7th Annual Success in the Classroom: Sharing Practices that Work
UNM Student Union Building – Wednesday, February 15, 2012
Preliminary Program – Subject to Change

Submitted presentation abstracts follow the program

	Models, Methods, and Tools to Promote Learning **Fiesta** *Session Chairs: James Burbank, English, and Christopher Holden, University Honors*		**Moving Online: Successful Teaching & Learning in the Online Environment** **Santa Ana** *Session Chairs: Becky Adams, New Media and Extended Learning, and Valerie Thomas, English*	
Time	Speaker	Title	Speaker	Title
9:00-9:30	Steve Koch, Physics & Astronomy; CHTM	Promoting Open Science with Open Notebook Science in Physics Junior Lab	Jason Wilby, Foreign Languages & Literatures	New Frontiers: Constructing and Teaching Online Courses at UNM
9:35-10:05	James Burbank, English	Using Enron Ethics Case Studies to Formulate Dynamic Writing Assignments	Elizabeth Browning, Psychology	A Unique Written Assignment to Facilitate Critical Thinking in an Online Course
10:10-10:40	Elizabeth Stone, Anthropology	Using Rubrics to Help Students Prioritize	Valerie Thomas, English	Building Community in the Online Classroom
10:40-10:55	*Coffee Break, Acoma A&B*		*Coffee Break, Acoma A&B*	
10:55-11:25	Christopher Holden, University Honors Program	Envisioning Knowledge-Building Curricula at UNM through Place-Based Mobile Game Design	Alicia Chavez, Educational Leadership & Organizational Learning	Deep Learning in Online Environs
11:30-12:00	Christopher Ramirez, Division of Equity & Inclusion; Sheldon Jordan, Biomedical Engineering, Patrick Barrett, Political Science; Brandon Harrell, Communications & Journalism; Arturo Lozoya, University College; Marcus Lucero, Political Science; Jamar Smith, Mathematics and Statistics; Josh Yasteya, History	"How Can I Be a Homie and an Academic?": Understanding and Building Success with Men of Color in the Classroom and Beyond	Tom Markle, Educational Psychology	Scaling up: The Logic and Logistics of Transitioning an Online Course of 20 into a Course of 100
12:00-1:15	*Luncheon. Lobo A&B* *Welcome and Introduction of Keynote Speaker: Dr. Chaouki Abdullah, Provost* *Keynote Address, "A Scholarly Approach to Science Education: Key Tools for Transformation at a Critical Time Nationally"* *Dr. Noah Finkelstein, University of Colorado*			
1:15-2:15	*Poster Session, Acoma A&B (titles listed below)*			

	Models, Methods, and Tools to Promote Learning **Fiesta** *Session Chairs: Deana Richter, Teacher & Educational Development, and Joe Ho, Chemistry & Chemical Biology*		**Moving Online: Successful Teaching & Learning in the Online Environment** **Santa Ana** *Session Chairs: Ann Brooks, Accounting, and Daniel Sanford, Center for Academic Program Support*	
2:15-2:45	Suzanne Fricke, Art & Art History	Police State or Anarchy?: Problems in Teaching Large Classes	Becky Adams, New Media and Extended Learning; Organizational Learning & Instructional Technology	Strategies For Success in Online Teaching and Learning
2:50-3:20	James McKinnell, Pediatrics	"So, You Want to be a Doctor": A Model for Physician Involvement in Undergraduate Pre-Medical Advisement	Ann Brooks, Accounting	Lessons Learned in Online Teaching
3:25-3:55	Jeff Saul, Physics & Astronomy	Parachute Class: Improving Retention and Student Preparation in Introductory Physics	Daniel Sanford, Center for Academic Program Support	Writing in the Online Course, and Online Tools for the Brick & Mortar Classroom
4:00-4:30	Sushilla Knottenbelt, Chemistry & Chemical Biology	Can a 'Parachute Class Prepare Students to Succeed upon Returning to General Chemistry?	Evan Ashworth, Center for Academic Program Support	Engaging Students in Online Writing Courses

Posters will be available for viewing all day in Acoma A&B, and presenters will be present during the scheduled poster session at 1:15-2:15 pm. Please see the next page for a list of presenters and topics.

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Poster Presentations:

Sally Bachofer, Family & Community Medicine	Laying the Foundation: A Curriculum that Supports Informed Advocacy for Family Physicians
Leyma De Haro, Olivia George, Summer Raines, Salina Torres, Gloriana Trujillo, School of Medicine	Redesign of the Biology for Non-Majors Course at a New Mexico Tribal College Using Active Learning, Group Work, and Case Studies to Increase Student Confidence in Their Ability to Learn Science
Jane Erlandson, New Media and Extended Learning	UNM's Transition from WebCT Vista to Blackboard Learn - Opportunities Ahead
Charlotte (Lani) Gunawardena, Heather Mendoza and Linda Barril, Educational Leadership & Organizational Learning	Transitioning to Online Teaching: Two Instructional Design Models for Open-ended and Structured Learning Outcomes
Piér Gutierrez, Center for Academic Program Support	Applying Supplemental Instruction Principles in the Classroom: Engaging Students as Diverse Learner
Majeed Hayat, Electrical & Computer Engineering, and Gary A. Smith, Office of Support for Effective Teaching	Small Group Instructional Diagnosis
K. Joseph Ho, Chemistry & Chemical Biology	Engaging Students in Experimental Design in Introductory Chemistry Laboratory
K. Joseph Ho, Wilson Ngambeki William, Chemistry & Chemical Biology	An Experience and Analysis of Using Calibrated Peer Review™ (CPR) in the General Chemistry Laboratory Course
Beth Kaimowitz, Center for Academic Program Success	Critical Thinking and Collaborative Learning: Bridging the Gap between Student Preparation and the Research University
Ayesha Livingston, Individual, Family, & Community Education	Using Concept Maps to Access Student Knowledge
Troy Lovata, University Honors Program	Mountain Landscape Methodologies: Integrating Mountains into the Liberal Arts Curriculum
Myra Luna-Lucero, Communications & Journalism	Communicating to Build the Tallest Free Standing Paper-only Structure
William Miller, Physics & Astronomy	Integrating various web tools for communications
Aurora Pun and Gary Smith, Earth & Planetary Sciences	Teaching Physical Geology with a Learning Activity Sequence Motivates Student Interest, Learning, and Success
Gary A. Smith and Shannon Bermea, Earth & Planetary Sciences	Using Concept Sketches to Recognize Student Misconceptions Persisting from Prior Instruction
Gary A. Smith, Office of Support for Effective Teaching	Peer-Learning Facilitators: Enabling Collaborative Learning in Larger Classrooms
Belinda E. Vicuña, J. Alexis Ortiz, & Bruce W. Smith, Psychology	First in Your Family to College: College Success for First-Generation Students

Engaging Students in Online Writing Courses

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The rapid increase of online course offerings in recent years represents an important shift in the way students learn. Nowhere is this shift more apparent than in online writing courses, where instructors must increasingly reconsider their pedagogical practices. This presentation will offer useful strategies for instructors engaging students in electronically mediated environments, whether through synchronous or asynchronous formats. Attendees will leave this presentation with a better understanding of how to provide feedback on student writing that is both technical and specific while remaining easily accessible. Attendees will also leave with an enhanced ability to promote interaction among students in commenting on one other's writing.

Lessons Learned in Online Teaching

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Background

Online teaching can be a scary endeavor with many hurdles to navigate. I have been teaching numerous courses online for over ten years and have experienced first-hand, the doubts and mistakes that come with transitioning a traditional class into an online class. However, with careful planning and knowledge, faculty can learn to anticipate and maneuver around these hurdles.

Purpose

This presentation will answer common questions that arise as faculty consider transitioning a class to an online format. The presentation will address the following questions:

- How should I deliver content in the online environment?
- How many students can I realistically teach in an online course?
- How do I develop a sense of community among the students and faculty?
- How do I assess student learning in online courses?
- How can I be certain of the integrity of the assessments that students complete?
- How can I assign and assess student writing in an online course?
- How do I manage my time to keep the online course from running my life?

A Unique Written Assignment to Facilitate Critical Thinking in an Online Course

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Summary: Students enrolled in a 300-level online course take an active role in their learning by comparing and contrasting the scientific information reported in a news story with the data and conclusions presented in the corresponding research article.

Active learning[1] occurs as students construct new knowledge about a topic of their choice. In an online environment teaching principles based on constructivist learning (students construct their own meaning and knowledge from their experiences) have been shown to be effective, including project-based learning tasks, tasks that require higher order thinking, and tasks that allow for learner choice[2].

This presentation will introduce a unique assignment that helps students analyze the research that is presented in the news. In my course, Human Neuropsychology, students choose a topic in the field of neuropsychology and identify a recent news story along with its corresponding source research article. Students enjoy selecting their own topics and often choose a topic of personal relevance (e.g., Parkinson's because their aunt suffers from this disorder, mild traumatic brain injury because their spouse recently returned from a military deployment, autism because their son has been diagnosed).

I will present reasons why I chose to implement this assignment in my online course, success stories from the past three semesters, lessons I have learned through iterations of this assignment, and future directions. I will provide resources and examples for instructors who may be interested in utilizing this assignment in their course (online or face-to-face), including my assignment guidelines, WebCT assignment instructions, the assessment rubric I use to evaluate student writing, and examples of outstanding student work. Finally, I will present feedback I have received directly from students about this assignment.

Instruction in higher education has focused on the consumption of knowledge, not on the generation of it[3]. I believe that the online environment provides a tremendous opportunity for students to take an active role in their learning. Activities and assignments that promote constructivist learning should be shared among instructors, along with the tools necessary to implement them, and I hope that you will find this presentation useful as you consider developing assignments that are learner-centered.

[1] Chickering, A. W., & Gamson, Z. F. (1987). Seven principles for good practice in undergraduate education. *AAHE Bulletin, 39(7),* 3-7.
[2] Partlow, K. M., & Gibbs, W. J. (2003). Indicators of constructivist principles in internet-based courses. *Journal of Computing in Higher Education, 14(2),* 68-97.
[3] Kim, K. J., & Bonk, C. J. (2006). The future of online teaching and learning in higher education: The survey says… *Educause Quarterly, 29(4),* 22-30.

Police State or Anarchy?: Teaching a Large Class

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As college level courses grow ever larger, professors are responsible for not only conveying the required material but also for creating a positive class environment. While it is possible to effectively teach a class with 100-500 students, the instructor must keep maintain a positive class attitude or face chaos. Since the largest classes are usually for freshman, the problems endemic to teaching large classes are compounded by the fact that many students are not familiar with how a college class operates. The professor needs to explain basic ideas, like how to use office hours, the role of a graduate assistant, and how to behave in a college classroom. Many students either do not know classroom etiquette or, when there are more than 100 people in a room, a “mob mentality” can take hold. Even those students who would not normally misbehave feel the lure of Facebook and Twitter when they see others using them. All of these bad behaviors, like talking, texting, and gathering up books before the end of class, can become infectious and can take over if not checked.

Some professors adopt a laissez-faire attitude. After all, college students are adults and treated as such. The students who want to focus and learn will, and those who are not motivated are free to act as they wish. The benefit of this attitude is that it allows the professor to focus on the material without having to attempt any sort of disciplinary action. The problem is that poor behavior can annoy those students who are trying to do well and it ignores those students who might succeed but need some extra attention.

Other professors take the opposite approach. Rules are set down in the syllabus and strictly enforced. No talking, no texting, often even no computers to avoid the temptations of email. Students are not allowed to talk, come in late, or leave early, and anyone attempting to do so will face reprimanded or their score docked. The benefit of this approach is that it demonstrates how seriously the professor takes the class, which helps the students also take the class seriously. The problem is that it is difficult for the instructor to be both disciplinarian and teacher. The attempt to control students by calling attention to their bad behavior can annoy the students who are paying attention. Constantly berating the students makes the professor sound like a kindergarten teacher and increases the alienation students already feel in a large class.

Should a class be a free-for-all, or should it be a dictatorship? Adopting the advantages from both perspectives is possible, though it requires careful planning. By creating a professional demeanor, establishing authority in the class, and using class assistants to help, it is possible to create and maintain a positive classroom status quo.

Transitioning to Online Teaching: Two Instructional Design Models for Open-ended and Structured Learning Outcomes

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As the demand for online courses continues to grow at UNM, many instructors who have no prior experience with distance learning are being asked to adapt their courses to an online learning environment. This poster session presents two instructional design models that can be used to develop online courses that either meets the needs of more open-ended, or structured learning outcomes.

The WisCom instructional design model that we developed (Gunawardena et al. 2006) and used to develop online graduate courses at UNM, can be adapted to build a learning community online if the learning outcomes are open-ended and require the exchange of multiple perspectives, problem solving, and knowledge construction. Based on socio-constructivist and sociocultural theories of learning and distance education principles, WisCom specifies three components that must be facilitated to create a wise community: (1) a cohesive learning community; (2) knowledge innovation - providing opportunities for reflection, sharing of perspectives, knowledge construction and preservation within the community, and (3) learner support and mentoring to achieve learning goals. The Cycle of Inquiry module design mirrors authentic learning, and starts with a learning challenge, which can be a question/issue/problem/case to be addressed, moving the learner through a process of exploration, gathering and sharing resources to address the question, discussing them with peers to learn from multiple perspectives, and concluding with the creation of a knowledge artifact (such as a summary or concept map), that addresses the question/issue/problem/case, or a personal reflection of the learning experience in a journal. We will demonstrate UNM courses that have been designed using this model.

Courses that have more structured learning outcomes can be designed adapting the OnCourse instructional design model that we developed. Through the use of modeling, coaching, exploration, and assessment, the OnCourse model provides an instructional design framework that can be used by instructors to translate their face-to-face, traditional classroom courses into online course management systems. The OnCourse Model draws upon cognitive apprenticeship theory and multimedia theory to provide an effective guide to online course development. This model can also be utilized by instructional designers seeking to create online courses based on content originally developed for a face-to-face classroom setting.

Gunawardena, C. N., Ortegano-Layne, L., Carabajal, K., Frechette, C., Lindemann, K., Jennings, B. (2006). New model, new strategies: Instructional design for building online wisdom communities. *Distance Education*, 27(2), 217–232.

Engaging Students in Experimental Design in Introductory Chemistry Laboratory

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Most of the college chemistry lab courses are expository. The emphasis of these expository labs is to verify theories and principles taught in the lecture courses, and through running the experiments, students also practice basic laboratory techniques. The expository labs are usually instructed as a cook-book and require very little higher level thinking from the students. This approach does not practice what a chemist usually does in the laboratory and therefore, does not provide practical training to students for how to work in a real lab using scientific method.

Like many other state Universities with large enrollment, we had offered our general chemistry labs in the expository format in the past. Our attempts to bring in more planning, thinking, and problem-solving elements into the lab exercises started in 2000. This presentation describes how our labs have been changed from a cook-book approach to a problem-based, guided inquiry lab. Because of the large enrollment in these labs, we could not make a dramatic change without knowing how students and lab personnel would respond to the new format. We took a small change at a time and made adjustments to the change according to the feedback collected from students, T.A. and lab techs. This data-driven effort has gradually elaborated into the current practice which we believe is much closer to what we vision a lab course should be in preparing our students to work in the real chemistry lab. During this process, many tools and methods have been considered and developed. In the presentation, we will explain how these methods and tools are used to engage students in the practice of scientific method to solve a chemistry problem. In this practice, students typically started an experiment by reading literature to build up preliminary knowledge and form the basis of hypothesis which they were required to write in their pre-lab report. They then considered the guided questions from the manual and watched video demonstrations of the lab techniques in attempts to design their own experiment to collect needed data for solving the problem asked for the lab. The result of these exercises is a written procedure that every student must to complete before the physical lab. The procedure will then be discussed, modified and carried out in the lab. After the data are collected and analyzed, students will practice presenting their result to other students and applying scientific reasoning to derive the conclusion from their observations.

Feasibility Studies of Using Calibrated Peer Review™ (CPR) in the Large General Chemistry Laboratory Courses

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In a chemistry laboratory course, we expect our students not only to learn lab techniques, but also to practice technical writing and critical thinking. The pedagogical principles of Calibrated Peer Review seem to address the need of these objectives of our lab courses. In addition, engaging students in peer reviews for their laboratory reports can reduce the burden of grading for instructors or TA in a large laboratory course. This report is the result of three semester's investigation for the feasibility and effectiveness of introducing CPR in large introductory chemistry lab course (CHEM 123L). The effectiveness of using CPR to improve students' performance in the report writing was studied between two randomly selected groups by giving a CPR assignment to the CPR group and no CPR assignment to the control group. The performance was analyzed by comparing the differences of the grades from post-lab reports between the two groups throughout the semester. It was found that students in the two groups showed significant performance difference in post-lab report writing after the implementation of CPR assignment, indicating CPR might have been one of the factors causing improvement in student's report writing. However, the study also found CPR is difficult to manage for large courses because of the long problem lists and poor instructor's controls. The students found the review process frustrating because they could not have confidence to give and receive proper and consistent reviews after a short training from the calibration. The instructors had to manually review large portion of students' reviews and override students' ratings to make grades fair, defeating the purpose of reducing instructor's grading burden. In our conclusion, although the pedagogical objectives of CPR are useful for improving students' writing skills, the current CPR program needs to be redesigned to make the peer review more effective and beneficial for our students.

Envisioning Knowledge Building Curricula at UNM through Place-Based Mobile Game Design

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Scardemelia and Bereiter (2006) describe the need to adopt knowledge building curricula. Rather than cover the same content with each batch of new recruits, the idea is to structure a curriculum as an opportunity for students and teachers to create new knowledge. The idea is born of a recognition of the similarities between deep learning and how knowledge advances in the world generally.

Discovery type methods of instruction also arose from this idea, but knowledge building seeks to go further. Rather than a pedagogical trick to get students to recreate authoritative knowledge, the challenge is "initiating the young into a culture devoted to advancing the frontiers of knowledge on all sides, and helping them to find a constructive and personally satisfying role in that culture." (p. 32) Rather than honoring students for the ideas in their heads, we instead seek to reward them for contributions they make to the community's knowledge.

A focus on knowledge building is characterized by six themes:

1. Knowledge advancement as a community rather than individual achievement
2. Knowledge advancement as idea improvement rather than as progress toward true or warranted belief
3. Knowledge of in contrast to knowledge about
4. Discourse as collaborative problem solving rather than as argumentation
5. Constructive use of authoritative information
6. Understanding as an emergent phenomenon

Enacting knowledge building is a radical departure from existing curricula (other than research laboratories and some aspects of graduate study). It will not happen overnight, or implemented by a simple set of new procedures. It must grow within a community.

Place-based, mobile game design is by no means the only possibility for producing the needed changes, but it presents broad possibilities across a variety of disciplines:

- Current school knowledge is place agnostic – applying or enacting it in local place is a largely unnavigated space.
- Mobile technology is a quickly growing, realistic means to connect students to civilization-wide knowledge building and local place
- Games are a new interactive a (new and old) medium with much potential for organizing and acculturating people in knowledge systems via their actions.
- Game Design is itself a multi-disciplinary complicated art form that requires deep collaboration.

Scardamalia, M., & Bereiter, C. (2006). Knowledge building: Theory, pedagogy, and technology. In K. Sawyer (Ed.), *Cambridge Handbook of the Learning Sciences* (pp. 97-118). New York: Cambridge University Press.

Critical Thinking and Collaborative Learning: Bridging the Gap between Student Preparation and the Research University

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Many students come to the university with significant gaps in their math and science preparation. Students frequently lack experience with developing their critical thinking skills and testing their knowledge using scientific methods. Collaborative learning gives students an opportunity to become active learners, to share diverse strengths, and to deepen critical thinking. This session will introduce techniques and opportunities for collaborative learning inside and outside of the classroom. Collaborative learning techniques will be shared, along with information on collaborative learning resources outside the classroom. Attendees will leave with a better understanding of potential gaps in their students' academic preparation and tools to help engage their students as critical thinkers.

Resources:

Barkley, E.F., Cross, K.P. & Major, C.H. (2005). *Collaborative learning techniques: A handbook for college faculty*. San Francisco: Jossey Bass.

Jacobs, G., Hurley, M., and Unite, C. (2008). How learning theory creates a foundation for SI leader training. *Australasian Journal of Peer Learning,* 1(1), 6-12. Available at: http://ro.uow.edu.au/ajpl/vol1/iss1/3

Quitadamo, I.J., Brahler, C., & Crouch, G.J. (2009). Peer-led team learning: A prospective method for increasing critical thinking in undergraduate science courses. *Science Educator*, 18(1), 29-39. Retrieved from EBSCOhost.

Can a 'Parachute Class' Prepare Students to Succeed upon Returning to General Chemistry?

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General Chemistry (Chem 121) serves as a gateway course for students majoring in many STEM disciplines and is required by at least 20 different degree programs at UNM. It consistently appears on the UNM "killer course" list with 20%-50% of students who enroll in the class failing or withdrawing. Students stumbling so early on their chosen path are set back in the sequence of required classes and may be discouraged from continuing in a STEM field.

In order to address this issue, students identified as failing General Chemistry at UNM from Fall 2010 onwards have been offered the chance to 'parachute' into a preparatory class designed to maximize their chances of succeeding in General Chemistry when they return to it. We hypothesized that students failing General Chemistry struggle in the large enrollment, fast-paced, generally lecture-dominated class. The parachute class is structured to be taught in small sections (led by TAs), and to use active learning techniques to help students grasp some fundamental chemistry concepts. We present observations of students taking the parachute class in its 1st year of implementation, our experiences in designing and teaching the class and some initial data on its effectiveness in improving retention and achievement of students returning to 121.

To assess the ultimate success of the parachute class, we have been tracking students who complete it and return to Chem 121. Data from three semesters show that the parachute class significantly improves the likelihood that students return to Chem 121 (compared with students not parachuting and failing). Initial data on parachute student achievement on returning to 121 is also encouraging. Analysis of student performance in 121 prior to the parachute opportunity shows that students who parachuted had somewhat lower course-work averages than the class average, but that their exam averages were significantly lower. We hypothesize that explicitly teaching study and test taking skills will help these students translate their effort into measurable learning, and are incorporating specific learning skills outcomes in the on-going course design. Interestingly, in a survey at the start of the parachute class, most students (after failing two tests in Chem 121) showed confidence in their ability to do well in the class, believed it to be important to them, and expressed interest and enjoyment in Chemistry.

In summary, the initial implementation of the parachute class has resulted in improved retention of students initially not succeeding in 121. Observations of student characteristics inform our ongoing efforts to optimize course design to enhance student success in Chem 121 and their further science classes.

"So, You Want to be a Doctor": A Model for Physician Involvement in Undergraduate Pre-medical Advisement

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Effective advisement is one element which may positively impact on undergraduate retention. The time frame that advisement is given along with the individual functioning as the advisor are both variables that impact effectiveness. Most undergraduates receive advisement through the department of their declared major, either from administrative personnel who function primarily as advisors or from designated faculty members. The advantages of advisement from faculty members include not only effective advisement but the potential for professional mentoring and networking. These very important contacts within the medical profession are not available to pre-medical students from their academic advisors within the departments of their chosen majors.

This presentation shares the components of a curriculum developed to help new undergraduate freshmen who have identified themselves as pre-medical or "pre-healthcare" students. The aims of the course are to provide students with insight into medicine as a profession as well as to offer very practical academic advisement and strategies for developing a competitive professional school application. These aims are accomplished with the use of: selected readings and class discussion; didactic presentations from representatives from the School of Medicine (SOM) faculty, SOM office of admissions and UNM Hospital volunteer office; small group encounters with current medical students and practicing physicians.

It will also be suggested that physician faculty may be a largely under-utilized resource in many academic environments like UNM. Because of the nature of their work and the environment in which they practice, physicians are uniquely positioned to mobilize the resources necessary to most effectively implement such a curriculum. A working physician also has the advantage of immediate perceived legitimacy if working in an advisory role for aspiring pre-healthcare students.

Teaching Physical Geology with a Learning Activity Sequence Motivates Student Interest, Learning, and Success

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To maximize student learning, we designed a learning-activity sequence (LAS) for introductory non-majors physical geology (enrollments 20-100) that integrates in-class instruction with structured out-of-class learning. The LAS has 3 essential parts: Students read before class to acquire knowledge used during in-class collaborative, active-learning activities that build conceptual understanding. Then, students review notes and synthesize what they've learned before moving on to the next topic. Our teaching model combines online and in-class learning and assessment: Reading quizzes before class; active-learning experiences during class; learning assessments after class. Class sessions include short lectures, peer instruction with personal response systems ("clickers"), and small-group problem solving (lecture tutorials).

Students are motivated to participate in the LAS by assigning points for completing tasks. Students are motivated to read by having online multiple-choice reading quizzes. After taking these quizzes, they have acquired some basic fundamental concepts which they are asked to apply during in-class learning tutorials. Their acquired knowledge from their reading is also applied to clicker questions answered by students using their student response systems. In-class learning allows students to interact with the instructor on more challenging conceptual content and to help correct misconceptions. After class, students are given online questions that mimic potential exam questions. Students are given individual feedback on short answer questions. Students recognize that these interconnected tasks help prepare them for exams. Students eventually appreciate that the goal is not to memorize factual material but to use their newly acquired knowledge to apply in different circumstances or to develop more sophisticated conceptual understanding.

Effectiveness of the LAS approach is reflected in three types of measurements. In 7 sections of Pun's class using the LAS approach, more than 90% of students complete the course with a grade of C or higher (compared to a 70% average for all department sections during this same time). Anonymous student surveys show that: 83% of students feel that they learned more in the LAS approach than with traditional instruction; 90% favor active learning in the classroom to only lecture; learning opportunities motivate 85% to attend class to participate in peer instruction and in-class exercises, even if these assignments did not contribute at all to their grade. Learning gains were assessed with the geoscience concept inventory (GCI) of Libarkin and Anderson (2005, J Geo Ed 53(4):395-401). Paired pre- and post-test scores (n=349) in the 7 classes show an improvement from 43.6% to 56.0% (29% gain) compared to the national data set of Libarkin and Anderson showing a change from 43% to 47% (9% gain). The normalized gain ranged from 18% to 36% in different classes, at and above the target goal that McConnell et al. (2008, GSA Abst Prog 41(1):49) propose for introductory geology courses that produce improved conceptual geoscience learning.

Peer-Learning Facilitators: Enabling Collaborative Learning in Larger Classrooms

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Peer Learning Facilitators (PLFs) are undergraduate students who enable and assist instructors to effectively implement active learning in large-enrollment classes (50 to 400 students). The term "peer" emphasizes that these are students who have a peer relationship with learners in the classroom. "Learning facilitator" emphasizes that PLFs work to facilitate learning in the classroom through one-on-one interaction with learners rather than through traditional teaching. PLFs are deployed to large-enrollment courses where instructors are otherwise hesitant to undertake active, collaborative learning during class time because a single instructor cannot effectively answer questions, monitor progress, probe learner understanding, and keep work on task.

PLF duties vary in accordance with the nature of the class and the needs of the instructor but working with students during class time is an essential expectation. The most important task is to work with small groups of learners to support the successful completion of in-class assignments or discussions that actively engage students in learning. This task includes (a) clarifying and explaining assignment expectations, (b) checking answers when requested by students who desire to build confidence before moving on with an exercise, (c) employing a Socratic approach of answering student questions with new questions that support successful completion of, and learning from, in-class assignments, and (d) probing depth of understanding among students who are not asking questions. Instructors meet with their PLFs each week to review the upcoming in-class assignments, distribute keys, and clarify the expectations of these assignments and the particular strategies that PLFs should use to assist students complete the work.

Most PLFs at UNM work as student employees, although some have pursued the experience in return for credit. PLFs were hired and trained over the past three years by Title V programs at UNM, funded by the U.S. Department of Education, and the Walmart Minority Student Success Initiative, managed by the Institute for Higher Education Policy. Continuing support for PLFs in science and mathematics classes is made possible until 2016 through UNM's Project for Inclusive Undergraduate STEM Success, funded by the U.S. Department of Education.

Surveys of students in classes where PLFs have been deployed reveal a number of positive impacts (n = 2650). Eighty-five percent of students state that they learn more in the active, collaborative-learning environment that is enabled by having PLFs in the classroom, compared to a lecture class; this learning motivation holds true for all groups of surveyed students but was particularly strong among first-generation-to-college students. Ninety percent of surveyed students felt that PLFs significantly aided their learning when working with classmates during class time, with 85% feeling that PLFs were important to successful learning in this interactive learning environment. Reflecting back on their course experience, only 15% of surveyed students stated that they would prefer a mostly lecture-based course, whereas 27% prefer mostly group work and 58% prefer an even mix of lecture and collaborative learning during class time.

Using Concept Sketches to Recognize Student Misconceptions Persisting from Prior Instruction

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Plate tectonics, a fundamental theory in geoscience, is taught at various times in K-12 curricula and in first-year college courses. Should instructors assume that certain basic conceptual knowledge exists by the time students reach a second college geoscience course? We used concept sketches (Johnson and Reynolds, 2006) to investigate students' conceptual understanding of plate tectonics in EPS 201L, Earth History. Concept sketches are simple student-drawn sketches that are concisely annotated with processes and labels of features. Over the course of five years, 149 students completed an in-class assignment where they drew concept sketches of plate boundaries with required annotations. Analysis of the sketches revealed eight common misunderstandings about essential aspects of plate tectonics. Rather than assuming students have a correct understanding about plate tectonics after their introductory course(s), most students demonstrate incomplete or incorrect understanding of the most fundamental processes and features explained by plate tectonics. Identifying misconceptions about plate tectonics allows for adjustment in instruction to address weaknesses in student's conceptual knowledge before moving forward with applications of the theory.

We hypothesized that variability in the frequency of misconceptions among students corresponded to general geosciences conceptual knowledge, nature of prerequisite course work, or both. We evaluated general conceptual knowledge by students' scores on the Geoscience Concept Inventory (GCI; Libarkin and Anderson, 2005), which students completed at the beginning of EPS 201L. We also compared misconception frequencies to whether students previously completed EPS 101, ENVS 101, or both as a prerequisite to EPS 201L; EPS 101 classes typically include more time for and more rigorous instruction of plate tectonics theory. For 7 of the 8 concepts, students who completed both courses had the fewest misconceptions, followed by those who only completed EPS 101; students who only completed ENVS 101 demonstrated the most misconceptions. Although consistent with the hypothesis, most of these differences are not statistically significant. However, students who completed only EPS 101 scored significantly higher on the GCI than students who completed only ENVS 101. In addition, for all 8 concepts the students who demonstrated misconceptions also scored significantly lower on the GCI than those that did not. Therefore, variability in conceptual understanding of the most fundamental geological theory is related to overall mastery of geosciences concepts, which is partly related to preceding course work.

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Using Rubrics to Help Students Prioritize

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Rubrics are a common and effective way to communicate expectations and facilitate fair and efficient grading. In my undergraduate classes I usually provide general rubrics for each kind of assignment so students know how aspects of their work are weighted. Part way through the semester of a challenging upper-division archaeology lab course, I began to include a specialized rubric for each lab report, in place of the more generalized grading scheme. The rubric broke down the requirements for the lab report by specific tasks, questions, and other requirements. Although I worried that providing a detailed rubric provided too much "hand-holding" for advanced students, I found that the rubric helped students prioritize their time and attention and helped them shift to higher level thinking. Rubrics allow students to identify the relative importance of different aspects of an exercise. They also help them avoid the pitfall of spending all their time on detailed description in place of more complex integrating analyses.

Building Community in the Online Classroom

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A number of studies have found that both instructors and students believe that a sense of community is essential for successful and robust learning in the online classroom and that the instructor must be at the center of community building, modeling behavior that invites students to work together as they construct knowledge (Mandermach et al, Paloff & Paloff, Ravoi). However, the computer-based environment can make community building difficult as it can "strip away the personality of the instructor, perhaps to the point that the learner loses the sense of taking a course from the instructor in favor of taking a course from a computer" (LaRose & Whitten). Thus, while it is important to build structure within an online course, which allows students to easily access content and complete activities, the challenge is to make an online course come alive by allowing students to interact with course content, with their instructor, and with other students in the class as they construct knowledge together.

In this presentation, we will begin by exploring what community means in the online classroom. I will ask for your thoughts on what constitutes community in your discipline so we have a common understanding of what we are trying to accomplish as online instructors. I will then share research on student and instructor perceptions about the best way to incorporate community in an online course. In many ways these perceptions intersect, but we will discuss why they don't always match and what that means to how you implement community building techniques in your online classroom. Based on this research, we will then explore a number of techniques you can use to build community. We will consider the types of materials you might post to build your presence and model a sense of community to your students. We will then focus on how you can use discussions and other activities to build a strong community of learners who actively engage with the content you provide. My hope is to promote discussion of these techniques so you can discover which ones will be most useful to your students and their success in your online course.

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Thoughts on Constructing and Teaching Online Courses

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Have you ever considered creating and teaching a course in an online format but were not sure how to begin? If so, my presentation is geared toward you. I will draw on my experiences teaching online at UNM and working with New Media and Extended Learning in order to provide an introduction to teaching online and an opportunity to dialog with others who have online teaching experience. My presentation will cover three areas: 1) Construction of online course content with two example courses, 2) Pedagogical considerations for online teaching, and 3) Special technologies for creating synchronous and non-synchronous interaction in online environments.