



Friday
February 24, 2006

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

**A UNM Community
Conference for Faculty
by Faculty**

**Center for the Advancement of Scholarship in Teaching and
Learning (CASTL)**

www.unm.edu/~castl

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The University of New Mexico

Program

SUB AMIGO ROOM

Facilitator: Gary Smith

8:55- OPENING REMARKS

9:00-9:25- Gary Smith, Earth & Planetary Sciences
The Use and Value of Online Assessment Quizzes to Gauge Student Learning

9:25-9:50- Gordon Hodge, Psychology

Increasing Success and Retention for Introductory Students: Required and Repeatable Low Stakes Quizzes.

9:50-10:15- Aurora Pun, Earth & Planetary Sciences

Online Quizzes: Encouraging Preclass Reading and

Assessing Post-class Learning

10:15-10:40- Ed Walters, Chemistry

Positive Experience with an Online Homework System in Chemistry 121

10:40-11:00 COFFEE BREAK

11:00-11:25- Gary Weissman, Earth & Planetary Sciences

Engaging large classes: activities at several scales

11:25-11:50- Kate Krause, Economics

(How) Can Cost-Effective Large Lectures be Educationally Effective? Problems and Approaches

11:50-12:15- Liza Nagel, Physical Performance and Development

The Educational Value of Making the Personal Connection: Appropriate Use of Disclosure & Humor

12:15-1:30 LUNCH IN ACOMA A/B

Timothy Moy, Presidential Teaching Fellow, History

Embracing Controversy in the Classroom:

Re-invigorating Discussion of the Use of Atomic Bombs in World War II

1:35-2:00- Stephen Preskill, Educational Leadership & Organizational Learning
Discussion as a Way of Teaching & Learning: 4 Cardinal Rules of Discussion Leadership

2:00-2:25- Kate O'Neill, Liberal Arts/Psychology (UNM-Taos)

Small Group Projects and Interpersonal Skills Building

2:25-2:50- Andres Salazar, Management & Engineering

Individual and Team Research Papers and Presentations

SUB SCHOLARS ROOM

Facilitator: Caitlin Anderson

8:55- OPENING REMARKS

9:00-9:25- Bruce Noll, Education Leadership & Organizational Learning

The Poetics of College Teaching

9:25-9:50- Daniel Wolke, Religious Studies

The pros and cons of an enforces quiet class policy in large classes.

9:50-10:15- Erin Lebacqz, English

Student Experts in the Writing Classroom: Increasing Class Participation by Recognizing Student's Ability to Lead

10:15-10:40- Anita Obermeier, English

Participation and Ownership in the Literature Classroom

10:40-11:00 COFFEE BREAK

11:00-11:25- Gail Turley Houston, English & Women Studies

Using Performance in the Classroom

11:25-11:50- Susan Deese-Roberts, Libraries

Preparing Students for Exams During Every Class

11:50-12:15- Connie Casebolt, Business Management and Technology (UNM-Gallup)
Using Active Learning Strategies in Accounting

12:15-1:30 LUNCH IN ACOMA A/B

Timothy Moy, Presidential Teaching Fellow, History

Embracing Controversy in the Classroom:

Re-invigorating Discussion of the Use of Atomic Bombs in World War II

1:35-2:00- Karen Acree, Teaching & Learning Center (UNM-Valencia)

I'd Like to Ask the Audience: Clicking the Way to Understanding

2:00-2:25- John Calfo, Physics & Astronomy

Teaching Introductory Physics: Quickly Identifying Students Unlikely to Succeed, Far Too Many Lack Basic Math Ability

2:25-2:50- Kathy Dimick, Physics & Astronomy

Teaching Introductory Physics: Improving the Success Rate, Helping Students with Supplemental Instruction (SI) and Keyrads

SUB SANDIA ROOM

Facilitator: James Burbank

8:55- OPENING REMARKS

9:00-9:25- James Burbank, English

Felt Sense and Beginner's Mind as Rich Sources for the Composition Process

9:25-9:50- Matthew Nyman, Earth & Planetary Sciences, Natural Science Program

Adding to the Teacher's Toolbox: Workshop Groups and Reflective Writing as

Instructional Strategies

9:50-10:15- Angela Wandinger-Ness, Pathology

Biological Sciences Education through Problems Based Learning and Small Group

Discussion

10:15-10:40- Anne Godfrey, Landscape and Architecture

Making as a Way of Knowing: Facilitating Student-Led Critiques in Design and its

Applications Across Fields

10:40-11:00 COFFEE BREAK

11:00-11:25- Katherine Larason, Business Management & Technology, UNM-Gallup

Computer Programming for Business Students: VBA as a First Language

11:25-11:50- Teresia McCarty, Psychiatry

The Use of Calibrated Peer Review™ for Medical Student Writing Assignments

11:50-12:15- Nick Flor, Marketing Information/Decision Science

Applying Direct-Response Advertising Techniques to Teaching

12:15-1:30 LUNCH IN ACOMA A/B

Timothy Moy, Presidential Teaching Fellow, History

Embracing Controversy in the Classroom: Re-invigorating Discussion of the Use of

Atomic Bombs in World War II

1:35-2:00- Dusti Becker, Campus Program Manager (UNM- Gallup, Zuni Campus)

Incorporating Citizen Science in Teacher Education

2:00-2:25- James Matthews, Civil Engineering

Sources of Motivation

2:25-2:50 Jean Giddens, Nursing

The Neighborhood: A Web-Based Platform To Facilitate Conceptual Learning in Nursing Education.

The Origin and Intent of the First Success in the Classroom Conference

(Presented during the luncheon by Professor Gary A. Smith)

I first met conference co-convenor Jim Burbank over coffee downstairs here in the SUB nine months ago. We met following an exchange of email messages regarding how to evaluate effective teaching. Our conversation quickly led to sharing of teaching philosophies and explanations of how we teach our classes in English and in the Earth sciences. We also talked more generally about our perceptions of a wide range of teaching effectiveness to achieve student learning at UNM, and how sharing ideas about successes and failures in applying pedagogy is likely a very important way for faculty to improve student learning. Less than an hour after we first met, the seed for this conference was sown and Jim and I are extremely grateful to Caitlin Anderson and her staff at CASTL for accepting the conference into this year's faculty-development program, to our sponsors for providing the necessary resources, and especially to the presenters and other participants who are clearly required for a successful conference.

In 1990 the Carnegie Foundation for the Advancement of Teaching published a landmark book by Ernest Boyer entitled *Scholarship Reconsidered: Priorities of the Professoriate*. Boyer argued that most colleges define scholarship too narrowly so as to include only the discipline-based research and creative work by faculty – what Boyer referred to as the scholarship of discovery. Among other forms of scholarship, Boyer argued that a high priority should be placed upon the scholarship of teaching, noting that “the work of the professor becomes consequential only as it is understood by others.” He emphasized that teaching needed to be more than a routine function tacked onto other faculty expectations. As a form of scholarship, teaching both educates and entices future scholars and, going further, advances the effectiveness of teaching and learning.

In parallel with other forms of scholarship, four core practices make up the scholarship of teaching and learning:

- Framing questions
- Gathering and exploring evidence
- Trying out and refining new insights in the classroom
- Going public with what is learned in ways that others can build on.

In a sense, the classroom becomes a laboratory for inquiry, where we ask and answer questions about students' learning in ways that can improve our own classroom and that also advances the larger teaching profession.

Whether our presenters recognized it or not before today, they are all scholars of teaching and learning, because they have followed these four practices, including advancing our profession through their public presentations.

Over the decade and a half since the publication of Boyer's book, institutions of higher education have responded, or not responded, in many ways to his call to place the scholarship of teaching and learning on an equal pedestal to the scholarship of discovery. To those championing the scholarship of teaching movement, the progress

has been disappointingly slow. It was once thought that the movement would stall out all together unless university administrators substantively supported the importance of teaching and student learning outcomes. However, this is not necessarily so. In another recent book from the Carnegie Foundation (*The Advancement of Learning, Building the Teaching Commons*), Mary Taylor Huber and Pat Hutchings report that they find evidence on many campuses, from community colleges to Research I universities, where concerned and dedicated faculty are making the scholarship of teaching succeed from the bottom up.

The key is a conceptual space that Huber and Hutchings call the teaching commons where those committed to learning exchange ideas. In a functioning commons pedagogical knowledge circulates, deepens through debate, critique, and experimentation, and informs the innovation that is important in the classroom. This conference is a part of the UNM teaching commons where we are capturing the work of teaching and learning and sharing it in the same way as we share the results of our scholarship of discovery.

Huber and Hutchings also recount the experience of a nationally recognized fellow of the Carnegie Academy for Scholarship in Teaching and Learning when going through the tenure decision at his community college. He was initially turned down for tenure because he seemed too interested in scholarship: "We're here to teach," the tenure committee told him. "We're not here to *think* about teaching." Today's speakers and attendees think about their teaching. Jim, Caitlin, and I hope that those who value the scholarship of teaching and learning will continue to grow a teaching commons at UNM – whether that be through conversations over coffee or lunch, like my first encounter with Jim, or more formal conferences such as this one, which we hope will continue as an annual event.

Abstracts of Presentations

"Success in the Classroom: Sharing Practices That Work"
A UNM Community Conference

Student Union Building
The University of New Mexico
Friday, February 24, 2006

Abstracts appear in order alphabetically by the presenter's last name. Not all presenters provided an abstract.

I'd Like to Ask the Audience: Clicking the Way to Understanding

Karen L. Acree, Lecturer II
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Research (Crouch & Mazur, 2001) shows that students who are engaged with an instructor in a course will have improved learning experiences and better retention of course concepts. Classroom response systems are one way to engage students, improve learning and assist faculty with immediate feedback of student understanding of a concept.

At the University of New Mexico – Valencia, faculty and students are using Classroom Performance Systems® (CPS) response pads to enhance the learning experience. In the first semester of use, Macroeconomics test scores increased by as much as ten percent. The pads are being used in a number of disciplines including business, technology, psychology, economics, and academics.

This workshop will provide participants an opportunity to use the CPS system in an interactive demonstration of a CPS enabled learning environment. From attendance to review questions to a Jeopardy-style game to testing, participants will discover how to engage students and create inquiring minds. These activities will demonstrate the ease of using a classroom response system to engage students, improve learning, and guide faculty in gauging student understanding of concepts.

References

Crouch, C.H. & E. Mazur. 2001. "Peer Instruction: Ten years of experience and results," Am. J. Phys. 69: 970-977; online at <http://tinyurl.com/d35z4>.

Incorporating Citizen Science in Teacher Education

Constance Dustin Becker, Ph.D.
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Finding meaning in one's life is part of the human condition, and college should help students understand themselves and the world around them in new and different ways. Higher education should encourage and empower people to make a difference in their societies. How can I make this happen in my science education class? This Powerpoint presentation shares a strategy that worked for me – involving my class in citizen science.

While teaching Natural Science 263 - Environmental Science for Teachers, a natural resources professional told me about World Water Monitoring Day. I suggested to my class that we participate and all agreed. During this outdoor science activity, my students collected data on water quality of a local lake and river. They measured and recorded water temperature, Ph, turbidity, and dissolved oxygen at the two sites. Next they contributed their findings to www.worldwatermonitoringday.com, an international website.

Knowing that we were part of a larger effort by citizens all over the world made the activity meaningful. We were helping collect data that would be used by scientists to understand variation in the quality of lakes, rivers, and streams all over the Earth. Studying their community's water and contributing to a scientific study helped my students be engaged in their science class. They seemed more confident, engaged and interested in the class after this one event than before. One student was empowered enough by the experience that he sought a part-time doing air pollution monitoring the week after we did the water quality project.

Participating in citizen science brings meaning to science. Activities are typically well-designed and supported by reputable organizations. More importantly by mentoring the process of citizen science to student teachers, they are more likely to involve their own students in science activities that make a difference to society.

Felt Sense and Beginner's Mind as Rich Sources for the Composition Process

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In teaching writing we are familiar with the cognitive demands of the writing situation. Teaching college writing using physical and emotional aspects of composition gives us new insights and tools to improve student writing and study skills. In this talk I will discuss the work of writing teacher Sondra Perls and Zen master Shyunru Suzuki to examine the links between writing and physical-affective dimensions of composition. I will relate my discussion to such issues as writer's anxiety, multi-tasking, and writer's block. I will talk about how an awareness of the physical emotional dimensions of writing can help students understand and improve their written work.

Teaching Introductory Physics: Quickly Identifying Students Unlikely To Succeed, Far Too Many Lack Basic Mathematics Ability

John A Caffo, Lecturer II

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The UNM retention and graduation rate is a critical issue. In my recent classes of Physics 151 (a required course for biology, pre med, pre pharmacy, physical therapy, pre dental and other students), the success rate (earning A or B or C) has been especially bad and has even fallen below 50%. Given recent increases in enrollment in biology this is not good for the many unsuccessful students and not good for the UNM retention and graduation rate. Many of the reasons that students do not succeed have nothing to do with physics. These include lack of time to spend on the course, poor attendance, lack of experience in following directions, and other reasons that are probably common to many UNM courses. But for Physics 151, inability to quickly use basic mathematics is a hurdle that many students cannot overcome.

This is not about difficult mathematics; it is adding and subtracting fractions, a very modest 9th grade level of algebra 1 and elementary right triangle trigonometry. I am not talking about grades in prior mathematics courses. I am talking about the ability to actually do basic mathematics. I have tried to help students add fractions who told me that they were taking a calculus course. And some of these students can show me fancy things on their expensive and complex graphing calculator that amaze me since I have never had the need nor taken the time to learn how to operate one of those things. Many students who cannot use basic mathematics need an early warning because they do not realize they are headed for trouble in Physics 151. They are in the wrong class at the wrong time, are destined for failure, and will contribute to the poor UNM retention and graduation rates.

I have developed a mathematics diagnostic test based on the simple mistakes students make. I wanted to (1) collect data on Physics 151 success rate versus ability to use simple mathematics and (2) to create a very early warning tool. Early warning is very important. Many students are not convinced they need to drop until it is too late to pick up another course. So they must make the terrible choice whether it is better to fail the course or to drop the course and go below 12 hours and lose their scholarship. If enough of the students pay attention to the early warning and select an alternative class before it is too late, the students and the UNM retention and graduation rate should benefit.

The test data show a correlation between mathematics ability and course success. For three 151 courses, students averaged between 5 and 6 (out of 10) on the test. Those who scored in the range 7 through 10 had course success rates from 72% to 81%, scores of 5-6 had success rates from 36% to 55%, scores 1-4 had success rates from 21% to 30%. And the miscellaneous category (which includes students who were no shows for the test or marked their answer sheet so it could not be scored or who did not provide their name) had success rates from 22% to 30%.

Recommendations. (1) Give the test the first or second day of class so students have feedback during the first week of classes. (2) Issue strong, immediate warning to students scoring below 7. (3) Use keypads and Supplemental Instruction sessions to help weaker students who choose to remain in the course. (4) Stress the basics in the low-level mathematics courses for non-mathematics majors such as the Physics 151 students. Students who can neither add fractions nor do simple 9th grade algebra 1 need to fix these deficiencies before they proceed to more advanced courses like calculus or Physics 151.

Conclusion. Perhaps similar tests can be developed for other courses; if so, students will benefit and the UNM retention and graduation rate should improve.

Active Learning Strategies in the Accounting Classroom

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The students in the beginning Accounting class often lack effective analyzing skills. Analyzing business transactions to determine which account should be increased and which account should be decreased is a foundation skill. Then analyzing whether the increase is a Debit or Credit is also vitally important. To help students develop this analyzing skill the Basic Accounting Equation is used.

The active learning strategy used has students categorize accounts into the Accounting Equation categories. From this students can determine the accounts normal balance and thus whether a Debit increases or decreases that particular account. This categorizing and analyzing is done with the aid of magnetic cardboard labels. Using magnetic labels uses less classroom time because students don't have to write on the board, they just move the appropriate label.

These label cards can be used to initially teach the concepts, to reinforce learning, and also as an aid for reviewing for exams. The students are engaged by this technique to do their preparation for each class, build confidence in their own analysis skills, and get immediate feedback from their classmates.

This active learning strategy developed for use in the accounting classroom is applicable to other disciplines. The particular strategy used could be adapted to any classroom setting where students are asked to categorize, analyze, and suggest courses of action.

Preparing Students for Exams during Every Class

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Students, especially at the freshman and sophomore levels, are often unprepared for exam questions that require higher levels of critical thinking. They focus on memorizing information rather than understanding it and, therefore, do not do well on exam questions that require interpretation, application, analysis, evaluation, etc. They also seem to study at the last minute and not throughout the weeks covered by the exam. I struggled with ways to help students be better prepared for exams. At the same time that I was trying to determine ways of helping students prepare for exams, I started including possible exam questions in my teaching log. By using the teaching log to help generate exam questions, the exams reflected better the content of reading assignments, class discussions, lectures, and other class activities. However, many students were still struggling with the more challenging exam questions.

When preparing for each class, I began making a list of quiz or exam questions that reflected the class content and began sharing those questions with students at the end of each class, usually via overhead transparency. On some days, I add questions based upon class discussions and activities. Over time and with student feedback, I developed a format for the questions/information that I offered at the end of each class. I included sample questions at the lower and higher levels of critical thinking. I began including information that students needed to know to answer questions on upcoming quizzes and exams but would not specifically be exam questions. [This concept surprised many students but was one that they quickly found to be very valuable.]

After using this technique for the first class exam, I start asking students to share questions they predict will be on the next exam. Over the course of the semester, they become more skilled at predicting higher level exam questions and at answering them on the exams.

During the presentation, I will show examples from a Freshman Learning Community seminar that I taught for the past three years and will show how the technique can be adapted for other courses.

Teaching Introductory Physics: Improving the Success Rate, Helping Students with Supplemental Instruction (Si) and Keypads

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Introductory physics is typically a course that students find very difficult. At UNM the “does not pass” rate has often been above 40%, even with significant curving of exams. Physics education research literature shows that just lecturing is not as effective as “active learning”. In fall semester 2003 I made three significant changes to my large lecture classes in an attempt to improve student learning and thus pass rates; I added in-class keypad questions, webassign computer grading for half the homework, and supplemental instruction (SI).

Keypad questions are asked during lectures; students answer on individual keypads. A computer tallies and presents the results. I have found it very effective to insert a series of 2-3 keypad questions of increasing difficulty in a lecture. The students then know right away if they missed the concept and pay more attention to the explanation. Often the following, more difficult question, has a higher percentage of correct answers than did the earlier, easier question. I can skip examples or add examples as needed based on whether students grasp the material. I also have students use keypads to predict results for demonstrations (experiments). With a vested interest in the result, they are pleased to have the correct prediction or very curious about the explanation. Keypads can also be used to review concepts.

Webassign is used to grade the easier half of the homework. This has the advantage that students know immediately if they got a problem correct and also gives them a chance to resubmit answers by a set deadline. After the initial frustration of learning the system, students generally like webassign. There is a strong correlation with webassign homework grades and doing well on the multiple choice part of my exams.

Keypads and webassign provide immediate feedback to students as to whether they actually know the easier concepts or problems. When they realize they do not, many are ready to seek help. In a class of 200 students, the instructor alone cannot provide enough help. Thus supplemental instruction was added to the course, taught by a graduate or advanced undergraduate student. The SI instructor attends the class and is assisted by the professor as necessary in identifying areas that need to be covered over again. The SI instructor leads 4 SI sessions a week and holds office hours. Most SI sessions follow a general format of 1/3 re-presentation of material, 1/3 working a new problem in small groups with assistance as needed, and 1/3 assistance with the harder homework problems. Attendance at SI sessions is voluntary and students attend as many or as few as they need. Having this time outside of the time pressure of class, in a friendly, collaborative, small group setting with a trained leader has proved beneficial to many students. They vote with their time to attend, and succeed at higher rates than the overall class. In three classes that used SI last fall, the pass rate for students who attended 5 or more SI sessions was greater than 90%. Additional data from fall 2003, shows that SI attendance was spread across students of all initial ability levels as defined by their math pretest scores. A graph showing passing versus math pretest scores versus SI attendance will be presented and discussed.

Applying Direct-Response Advertising Techniques to Teaching

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Walk into the classroom of an excellent teacher and you will likely find a highly attentive, *captive* audience of students. Captivating your students is important for effective teaching. The problem is: how? You probably already know some captivating techniques. For instance, saying, “This will be on the exam...,” is a good way to captivate your students; unfortunately it can only be used during exam situations. What teachers need are guidelines for creating phrases that will captivate students.

Direct-Response Advertising

Direct-response advertising provides such guidelines. It is a kind of advertising where the goal is an immediate response from the consumer—usually an order or a request for more information (Ogilvy, 1985). People who write direct-response advertisements are known as “copywriters.”

Direct-Response Advertising Guidelines

Robert Collier was a famous copywriter in the early 1900’s. His copywriting techniques were so effective that copywriters today continue to successfully apply them. Collier described six essential elements of a good direct-response advertisement (Collier, 1931; p. 71):

1. *The opening*, which gets the reader’s attention by fitting in with his train of thought and establishes a point of contact with his interests, thus exciting his curiosity and prompting him to read further.
2. *The description or explanation*, which pictures your proposition to the reader by first outlining its important features, then filling in the necessary details.
3. *The motive or reason why*, which creates a longing in the reader’s mind for what you are selling, or impels him to do as you want him to, by describing—not your proposition but what it will do for him—the comfort, pleasure, the profit he will derive from it.
4. *The proof or guarantee*, which offers to the reader proof of the truth of your statements, or establishes confidence by a money-back-if-not-satisfied guarantee.
5. *The snapper or penalty*, which gets immediate action by holding over your reader’s head the loss in money, prestige, or opportunity that will be his if he does not act at once.
6. *The close*, which tells the reader just what to do and how to do it, and makes it easy for him to act at once.

Talk Outline

My talk will show you how to adapt Collier’s advertising guidelines to create a captivating *lecture introduction*. We will explore why the guidelines work in terms of conceptual blending theory (Fauconnier & Turner, 2002). Finally, I will show video of its application in one of my web-development courses, where all students have wireless laptops and are highly distracted by the ability to surf the Web.

References

- Collier, R. (1931). *The Robert Collier Letter Book* (p. 71). New York: McGraw-Hill
Ogilvy, D. (1985). *Ogilvy on advertising* (p. 148). New York: Vintage Books
Fauconnier, G., & Turner, M. (2002). *The way we think*. New York, NY: Basic Books.

Increasing Success and Retention for Introductory Students: Required and Repeatable Low-Stakes Quizzes

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In 2001, the Pew Grant for Course Redesign funded the redesign of General Psychology 105 to improve student performance and increase retention. Students are required to complete three online quizzes per week. Although performance on any of the 45 quizzes alone counts relatively little, altogether quizzes count for approximately half of the final grade (in-class exams count for the other half). The 3,000 or so multiple-choice questions, from which the 20-question quizzes are drawn, are taken from a publisher's test-item file, and cover 95% of textbook material. Questions test both factual and conceptual knowledge. Students may take the randomly generated quizzes, which are timed (20 minutes) and have weekly deadlines, as many times as desired. Their incentive for taking the quizzes multiple times includes the knowledge that in-class exams are comprised of questions drawn from the quiz pool and that their highest quiz score count toward their course grade.

Over the last several years, the percentage of students passing the course with a C grade or better has stabilized around 80%, a 20% increase from the traditional lecture only method (see Figure 1). A quasi-experimental design was used to compare the redesign with a control section (i.e., quizzes were available but not required). In the redesigned section (n = 805), 80% of students received grades of C or better compared to only 50% among students enrolled in the control section (n = 147), which was otherwise similar (i.e., same syllabus and lecture content, identical textbook, identical exams) except quizzes were not required (see Figure 2).

Not only did student performance improve, it improved in a more comprehensive and arguably more difficult course than students had previously encountered. Students discovered that quizzes were the key to good exam performance; some remarked that the textbooks and even lectures were less important than completing the quizzes multiple times. With respect to overall student satisfaction, course and instructor evaluations revealed no differences on ratings between traditional and redesigned sections.

Figure 1. Improved performance and retention.

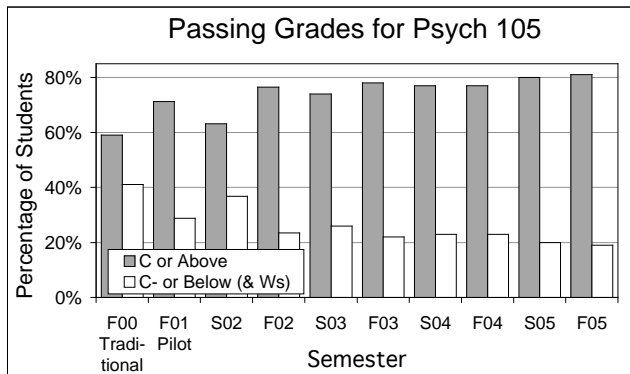
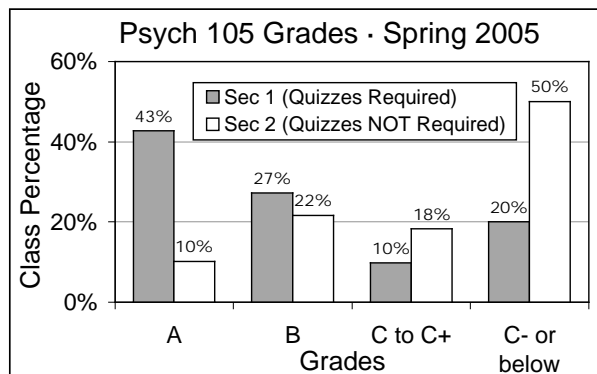


Figure 2. Required versus nonrequired quizzes.



Using Performance in the Classroom

Gail Turley Houston
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Those teaching literature courses in any language or performance courses might be interested in how Gail Houston uses performance in her classroom in order to help student's gain an intellectual and emotional in depth understanding of literary texts. Non-threatening techniques to get students to "perform" take them from the simplest of performance tasks to more complex forms.

Matching Learner and Language. A Beginning Programming Course For Community College IT Majors

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Like many community colleges UNM Gallup offers a two-year Associates (A.A.S.) degree in Information Technology. The program is housed in the college's Business Management & Technology. The curriculum is heavily weighted with business and software applications courses; beginning programming is a required course.

By the time they enroll in beginning programming, students have a fair understanding of the Microsoft platform and applications but, in general, their problem solving skills are weak and adapting to a new software environment plus learning programming skills overwhelms them. In addition, very few of them will ever write a line of code after the course is over.

Visual Basic for Applications (VBA) as a first programming language appears to fit this situation. Students are familiar with the Microsoft environment and they can relate programming concepts to applications' topics learned in earlier courses.. Students can apply VBA programming to their future use of Microsoft applications. Finally, the Microsoft VBA environment contains utilities, the Object Browser, Help system, and Project Explorer to name a few, that make teaching object oriented programming concepts easy and natural.

Sources of Motivation: What Motivates

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The purpose of this presentation is to present some ideas which are relevant to the motivation of undergraduate engineering students. Common knowledge indicates that love, hate, and fear are emotions that can motivate us to pursue different activities. Educators like to distinguish between students who are either intrinsically or extrinsically motivated. A student is described as being intrinsically motivated when he or she is motivated from within. They actively engage themselves in learning out of interest, curiosity, enjoyment, or in order to achieve their own personal and intellectual goals. Extrinsically motivated students engage in learning “purely for the sake of attaining a reward or for avoiding some type of punishment.” Motivation is defined as the conscious or unconscious stimulus, incentive, or motive required for action towards a goal. Instructors think that a significant role they play is to stimulate the interest of a person in an activity. Peter Drucker, the management guru, maintains that people motivate themselves. You cannot motivate them; you can only thwart their motivation. To be an effective leader, you must realize or recognize that the business you are really in is the obstacle identification and removal business.

Professors commonly consider students to be similar to themselves in sources of motivation. Instructors often recall with enthusiasm and clarity one or more teachers or coaches who positively influenced their academic motivation or their style of instruction. Also the instructors queried indicated that a major fraction (approximately 75 percent of my students in Engineering Statics and Mechanics of Materials) would respond that they are extrinsically motivated.

Based on the responses of 58 students who were given 10 minutes to respond to the question, “What motivates you to do well academically?” the ratio of extrinsic to intrinsic responses was 9 to 8. Another counterintuitive outcome of the survey is the very low of instructors being recognized as a motivating factor in their academic experience. Based on this limited sample, perhaps Peter Drucker was correct—we cannot motivate the student; we can concentrate on the obstacle identification and removal business. If this is true, then the question, “Did the instructor motivate me to do my best work?” is itself open to question. One positive aspect of soliciting student input to such a question in class is the establishment of an attitude of respect and appreciation between the instructor and the student. In a somewhat formal lecture/problem-solving class, this can be beneficial to both parties. Based upon my personal experience and the results of the survey, it would appear that those students who are sons or daughters of college graduates are more confident in seeking help from professors and are more knowledgeable concerning the role of the University. Although instructors may not be perceived in real time as a critical factor in a student’s motivation, we are an important element in the obstacle identification and removal business.

This presentation also included nine instructional techniques which are used to motivate and assist the student in solving analytical problems in engineering.

The Educational Value of Making the Personal Connection: Appropriate Use of Disclosure & Humor

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The literature is replete with studies that support the positive relationship between student performance and personal engagement with their teacher. The purpose of this presentation is to describe the use of instructional strategies aimed at increasing student engagement. Specifically, I will introduce ways in which personal disclosure and humor can reinforce content knowledge and skills in the classroom setting.

Educators can simultaneously protect themselves from the unique vulnerabilities in the very public setting of the classroom while increasing student engagement by utilizing three simple steps in determining the appropriateness of their personal disclosure. First of all, it is imperative to recognize the inherent risks associated with personal disclosure by the university professor. In addition, they need to completely comprehend the policies and procedures of their academic environments as well as the history of administrative support regarding sensitive issues that may be disclosed. Secondly, research indicates that the pattern of distributing personal information can impact student learning. Participants will explore this pattern and plan for disclosing with their students. The final step to consider is the appropriateness of timing, context, student motivation to elicit disclosure and the educational value of personal disclosure by the professor.

In the educational setting, humor can provide two major services. It has a purely instructional function where it provides the vehicle for introducing new concepts to student learning, reinforces previously learned information, and facilitates higher order learning (Bloom et al., 1956). Its second function is to make a “personal” connection with the instructor. This presentation will examine appropriate use of humor in the classroom as well as strategies for avoiding the associated risks.

The Poetics of College Teaching

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Let us remember...that in the end we go to poetry for one reason, so that we might more fully inhabit our lives and the world in which we live them, and that if we more fully inhabit these things, we might be less apt to destroy both.

Christian Wiman

This presentation advocates the value and practice of using poetry in all college course teaching as a way to add depth and insight to content as well as to class climate. Poetry is able to provide an avenue that allows the learner to make connections to concepts that may not be easily made in other ways because of its use of metaphor and its appeal to the artistic/affective self. The presenter uses illustrations from courses he teaches from the freshman to the doctoral level including entomology, speech, mediation, team building, science and technology, technology and society, school communication and public relations, adult learning and dissertation seminar.

A carefully selected poem can work for a student because it is able to cut past logic and facts and speak from one heart to another. It can say, you are not alone here. Because of this intimacy a poet can bring an aspect of science or math and show how there can be excitement in the working of formulas and studies of synapses or perplexing processes.

Poems of course can bring levity to the classroom just when we are about to take ourselves too seriously. A poem can bring passion or incredulity, love or indifference, bring to light frustration or fear and can lead to another way of knowing.

John Kennedy wrote, "When power leads man toward arrogance, poetry reminds him of his limitations. When power narrows the areas of man's concern, poetry reminds him of the richness and diversity of his existence." No matter what our discipline, no matter how narrow our focus, the challenge and duty for college professors is to nurture the whole person who comes to sit in our classrooms. Poetry is one of the arts that can help us achieve that needed embellishment.

Adding to the Teacher's Toolbox: Workshop Groups and Reflective Writing as Instructional Strategies

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In this talk, I will discuss the successful application of workshop groups and reflective writing in three different university classroom settings. Workshop groups are a common instructional strategy in K-12 classrooms, especially at the elementary grades, and involve students working through different types of activities that center around a main theme. One of the goals of this process is to provide a range of activities that attend to different learning styles. Reflective writing is another common strategy for secondary classrooms. This instructional strategy entails “free writing” and may include a focus on preconceptions, learning goals, learning successes, and application to other content areas. Reflective writing serves as an excellent self-assessment process, and can provide invaluable formative feedback to the instructor about individual students. Workshops and reflective writing, while widely used in K-12 education, are only recently gaining attention from university faculty as recent studies show that these powerful teaching tools can also be used successfully in college settings.

Natural Science Program

The Natural Science Program provides science content courses designed for elementary education majors. Classes are capped at 21 and meet for 2.5 hours so that lecture and lab activities can occur within the same class time. The small class size and extended class time provide an ideal setting to use reflective writing and workshop groups. Details on a workshop centered on waves will be presented as well as results from reflective writing on a range of concepts in physics.

Science Education Institute of the Southwest (SEIS) Summer Classroom – River Systems

Reflective writing was the major assessment tool used in a 2005 summer science class for middle school science teachers. Results from this effort will be presented including the benefits of using reflective writing 1) to discover student knowledge including pre- and misconceptions; 2) to increase student self-efficacy in conducting unfamiliar academic tasks; 3) for gauging the progress of the class and; 4) as a formative and summative assessment tool.

Earth and Planetary Science 300 Level Class for Majors - Mineralogy

Traditionally, content in 300-level science classes is delivered primarily through lecture. In the fall 2005 semester, I employed both workshop groups and reflective writing in Mineralogy (EPS 301). Reflective writing involved weekly writing assignments where students were required to outline the major concepts covered in lecture and assigned readings and develop questions about the content. Both of these items provided for a dynamic lecture environment the following week and an excellent barometer for student learning. Workshop groups were employed at the end of the semester and focused on investigation of systematic mineralogy. Workshop “stations” included examination of mineral hand specimens, investigation of crystal structures using visualizations and development of an atlas that students used for the final exam. Student reviews of the workshop were overwhelmingly positive; many students enjoyed the change of pace, the opportunity to work with other students, and the additional time to process the required large amount of information.

Student Participation and Ownership in the Literary Classroom

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This presentation discusses classroom formats incorporating Ciceronian and Socratic methods of teaching, focusing specifically on efficacy of small group discussion in dealing with literary texts. For instance, students are assigned smaller sections of the literary text and given 5 minutes to identify the essential aspects of that text. Each student group leads the discussion on its particular text passage, with the professor lecturing on the aspects students missed. This highly successful strategy makes the students take ownership of the text, forcing them to be prepared, as each student will have to contribute to the class discussion. The instructor can assess how well students understand a text and its culture. The presentation will also address adjustments to this strategy.

Small Group Projects/Exercises and Interpersonal Skills Building

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Good communications and human interpersonal skills are ever more important, especially with advances in technology and our ever expanding access to data and information. Small Group Projects/Exercises (SGP/E) offer students opportunities to practice skills in creative problem-solving and greater interpersonal communication. The pedagogical model presented is applicable to a wide range of courses including arts, liberal arts, sciences and social sciences. The relative merits of dyads, triads and larger groups are discussed. The additional benefits of integrating different demographic groups within SGP/E's for maximized learning is another key benefit. The emphasis is on flexibility so that interactive SGP/E's can be used effectively with various numbers in any size class in a variety of subjects. These techniques can facilitate good learning outcomes.

Interpersonal skills can be gained by simply turning to the person sitting next to you and describing some aspect of the course information and/or questions you may have about the material. This switches the energy level in the group, partly because 75% of people are extroverts and enjoy talking with others. It also taps into the Verbal and Interpersonal learning styles. In addition this process lessens isolation, refocuses attention and lengthens attention span by shifting students from listeners to participants. Directed conversation also allows for some personal disclosure, humor, perspective-taking, cognitive reframing and other socially beneficial elements.

Three or four is a good number for Small Group Projects (SGP's). Teach your students essential items such as how to: 1) Get organized (exchange contact information, set-up timeline for decisions and implementation). 2) Get Creative (brainstorm, tap into motivation, use both hemispheres of the brain, offer significance). 3) Get Coordinated (make presentation/project elements work together with speakers, environment and resources). And, 4) Get Cooperation. Each person contributes ideas and offers responsiveness to the viewpoints of others.

Recent research shows that the most common barrier to effective teamwork is an atmosphere of defensiveness (LaFasto & Larson, 2001). According to LaFasto and Larson (2001) students/team members can learn to become less defensive and more skilled in interpersonal projects through practice in creating an environment/experience in which: 1)opinions are valued; 2)personal conflicts are resolved; 3)focus stays on relevant problems rather than side issues; 4)opinions are expressed yet the group stays focused; 5)simple and clear decisionmaking process utilized; 6)effective action is possible; 7)team's outcome is defined clearly; 8)each individual contributes directly to the outcome. All of these communications and interpersonal skills play a role in student outcomes.

LaFasto, F. & Larson, C. (2001). *When Teams Work Best*. Thousand Oaks, CA: SAGE.

Goleman, D. (1994). *Emotional Intelligence*. NY: Bantam.

Discussion as a way of Teaching and Learning: 4 Cardinal Rules of Discussion Leadership

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Rule One – Use specific strategies and processes to encourage student participation in discussion

- Quick Writes
- Circle of Voices
- Hatful of Quotes
- Conversational Moves

Rule Two – Ask questions that show you are curious about students' ideas

- Questioning for clarification
- Questioning about evidence
- Questioning for extension, connections and continuity
- Questioning for synthesis

Rule Three – Once you have asked your questions, remember to stop talking and to really listen

- For understanding
- For connection to other content already presented or other comments already made
- For engagement, interest, and relevant personal testimony
- Learn to value, at least some of the time, teaching with your mouth shut

Rule Four – Find out on a regular basis how students are experiencing class discussions and use that information to enhance learning and learner satisfaction

- An Example: Critical Incident Questionnaires
- Employ any systematic process for eliciting regular learner feedback

Online Quizzes: Encouraging Pre-class Reading and Assessing Post-class Learning

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How can I get my students to be prepared for class? How do I know my students are learning the material? Online quizzing may be the answer in addressing these two objectives. My class meets once a week for one, 2.5-hour block. During class, students respond to and discuss “clicker” questions and work on active-learning assignments to help them develop inquiry and higher-order-thinking skills while applying major concepts. Students need basic knowledge and comprehension derived from their reading prior to tackling these assignments. A survey of my students in an introductory geology class indicated that many did not do the assigned reading before class, if ever. Classroom time resulted in the student’s first contact with the material. After class, I wanted students to review the material and to determine if students understood it.

How can I get my students to read before class? To encourage pre-class reading, online reading quizzes hosted by WebCT are assigned and due prior to class. The quizzes are objective and automatically graded, with built-in feedback. These quizzes represent 15% of the total grade to encourage participation. The results are also used as a just-in-time teaching tool, so that I can address problem areas revealed from the quizzes.

How can I determine if students are learning the material? Post-class assessment quizzes are assigned after the material is covered and are due several days later, but prior to the next reading quiz. These quizzes are also 15% of the total grade. These quizzes include objective and short-answer questions that are posed at a higher cognitive learning level than the reading quizzes, and are manually graded. Feedback is provided to every student to correct misconceptions and to help students in their understanding of the material.

Did the reading and assessment quizzes work? I compared the scores from one exam given to a class not using quizzes and one using quizzes. The exam used was very similar between the two classes, but there are many variables that may influence student performance. The exam comparison indicates a higher proportion of A and B grades for the class using the quizzes (72.4%) compared to the class not using quizzes (53.8%). An anonymous survey was also given to students near the end of the semester in the class using quizzes. The survey completed by 89 % of the students indicated that 100% of those students read their textbook. Almost all of the students (96%) found that the quizzes helped them learn and gave them a guide to what to expect on exams. Ninety-two percent of the students agreed and strongly agreed that these quizzes helped them learn more than they could have imagined learning without quizzes.

It appears that online reading and assessment quizzes can be used to alter the study habits of students. These quizzes encourage the students to read and prepare for in-class activities. The preparation fostered a classroom environment with more discussion and participation. The class time concentrated on learning more challenging concepts instead of introducing the basics. Assessment quizzes provide a way for students to track their own understanding of the material prior to exams and provide me with a way to help each individual student understand the material better.

The Use and Value of Online Assessment Quizzes to Gauge Student Learning

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Studies of teaching practices that successfully accomplish learning outcomes emphasize the importance of frequent formative assessments of student learning, adjusting instruction based on these assessments, and providing feedback to enhance student learning progress. Formative assessments continually gauge student progress in learning, with feedback to students and instructors that determines the course of subsequent teaching/learning activities. In contrast, summative assessments like exams are periodic assessments of students' cumulative knowledge and understanding at the end of a unit, a course or a curriculum as a result of student learning and instructor effort. Authorities disagree on whether or not formative assessments should be anonymous and if it is appropriate for them to be graded. My formative assessments are low-stakes graded exercises as an incentive for students to participate and so that I can individualize feedback to students. Most of my data on assessment effects derives from E&PS 201L, Earth History, and E&PS 333, Environmental Geology. Both classes have a single, lower-division prerequisite, are enrolled by 25-40 students, and have a sizeable population of students (~25%) who are not majoring in Earth and Planetary Sciences or Environmental Science.

One assessment used in both classes is in-class, conceptual problem-solving assignments completed in pairs or small groups. These exercises also serve as collaborative active-learning opportunities. Students evaluate these exercises highly and prefer them to lectures, but in-class-assignment scores correlate poorly to moderately with exam grades (correlation coefficients of 0.259 in E&PS 201 and 0.541 in E&PS 333). This suggests that the in-class assignments are insufficient for achieving learning outcomes, perhaps because all students do not learn equally well in groups where everyone shares a common score.

Implementation of weekly online assessment quizzes via WebCT has produced results that are more positive. Quizzes consist of 7-12 questions in short-answer and multiple-choice formats. Students may re-answer by email about 25% of incorrect short-answer questions, and this revolving feedback enhances student understanding and highlights problem areas for me. The quizzes emphasize comprehension, analysis, application, and synthesis in about the same proportions as exams (although quiz and exam questions differ and exams contain no objective questions). Quizzes include about 4% "free points" for describing the most interesting, important, or difficult material covered during the week. I use the quiz results to return to content that has not been sufficiently learned and students use the results to track their learning progress. Anonymous surveys show that students overwhelmingly strongly agree/agree (80-85%) that the online quizzes increase confidence in what they know and do not know about course material, and 93% of 201L students strongly agree/agree that the quizzes help them prepare for exams. Data show that about 60% of students review answers and feedback on the quizzes weekly, and only about 5% never check their quiz results. Online quiz and exam grades correlated strongly in 201L (correlation coef., 0.925) and moderately in 333 (0.665). However, the poorer correlation in 333 partly results from much stronger exam, than online-quiz, performance by those students who regularly reviewed quiz feedback.

The online quizzes (1) are a gauge of student learning that parallels learning assessed on exams, (2) provide continuous feedback to students on their learning progress, (3) allows me to readdress content, concepts, and skills that have not been mastered, and (4) identifies students who will most benefit from my closer attention before an exam.

Positive Experience with an Online Homework System in Chemistry 121

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The Chemistry 121 class served as a test bed for the Addison Wesley online homework system "Mastering General Chemistry" during the Spring 2005 semester. This material did not come with the textbook we used for the course, but had to be accessed through the Addison Wesley website. The 500-plus students in the course managed to register for the online supplement with a minimum of difficulty (about a 1-2% complications rate) and after a reasonably short break-in period were able to do the homework assignments rather smoothly. Some caveats to this will be discussed. It became apparent from the first of three midterm exams on that the pass rate on the exams had increased substantially. For example, a comparison of the first exam in Spring 2005 with that from a year before, which did not use the online homework system, resulted in approximately 70 more students scoring above (an arbitrary) 50% mark than would have been expected. This experience continued through the semester. I believe the improved performance is due most significantly to the interactive and instant feedback character of the online system. Conversations with the students support this belief.

Therefore, this current semester the online system that accompanies our textbook was introduced. The primary conclusion to draw from this experience is that systems can be very different from one another. We encountered MANY difficulties in registering for the system and in using it. The problems were varied and there seemed to be at least one major new problem with every new assignment. The situation became untenable, and we have now switched back to the system described in the preceding paragraph. More details will be provided.

Biological Sciences Education through Problem Based Learning and Small Group Discussion

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The Biomedical Sciences Graduate Program (BSGP) at the University of New Mexico Health Sciences Center (UNM HSC) provides graduate students with a 'skills toolbox' and the requisite competencies to successfully enter research and education careers. The program addresses a nationally recognized need to train the next generation of experimental biologists to deal with increasingly complex scientific and technological environments. UNM HSC offers unique disease oriented training through its Biomedical Sciences Graduate Program, one of only two programs nationwide integrating basic sciences and pathology departments in a single unified degree program. Through a curriculum grounded in enquiry-based learning and a teacher-training program, students systematically learn research and education skills and competencies. In collaborative, interdisciplinary learning communities, students actively practice critical thinking, hypothesis development, data analysis, communication skills and bioethics. A teacher-training program for advanced graduate students provides exposure to education literature, training workshops and practical experience in facilitating enquiry-based learning. The program includes specific skill and competency assessments. The School of Medicine has provided national leadership in educational programs and case-based learning for over 20 years. We have applied the same core educational principles to graduate education and illustrate how this teaching philosophy may be successfully applied in the life sciences. Funded by UNM Scholarship in Education Allocations Committee Grants to AWN and SR.

Engaging Large Classes: Activities at Several Scales

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The only person learning in a classroom is the one speaking. This profound statement indicates that classic lecture styles may not be completely effective and that an active classroom environment may be more conducive to learning. The large class (> 75 students) creates different challenges than small classes for participatory learning exercises, thus different strategies may be necessary.

I use several approaches (in combination with standard lectures) to create an active classroom in my large classes (currently I have 180 students but have successfully used these approaches with close to 300 students). I break these into four different types, or scales, of activities (from individual activities to large group activities) – individual problem solving, “think-pair-share”, “drama group”, and “full classroom participation.” I present examples of all but ‘individual problem solving’ during my presentation.

Think-Pair-Share activity:

The ‘think-pair-share’ activity is probably one of the easiest to run and can be extremely effective in reaching several goals. To start this activity, I present a question for the students to consider (e.g., “If you lived in the 17th century, how could you provide evidence for the hypothesis that the Earth is indeed round?”). The students first consider the question, then turn to a neighbor and discuss the solution to the question. After an appropriate period of time, I ask for answers from several groups, posting these on the board so students can take notes on the activity results. This activity accomplishes several goals, including (1) students learn the material by discussion, (2) students can’t fall asleep, and (3) students get to know other students and form friendships and study groups.

Drama Group activity:

For the “Drama Group” activities, I ask for several volunteers from the class (never assign this task to students unless you are prepared for adverse responses). Often, it takes several moments of silence or encouragement on my part to get the volunteers, but I don’t allow the class to move forward without a group of volunteers. I then coach these students to act out some concept just covered in lecture. For example, I teach the Rock Cycle to students (e.g., how rocks transform between different rock types). The students use newspaper from the recycle bin to ‘act out’ the different stages of the rock cycle (very exciting when the volcano erupts!). Though only a handful of students participate in this activity, most students will identify with one or more of the ‘actors,’ thus vicariously participating in the activity. I also ask the entire class to help direct the action. Feedback from students tells me that this activity is extremely helpful for understanding complex concepts.

Full Classroom Participation activities:

Activities that involve all students are difficult to develop, yet are very engaging. I developed an example of this type of activity for teaching transmittal of seismic waves from earthquakes through the Earth. Students stand and cluster toward the center of the room. I then ‘release an earthquake’ from the front of the room and have the students transmit it to the back by ‘doing the wave’. Students participate in learning about how waves move through different media.

Though these activities take time from lecturing and we cover fewer concepts during the course of the semester, we are able to cover material in greater depth. Additionally, evaluations of students and from students indicate that they retain material, understand complex concepts, and are more engaged in the class (reflected in high attendance rates). Thus, I believe that activities are an important part of any large class.

The Neighborhood: An Innovative Teaching Platform for Undergraduate Nursing Education

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Background: Over the past several years, there has been a persistent call for reform within health sciences education; the need for educational reform has held a prominent presence within the nursing literature. The National League for Nursing (2003) has called for dramatic reform suggesting that a paradigm shift is needed. The conventional teacher-centered pedagogy common to nursing education tends to focus on covering content as opposed to learning.

In response to the need for dramatic educational reform, *The Neighborhood*, an innovative approach for teaching undergraduate nursing, has been developed and implemented at the University of New Mexico College of Nursing. The purpose of this paper is to describe *The Neighborhood* and how it fosters innovative teaching and supports learning in the new undergraduate nursing curriculum.

Description of the Project: *The Neighborhood* is a fictional Web-based community featuring 11 households and several community agencies. Within the households and community agencies are characters. The household characters represent individuals across the age, health-illness, and socioeconomic spectrum and represent various cultural groups. Health-related problems are depicted through the characters that represent biophysical and psychosocial issues based on incidence and prevalence in population groups.

Healthcare is represented in *The Neighborhood* across multiple environments within the home and community agencies such as schools, churches, senior centers, outpatient offices and clinics, and hospitals. A newspaper also features health related articles that interface with happenings within the community. Characters featured within the community agencies and newspaper depict personal and professional issues faced in a number of roles including a hospital staff nurse, nurse manager, advanced practice nurses, school nurse, community agency nurse, and physicians.

The stories of the characters within *The Neighborhood* unfold on a week-to-week basis extending over three academic semesters (45 weeks). Students log on to *The Neighborhood* website at their convenience and visit the featured households and community agencies to read the weekly character stories. The text-based stories are supplemented with short video vignettes and photos. If a character has a health related problem requiring a health care visit, a portion of a medical record may also be included.

The Neighborhood represents a combination of story-telling, case-based learning, and narrative pedagogy as theoretical foundations for this learning approach. Through the stories, students learn not only about the health related problems experienced by individuals, but the impact of illness on their day to day lives and on the lives of their family members. Nursing is presented in the context of care within acute and outpatient settings; the community resources further provides a mechanism to explore the health care delivery system. Because *The Neighborhood* is utilized across all courses, students and faculty have a shared experience allowing for conceptual linking within and among courses.

Conclusions: *The Neighborhood* has generated a great deal of interest and excitement among faculty and students. Faculty are learning how to incorporate it most effectively into their teaching. Students enjoy the idea of learning through stories and over time; the Web based platform is appealing particularly to the Generation X and Y learners. Although long-term evaluation of the project is still pending, initial feedback has been overwhelmingly positive.