regurgitate directly from memory. I usually encourage students to discuss questions with their neighbors before answering. The best moments with clickers actually come when most students give an *incorrect* answer, and I am forced to admit - publicly - that I failed to communicate effectively with the class. Whenever this happens, I take extra time to go back over the confusing material, usually with different examples, and then re-query the students.

I give participation points for clicker use, and additional points for correct answers. Clicker use counts for 10% of the term grade. Written feedback from my classes indicates that the vast majority of the students like the clickers and feel that clicker use increases their comprehension of the course material (Some quotes: *The questions were very effective in reinforcing important class material; the clickers make me feel good when I know that I understand the material, and they also show me what I need to work on; the clickers get me involved in discussions; the questions really make me think; I like how you go over the material again after each question; clickers are a really powerful tool in this class*). Many students also say that they are more likely to come to class because of the participation points (although attendance remains a problem in EPS 101). Median scores on my exams increased by 3-5 points following adoption of clickers.

In summary, clickers help me to teach better, the students like them, and class performance has improved. These are powerful reasons to use clickers in large classes.

Mixing it Up: The Advantages of Implementing Diverse Learning Opportunities for Diverse Learners

Gary Smith, Professor
Earth and Planetary Sciences
gsmith@unm.edu

“It now appears that all traditionally taught college courses are markedly (though unintentionally) biased against many non-traditional students, and, indeed, against most students who have not attended elite preparatory schools. Thus, when we teach merely in traditional ways we probably discriminate strongly on grounds quite different from those we intend. Easily accessible changes in how we teach have been shown repeatedly to foster dramatic changes in student performance with no change in standards.”¹

A large body of research emphasizes the diversity of student learning styles and disparate levels of cognitive development that influence student success in college. The implications are clear. Adjusting instruction away from a strong emphasis on lecturing to more collaborative learning, cooperative rather than competitive learning, and frequent formative assessment with feedback on learning progress can be accomplished without sacrificing content and leads to more positive learning outcomes and student attitudes.

Over the past 5 years I have incrementally adjusted instruction of Earth and Planetary Sciences 201L to include a variety of in-class and online assignments. In-class collaborative-learning assignments replace previous lecture time and both in-class and online assignments serve as formative assessments of learning progress. In addition, at the beginning of the semester students complete short online learning-style inventories². These inventories not only provide me with data on student learning styles but this is usually the first time that students have thought about their learning preferences and considered developing strategies for increasing their learning.

I initially thought that adding a variety of optional and required learning opportunities would increase student learning success because there would be some opportunity that would “work” for some students better than others. While this may be true to some extent, what appears even more important for my EPS 201L students is that they nearly all profit from learning in a variety of ways, rather than by a preferred approach. I identified ten types of learning opportunities utilized in the course, including reading, review questions, lectures, in-class assignments, online assessments, feedback from in-class and online work, and laboratory exercises. Students were surveyed to evaluate the learning effectiveness of each opportunity on a Likert scale and also ranked the whole list. No student showed a strong preference for only one or two opportunities. Instead, they each selected 4 to 6 equally effective opportunities. Anonymous comments on surveys and the FACE evaluation show that students like the variety of learning opportunities partly because each class period includes something unexpected that maintains their interest, and partly because the different methods employed tend to reinforce understanding. This outcome is consistent with the students’ learning-style inventories, which generally show a lack of a dominant learning style.

EPS 201L exam scores during Fall 2006 may illustrate the importance of employing multiple learning opportunities. Median grades on the first three exams were 8-10 points higher than the average in the previous eight years. On the fourth exam, the 2006 median score plummeted five percentage points below the long-term average. The 2006 course included the greatest variety of instructional approaches but there were notably fewer in-class assignments and online assessments during the last quarter of the course than earlier. Although all surveyed students agreed that lectures were effective for their learning and about one-third ranked lectures as the most effective (in many cases tied with other methods), overall student exam achievement was substantially less for content and concepts covered overwhelmingly by lecture. It is possible that this instructional shift in the latter part of the semester (related partly to the incremental redesign of the course) unintentionally decreased student learning outcomes by reducing the variety of learning opportunities.

Breaking away from lecture-and-exam instruction to employ multiple instructional and assessment tools enhances learning outcomes, improves student attitudes and attendance, and makes teaching far more enjoyable.

¹C.E. Nelson, 1996, Student diversity requires different approaches to college teaching, even in math and science: *American Behavioral Scientist*, 40(2):165.

²Example online learning-style inventories: www.ulc.arizona.edu/self_assessments.htm; www2.ncsu.edu/unity/lockers/users/f/felder/public/ILSpag.html

Going Online: Strategies & Tips for Success in Your First Online Course

Valerie J. Thomas, Lecturer
Department of English Language and Literature
vthomas@unm.edu

Are you curious about what it takes to move a course online? Do you wonder what you need to do differently to help your online students learn? Do you want to know what steps to follow to successfully setup your online course? Are you worried about how to manage the extra time commitment necessary when you move your course online? These questions and others will be addressed in this presentation on taking a course online for the first time.

What are the benefits to offering a course online for students and for you?

Online courses allow students to learn anywhere, anytime, and at the pace that helps them learn best by taking the time to reflect on the materials and questions you and other students pose. As an instructor, you will discover new perspectives to help you revitalize how you teach. You will also see improved interaction between all students in your course that will lead to more students taking control of their learning.

What do you need to do differently when you teach online?

Chickering and Ehrman posit that “good learning like good work is collaborative and social, not competitive and isolated.” Therefore, online instructors must become a *facilitator* instead of a *lecturer*. Online activities need to be *student-centered* to allow your students to construct knowledge from their interactions with the content, other students, and outside resources.

What do online students need?

Online students need to understand learning outcomes, course requirements, and online course navigation. They need to be motivated and encouraged to participate in all aspects of the course. They also need to receive frequent and timely feedback from you.

What steps do you need to take to get ready to teach online?

It’s important to start planning your online course a full semester prior to when you would like to teach online. After getting permission to teach online, reflect on your learning outcomes and then design course materials, assignments, assessments, and activities to meet those learning outcomes. Build your course and test it from the student’s point of view.

How do you manage your time effectively when teaching online?

After you translate your materials to the online environment, your biggest time commitment will be handling discussions and other communication with your students. To manage your time, encourage students to take on a larger leadership role and to interact with each other in substantive ways.

By applying solid pedagogical practices from the campus-based classroom, reconsidering your role as an online instructor, and the needs of our online students, you can make online learning an extremely effective learning environment.

Chickering, Arthur and Stephen C. Ehrmann. *Implementing the Seven Principles: Technology as Lever*. 28 March, 2006. <<http://www.tltgroup.org/programs/seven.html>>