



# NACTA

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## Oral Abstracts

#003

### **Capstone Semester Incorporating On-Campus Instruction and a Field Based Practicum**

David C. Drueckhammer and Sandra K Graham  
Tarleton State University, TX

Through the input and direction of an industry based advisory group a capstone semester has been established for the B.S. students in Agricultural and Consumer Sciences including both the Extension/Industry and Agricultural Communications Options. The capstone semester includes five weeks of on-campus classroom instruction followed by a ten week practicum/internship in a business, industry or governmental agency setting and is the culminating experience for students in the program. Classroom instruction attempts to bridge the individuals from student to professional using numerous business and industry contacts. The five week block on campus instruction provides the student with a course in each of the following: leadership; extension/industry methods; and portfolio media design. Students work in cooperation with faculty members to select a practicum experience that will move the student toward the type of career the student desires. While students are in the field they are evaluated on the ten week experience. Faculty members receive an electronic weekly evaluation of the student by the practicum mentor that gives faculty an indication of student's progress. All students receive a faculty visit during the practicum. A final extensive evaluation of the student is done by the practicum industry mentor at the end of the practicum that is used for evaluation of both the student and the program. Skill and knowledge evaluations done by the mentor are used in the overall assessment of the degree program and are also used in the annual assessment for accreditation. Changes in the degree programs have been made as a result of this assessment and the ongoing work of an advisory group. Generally this assessment has lead

to a more electronically literate student with increased focus on communication skills and hands on agricultural experiences.

#005

### **The Impact of Audio Technology on Undergraduate Instruction in a Study Abroad Course on English Gardens**

Paul C. Siciliano, Matthew A. Jenks, Michael N. Dana and B. Allen Talbert  
Purdue University, IN

This study investigated the effectiveness of audio podcasts as a means of disseminating course content to students in informal learning environments like public gardens and parks. The investigation was organized into three major areas: (a) student's utilization of audio podcasts; (b) the effects of audio podcast on knowledge gain; and (c) students' perceptions of audio podcasts. Twenty-two undergraduate students participated in a 21-day study abroad course on the history of the English landscape, garden design, and horticulture. This course included instruction in both the classroom and on-site at public garden locations throughout southern England. All 22 students were provided with two to four pages of written text describing key historic and horticultural information regarding 12 English gardens. Instructional audio narratives for iPod of 20-30 min duration were developed for each of the 12 historic gardens. Written exam scores differed little between audio users and non-users. However, students with the audio narratives scored significantly higher on two of the three oral exams. Rather than multiple choice questions as in the written exams, the oral exams utilized more open-ended questions that required the students to integrate course content in order to demonstrate a higher level of overall meaning. In a subsequent survey, the audio users expressed positive reactions to this learning technology, and these reactions, together with the positive learning outcomes, suggest that audio can enhance teaching effectiveness in informal learning environments like public gardens and parks.



#013

### **Online Group Projects: Student Perceptions and Faculty Methods of Support**

Karen C. Williams, Bruce A. Cameron and Kari Morgan  
University of Wyoming

Group work can be used to enhance student learning in online classrooms. Previous research has found that group work creates a sense of community, thereby contributing to increased learning and satisfaction. Social tasks may play a role in group formation. The goal of this study was to explore student perceptions of social tasks related to group formation as well as student definitions of roles and responsibilities in online group projects. A survey was deployed to 127 students in six different online classes delivered by a department of Family and Consumer Sciences in a Western university. Students reported that social tasks were important for making oneself known (88%), discovering etiquette within the group (80%), getting to know others (63%), and developing an identity within a group (59%). Comments from the survey, threaded discussion threads, and chat logs were also analyzed. Four themes emerged regarding student perceptions of social task development: testing the waters, apologies as being nice, tag – you're it, and struggling to find one's role. Students created some alternate roles from those typically defined in the literature. Roles included leader, wannabe, spoiler, agreeable enabler, coattails, and supportive worker. Instructors need to be aware of the challenges specific to social task development. Faculty should use assignments that allow collaboration and student engagement, create a preliminary assignment to introduce group roles and styles, consider assigning roles to group members, incorporate peer feedback and member participation when grading, and add wikis or other document sharing areas, group planning threads, and/or group chat areas to make group work visible.

#014

### **Classroom Attendance as a Precursor for Student Engagement**

T. Grady Roberts, Christopher T. Stripling and R. Elaine Turner  
University of Florida

Engaging students in the learning process is critical for learning to occur. Instructors will often go to great lengths to create meaningful classroom learning experiences designed to engage and motivate students. Despite these efforts, a precursor to student engagement is attending class. This study explores reasons that impact a student's decision to attend class. Using a researcher-developed instrument, undergraduate students from the College of Agricultural and Life Sciences at the University of Florida (N = 3825) were invited to participate in this study. A comparison of demographic data of respondents (n = 795) to the known population revealed differences, thus results are only applicable to the respondents. Students were asked to indicate their level of agreement with 114 potential reasons for missing class using a five-point rating scale (1 = strongly disagree to 5 = strongly agree). Validity and reliability of the instrument were established through standard procedures. According to students, the top five reasons that would likely cause them to miss class were: (a) attending a funeral; (b) an un-foreseen, urgent emergency; (c) a severe illness; (d) school related function (with prior instructor approval); and (e) the instructor does not know the content. In contrast, the least likely reasons for missing class were: (a) attendance is taken in class; (b) the class is very small (less than 15 students); (c) the class is moderately small (15 to 30 students); (d) the class is a required core course in the major; and (e) the class meets on Wednesday.

#015

### **The Power of Experiential Learning and Mentoring to Increase Underserved Minority Undergraduate Students into Graduate School**

Shad D. Nelson, Kimberly McCuistion, Randy Stanko, and Eliezer Louzada  
Texas A&M University

Texas A&M University-Kingsville (TAMUK) has received several grant awards from the USDA-NIFA Hispanic Serving Institutions grant program with the express purpose of increasing the

number of Hispanic undergraduate students to graduate school in agricultural sciences. A large portion of South Texas students are first generation college students. Upon enrollment, few Hispanic undergraduates have considered graduate school or careers in the agricultural sciences as their perceptions of agriculture is solely field-work oriented due to their parents socio-economic background. The objective of this program was to improving the scientific knowledge and skills of Hispanic students through the use of experiential learning in undergraduate research. Experimental techniques training courses coupled with individual undergraduate research projects under the direction of a faculty mentor and student presentations at professional society meetings provide the mechanism for experiential "hands on" learning, and career development. The result of student success in this program was 100% graduating with a B.S. degree within 6-years as compared to a 60% 6-year graduation rate for student not participating in this program. For the Hispanic students involved in this mentoring program, 50% continued onto graduate school with 10 % entering directly into PhD doctoral programs after the completion of the B.S. degree. This is evidence that research involvement can be an effective mechanism of assisting and preparing students for post baccalaureate degrees and careers in the agricultural sciences. Programs like this are examples of the power that faculty mentoring and experiential learning through research involvement can prepare the next generation of scientists and agricultural professionals.

**#019**

### **Student Technology Acceptance: Implications for Teaching in Colleges of Agriculture**

Theresa Pesl Murphrey, Amanda Sudduth,  
Tracy Rutherford and Holli Leggette  
Texas A&M University

David Doerfert  
Texas Tech University

Leslie Edgar and Don Edgar  
University of Arkansas

Students' technology use has continued to explode at a rapid rate. As instructors across

colleges of agriculture seek to utilize technologies in the learning process, it is critical to assess student technology acceptance. Understanding technology acceptance can ultimately assist in the appropriate use of educational tools. The purpose of this study was to describe agricultural undergraduate and graduate students' current level of technology readiness related to Second Life™, social networking, Twitter™, and content management systems. The Unified Theory of Acceptance and Use of Technology established by Venkatesh, Morris, Davis, and Davis in 2003 served as the framework and provided the context for the instrument, which included both Likert-type and open-ended questions. A total of 716 completed surveys were analyzed. The construct of content management systems was reported by students to be helpful in their education. However, students did not report high use of virtual worlds or Twitter™, nor were these technologies reported to be useful to their education. Social networking, while reported to be used frequently, was not reported as valuable towards their education. Findings from this study reveal that students separate recreational and educational use of technologies. As educators strive to utilize innovative technologies, it is important to recognize these limitations so that technologies can be introduced and used in the most appropriate and effective manner. Implications for these findings are broad. The results of this study indicate that educators should take pause as they implement various technologies with caution and purpose.

**#021**

### **Teacher Immediacy as an Indicator of Student Engagement**

Nathan W. Conner, Christopher M. Estep and  
T. Grady Roberts  
University of Florida

Teacher immediacy is the perception of closeness between the professor and the students. It can be used in the classroom to decrease the distance between the professor and the students, and to increase the comfort level within the learning environment. Teacher immediacy behaviors include both verbal and non-verbal behaviors. These behaviors build rapport with the students and encourage the students to be focused on the activities going on

in the class. Teacher immediacy allows the students to engage in the course and take action of their own learning. Pre-determined class sessions from five courses within the College of Agricultural and Life Sciences at the University of Florida were video recorded and analyzed using a computer software program that allowed the researchers to identify and record the frequency of each teacher immediacy indicator. The most frequent behaviors observed were gesturing while talking to the class, asking questions to solicit viewpoints or opinions, asking questions or encouraging students to talk, & using a variety of vocal expressions when talking to the class. The least frequent teacher immediacy behaviors observed were physically touching students, criticizing student work (negative characteristic), calling on students that don't indicate they want to talk (negative characteristic), and encouraging outside of class meetings for questions or concerns. Positive teacher immediacy behaviors can allow the students to feel comfortable within the learning environment and to engage in the content of the course. Verbal and non-verbal teacher immediacy techniques were evident in the colligate courses observed at the University of Florida.

**#027**

### **Sustainable Food & Bioenergy Systems at Montana State University: Development and Evaluation of an Interdisciplinary Introductory Course**

Alison Harmon, William Dyer, Mary Stein and Bruce Maxwell  
Montana State University

Kate Malone  
University of California

Cathy Perillo  
Washington State University

Addressing current food and energy issues and affecting positive change in Montana's food system will require creative, competent professionals who understand the interrelatedness of food production, processing, distribution, and consumption, as well as the link between agriculture, food, and health.  
Sustainable Food and Bioenergy Systems

(SFBS) is a new interdisciplinary degree program at Montana State University intending to attract students to the study of food and bioenergy production, agroecology, food systems and health, food security, and food enterprise. The curriculum emphasizes systems thinking, service learning, and field-based experiences. The first curricular component, an interdisciplinary, team-taught, and experiential introductory course has been developed and evaluated. This course is designed to introduce students to a broad array of SFBS-related topics, expose them to career opportunities in these fields, and enable them to establish relationships with food, agriculture and energy stakeholders. Students completed baseline and follow-up surveys, reporting information about their backgrounds, values, and knowledge of SFBS-related topics. The surveys also tracked students' learning and captured feedback on course methods. Students demonstrated development of course vocabulary and concepts and their experiences in the course prompted changes in their school- and career-related goals. The team-teaching approach was highly valued. Teaching and learning should be focused on solutions to current societal problems. Courses like this can help prepare students to become informed, innovative, critical thinkers capable of excelling in a multitude of food, agriculture, and energy-related careers. Additional key components of the SFBS degree program include two summer field experiences and a senior capstone course.

**#029**

### **Maximizing Your Fulbright Teaching Experience: Challenges and Opportunities**

Rama Radhakrishna  
Penn State University

This past fall (2010) I completed my Fulbright as a visiting lecturer in India. Although everything was planned according to Fulbright guidelines and the host institution's requirements, there were many challenges. The purpose of this paper presentation is to highlight the challenges and what I did to overcome it, and discuss the opportunities that were never there, but emerged as I continued my work. Regarding challenges, the department that was hosting me was not even aware of my arrival and as such

they didn't even know what my assignment was. Second, what courses to teach for whom (graduate or undergraduate), class size, classroom, office and other resources had to be agreed upon. Third, language and communication was another challenge. Through negotiations, meeting with department heads, faculty and higher administration, these challenges were addressed. I ended up teaching five courses for three departments. I became more familiar with the policies and procedures and adjusted to the new found culture and the environment. As time went by, other opportunities emerged which included carrying out research on a topic that was new--climate change and its effects on agriculture and working with a Bangladesh faculty member on value addition. These two efforts culminated in conference presentations and journal articles. This was a very rewarding experience to compare and contrast how decisions are made and implemented. Despite the challenges and frustrations, my Fulbright experience was a worthy endeavor. Perhaps, the greatest lesson I learned is how to be patient, understanding, and kind.

**#031**

### **Strategies for Engaging Students in Active Learning: Reflections from Two Classes**

Rama Radhakrishna and John Ewing  
Penn State University

Naveen Chikthimmah  
University of Wisconsin

Today teachers are not only challenged to make students think, but are also challenged to provide experiences in the classroom. A combination of thinking and doing is often referred to as active learning. The purpose of this paper presentation is to discuss strategies for teachers to integrate active learning in their classrooms. Several strategies that are being currently used in two classes one undergraduate and one graduate will be discussed. These include: TPS (Think, Pair and Share), group projects, group research article critique, structured question and answer in the form of RECAP (recall information). The TPS strategy works well in medium class size settings where there are enough students to pair and class

period (50 minute vs. 75 minute). Students felt that the TPS strategy was very useful because it allowed them to think and talk through a situation or concept with a peer-classmate. In addition, they and others in the class could share and learn from each other. The group project strategy involves group study, discussion, and group effort on a mutually defined task. This strategy is good for senior and/or graduate level classes where a group of students (2-3 per group) research a project, prepare a report and present it to the class audience. The group research article strategy is very helpful in learning and thinking as opposed to doing in the group project strategy. Each of the strategies discussed in the presentation have advantages and disadvantages. Understanding these strategies and how to use them will help in engaging students in active learning.

**#047**

### **Student Achievement in an Equine Animal Science Class: The 'Distracter Factor' in Experiential Learning-Based Labs?**

Nicholas E. Fuhrman, Kari Turner and Dennis W. Duncan  
University of Georgia

Brittany Adams  
University of Florida

Equine science classes offer unique opportunities to engage students in hands-on experiences with animals. Although content knowledge must be shared with students prior to participation in a laboratory experience, should such knowledge be shared via formal lecture in the classroom or non-formally in the field? Do hands-on experiential learning-based labs provide a more effective learning environment when compared to lecture-based classroom instruction? The objectives of this study were to: (1) compare student achievement following exposure to lecture-based and experiential learning-based teaching approaches and (2) determine if student demographic characteristics influenced achievement for either teaching approach. Achievement was defined using researcher-developed pre- and post-tests measuring student knowledge of horse

breeding, feeding, and management at the beginning and end of a semester. Growth scores comparing pre- and post-tests were calculated to determine knowledge change following lecture or lab-based instruction. Although both teaching approaches influenced achievement, the lecture based approach resulted in a larger increase in knowledge. Students who owned horses had a larger increase in knowledge when exposed to lecture-based instruction over lab experiences. Lecture-based instruction also resulted in a larger increase in knowledge for students who had not previously taken horse-related classes nor participated in extracurricular horse-related activities. Student achievement may have been higher following the lecture approach because of fewer distractions when compared to the outdoor, barn-based lab environment. Experiential learning-based equine labs could provide a more effective learning environment if separated into beginner and experienced sections. Surveying students on the specific distractions experienced during lab exercises is also recommended.

**#44**

### **Engaging Agriculture Students through General Education: The Role of Writing and Speaking Courses at the Two-Year Agriculture College**

Eric Melvin Reed  
Nebraska College of Technical Agriculture

The Nebraska College of Technical Agriculture (NCTA) updated and revised its core general education curriculum between the summer of 2010 and spring of 2011 to express a more unified commitment to broad intellectual knowledge and critical thinking skills in the liberal arts, arts, humanities, and natural and social sciences. Many NCTA students come into the writing and speaking classroom with extensive experience and knowledge of their fields but having rarely engaged in profound reflection about their own deep-seated opinions about agriculture, or having seldom seriously considered outside perceptions of agriculture. This paper addresses this issue by describing experiences teaching communication and critical thinking skills in first year composition, advanced composition, speech, and business and technical writing classrooms at NCTA. It is

based on student surveys, opinions, oral and written assignments, secondary research, and observations. Like many students outside of agriculture, many NCTA students have difficulty researching and conveying substantive information about their field in a manner that can be easily understood. Many students respond with ad hominem attacks and irrelevant topics when presented with opinions about agriculture that conflict with their own. This paper discusses methodology for teaching clear communication and critical thinking skills about agriculture. It also discusses students' opinions about writing and public speaking and how students view those subjects in relation to their future careers in agriculture.

**#048**

### **Engaging Undergraduates and High School Students as Citizen Scientists: A Collaborative Method for Improving Forestry Data Collection Accuracy**

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and Chris Morgan  
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John A. Peterson and Carolyn A. Copenheaver  
Virginia Polytechnic Institute and State  
University

The Ambassadors for Conservation Education (ACE) Program involves undergraduate students teaching high school students from Atlanta, GA and Washington, DC about forestry data collection. Through the experience, undergraduates become "ambassadors" and mentors of the high schoolers while bolstering interest in forestry and agricultural communication college majors and careers. In this presentation, participants will: (1) become aware of the procedures used to prepare undergraduates for teaching high schoolers to collect data, (2) acquire results from several years of forestry data collected by high schoolers, and (3) gain advice for improving the accuracy with which data is collected by students. Working collaboratively, undergraduates and high schoolers visited two parks to collect forestry data needed by federal and state land managers: they classified trees by species and determined diameters. Their data was then compared to established answer

keys and found to be 85% accurate. However, in previous years, high schoolers collaborated with two different groups, their teachers and college faculty, yielding different results. When working with only their teachers, accuracy of the high school student collected data was very low (55%). In contrast, when high schoolers collaborated with university faculty to collect data, 98% of their data were accurate. With less faculty support and trained undergraduates leading the teaching, data accuracy can remain moderately high. Reduced age differences between undergraduates and high schoolers, smaller student-teacher ratios when working in the field, and early teacher buy-in are additional factors potentially contributing to the data collection accuracy.

**#049**

### **Development of the Sustainable Agriculture Paradigm Scale**

Patricia E. Grace and Eric K. Kaufman  
Virginia Tech

Sustainability is increasingly a topic within our classrooms and an outcome desired from our programs. Sustainable agriculture is a broad concept that encompasses multiple dimensions, including economic, environmental, social, and ethical-animal welfare. However, a review of the related literature reveals that no instrument is available to measure attitudes toward this broad concept with consideration for all of the different dimensions. This session will highlight the development of a new instrument, The Sustainable Agriculture Paradigm Scale, which can be used to measure the state of and changes in attitudes toward the broad concept of sustainable agriculture. The development process of the instrument included a literature review, expert panel review, pilot test analysis (N=70), and full study analysis (N=296). The resulting instrument consists of 20 items assessed using a Likert-type scale. All 20 items strongly load (>.4) on a single factor. Sample items include: "Too much attention is given to the welfare of agricultural animals in recent years" and "The primary goal of farmers should be to maximize the productivity, efficiency and profitability of their farms." The internal consistency of the instrument, computed using Cronbach's Alpha, was .931. With the continued emergence of sustainable agriculture as an

alternative to conventional agriculture and the corresponding interest in this construct, The Sustainable Agriculture Paradigm Scale could be a valuable tool. Educators should consider it as a way to assess learners' attitudes toward sustainable agriculture before and after related interventions.

**#051**

### **Advancing Agricultural Research through Student Experiential Learning on Advanced Functional Genomics Technologies**

Leluo Guan and Urmila Basu  
University of Alberta

An advanced Functional Genomics course (AFNS575) has integrated teaching at both fundamental and advanced levels of molecular techniques with world class research going on, in different areas including livestock genomics, metagenomics, human nutrition, and plant biotechnology in the department of Agricultural, Food and Nutritional Science (AFNS) at the University of Alberta. This course has offered a unique learning environment for the graduate students to gain knowledge on functional genomics technologies through hands-on experiences using a state-of-the-art facility of Agriculture Genomics and Proteomics Unit in AFNS. AFNS 575 was a new course developed in 2007. In past four years, the enrolment has shown an upward trend with 5, 8, 12 and 12 students in 2007, 2008, 2009 and 2010, respectively. AFNS 575 is delivered as a module based course with each module including lectures (3 hr) and hands-on laboratory experience (10 - 13 hr). Five modules are offered per term and each module includes lectures on concepts and principals and experiment. As a part of this experiential learning, students become competent in problem solving skills as well as learn to write reports in the manuscript style. Furthermore, student presentations provide them the platform for public speaking which is crucial part of the completion of their graduate studies. This course links teaching, learning and research, and many graduating students have applied this learning on different masters' and doctoral research projects ranging from food safety, animal

production and health, animal and human nutrition as well crop biotechnology.

**#056**

### **A Model for Evaluating Program Curriculum: Using Graduate Feedback**

A. Christian Morgan  
University of Georgia

Preparing students for successful entry into a career is core goal of undergraduate programs, but keeping up with industry changes can be challenging. To maintain graduate competitiveness, programs must be evaluated periodically to determine if the necessary skills and competencies are being taught. An agricultural communication program recently undertook this endeavor, which began with two research studies. Using focus group and Delphi methods, program alumni were asked: What competencies are needed for agricultural communication bachelor of science graduates? This information was analyzed and aggregated into a list of essential competencies needed for graduates. Then the existing curriculum was evaluated course-by-course to determine if, and in which courses, these competencies were taught. Gaps between industry expectations and current curriculum were identified, as well as competencies taught in multiple courses. For competencies not currently addressed, existing courses at the university were sought out; if established courses were not found, suggestions were made to develop new courses to address these gaps. For competencies taught in more than one course, decisions were made to either choose a single course for the curriculum or allow students to choose between pre-selected courses. Through this process a 54-page report emerged which provided an improved curriculum that better equipped students with the knowledge and skills expected by employers. This presentation will pose a literature based model that may be useful to other disciplines desiring to evaluate their curriculum. Details will be provided explaining the steps used for this curriculum evaluation and how program changes are implemented.

**#057**

### **An Interdisciplinary Field Methods Course on Suburban Detention Pond Water Quality**

Courtney G. Flint and Mark David  
University of Illinois

Detention ponds are now common in all new housing developments, with houses built on the shoreline and people using them for recreation. We taught a semester-long field course for our department's undergraduate students during the fall of 2010, focusing on both the water quality of these ponds (chemical and microbiological), as well as homeowner perceptions, use of the ponds, and lawn care practices. Students were trained in water quality measurement techniques and survey research methodology. We found ponds high in total phosphorus with mostly undetectable reactive phosphorus, as algae and aquatic plants quickly scavenged all phosphorus. Chemical treatments (with copper compounds) were routinely needed to manage the algal populations. Survey results showed residents enjoyed the ponds for the view, as well as for walking and fishing, and saw them as adding value to their homes. Geese were viewed as a major problem, and were likely the source of the numerous coliform bacteria measured. Lawn chemicals were also assessed, showing 93% of those surveyed applied chemical fertilizers and 63% applied herbicides and pesticides. Risk perceptions of these treatments and water quality varied. These ponds were built for storm water retention, but are an integral part of the local environment that homeowners experience daily. The course culminated in integrated presentations and team reports. Exposure to multiple factors involved in suburban pond management broadened student perspectives on resource management in highly human-dominant ecosystems. Course experiences inform development of interdisciplinary learning environments for students in natural resources and environmental sciences.

#064

### **Mentoring Underrepresented Students through Agricultural Related Research Projects**

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Eastern New Mexico University

Sul Ross State University (SRSU) was awarded a Hispanic-Serving Institutional grant of \$290,000 to increase the number of underrepresented students entering and completing graduate school through developing a science-based mentoring program. To facilitate cross-cultural and cross institutional collaboration, SRSU partnered with key personnel at the University of Puerto Rico at Mayaguez (UPRM). The research mentoring model allowed faculty to work with top graduate students to select a team of undergraduates that would work together on sustainable agricultural and biological research projects. Three projects were designed in the fall of 2010 to begin comparing student participation in the new research mentoring model with the successful managerial mentoring model at SRSU. These research projects were conducted utilizing 30 students, three faculty members, and three universities which included Eastern New Mexico University. Of the 30 participating students in the research projects ten of them were underrepresented animal science students. This was a 50% increase in total participation and a 30% did increase in minority participation compared to the projects conducted over two years in the managerial mentoring program. Notably, two of the seven graduate mentors were Hispanic students. Thirty percent of the undergraduate participants were either freshmen or sophomores in classification and half of them were minority students. Undergraduate student participants represented five different Animal Science concentrations and Natural Resource Management degree programs. The science-based research mentoring model developed at SRSU from the Hispanic-Serving Institute grant has the potential to increase the quality of its post-secondary instruction for underrepresented students in agricultural programs.

#065

### **What Influences Student Learning, Motivation, and Engagement? An Exploratory Study Using the APA Learner-Centered Psychological Principles**

Cory Epler, Tiffany Drape and Rick Rudd  
Virginia Tech

University classrooms possess many interactions that influence student learning and motivation, which creates tough questions for instructors. What does it take to motivate students and help them learn? What teaching strategies and methods are most effective? In some cases, descriptions of teaching are placed range from “teacher-centered” to “learner-centered, yet there continues to be disagreement about which is more effective: teacher-centered or learner-centered methods. With this in mind, the researchers chose the American Psychological Association’s (APA) learner-centered psychological principles as the conceptual framework for this study. The APA learner-centered psychological principles reflect five dimensions of meaningful learning including: (1) the knowledge base, (2) strategic processing or executive control, (3) motivation and affect, (4) development and individual differences, and (5) situation or context. This exploratory study examined the teaching practices that influence student learning, motivation, and engagement. A phenomenological qualitative research design was selected, and semi-structured interviews were conducted with 13 students. The data illustrated that students are motivated by many factors, including the instructor’s characteristics. When instructors indicate they care, students are more likely to be motivated. Furthermore, the students wanted classes to include discussion, independent learning, practice, and real-life application. The researchers recommend that instructors: (1) build rapport with students as it sets the stage for learning, (2) use a variety of teaching methods appeals to a broader group of learners, and (3) even though students wanted to be challenged, many indicate the grade is important. Instructors should emphasize the importance of learning versus grades.



#071

### **Attracting an Eclectic Set of Students into a Science-based Agriculture Course Using Terrorism as the Context.**

N.S. Hill, D.G. Shilling and J.A. Bertrand  
University of Georgia

Attracting non-agricultural students into agricultural courses is challenging because many do not think agriculture is relevant to them. A course was developed entitled 'Terror in the Food Supply' in an attempt to attract a diverse group of students into an agricultural venue to increase dialog between agricultural and non-agricultural majors. The course has been taught on a yearly basis since 2007. Students were surveyed at the beginning of each semester and asked questions about their class status and majors, how they found out about the course, what attracted them to the course, what they expected to gain from the course, number and types of courses they had completed, and their understanding of the 'farm to fork' food supply system in the US. Data were analyzed by analysis of variance and regression to establish yearly trends. The percentage of non-agricultural majors increased from 8 to 52% and the number of students enrolled increased from 12 to 33 over a four-year period. Fewer students had an understanding of agriculture as the class grew in size but students who had three or more college-level science courses increased from 5-50% over time. Students were attracted to the course because of the subject matter, and the percentage learning about the course from their advisor or a University webpage increased from 0 to 50% with time. Those who learned about the course from friends decreased from 75 to 30% over time. We were successful at attracting non-agriculture majors by applying science to current events.

#073

### **Thinking outside the Slide: Introducing Prezi Into the Classroom**

Quisto Settle, Lauri M. Baker and the  
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Communication  
University of Florida

Katie M. Abrams and the Department of  
Advertising  
University of Illinois

Prezi is a free presentation program that differs from traditional programs. Rather than a slideshow, Prezi exists on one canvas, where visual elements of images and/or text move to different points on the canvas, allowing for an alternate representation of information. Prezi is in use by some instructors and shows potential for wider adoption. As with any emerging teaching technology, best practices should be understood. The authors have introduced Prezi into classes and received feedback from students. Positively, Prezi can display ideas through means slideshows cannot. Developers can display ideas at different sizes or zoom levels, display all elements to show the big picture, and move between ideas with linear or non-linear paths. Prezi provides students a visualization of how lesson components relate. When using the Web-based version, students can collaborate in class. Up to eight people can edit Prezi simultaneously, allowing construction and presentation of students' knowledge in new forms, which appeals to different learning styles. Negatively, misuse of the zoom feature can cause visual discomfort and unimaginative design can emulate over-animated slideshows. Finally, while some learners may prefer Prezi's capabilities, others may not. Based on feedback, guidelines are suggested for instructors. Do: get creative and think like a designer, illustrate the relationships between components, involve students as collaborators, and balance linearity and non-linearity. Don't: make all elements the same size, overuse zooming and movement, mimic slideshows, or fear customization. Prezi is a novel instructional tool, but should be used in a manner facilitating learning rather than for novelty.

#075

### **Humanistic Studies in Engineering Education: Improving the Competencies of Agricultural Engineers**

Kerri Patrick Singer, Timothy L. Foutz, Maria Navarro and Sidney Thompson  
University of Georgia

The overall goal of our project is to provide a pedagogical model to help agricultural

engineering faculty integrate the humanities (and social sciences) into their curriculum. In this portion of the project we piloted the implementation of the model in a first year agricultural engineering course through an interdisciplinary content module. We also explored whether or not the use of the module helped students in the class to better analyze and communicate how work in their field affects society. We used pre-tests, post-tests, and group interviews to assess students' understanding of the connection between the humanities and agricultural engineering. Specifically, we administered a pre-test and post-test to all students in the pilot course (treatment group), as well as to students in two control courses (a comparable agricultural engineering course without the content module, and a different course). We also interviewed treatment group students in the middle and at the end of the module. The results indicate that the students in the treatment group had a clearer understanding of how the humanities are imbedded into agricultural engineering practice. The treatment group grasped concepts regarding the need to take into account various stakeholders, problem definition, and understanding how their engineering work affects society, whereas the control groups only acknowledged communication as an important manifestation of the humanities in engineering work. Overall, the treatment group understood the value of the module and wanted the module to be expanded so that they had more time to apply the concepts and to further their understanding.

**#076**

### **Engaging Students through Technology Integration-A Qualitative Case Study**

Tiffany Drape, Donna Moore, Rick Rudd,  
Samuel Doak, Joseph Guthrie and Pavli  
Mykerezi  
Virginia Tech

Students in any educational setting need to learn how to integrate and successfully use technology to be successful in a future career. While any educational system cannot teach every skill, faculty can help integrate technology and model skills that students will need later in life. Using Rogers' Diffusion of Innovations as a model, the researcher examined technology

integration and how it affected engagement, motivation, and learning in the classroom setting. Questions to guide this study included: 1. How do educators decide what and how much technology to integrate in their course? What influences their decision to integrate technology? 2. How does technology integration influence student engagement and motivation? 3. How does technology integration influence student learning in the classroom? This case study explores technology integration from the faculty and student perspective using video collection, observations, qualitative interviews, and video coding using Noldus Observer. Video observations were collected on 96 students and two faculty and interviews were conducted with 10 students and the faculty. The data illustrates that technology integration is a decision made by the whole faculty and takes into account student feedback and industry perspective. The researchers recommend: (1) the relationship the faculty and students have with technology remain at a high level with course offerings to help both groups be more comfortable, (2) continue to encourage students to integrate and master technology while they are in a formal educational setting for future application, and (3) maintain engagement and motivation with students through open dialogue and feedback opportunities.

**#079**

### **Honors and Agriculture: A Win-Win for Student/Faculty Engagement**

Timothy J. Nichols  
South Dakota State University

While South Dakota State University is a land grant institution with a significant enrollment of agriculture students, traditionally, very few of these have pursued the Honors College curriculum and graduated with Honors College distinction. As a complex system, agriculture provides an ideal framework for critical thinking and multidisciplinary analysis approaches that are foundational to Honors pedagogy. This session will provide an overview of an initiative at SDSU designed to expand enrollment and build Honors College programming for students and faculty around issues related to agriculture. Program components include a colloquium on Agriculture, Food and Society; service learning efforts aimed at reducing local hunger; an

Honors in Agriculture undergraduate research initiative, and curriculum development efforts. Examining ethical issues in agriculture from multiple perspectives has been integrated throughout project programming. Faculty development has involved long-time Honors faculty, as well as agriculture faculty without previous experience in Honors. Early assessment results indicate a high level of faculty and student engagement, satisfaction, and higher order learning outcomes.

**#081**

### **Evidence that Application Lessons Encourage Engagement and Learning**

Carol Speth and Donald Lee  
University of Nebraska-Lincoln

The Plant and Soil Sciences eLibrary offers public access to 116 animations and 120 content lessons. Application lessons were created to show how key concepts are used in occupations. Such lessons are not effective if students make superficial or no use of them. What assurance can we offer that their time and effort will pay off? What assurance can we offer funding agencies this money to improve science teaching was well-invested? University students in a first-year Plant Sciences course were asked to read a lesson on Transpiration Principles and an application called "Greening up the Greens," then answer survey and assessment items. One asked, "Which strategy best describes your use of the application lesson?" Answer choices represented five levels of engagement. Only 7% of the 149 students said they did not read the application, while 24% scanned the lesson but did not answer the practice questions, 30% read the lesson and answered the questions but did not check all their answers, and 42% said they read it, answered the questions and checked their answers. Six assessment items came directly from the application, while two required transfer. On seven items, the 42% who said they used the most intensive strategy out-performed the class average. Items were ranked from easiest to most difficult, and that 42% had even more advantage on more difficult items. Application lessons on flowering are being evaluated in a similar way, providing more evidence that engagement with the lessons is worthwhile.

**#083**

### **Factors Affecting the Adoption of Social Media into College of Agriculture Development Offices**

Quisto Settle, Joy Goodwin, Ricky Telg, Tracy Irani and Charlotte Emerson  
University of Florida

Social media are becoming a more prominent component of higher education, including college of agriculture development offices. While adoption is occurring, the factors that affect adoption should be determined if widespread use becomes the goal of development offices. Interviews were conducted with personnel from six different colleges of Agriculture, delving into reasons social media were or were not adopted. Only one participant had not adopted social media for work. Four basic themes arose from the data. First, adoption was being affected by a desire to reach their intended audience. Current, future, and former college students are using social media en masse, especially Facebook. Second, the participants were trying to increase audience members' interactions with the college and the technology. More specifically, social media offered the target audience another medium of interaction with the development offices, and the target audience is also able to interact with the actual sites more than static websites. Third, participants were reacting to emerging technologies, including exposure to new uses for the technologies from peers at other universities, as well as conferences. Finally, availability of time affected the decision and rate of adoption. The non-user specifically mentioned this factor as a reason social media were not adopted for work. No one factor was affecting the decision to adopt social media into development practices. As such, administrators who want their staff to adopt new technologies should be aware of these factors should they seek to implement or improve social media use.

**#087**

### **Helping and Receiving: Service Recipients Perceptions of Service-Learning Participants**

Lance Palmer, Joseph Goetz, Swarn Chatterjee, Joan Koonce and Lee N. Johnson

University of Georgia

Often the scholarship of engagement brings students out of the classroom and into contact with community members and real-world situations. While an abundance of research has focused on how engaged scholarship helps students, research examining community members' perceptions of students providing service-learning is scant. This presentation examines the trust and confidence community members have of students who were helping prepare and file U.S. Income Tax returns. In addition to tax preparation, students provided financial education on a variety of tax advantaged savings strategies. Community members receiving these services were generally older than the students, had different family life roles, and many lived economically disadvantaged lives relative to the students who served them. Community members rated student volunteers, using a five-point Likert scale, regarding how much they trusted student volunteers, their confidence in their abilities and services, their willingness to refer friends to them, and their willingness to act on student volunteers' recommendations. Community perception of students was overwhelmingly positive. For most measures, over 75% of community participants "Strongly Agreed" that student volunteers were up to the task of providing meaningful assistance to the community and were gladly willing to receive assistance on important matters, such as income taxation, from students. Community members who receive help from students engaged in service-learning work think highly of these students and value students' help and input, even when the task at hand is complex and has serious consequences if performed poorly.

**#088**

### **The Louisiana Tech University Rural Development Certification Program: Progress and Outcomes**

Aaron K. Lusby  
Louisiana Tech Rural Development Center

The Rural Development Certification Program, a NIFA DOCE-funded project, addresses the need for graduates who understand the key issues for the survival of rural communities and

businesses, such as sustainable development, marketing of local businesses on a global scale and fostering a productive environment for entrepreneurship. This presentation summarizes the goals, products and outcomes of the program, in its final year of grant funding. The primary target group is non-traditional students who desire training that enhances their ability to grow their rural communities, such as extension agents, community and county public officials, local business leaders, and entrepreneurs. Courses, offered online, include Grant Writing, GIS for Rural Development, Introduction to Rural Development, International Trade, and E-commerce. They provide a mix of theory, application and service learning. The program will graduate its first students this year. With minimum promotion, interest in the program has come from community planners, economic development directors, realtors, bankers, nurses, extension agents and building contractors as well as traditional students; from within Louisiana, but also from Texas, Arkansas, North Carolina and Ohio. Anticipated total enrollment by Summer 2011 is eight students. Outcomes to date include one student who has started a grant writing business and, in a special service learning assignment, assisted Union Parish Community Action Center with a grant proposal to support workforce development programs.

**#089**

### **College of Agriculture Undergraduates' Perceptions of Factors Contributing to Student Content Engagement**

Christopher M. Estep and T. Grady Roberts  
University of Florida

Students graduating from college are finding the workplace is rapidly and dynamically changing. According to recent reports, employers are looking for college graduates who possess a diverse set of higher-order thinking skills in addition to discipline specific knowledge. The National Research Council suggested that colleges of agriculture are in a position to provide employers with highly qualified individuals. However, to fully meet this need, the NRC argued that colleges of agriculture need to employ more individualized, engaging instruction. The purpose of this qualitative study was to add substance to the Student Content

Engagement Model by examining college undergraduates' perceptions of which teacher behaviors help increase classroom engagement. This investigation utilized three focus groups (n=29) consisting of upperclassmen enrolled in a technical writing course in the college of agriculture at the University of Florida. Data were analyzed using a hybrid approach coupling the constant-comparative method with the deductive a priori template of codes method. Results revealed numerous teacher behaviors that students felt help increase their classroom engagement. Some factors that emerged were, teacher elaboration, assessment of student prior knowledge, class discussions, projects, repetition, using examples, questioning, variability in teaching, and problem-based learning. Additionally, a new construct of teacher immediacy emerged in the model. Teacher immediacy is the use of behaviors that build rapport between students and teachers. Immediacy appears to influence motivation which might place immediacy as a mediating factor in the student engagement model. In conclusion, by implementing the aforementioned factors teachers may help increase their students' classroom engagement.

**#092**

### **The Use of Reflective Journaling to Assess and Improve a Summer Workshop for Teachers**

Quisto Settle, Tracy Irani and the Department of Agricultural Education and Communication University of Florida

Twenty-five secondary science teachers in Florida participated in a two-week workshop at the University of Florida that sought to give teachers increased knowledge of science discoveries, new lab techniques, and pedagogy. The workshop focused on emerging pathogens and was led by faculty at the University of Florida. The teachers completed reflective journals in response to four prompts at different points in the two-week workshop. These reflections were analyzed to understand the participants' experiences. Overall, the participants viewed the workshop positively, reporting the workshop was informative and interesting. Participants expected they would be able to take what they had learned into their classes. Polymerase chain reactions and DNA

extraction were the labs mentioned the most by participants when asked what they planned to incorporate into classes. Pedagogy and learning styles were the topics participants had the most negative responses for. Some participants reported that, as teachers, they either already knew the information or were receiving the information from other sources. An overall concern of some participants was that the material from the workshop might be too difficult for secondary students to understand. The participants also reported that time and monetary restraints would be the most difficult barriers for implementing material from the workshop. Borrowing resources from the university was expected to help alleviate the monetary burden. The participants did not have consistent recommendations for future workshops though focusing on science instead of pedagogy was mentioned. While participants held mostly positive emotions toward the workshop, there was room for improvement.

**#93**

### **Building a Healthy Community through Experiential Learning**

Donna Diller, Mary Martinez and Sharon Gordon  
Central New Mexico Community College

As a part of the Healthy Meals, Fit for Life USDA grant, students from Central New Mexico Community College engage with the community through service learning opportunities partnering with various approved agencies. Students share their culinary and nutritional expertise with the community through demonstrating healthy cooking practices, teaching children how to create healthy snack art and developing healthy recipes using nutritional analysis. Service learning participants choose an approved agency and work either individually or as part of a service learning class project to share their culinary and nutritional skills. Once approved by the instructor and agency, the student commits to a minimum of 15 hours of service. At the completion of the project, students participate in a reflection session analyzing the experience and the impact on themselves and the agency served. An example of a service learning community project involved partnering with the National Hispanic Cultural Center's Families in Motion Summer 2010 project. A two part-series, students were involved first as assistants and

then as demonstrators preparing healthy variations of traditional New Mexican recipes. A second group of students taught children of participants how to create fun food art snacks and learned about healthy eating and exercise. Recipes were distributed to all participants. In addition, culinary nutrition students are in the process of using nutritional analysis to create healthy recipes for agency partners. Through these opportunities, the community is exposed to healthy alternatives and students are engaged in educating the community and making a difference in the lives of others.

**#094**

### **Incivility in the Classroom**

Donna L Graham, Duane Wolf and Mary Savin  
University of Arkansas

If teachers and students engage in a meaningful educational process, the classroom must be an environment free from incivility or disruptive behaviors. Yet, faculty members comment frequently that the decline in student civility has caught them off guard, reflecting that students are more aggressive, defiant, disrespectful, and demanding. The presentation will describe the most disruptive behaviors of incivility in the classroom as perceived by students and faculty. The results are from a convenience sampling of 204 undergraduate students in crop, soil, and environmental sciences and honors orientation courses and 35 faculty members in the College of Agricultural, Food and Life Sciences. Students felt that allowing the cell phone to ring in class as the most disruptive, while faculty felt that students talking to other students in lecture as the most disruptive. Differences were found regarding text messaging and complaining about assignments and grades. All of the behaviors will be presented as annoying behaviors or behaviors threatening to learning. If faculty instructors are responsible for establishing and maintaining a learning environment, it is important to address inappropriate behavior. Having clearly defined expectations in the syllabus on the first day of class sets the tone for behaviors acceptable for the classroom. Understanding behaviors that students consider as uncivil will assist the faculty to develop practical strategies for classroom management.

**#099**

### **Crisis Communication Needs Assessment: A Delphi Study to Enhance Instruction for Agricultural Communicators and Other Stakeholders**

Allyson McGuire, Leslie Edgar and Don Edgar  
University of Arkansas

Tracy Rutherford, Theresa Pesl Murphrey and Holli Leggette  
Texas A&M University

David Doerfert and Christy Witt  
Texas Tech University

Agricultural communicators and industry stakeholders need to be able to develop, prepare and implement crisis communication plans to help assure the sustainability of the agriculture industry should a crisis event occur. The purpose of this study was to determine the competencies needed by agriculture crisis communication professionals. The researchers used a five-round Delphi to identify these desired set of related competencies and the extent to which they exist in industry professionals. A snowball sampling technique identified 49 crisis communication experts from three professional organizations with 31 agreeing to participate. Eight major competency areas were identified and verified in the first two Delphi rounds: (1) areas of experience; (2) communication, media and technical skills; (3) contingency plan and preparedness; (4) learning/training needs and opportunities; (5) media and technical skills; (6) networking opportunities; (7) personal traits; and (8) supplies and tools. Round three employed a five-point Likert-type scale to rank skill/knowledge needs within the eight competency areas. Eleven 100% acceptance responses regarding highly important ( $M = 5$ ,  $SD = 0.0$ ) skills/tasks in six of the eight competency areas emerged. There was no single skill/knowledge item where 100% of the participants ranked themselves as expert. The final two rounds created a succinct, yet comprehensive and validated list of skill/knowledge needs. The final round assessed whether the items in each competency area should be taught using theory, application using simulation, application based on real experience, both theory and application, or

neither. Results will assist higher education/industry training outlets to improve curriculum and instructional methods.

**#103**

### **Does Problem-solving Style Gap Induce Bias in Authentic Assessment?**

Curtis R. Friedel, Eric K. Kaufman and Thomas W. Broyles  
Virginia Tech

According to Kirton's Adaption-Innovation (A-I) theory, individuals may be placed on a continuum of being more adaptive or more innovative in their style of solving problems. Further, a 20-point gap between the student & instructor on this 128-point scale may impede communication, work efficiency, and trust. A-I theory has been applied extensively in the corporate world, but little knowledge exists in its application to the classroom. Specifically, as classrooms in higher education become more student centered with authentically graded projects, how does a problem-solving style gap affect an instructor's assessment of student work? The objectives of this philosophical presentation were to 1) Explicate A-I theory as it applies to assessment of learning; 2) Identify techniques for discerning problem-solving style in student projects; and 3) Identify practices that may be used to maintain problem-solving style neutrality in authentic assessment of learning. The hallmark of A-I theory was the separation of problem-solving style from level, or intelligence. This distinction makes A-I theory particularly useful in authentic assessment of learning, because distinction is made between the student being capable of learning the course material, and same student providing evidence of learning the course material in a more adaptive or innovative manner. It may be possible that instructors confuse style and level and inappropriately assess student learning, because of a shared problem-solving style gap. If instructors can distinguish between problem-solving style and level while grading authentic assessments of learning, students may benefit by receiving a more precise and reliable assessment of learning.

**#107**

### **Engaging Freshman Students to Enhance Student Retention**

Ron Hanson  
University of Nebraska-Lincoln

In order to engage first semester freshman students majoring in the Department of Agricultural Economics and to achieve a more successful transition from high school to college, a New Student Career Orientation course was designed and implemented at the University of Nebraska-Lincoln. The goal for this course was to elevate the level of academic success and to increase retention for new entering freshmen. Through this course students gain an understanding of the diverse role of University life and are required to establish both personal and academic goals as they begin the start of their college studies. These goals are identified in three categories: first semester; first year; and four years (upon graduation). Upon completion of this 12 week course, freshman students will have accomplished eight measurable learning objectives leading to a higher rate of student retention for our Department and College. Students learn time management skills as well as study skills for academic success. Through this engagement, freshman students are able to identify potential internship and career opportunities in their program of study, as well as international study opportunities. This orientation course further promotes student academic success by fostering the development of student leadership skills through campus involvement and student activities. These freshmen implement networking strategies with faculty and their peers. During the past ten years, a 96% retention rate has been achieved by actively engaging these freshman students in the university community during their first semester of college.

**#109**

### **International Service-Learning Engagement Relies on Partnering Structures**

P. Ebner and M. Russell and S. Clark  
Purdue University, IN

S. Clark  
Virginia Tech

Service-Learning is university engagement which emphasizes the service contribution of students from which they learn course content. The reciprocity of community and student benefits relies on engagement and partnerships. Most college strategic plans include the need for partnering, but usually focus on research and funding. If the educational process is to leave the university and truly be an engagement activity, it too relies on partnering. In our experiences, service learning works best when partnering is in place with local organizations, universities, and related industries. The engagement begins with a partnership with an organization like Heifer International, Timmy Foundation, Habitat for Humanity who have the service expertise and the local partnerships themselves. These groups can provide the expertise and the connections needed on the ground to design meaningful projects. For us, it has worked well to then partner with in-country universities that share our academic goal of providing transformational experiences to students. Outcomes include the impact on student learning (e.g., academic skills, civic skills, life skills) and the impact on the community (e.g., service delivery, client satisfaction). Once the organizations and the universities demonstrate partnered success, companies which believe that "corporate social responsibility as an important company priority" are joining the effort for multiple reasons. The authors have curricular service learning experiences partnering in Ecuador, Romania, Honduras, and in the United States and we will share syllabi of service learning courses & methods and consequences of partnering with universities, NGOs, and industry to strengthen the transformational value of the experience.

**#113**

### **Encouraging Students to Use Their Multiple Intelligences to Enhance Learning: The Box Project**

Crystal A. Allen and Walter L. Hurley  
University of Illinois

An intelligence is defined as a computational capacity to process a certain kind of information and involves the ability to solve problems.

Gardner identifies seven Multiple Intelligences (MI), including verbal, visual, logical, kinesthetic, interpersonal, intrapersonal, and musical, and believes that everyone possesses each MI at varying degrees. How can students be encouraged to effectively utilize their MI to enhance their learning? The Corrugated Cuboidal Collaborative Creation (C4), or box project, is a course assignment that employs a cardboard box as a medium for classroom presentation. Course-related questions are derived from student input. Students self-select a question and form a group with the purpose of developing a presentation that addresses the question. Each group is given a cardboard box which may be altered in any manner that will make an effective presentation. Boxes often are painted or surfaces covered with paper or images, have items attached or placed within, and are re-designed to represent pertinent objects. This novel presentation medium encourages students to explore and capitalize on their capabilities in all the MI, and releases them from the uniformity of power point-based presentations. The MI strengths of the group become manifested through the planning and development of the C4 and its presentation. The majority of students think that the project "made information more memorable." They take ownership of their own learning, invest substantial time in developing a creative, yet meaningful presentation, and take pride in their project outcome. The C4 assignment can be adapted for most college courses.

**#116**

### **Teaching through Experiential Learning: The Southern Illinois experience**

Elvira G. de Mejia  
University of Illinois

The office of research at the College of Agricultural, Consumer and Environmental Sciences initiated in 2008 a program called the Summer Intern Program (SIP). The objective of this presentation is to evaluate the outcomes and teaching benefits of this educational program. This is a hands-on experiential learning opportunity through observation, participation and interaction with experts at the Agricultural Station, Dixon Springs Agricultural Center (DSAC). Students select a faculty advisor on campus and also have a supervisor



in DSAC. Stakeholders lend their experience and expertise to help identify local relevant needs that a targeted research project could address. During eleven weeks, students from the Urbana-Champaign campus work side by side with DSAC researchers. Undergraduate sophomores and juniors, learn a particular subject through research. They are exposed to real life situations; learn experimental design, data collection and data analysis and reporting. Students learn through participation in the research programs of the DSAC with a research project of their own relevant to the needs of local agriculture, food production, local economy, the environment and communities in Southern Illinois. Furthermore, they have opportunities to learn about the Southern Illinois economy through prearranged group activities such as farm tours, interactions with local agribusinesses, in conjunction with project leaders and extension personnel. This experience allows students to engage, be responsible and integrate research into the student learning process, engaging the community and industry.

**#117**

### **Community-Service Learning About Local Food Systems in Edmonton**

Brent Swallow  
University of Alberta

A relatively new first year course at the University of Alberta is entitled, "Plate, Planet and Society" (AREC 173). The course introduces students to challenges at the interface of food, agriculture and environment. Students learn how different types of choices relate to those challenges, as well as basic analytical techniques for studying those Choices. Community-service learning (CSLO) is used to introduce the issues to the students to the issues in very practical ways. Students volunteer participate in projects that fulfill objectives of the community partners, while they gain first-hand understanding of topics that are highly relevant to the class. The community partners who are involved the class perform various roles in Edmonton's local food system, from production to marketing to consumption. One of the most popular CSL partners has been the University of Alberta Student's Union; the results of student projects are contributing

directly to the efforts of the Students Union and other campus groups to provide food that is nutritious and sustainable, as well as affordable and readily available. This paper will summarize lessons learned from integrating CSL into the class over the last two years, drawing upon reflections of the instructor, students and community partners.

**#118**

### **Fostering Change through Storytelling**

Patricia E. Grace and Eric K. Kaufman  
Virginia Tech

The role of an educator often goes beyond providing basic education to students. We are frequently tasked with the goal of promoting change in attitudes or behaviors. The objective of the presentation is to share the results of a study which examined the role of storytelling in fostering change. The theoretical basis of the study was drama theory and the psychology of narratives. Undergraduate students (N=142) participated in a mixed-methods study designed to examine the impact of a carefully crafted story on college student's attitudes toward sustainable agriculture and to explore what qualities of the story were associated with change. Pre and post tests using the Sustainable Agriculture Paradigm Scale measured changes in attitudes toward sustainable agriculture. Analysis of Variance (ANOVA) results indicated that story-based treatments (told story and read story) were significantly more effective in fostering change than were information-based treatments (lecture and factsheet). This was particularly true of students deemed resistant to change (based on their pre-existing attitudes toward the subject). Story qualities associated with change included identification with the storyteller, vivid description, and the first-hand personal view provided by the story teller. The results of this study suggest that the inclusion of storytelling in the educator's toolbox could prove to be a valuable and useful addition.

**#119**

### **Student Blog Assignments: How They Get Engaged**

Eric K. Kaufman  
Virginia Tech

Recently, innovative educators have been using student blog assignments as a tool for developing critical thinking skills. According to academic scholars, there are four benefits of student blogging: (1) Students become subject-matter experts; (2) student interest in learning increases, (3) students have legitimate chances to participate, and (4) blogs provide opportunities for diverse perspectives. Several researchers have noted the advantages of blogs and journals for improved reflective engagement with course material, as well as improved learning and performance. This session will highlight reflection blog assignments as a tool for promoting student learning and engagement. The presenter will share an example framework and scoring rubric for blog assignments he has used over the last two years. The proposed structure follows a "what?", "so what?", "now what?" format, similar to other recognized approaches to reflection. Students are required to use a blogging service, such as Blogger or Wordpress, and they are given recommendations for creating high quality blogs. For example, high quality blog entries are typically 150-500 words in length, include three to five hyperlinks to related resources, and incorporate at least one image (graphic or photo). Portions of the scoring rubric have been adapted from Association of American Colleges and Universities' VALUE rubrics. Session participants will leave with practical ideas on how to get students engaged on an individual level through personal blog assignments.

**#120**

### **Strengthening the International Capacity of University of Maryland Eastern Shore Students and Faculty: A Belize Field Experience**

S. Tubene, and L. Marsh  
University of Maryland Eastern Shore

Strengthening the capacity of 1890 institutions is much needed in the 21st Century. Since U.S. students have limited knowledge of other cultures, exposing them to international learning experiences is critical to their career development in food and agricultural sciences.

Fifteen students from the University of Maryland Eastern Shore were placed in Belizean agencies in July 2009, January 2010, and January 2011 for three weeks. The project aimed to train UMES students in international multi-disciplinary programs to become competitive in the global economy, and enhance the UMES faculty's teaching capacity. Methods used in this study were instructional delivery systems and International Service Learning (ISL). Data consisted of students' opinions on international experience, global competence, and knowledge of agriculture; critical thinking, analytical thinking, and problem solving skills before and after the trip rated on a 1-4 scale (1 being strongly disagree and 4 strongly agree). While the means of these factors before the trip were 3.00 or less, they were all above 3 after the trip. In addition, an Analysis of Variance (ANOVA) revealed that students became better prepared for a globally competitive workforce; developed critical thinking; acquired analytical and problem-solving skills through solving real field problems and issues encountered in Belizean agencies including Belize Animal Health Authority, Belize Trade and Investment Development, University of Belize, etc. The difference between the means of these critical parameters was statistically significant at alpha 0.05 (F-stat being 7.07 compared to F-critical of 1.66, and p-value being 5.55E-14), indicating the positive impact of the ISL method on students.

**#121**

### **Teaching Beliefs of Excellent Undergraduate Professors**

Aaron J. Giorgi and T. Grady Roberts  
University of Florida

The formal teaching/learning process typically involves interactions between the teacher, learners, content, and the learning environment. Teachers collectively agree that students are more engaged in the learning process when they feel professors understand their needs and afford them control over their education. The Theory of Planned Behavior proposes that a person's beliefs influence their intentions, which in turn influence their behaviors. According to Heimlich, sensitivity and inclusion are the two key dimensions that describe the teacher's beliefs. The purpose of this study was to describe teaching beliefs of excellent college

professors. A census was attempted to describe faculty beliefs based on the Van Tilburg/Heimlich Teacher Belief scale ( $n = 22$ ) and a subsequent content analysis of their teaching philosophy statements. A participant mortality rate of 50% occurred between the stages. It was found that the majority (91%) of faculty scored high on both instrument and content analysis for the dimension of Sensitivity. In addition, for the dimension of Inclusion the majority (85%) of faculty scored high on the instrument, while no majority exists for the content analysis. Faculty were selected through a student nomination and peer evaluation process, this implies that students and faculty value teachers that are sensitive to student needs and inclusive of all students. It is recommended that new instructors should strive to model these behaviors in practice. It is recommended that the study be expanded to general faculty, and replicated at other universities and other disciplines to see if similar results are found.

### #122

#### **An Integrated Approach to Curriculum Development in Global Agriculture: Helping Students Understand and Experience US – México Interdependencies**

Michel A. Wattiaux, M. Wiltbank and P. Crump  
University of Wisconsin

Our goal was to help students learn and analyze complex and real-world problems on issues related to social, environmental and economical aspects of dairy farming globally and in the context of US-México relations. Since 2004, 100 students have enrolled in a 1-credit spring seminar (Agriculture in Emerging Economies: Dairying in México; and 69 students have participated in a follow-up 2-credit, 2-week field program in Central Mexico. Paired t-test ( $n=34$ ) of survey tools administered at the beginning and end of the semester in 2008, 2009, and 2010 indicated an increase in self-reported knowledge of agriculture in developing countries (4.3 vs. 7.2), agriculture in México (3.9 vs. 7.4), US-México agricultural relations (4.1 vs. 7.4), structure and diversity of the Mexican dairy industry (3.5 vs. 7.7), structure and diversity of the US dairy industry (6.2 vs. 7.7), people and

cultures of México (5.7 vs. 6.9) and issues related to poverty in México (5.1 vs. 7.3, all  $P < 0.01$ ) when measured on a scale of 1 (not at all) to 10 (a great deal). Score for "Expanding agricultural (dairy) trade with México is good for the US" increased from 6.0 to 7.6 ( $P < 0.01$ ) but the score for "Expanding agricultural (dairy) trade with the US is good for México" decreased from 6.6 to 4.7 ( $P < 0.01$ ). Self-reported learning gains differed among freshmen, sophomores, juniors and seniors. Although participants in the field program documented personal and academic experiences with portfolio entries published on the aforementioned website, additional reflection opportunities may add pedagogical value to the program.

### #123

#### **Building Bridges across Riverside through Water Quality Research: A Successful Model for Student Research, Mentoring, and Transfer**

Heather M. Smith  
Riverside City College

Sharon L. Walker  
University of California

We have developed a successful model for integrating community college students in high quality research at a four-year institution. Riverside City College (RCC) and the University of California, Riverside (UCR), both Hispanic Serving Institutions, partnered for two critical purposes: 1) to involve RCC students in USDA-relevant research at UCR and 2) to motivate and facilitate RCC student transfer to UCR or other four-year institutions. This was accomplished by providing RCC students an experiential learning opportunity in cutting-edge research, with direct water quality applications and implications. Each year, two top students from underrepresented backgrounds enrolled at RCC were selected to participate in a year-round research experience at UCR. These students were mentored by the Project Directors, graduate students, and received informal research and career mentoring from a full-time USDA researcher. To date all students who have participated in this program have transferred to four-year institutions in the sciences or engineering and three are continuing on to Ph.D. programs. Furthermore,

over 500 students, faculty, and staff attended the 'Building Bridges Across Riverside' seminar series at RCC. RCC students were introduced to UCR faculty members who serve as advisors to the student chapters of Society of Hispanic and Professional Engineers (SHPE) and National Society of Black Engineers (NSBE). As a result, RCC students formed new student clubs on campus: a student chapter of SHPE, Women in Science and Engineering (WISE), and a Sustainability Club. This directly addresses a goal of the USDA to enhance and diversify the Nation's scientific and professional workforce.

**#127**

### **Engaging Students via MAP-Works®: An Investment in the Future**

Curtis R. Youngs, Don Whalen, Ginny Arthur and Mary Jo Gonzales  
Iowa State University

The objective of this study was to assess the potential utility of MAP-Works® as a student retention tool. MAP-Works® (Making Achievement Possible) is a commercial program designed to identify students who are at risk of not being successful in college. During the first 3-6 weeks of fall term, students complete an extensive survey addressing topics such as academic goals and commitment, academic behaviors, financial concerns, time management skills, lifestyle, and living arrangements. Survey responses are analyzed, and students are color coded (red, yellow, or green) with respect to their relative risk for problems (high, moderate, or low, respectively). The Department of Residence launched the MAP-Works® initiative at Iowa State University, and institution-wide survey response rates were 68.2%, 74.9%, and 84.8% for fall 2008, 2009, and 2010, respectively. Analysis of data from students enrolled in the College of Agriculture and Life Sciences revealed that 82% and 86% of fall 2008 and fall 2009 non-respondents were retained one year later. Red risk students were least likely to be retained (78% [2008] and 68% [2009] retention), yellow risk students were intermediate (83% [2008] and 88% [2009] retention), and green risk students were most likely to be retained (93% [2008] and 92% [2009] retention). Given the need to develop human capital, coupled with higher cost of recruiting versus retaining students, identifying students

who are at risk of leaving an institution and engaging those students in activities to enhance their success seems like a wise investment not only for the institution but also for society.

**#128**

### **Authentic Data in the Environmental Science Classroom (grades 9-16) - A Model and Evaluation**

David N. Raizen, Madhumi Mitra and Abhijit Nagchaudhuri  
University of Maryland Eastern Shore

The Chesapeake Bay is the largest estuary in the United States and fed by a watershed spanning parts of six Mid-Atlantic States. It is a vital resource providing food, jobs, habitat, recreation, and other benefits. It is, however, a fragile resource made especially vulnerable to eutrophication (nutrient-enrichment) due to its long dendritic shoreline and the many human activities that are prevalent. Protection of this resource through promoting environmentally responsible behavior (ERB) can be an important part of environmental science curricula throughout the watershed and beyond. While most of the environmental monitoring data are readily available, there remain large obstacles to the use of these data in secondary (grades 9-12) through undergraduate science classrooms. The current project discusses the integration of community data and computer models into a web based teaching tool. This tool allows students to access authentic water quality and land use data from a variety of sources including the Chesapeake Bay Program's Phase 5 Watershed Model. Such an innovative approach through engaged learning experience incorporating authentic data has profoundly impacted the processing skills of students. Unit plans for secondary classrooms based on this tool and designed to incorporate National Science Education Standards related to inquiry and systems, personal, and social perspectives were evaluated using pre- and post-tests of ERB indicators for both faculty and students. Initial trials using approximately 50 high school students from the Eastern Shore of Maryland are discussed. Some successes as well as several areas of potential improvement are indicated.

#130

### **Chosen Careers of Agricultural Student Teachers: A Study of Retention and Program Evaluation**

Dwayne Pavelock and Doug Ullrich  
Sam Houston State University

Accountability is becoming increasingly important in postsecondary education, especially in today's economy. Programs failing to produce a certain number of graduates are considered low-performing and may be closed or merged. Teacher education programs must also deal with accreditation standards, primarily those of the National Council for Accreditation of Teacher Education (NCATE). The purpose of this study was to determine the career pathway of agricultural student teachers at Sam Houston State University (SHSU) from 2003-2010. The objective was to determine the success of the Agricultural Education program at SHSU in preparing students to become secondary agriculture teachers. The initial and current career pathway of each student teacher from Fall 2003 through Spring 2010 was determined through personal communication/knowledge by the researchers and electronic databases. One hundred fifty-one individuals completed student teaching during the chosen time period: 58.9% female and 41.1% male. Eighty-two (54%) subjects immediately established an agriculture teaching career, and more males (71%) secured such a position than did females (42.7%). Outside of teaching agriculture, 13.3% obtained non-agricultural teaching positions. Considering the 151 student teachers, 53.0% are still teaching agriculture and 10.6% are teaching a subject other than agriculture. Only 8.6% of those who immediately began teaching agriculture are no longer teaching, while 8.0% of those who did not immediately enter the agricultural teaching profession are now in such a career. The agriculture teacher education program at SHSU has been successful in preparing secondary agriculture teachers who remain in the profession at a higher degree than indicated by most teacher retention studies.

#131

### **The Richmond Farm School: An Extension Education Program to Prepare 21st Century Urban and Peri-Urban Agriculturists**

Kent Mullinix, Arthur Fallick and Anna Rallings  
Kwantlen Polytechnic University, British Columbia

In response to growing interest in agriculture as an integral element of sustainable human settlement and the impending need for 50 million post peak-oil North American farmers, a university, municipal government and community NGO partnership in Richmond, British Columbia, has implemented a unique agriculture education program. The Farm School teaches the science and art of local-scale, human-intensive, direct-market agriculture. It is designed to appeal to, and accommodate, an emerging and very different type of aspiring agriculturist- urban professionals who see agriculture as a personally rewarding and valuable way to contribute to the sustainability of society. It quickly and efficiently imparts fundamentally critical crop and stock production knowledge and farming acumen, and nurtures neophyte farmers in their agricultural businesses. Over one season, students study 350 hours of broad farming subjects in the classroom and for an additional 350 hours participate in structured practical farming experiences on a four acre urban, market crop farm and orchard before qualifying for access to municipally owned and provided "incubator" farm land, shared resources, and technical support, (for up to three years). We are piloting the Farm School as one strategic element of a larger research and agriculture/community development initiative, Municipally Enabled and Supported Agriculture (MESA). MESA is intended to integrate agriculture with urban-culture and advance local-regional agri-food systems as a foundation for sustainable urbanity. We expect to implement regionally appropriate variations of the Farm School in municipalities across British Columbia. Information about the Farm School curriculum, pedagogical approach, students, outcomes, and satisfaction will be presented.

#132

### **Avoiding and Overcoming Challenges Associated with Industry Participation in the Classroom**

Cheryl J. Wachenheim  
North Dakota State University

Experiential learning is enhanced when industry practitioners are actively engaged. Our Agrisales class involves sales-professionals who host students on ride-alongs, serve as customers in the cumulating practical exercise, and visit the classroom as guest speakers. Realized benefits have been accompanied by notable challenges. One challenge is that students may perceive individual-sales professional testimonials as general reality. Solutions to pre-empt this outcome include exposing students to various professionals, and assigning students to a variety of industry readings and to evaluate differences in content or philosophy presented by the different sales professionals and their readings. Another challenge is when speaker presentations are not in-line with the material otherwise presented in class (at the wrong time, including conflicting material, or ethically questionable). To prevent or overcome poor-timing of speaker presentations, the instructor should know what speakers will present and schedule them accordingly or present speakers with expectations regarding the content they will present. Content presented that is either in conflict with other class material or within the gray area of ethical practices can provide an example that there is often not one right answer and that firms often have specific guidelines regarding the behavior of their sales staff. Another challenge is industry participants that do not add value to the class but actively pursue involvement. In this case, the “do the least harm” criteria may apply. Other challenges result from students “behaving badly” during their interactions with professionals and the inherent variation of student experience and resulting fairness concerns from students.

#136

### **NACTA Members’ Perceptions of Ethics Education in Agriculture and Life Sciences**

Traci L. Naile, Ashley D. Charanza and Jennifer Williams  
Texas A&M University

Ethical discussions are not new to the agricultural industry, and agricultural professionals should be prepared to address ethical issues in an educated, professional manner. Educators are responsible for providing effective ethics education to prepare students who are future agricultural professionals for ethical discussions. This study examined faculty members’ perceptions of the value of ethical awareness and education in their respective disciplines, and their preparedness for providing such education. A survey was distributed to 2010 NACTA members accessible via email (N = 695), and 244 faculty/staff members responded. Respondents represented all NACTA regions, 60 disciplines, and all faculty ranks. Respondents reported low use of newspapers, television, and online media for learning about ethical issues, as well as low reliability of and trust in those media for providing information about ethical issues. Industry magazines were rated more highly than other media for use, reliability and trust. Respondents’ strongly agreed ethics are important in their disciplines and students should be aware of ethical issues, and agreed ethical topics should be included in undergraduate and graduate courses. Respondents also agreed they are responsible and qualified for teaching ethical topics or courses at the undergraduate level but were neutral about their responsibilities and qualifications at the graduate level. Respondents slightly agreed they would participate in training about teaching ethics. The responses demonstrated NACTA members believe ethics and ethics education are important in agriculture, although resources and training are needed to facilitate proactive ethics education and information seeking across disciplines.

#143

### **Engaging Veterinary Medical Students Food Animal Education with iPod Applications, Podcasting and Problem Based Learning**

Ann Rashmir-Raven, Robert Malinowski, Frank (Bimbo) Welker, Robert Linford, Michelle

Kopcha, Jon Patterson, Art Currey, Kent Ames, Lowell Midla and Matt Raven  
Michigan State University

It is becoming increasingly more challenging to adequately train food animal veterinarians. This is in part due to diminishing food animal caseloads at colleges of veterinary medicine and the increasing complexity of our nation's food supply. iPhone/iPod Touch applications (Apps), podcasts of food animal, clinical-based case studies and technical procedures in a problem-based learning format are being used to supplement veterinary medical student's food animal knowledge and technical skills and increase the number of veterinary medical students desiring to become food supply veterinarians. Students' critical thinking skills may also improve as a result of this training. The critical thinking skills, food animal knowledge base and career intent of the control group (sophomore veterinary medical students, Class of 2013) were surveyed at three colleges of veterinary medicine. The Health Sciences Reasoning Test (HSRT) was used to evaluate critical thinking and reasoning skills. The overall mean score for the pre-test at the three colleges was 23.73 (33-point scale). ANOVA testing indicated a significant difference between Michigan (24.11) and Mississippi (22.35) as well as Mississippi and Ohio (24.53). Food animal problem based case materials were developed for the iPod and will be used to supplement the training of the experimental groups of students (sophomores students in the Class of 2014). The HSRT will be administered again as a post-test at the end of the sophomore year to evaluate and compare changes in critical thinking skills at the three sites.

**#146**

### **Is All Science Presented Equal? Uncovering Student Engagement in Scientific Discourse**

Nick J. Balster and Mallika Nocco  
University of Wisconsin-Madison

Student engagement in science is essential to their development as critical thinkers and ultimately, the propagation of a scientifically literate society. However, knowing science is not presented equally, what can we learn from student engagement in scientific discourse and

their perception of science? This study quantifies student sophistication at evaluating scientific information from both peer-reviewed literature and popular media sources as an identifier of scientific literacy. Sixty-nine undergraduate students representing 43 different majors enrolled in an introductory soil science course wrote critical reviews of a common scientific topic from both a peer-reviewed and popular media article. We conducted a systematic, direct content analysis to codified student text used in their reviews. Results indicate a dichotomy in student engagement with these two information outlets revealing a complex relationship between the language used to frame scientific information and student preconceptions of science resulting from this framing.

**#147**

### **Soil Online: Offering Soil Science Courses and Experiential Learning to Students and USDA Employees**

Heather M. Smith  
Riverside City College

Victor B. Zordan  
University of California

The availability of soil science courses at the undergraduate level has decreased nationwide leading to a shortage of qualified soil scientists for USDA positions. Riverside City College (RCC) and the University of California – Riverside (UCR) – both Hispanic-Serving Institutions (HSIs) have collaborated to serve two critical purposes: 1) to provide five lower and upper division soil science courses online to undergraduate students in California and around the country to facilitate qualification for GS-5 level certification in the Federal service for employment within the USDA and related agencies at a low cost and 2) to provide online soil science courses for current USDA employees requiring additional training. Furthermore, formal interactions and career mentoring from USDA (NRCS, Forest Service, and/or ARS Lab) personnel is required for all online students. To further recruit underrepresented students for USDA positions, 13 outstanding students who complete an online course are offered a 1-week paid internship (\$1000 stipend) with a USDA agency to provide them an experiential learning opportunity and

formal mentoring. Course development and teaching involves soil scientists from four institutions around the country. Thus far, over 90 students have participated in at least one online soils course through RCC and two students have been offered paid internships with the USDA. The Soil Online website (<http://academic.rcc.edu/soil/>) has been developed for use by online students as well as academic and professional institutions. This project directly addresses a goal of the USDA to enhance and diversify the Nation's scientific and professional work force.

**#150**

### **Implications of a Corporate Performance Measurement Tool for Educational Programs**

Chaney W. Mosley and Thomas W. Broyles  
Virginia Tech

Many dynamics affect student experiences and the quality of academic programs. The purpose of this study was to use Net Promoter Score (NPS) to determine student experiences in an educational program. NPS is a standard for determining corporate customer loyalty, developed by Satmetrix. Participants were agricultural education students (N=1,415) in a leadership development program. A survey was administered regarding student experiences. NPS was determined by asking the likelihood of recommending the program to someone else. NPS is based on a 0 to 10 scale (0 = not at all likely and 10 = extremely likely). Participants are placed into categories based on their rating - Promoters (9 to 10 rating), Passives (7 to 8 rating), and Detractors (0 to 6 rating), with the percentage of detractors being subtracted from the percentage of promoters to receive the NPS. Multiple regression was used to test the impact of independent variables, including time, location, and staff characteristics, on NPS. The program received an overall NPS score of 92, which is a strong indicator of high customer satisfaction. The overall model with six independent variables successfully predicted the NPS, which was indicated by an F-value of 5.10 ( $p < 0.01$ ) and R-square of 0.021. NPS has positive implications for engaging students in performance assessment. The vitality of an academic program is influenced by student experiences. Numerous factors can impact

student experiences and NPS provides a platform for investigating the effects of such factors. NPS relies on the engagement of students to determine overall loyalty to the program.

**#152**

### **Assessing Critical Thinking Skills of Undergraduate Pre-service Teachers: Implications for Curriculum Development**

Marcus S. Pollard, Dennis W. Duncan and  
Nicholas E. Fuhrman  
University of Georgia

John C. Ricketts  
Tennessee State University

Critical thinking has been called one of the most important attributes for success in the 21<sup>st</sup> century and is the limiting factor for students to reach their fullest potential in today's society. Critical thinking requires a set of skills and approaches to be effective. Significant adults, peers, and environmental factors influence dispositions of critical thinking. This study assessed three constructs including Analysis, Evaluation, and Inquisitiveness among University of Georgia undergraduate student teachers. Students were given a 20-question survey that measured the three constructs. Results of seven years of data show that females were statistically significantly higher in analysis and inquisitiveness scores. No statistical differences were found on analysis, evaluation and inquisitiveness scores based on where students indicated residing (urban, rural, and suburban). A significant positive correlation was found between student GPA and their analysis score. Knowledge of a student's gender and GPA accounted for 12.4% of the variability in their analysis score and 7.4% of the variability in their inquisitiveness score. These results suggest that undergraduate teacher education programs should acknowledge the differences in critical thinking abilities of students and give particular attention to males and students with GPAs below a 3.0 if building critical thinking skills is an objective.



#153

### **Engaging Students in Program Evaluation Through the Use of Wikis**

Thomas W. Broyles, Lisa S. Hightower and  
Richard J. Rateau  
Virginia Tech

It can be difficult to accurately evaluate short-term programs, programs lasting less than three months. Often researchers rely on pre/posttests to determine the effects experienced by program participants. Unfortunately using a survey may not show the true impact of the program for the participants; hence the researchers discovered that involving a self-reflection component to the evaluation allowed the participants to describe their experiences in their own words. The purpose of the research was to evaluate a month long agricultural summer enrichment program allowing the participants to describe their experiences through the use of a photo diary using a Wiki platform. Each week participants responded to an engaging question generated by the researchers in which a photo and written reflection were uploaded. In addition, participants conversed through the Wiki, commenting on other participants' posts; participation was not mandatory. Data were gathered from 1,976 threads and 326 photos uploaded by the participants and analyzed using whole text analysis and coded using comparative analysis method. Themes emerging from the data were coping with a new environment, feeling of being overwhelmed, development of leadership and teamwork skills, and growth in analyzing problems and decision making. The use of the photo-diaries in the evaluation of the program offered rich descriptions of the participants' experiences and provided quality feedback for program improvements.

#156

### **Is Performance in A Veterinary Nutrition Course Influenced by Previous Undergraduate Experience? A Preliminary Analysis**

Lorraine Doepel and Kent Hecker  
University of Calgary, Alberta

The purpose of this study was to assess the relationship between undergraduate variables (undergraduate grade point average [GPA], undergraduate program and courses taken) and performance in a first year nutrition course at the University of Calgary, Faculty of Veterinary Medicine (UCVM). Data from three years of students (n=89) enrolled at UCVM were used. Prior to admission into UCVM, 23 students (25.8%) were enrolled in an undergraduate agriculture program, 64 (71.9%) in a science program, 1 in forestry and 1 in education. Twenty-four students had taken a nutrition course in their undergraduate program; 19 of these students were enrolled in an agriculture program. Pearson product moment correlation was used to assess relationships between undergraduate performance in an introductory nutrition course and the average of the 10 prerequisite courses used for admission into UCVM and the GPA in the UCVM nutrition course. Performance (GPAs) in the two nutrition courses was not correlated ( $r = 0.291$ ,  $P = 0.17$ ), however, students with a higher GPA in the prerequisite courses obtained a higher GPA in the UCVM nutrition course ( $r = 0.306$ ,  $P = 0.004$ ). Students who were previously enrolled in an agriculture program performed better in the UCVM nutrition course than students enrolled in a science program (GPA of 3.48 vs. 3.23;  $t(85) = 2.25$ ;  $P = 0.027$ ). These preliminary data suggest that students already familiar with nutrition concepts obtained through an undergraduate course obtain a better grade in a veterinary nutrition course.

#157

### **Scholarly Assessment of Teaching Methods**

Cheryl J. Wachenheim  
North Dakota State University

Scholarly output is an important responsibility in many academic venues. Even when not explicitly required by job description or criteria for advancement, its value to teaching is many faceted. Depending on the specific objectives and methods employed, scholarly assessment encourages careful review of existing literature, work from which teachers can gain ideas and identify existing resources available to support teaching; engages teachers with students and with the teaching process as they work to discover more about their students, the learning

process, and the outcomes of their work; and provides input on the effectiveness or efficiency of, or student reception to, their teaching. The objectives of this presentation are to identify and discuss the key steps, and the challenges associated with conducting research on pedagogy. Steps include identifying opportunities for scholarly assessment; choosing, preparing and testing an assessment instrument; working through the Institutional Review Board process; engaging and otherwise motivating student-participation; and preparing and targeting scholarly output.

**#160**

### **Assessment of Student Engagement in a Collaborative Learning Experience**

David Lust, Kevin Williams and Lance Kieth  
West Texas A&M University

Educators employ various strategies to engage students in the learning process. It is important to assess effectiveness of such strategies. Faculty at West Texas A&M University developed a survey with the objective of assessing the engagement and satisfaction of students participating in a multi-course, multi-discipline experiential learning project. Surveys were administered following the 2010 project. The project's objectives were to engage freshmen in peer-based learning communities, improve critical thinking, and provide teaching experience for students enrolled in a Supervised Agricultural Experience Program (SAEP) course. A student-led livestock showmanship competition (Little International) involved students from two courses; students in a freshman animal science course trained, prepared and exhibited livestock under direction of upperclassmen from the SAEP course. Project learning objectives emphasized knowledge of livestock characteristics and student engagement. Surveys assessed student knowledge of livestock and team building skills and project satisfaction. Students rated their knowledge levels (1=lowest; 6=highest) before and after the project on 18 topics related to animal characteristics and teamwork. Means for animal knowledge were 3.68 pre-project and 4.79 post project. Mean knowledge of team building was 4.82 pre-project and 5.27 post-project. Mean rating on 10 questions related to project satisfaction was 4.46. Students' general

knowledge of livestock was rated higher after the project. Student satisfaction with the quality of instruction from peer leaders received the highest rating, while time spent on the quiz bowl activity provided the least satisfaction. Students indicated that the project was a valuable educational experience and they would recommend it for future courses.

**#162**

### **Assessing Learning Outcomes in an Engagement Setting: Introducing Students to International Extension through Service Learning**

P. Ebner and M. Russell  
Purdue University, IN

I. Hutu  
Banat University of Agricultural Sciences and Veterinary Medicine, Timisoara Romania

Purdue University, in cooperation with the Extension Unit, Banat University of Agricultural Sciences and Veterinary Medicine (Timisoara, Romania), conducts a service learning-based course where undergraduate students are introduced to extension methodologies by working directly with Romanian farmers to solve issues and challenges facing livestock production. A scientific approach is necessary to properly assess the efficacy of any course and here we utilize several approaches to measure learning outcomes in this nontraditional setting. A pre-baseline assessment, taken the first day of the course, not only determines the student's capacity at the time taken, but also prepares and heightens their expectations to learn the intended outcomes. Students complete a 48-item questionnaire designed and validated to assess their oral and written communication, intercultural, and flexibility skills. During the course, students regularly engage in qualitative written and oral reflection practices. These allow both the educator and the student to assess not only what they are learning, but how they are learning. Students actively determine what contributed to their personal successes and challenges in different situations or projects. Finally, post-test and a post-reflective assessment are administered to allow students to gauge their personal growth during the course. These post-tests afford students the

opportunity to compare their perceived (pre-test) and true (post-test) strengths, skills, expectations, or attitudes and, in some cases, demonstrates misconceptions of what students did not know until during or after the course experience. Taken together, these various assessments offer both quantitative and qualitative measures of success in this nontraditional educational setting.

### # 163

#### **Agricultural International Experiences: Borderless Classrooms**

Lyle E. Westrom, Harouna A. Maiga and Terrill A. Bradford  
University of Minnesota

Internationalizing agricultural curriculum can be accomplished with multiple teaching models. The objective of this presentation is to provide educational examples of real world experiences and opportunities for student learning within each of four models. Model 1 is an upper level three-credit course designed to provide students with a study abroad experience. Sixteen students traveled to France to study the agricultural production, processing, and marketing systems of the country. Model 2 is a lower level three-credit World Agricultural Food Systems course, where faculty and guest speakers share their overseas experience. Model 3 provides students with an international internship experience that is shared with others upon their return. In Model 4 students enrolled in World Agricultural Food Systems share daily news items related to world food issues using multiple media sources. Over 70% of students utilized internet news as their preferred media source. Student evaluations of delivery and learner outcomes were very positive. All models were perceived to be easily implemented. Model 1 may present overseas travel arrangements, language, and cross-cultural challenges. Nearly 100% of students speak of the significant educational benefits that come from alternative methods of internationalizing agricultural curriculum. A borderless classroom is relevant and essential in the global world relative to food production, trade, and cultural understanding. Borderless education can be successfully implemented if carefully planned.

### #166

#### **Using Team Projects to Enhance Student Engagement and Learning**

B. D. Whitaker  
The University of Findlay, OH

The Swine Production and Management course at The University of Findlay is designed to introduce students to the structure and dynamics of the swine industry and principles behind raising pigs. A strategy used to apply the discussed principles, enhance student engagement, and assess student learning was the use of three team projects throughout the course. Each team consisted of six students and was responsible for completing one semester-long project and two shorter, month-long projects. The shorter projects were designed to allow the students to apply farrowing and pre-weaning (project 1) and nursery pig (project 2) management practices. The objective of these projects was to provide a mechanism for the students to integrate classroom readings and material into experiential situations. Through the projects, students were able to practice management skills and relate their personal experiences with the current techniques discussed in the classroom. Project evaluation surveys were developed to assess the students' learning outcomes for the projects as well as the course itself. Results indicated the students had a greater comprehension of general swine management practices in addition to gaining animal handling experience. Student feedback also indicated overall satisfaction of group work, small projects, and hands on experiences. Based on these findings, the content of the course is being altered to include more projects in subsequent semesters to facilitate higher learning engagement.

### #167

#### **A Partnering Approach with Posters**

Murray McKnight and Kendra Tippe  
Olds College, Alberta

Kendra Tippe Instructor and student collaborate to present dual perspectives on an applied research project in a capstone course. The objective is to demonstrate a learner-centered

approach that incorporates team building, problem solving and project management. A four by six foot poster displayed research results and provided a functional format for community, industry and student interaction. Six Rural Land-use Planning students evaluated the effect of land planning mechanisms on wetlands. Legislative and non-statutory documents from four selected municipalities in rural Alberta and the Northwest Territories were assessed. Wetland protection measures were identified and evaluated. Criteria for an 'A' to 'F' letter grade were developed. A score was applied to each planning tool based on how well it protected and promoted the long-term sustainability of wetlands. Empowered students engaged the assistance of industry partners in a process of interpreting complex realities into clear, understandable knowledge bytes. Coaching, industry partnering, sharing and collaborating were tools used to facilitate this project. A philosophical approach to the participatory and problem solving powers of posters will be presented. Far beyond their display prowess, posters provide an effective format for a group-learning project while allowing learners opportunities to engage and leverage real-world activities. Teacher and student give their personal perspectives on a process lasting four months, from initiation, to buy-in, to presentation. "A Partnering Approach with Posters" will demonstrate that old world tools work in a new world format.

**#169**

### **Student Initiated Engagement**

Bonnie S. Walters and Crystal Ganz  
University of Wisconsin

Student engagement can be accomplished in a variety of ways. Traditionally the engagement of students with course material was directed by the instructor. As technology has advanced the engagement of students with course material has also changed. Students utilize web resources, discuss course material on line using course management systems or write their own blogs. The development and use of social media has created another way for students to communicate what is happening in their courses. Students taking the Poultry Production course at the University of Wisconsin - River Falls became engaged by posting pictures and

descriptions of course activities on a Facebook page. Students created the page with the goals of showing family, friends and others what was happening in class and to promote poultry activities on campus. The class completed a research project to determine how raising chickens with environmental enrichment would impact growth rate and behavior. The postings digitally captured and documented key activities from the project. This student initiated activity increased the engagement of the students in the course as well as students who were not taking the course but have now inquired about the course. As the weeks into the course continued more of the members of the class would take pictures for the page or suggest pictures to include in the postings. Student engagement can happen by many ways whether it is instructor directed or student directed, either way the engagement enhances the educational experience.

**#170**

### **Engaging Students by Building a Raised Bed Garden**

Michael Nicodemus and Florah Mhlanga  
Abilene Christian University, TX

As part of the laboratory experience in our freshman-level plant science course, students help with building, planting, and maintaining a raised bed garden. We believe this is an effective way for students to internalize concepts discussed in lectures. To gauge students' expectations and engagement as related to the garden project, we administered a pre-test consisting of 17 questions on a Likert scale (1=strongly disagree, 5=strongly agree). Students also listed their gender, class, and major (environmental science, animal science, or agribusiness). Responses to the questionnaire generally showed positive expectations and engagement from the students. From the pre-test, we found female students tended to rate their responses on all questions as high or higher than male students. For two questions, "I feel involved and engaged in this department" and "I know that if I have a problem at the project site, I can go to my instructor for help", female response was significantly higher than male ( $P = 0.0872$  and  $0.0974$ , respectively ( $\alpha = 0.10$ )). Environmental science students rated their responses higher in

general, with significantly higher responses than all other majors for “I am familiar with what drip irrigation is and how to use it” ( $P = 0.0066$ ) and “Building a garden is a useful way to learn about plants” ( $P = 0.0892$ ). The pre-test will be compared with a post-test to be administered at the end of the semester to determine changes in response due to the garden project. Results and recommendations will be discussed.

**#171**

### **Engaging Agribusinesses and the Agricultural Community in a New Undergraduate Agronomy Program**

Grace Armah-Agyeman  
Southwest Minnesota State University

Engaging industry in university education is very important for improving the relevance of academic courses as well as preparing students for careers. A number of academic programs especially those in the business and engineering fields require students to work on industry related projects or take industry related internship placements while in school. Such requirements or opportunities for industry or professional sector collaboration are missing in some academic programs. The process of ensuring that students are properly matched with employers in their area of study has become critical especially during this economic downturn when employers are searching for employees who are work ready. This presentation shows the methods used by a three year-old BS degree program in agronomy in engaging the agricultural industry to benefit both the student and the industry. Engagement methods included invitation to industry personnel to be guest instructors in agronomy classes, involving industry as stakeholders of the program, seeking input from industry personnel on effective student recruitment methods, attending seminars, workshops and social events and giving presentations about the program. Benefits of the collaboration has been the provision of student scholarships by industry, internship and job placement opportunities for the students, donation of manuals and other items to students by guest speakers and the collaboration of industry in the design of the capstone course.

The experience of this new academic program with industry shows the importance of actively engaging the community and industry as part of the students' education.

**#173**

### **Promoting Student Engagement Using Interactive Whiteboards**

Tim Buttles  
University of Wisconsin

This presentation will describe the use of interactive whiteboard tools to promote student engagement. These tools expand options for interaction with course content and can help fulfill the expectations students from the iGeneration bring to the classroom. Interactive whiteboards from companies such as SMART Technologies and Promethean allow the teacher and students to control a computer and image by “writing” on the board. These tools also come with specialized software tools for creating interactive activities. Instructors create files with multiple pages made up of text, images, video, links and interactive content. Animation and widow shade tools allow the teacher to hide portions of the page while students answer a question or solve a problem. The answer or sample solution can then be revealed and compared. Interactive content tools allow for the creation of interactive quizzes including multiple choice, matching and other question types. Files can be saved at the end of class, converted to PDF documents and posted in course management systems. Interactive whiteboard tools were used to engage students across five agricultural education courses ranging from an orientation course for first semester students to a senior level teaching methods course. Students interacted with the whiteboard directly and through a wireless slate passed around the room. Interactive whiteboard tools supported a range of teaching methods from media rich presentations to cooperative group activities. Student comments on the course evaluations supported the benefits of using these tools. Interactive whiteboards provide another option for teachers to engage students with course content.

#174

### **Using a Real World Case Study to Develop Experiential Learning Opportunities**

Kevin J. Bacon  
Western Illinois University

Student complaints around case studies often center on the lack of real world application. While this may sometimes ring true, a far more common problem of case study examples is that the student is too removed from the elements of the case (understanding of the business climate as an example) due to lack of common world framework – thus the example simply isn't real. For this project, the startup process for two ethanol plants were examined in depth. The plants were similar in initial name plate capacity, both were in close proximity to campus, and both had similar project startup timelines. However, that is where the similarity ends. One of the plants has become extremely successful and the other went bankrupt before completion of the plant. Using a CAMEL analysis (capital, assets, management, equity, and liability) a profile of each plant was developed. This analysis was then used to develop a profile for guidance on project startups. Students found the discussion to be very useful to them because they are very aware of facilities under study. This provided for a very robust discussion on business planning and management along with a real world sense of realism allowing the students to connect theory to practice.

#176

### **Exploring International Cuisine and Agriculture through a Short Term Study Abroad Experiential Learning Opportunity**

Dave Goorahoo, Klaus Tenbergen and Sean Seepersad  
California State University

“Tell me and I forget, Show me and I remember, let me do and I understand” was the motivation for a short term study abroad program conducted during June 2010. Eighteen students from three departments within the Jordan College of Agricultural Science and Technology

(JCAST) at California State University- Fresno, participated in a 10-day experiential learning opportunity on the twin islands of Trinidad and Tobago (T&T) in the Caribbean. Objectives of the course were to: explore the personal attitudes, values and behaviors of the people of Trinidad and Tobago (T&T), with respect to agricultural, culinary and family life sectors; and, develop the students' leadership and cultural competence skills through engagement with identified communities. In keeping with the holistic model that experiential learning involves a multi-linear model of adult development, it was anticipated that the students would be able to apply information learned about T&T to their own experience as a student, a citizen of the United States, and a member of the global community. We review the initial planning, funding sources, daily activities, students' perspectives, challenges and evaluation of the course. In a post trip survey, 86% of the respondents indicated that this course met or exceeded their expectations and 57% “strongly agreed” they would return to T&T to provide humanitarian assistance. Students unanimously agreed that the experience significantly changed their outlook on life and they were now more familiar with the agricultural/child/family situations in a promising and developing country that has much to offer American Study Abroad students.

#177

### **Influence of Human Resource Practices on Employee Intention to Quit**

Michael J. Martin and Eric Kaufman  
Virginia Tech

Reducing employee turnover through retention practices is an area of great interest to employers who depend on a highly skilled workforce. In recent years, Cooperative Extension has experienced the loss of many county agents/educators due to resignation & also retirement incentives offered as a cost saving measure to manage reduced funding. Due to the type of work, the training needed, and the small pool of qualified applicants, it is important to pay attention to the retention of newly hired Extension workers. Prior research suggests a linkage of factors that can predict the likelihood of new employees' intention to quit. Human resource practices including recruitment

& hiring, compensation & benefits, training & development, and supervision & evaluation are items that can directly influence the level of job satisfaction of new employees as well as their level of commitment to the organization. The level of job satisfaction and organizational commitment can, subsequently predict an employee's level of intention to quit. This presentation will share findings of research conducted in the fall of 2010, which included 480 Extension Agents/educators, representing 12 states in the Southern United States. The study targeted employees with less than six years of employment and investigated human resource practices that influence intention to quit. Findings indicate a significant relationship between human resource practices and intention to quit, when mediated by organizational commitment and job satisfaction. Accordingly, the research has important implications for the management of Cooperative Extension and anyone working in or preparing to work in related fields.

**#179**

### **Identifying Faculty's Knowledge of Critical Thinking Concepts and Perceptions of Critical Thinking Instruction in Higher Education**

Nicole L. P. Stedman and Brittany L. Adams  
University of Florida

Faculty often find it difficult to engage students in the classroom. One factor in engagement is cognitive engagement. Critical thinking has been found to be a tool to accomplish cognitive engagement. Researchers conducted this study to identify patterns in college of agriculture and life sciences faculty's understanding of basic critical thinking concepts and self-perceptions of critical thinking instruction. If faculty are not equipped with the basic knowledge of critical thinking how can they be expected to teach it? The objectives of this study included identifying patterns in faculty's knowledge of critical thinking concepts and identifying patterns in faculty's perception of critical thinking instruction in higher education. The participants included 61 self-selected faculty with teaching appointments in a college of agriculture and life sciences at a southern land grant institution. The primary conclusion was that faculty's knowledge of

perceptions and concepts of critical thinking is severely lacking. In terms of basic knowledge there was not a single question answered correctly by all respondents. In other cases it was evidenced that there is still a bit of conflict surrounding critical thinking instruction in higher education. The objective of this presentation is to educate faculty on the need to engage in critical thinking in order to engage their students cognitively. Critical thinking by faculty members may assist them in teaching students to think critically. The session will cover ways to increase critical thinking by faculty, which will translate positively to the students.

**#183**

### **Encouraging BASIK Student Outcomes through Engagement in First-Year Experience Programming**

Keyana C. Ellis  
Virginia Tech

The literature defines student success as a student's ability to acquire a college degree. Success is determinant upon and heavily influenced by a student's first year in college. A period of transition and adjustment to the social and academic demands of college, the first year experience is a time when student dropout is greatest. Institutional efforts to combat student dropout, such as first-year experience programming, aim to depress student difficulty at the student level. Participation and engagement in these programs show considerable gains for both the student and the university, including increased persistence, peer connections, self-awareness and self-efficacy, institutional satisfaction, use of campus resources, respect for diversity, learning, and faculty/student interaction. Yet, many agricultural science degree programs do not engage students in such proactive environments due to budget constraints, degree requirements, faculty availability, and interests of students. Such courses are most effective when separated from introductory level courses and when delivered with energy to motivate students. The purpose of this study was to explore undergraduate agricultural science students' perceptions of their first year experience at a four-year Land Grant institution and their current academic and social performance one year after participating in a first-year course. Based on results of a

qualitative case study, engagement in first-year programming must encourage student behavior, attitudes, skills, emotional intelligence, and knowledge (BASIK). Students suggest building a network, reflection, role of the instructor, in-depth discussion, and fun experiences that connect students to the university and roles in college as necessary pillars of success for first-year programming.

**#184**

### **What do Students Say About their First Year Experience?: Using Tinto's Interactionalist Model of Student Departure to Qualitatively Assess Undergraduate First Year Experiences**

Keyana C. Ellis  
Virginia Tech

Research indicates that experience in college has psychological, cognitive, physical, social-cultural, and economic influences on the student, thus providing considerable challenges that must be addressed to usher students to successful degree completion. These challenges must be identified at each stage of educational development for students, especially during the first year of matriculation. Tinto's Interactionalist Model of Student Departure is commonly used to predict student departure. It best describes the longitudinal processes of student persistence that affects a student's voluntary withdrawal and centers on the interaction between the student and the social structures of the college environment. Through a qualitative case study methodology using eight sophomore year undergraduate students enrolled in the agricultural sciences and one dropout, students discussed their first-year experiences based on key components of the model. Students expressed strong ties to youth organizations and advisors; limited and distorted information due to a lack of preparation and/or first generation status; and, strong intentions to acquire a degree. During their first year, students experienced challenge in their interactions with characteristics of college, including maneuvering campus technology, financing their education with external commitments, developing meaningful relationships, performing successfully, balancing course loads, juggling time, and finally, making decisions. Students

express enjoyment in trying new things, meeting new people, and attending academic and social events—this enjoyment only comes when they are successful in balancing the new freedom with their responsibilities in college. Students must find a niche in their academic and social communities, meet academic intensity, and exhibit maturity in decision-making and time management.

**#186**

### **Finanzas para Chavos: A Game-based Approach to Teaching Economics to Mexican Youth**

Lawrence A. Wolfskill  
Sam Houston University

Bernardo Quintanilla García  
Universidad Autónoma del Carmen, Campeche  
Mexico

The fundamentals of a real economy are taught through an educational program called *Finanzas para Chavos* (Finance for Teens). The program utilizes a game as its principal pedagogic tool. This way, the game sketches a real economy where participants have a job, receive salary, buy products and services, save, invest, can ask for a loan at the bank, pay taxes, have democratic elections, and even live through an economic crisis. *Finanzas para Chavos* helps Mexican teenagers better understand how the economy works by simplifying it through an active, role-playing simulation. Four groups totaling 98 people have played the game since its inception in May 2010. While designed for and directed at teens, the groups have consisted of ages ranging from 8 to 50. Participants have seen and experienced that when savings grow and investment slows, the economy lacks strength and loses its vigor. The main conclusions, though preliminary, are that youth tend to view money as more a medium of exchange than a storage of value. With this view, participants initially tend to avoid debt and embrace savings, driving the economy toward bankruptcy. The second conclusion is that larger economies perform better than small ones. Through the game process, learners find that stimulating the economy and taking calculated risks can lead to greater wealth and growth of the economy. The game serves to clarify the



functioning of a real economy and transform the way people in the next generation understand it.

#187

### **BioSUCCEED: An Instructional Platform for Biomass & Bioenergy**

Lucian A. Lucia, Martin A. Hubbe, Stephen S. Kelley, Richard A. Venditti, Hasan Jameel, Ilari Filpponen and Xiaodong Cao  
North Carolina State University

Keith A. Schimmel  
North Carolina Agricultural and Mechanical State University

Timothy G. Rials  
University of Tennessee

On January 31st, 2006, President Bush directed the attention of the US and the world to the looming specter of diminishing petroleum reserves and the implicit threat of an oppressive downward economic spiral. He called for biofuels from ethanol from wood chips, stalks, switchgrass to be “practical and competitive” by 2012 to avert a potential economic crisis. He said, “We must replace more than 75% of Middle East oil imports by 2025.” Current President Obama is upholding this initiative by calling for the production of 50 billion gallons of bioethanol by that time. It was on the heels of Bush’s request that NC State University, NC Agricultural & Mechanical State University, and the University of Tennessee-Agricultural Campus began to map out for USDA a teaching and research platform that would help to address in a small way the spirit of the Bush Administration agenda. A research program, BioSUCCEED (Bio-products Sustainability, a University Cooperative Center for Excellence in Education) was enthusiastically funded later that same year by USDA and thus began our odyssey in learning and exploring the unique potential and power of biomass (see our modules at <http://www.biosucceed.com>). We decided to harness our collective teaching & research efforts to promote the creation and dissemination of teaching modules in the form of open access, freely available PowerPoint slides. Content in the form of slides, papers, exercises, and websites is freely available to all who are interested in learning about biomass & bioenergy.

#189

### **Leadership Motivational Factors of Students in Agricultural Collegiate Organizations**

Micah D. Scanga, Hannah Carter, Nicole Stedman and Michael Olexa  
University of Florida

The four years spent in college are one of the most important developmental time periods for leaders in the agricultural industry. This research measures the leadership motivational factors of students in colligate organizations in colleges of agriculture. This study will aid in motivating students to seek out and accept leadership roles. The theoretical frameworks used in this study were Self-determination Theory and Servant Leadership Theory. The population was all undergraduates in student organizations in the College of Agricultural and Life Sciences (CALS) at the University of Florida (UF) for the fall of 2010 semester. Participants were administered a researcher designed face-to-face survey. Eight constructs were measured during this study. The three constructs associated with Self-determination Theory were autonomy, competence, and relatedness. The five constructs associated with Servant Leadership were altruistic calling, emotional healing, wisdom, persuasive mapping, and organizational stewardship. The study found that of the three constructs measured under Self-determination Theory, relatedness was the only construct that was statistically significant with distinguishing leaders versus non-leaders. Furthermore, the study found that of the five constructs measured under Servant Leadership, altruistic calling and organizational stewardship were the two constructs of servant leadership that had statistically significant differences between leaders and non-leaders.

#190

### **Educating through Field-Based Research and Career Development to Increase Retention of Students Pursuing College Degrees in Agriculture**

J. K. Bush and C. A. Negrete  
University of Texas at San Antonio

We are using community entities to develop young people's interest in natural resources and conservation careers. The model is centered at an institution of higher education, draws on mentoring from government agencies and the private sector, and reaches to community colleges and K-12 students. The TREE (Teaching and Research in Environmental Ecology) Program has increased the number of underrepresented students enrolling in natural resource and conservation courses, and completing baccalaureate or graduate degrees in conservation and natural resources. The program has also increased the number of

students who exhibit confidence in academic and leadership qualities through various workshops. We have involved conservation and natural resource community mentors, and increased their awareness of students as a resource. We hope to build on this program by involving K-12 students in order to introduce issues in conservation and natural resources. We have shown a greater than 10% increase in students enrolling in natural resources and conservation courses and a greater than 10% increase in post-secondary students completing degrees in natural resources and conservation. We hope to show a 67% increase in K-12 students who have an understanding of careers in conservation and natural resources and K-12 students who are 67% more likely to know about conservation and natural resources. The program has been successful in increasing the number of underrepresented students interested in natural resources and conservation, and could be adopted at other institutions to help increase the number of students entering the workforce in natural resources and conservation.

## Poster Abstracts

#001

### **The Effectiveness of the Online Scaffolding**

Sha Li  
Alabama A & M University

The experiential learning proponents argue that learning should take place in the same context in which it is applied. The Internet-based learning environment facilitates learning activities with fast, convenient and time effective features simulating the real world tasks. Moving learning resources to Internet enhances learning engagement and arouses the student's involvement. The teacher-made online learning resources provides course content anchored resources that focus on specific tasks in class and a supportive authentic learning environment. The teacher-made online resources could better meet the students' instant needs and facilitate students with just-in-time help. Alabama A & M University is innovating a new learning approach in the networked environment by incorporating the teacher-made online scaffolding to learners, by which the multimedia driven learning resources and tutorials in both text format and video format are available to students anytime and anywhere. With the course content anchored online scaffolding, students are guided, supported, motivated, and engaged effectively in learning activities. The objective of this presentation is to present a case study on the students' attitude and perspectives on the effectiveness of the online scaffolding in a graduate agricultural education course. This study used qualitative and quantitative mixed methods. The findings show that the online scaffolding is an effective approach of integrating online learning resources in instruction, and help "Leave Nobody Behind." This strategy is beneficial for both the learners and the instructor. The students provided ample feedback about their experiences and their use of the online scaffolding resources. They also provided some suggestions relating further improvement of this learning approach. Learning through the online scaffolding also models the effective creation of

the digital online learning resources for educational purpose, which could leave a long lasting impact on students.

#002

### **Engaging Plant Biotechnology Students in their Learning through Undergraduate Research and Extra Curricular Activities**

Amanda Kimball and Ingelia White  
Windward Community College, HI

A majority of college freshmen in Hawaii have some phobia toward sciences. Windward Community College has offered an Academic Subject Certificate in Plant Biotechnology since 2002. The program is supported through USDA-NIFA grants. To increase students' retention and make learning more fun, students are encouraged to do research projects and extracurricular activities provided through Plant Biotech facilities: the Kuhi La'au-Tropical Plant and Orchid Identification Facility, the climate-controlled greenhouse, the Tissue Culture and Plant Biotechnology Lab, and the Bioprocessing Medicinal Garden Complex (BMGC). Research collaboration has been developed with the Hawaii Agriculture Research Center. Two BOT 299 (independent study) students have presented their genetic transformation research projects at scientific conferences. Two-hundred four students from BOT 105 (Ethnobotany), BOT 160 (Identification of Tropical Plants), and BOT 205 (Ethnobotanical Pharmacognosy) have joined Botany Club and participated in extra-curricular activities including planting medicinal/nutritious plants at BMGC, and conducting pharmaceutical/nutraceutical research. Research results have been published in three campus Ethnopharmacognosy publications. Three AG 152 (Orchid Culture) students joined local orchid societies, and have even become board members, providing service as well as learning about orchids in commerce. Engaging students in these extra credit activities have positively impacted their learning proficiency. Eighty-three percent of these students received grades of 'A.' Forty-five

students have received the Plant Biotechnology certificates and have transferred to higher degree institutions and have chosen careers in agribiotechnology, horticulture, ethnobotany, and agripharmacognosy. The number of students majoring in Plant Biotechnology has increased by 33% since the inception of undergraduate research and extra-curricular activities in 2008.

### #004

#### **Peer teaching as a means to engage students and improve learning in a capstone course**

Thomas H. Paulsen  
Iowa State University

Agriculture students enrolled in capstone courses apply knowledge gained from previous coursework, internships and other life experiences within a contextual setting. A student-managed farm serves as the context for a capstone agricultural management course at Iowa State University. This presentation will describe a unique student experiential learning activity based upon the key tenets of teaching and experiential learning. Farm Management and Operations (AGEDS 450) is a capstone course that utilizes various learning activities to help students solve the problems associated with managing and operating a crop and livestock farm. A committee structure is used within the context of the course to support each of the primary enterprises of the student-managed farm. Students apply and are selected for the committee in which they wish to serve and once selected spend a considerable amount of time researching various aspects of the management and operation of that particular enterprise. Previous course evaluations show that students want additional practical experiences beyond their primary committee. To meet this need, an experiential peer teaching activity was added to the curriculum. This teaching activity provided students with the opportunity to teach their peers specific skills related to a critical needs area relative to the management and operation of the student-managed farm. The experiential teaching activity provided all students enrolled in the AGEDS 450 with an opportunity to experience, reflect upon, and apply new skills in an authentic setting within the context of the student-managed farm.

### #006

#### **Providing Maximum Student Opportunities at Minimum Institutional Cost through the Development of a Multi-Institution, Web-Based, Graduate Certificate in Bioenergy Sustainable Technology**

Mary Rezac and Dawn Anderson  
Kansas State University

Daniel Humburg  
South Dakota State University

Julie Carrier  
University of Arkansas

Dani Bellmer  
Oklahoma State University

This presentation discusses the development of a multidisciplinary graduate program entitled, "BioEnergy Sustainable Technology," utilizing high-quality instruction and distance delivery methods. Industry feedback on the curriculum has been employed to ensure workforce needs are met. The project is a collaboration between the University of Arkansas, Kansas State University, Oklahoma State University and South Dakota State University. Through this collaboration, the partner universities are developing: (a) eight new web-based courses, (b) shared existing web-based courses, and (c) a new graduate program in bioenergy sustainable technology available entirely through web-based courses. As a result, students will have a rich and convenient educational experience that allows them to fulfill their academic and career goals. Faculty will be invigorated by working with colleagues from other universities to create and deliver a high-quality, high-need program in an exciting field. Employers will be able to recruit and hire new employees that meet their needs AND will have professional development opportunities for existing employees. Universities will be able to offer a sustainable program by sharing resources. The resulting bioenergy sustainable technology systems will meet societal needs without long-term degradation of the environment or change in the climate.

#007

### **Engaging Students in Entrepreneurship Behavior: The Mushroom Experience**

Kiumars Zarafshani and Lida Sharafi  
Razi University, Iran

It is a common experience that agricultural graduates from Iranian universities find it very difficult to get employment. This is due to the fact that the higher education system emphasizes too much on the value of the college certificate than the holder himself. In order to overcome this dilemma, the College of Agriculture at Razi University offers an introductory course in entrepreneurship with a hope of creating entrepreneurial spirit and culture among undergraduate students. As an entrepreneurship instructor, I decided to engage students in planting mushrooms in 84 m<sup>2</sup> area. Interestingly, within 75 days, students produced 1800 kilograms of mushrooms selling for nearly \$5000. The purpose of this qualitative study was to shed light on student motivation in starting a mushroom business. Q methodology was used to derive an in-depth understanding of students' source of motivation in starting mushroom production. The Q methodology analysis revealed three discourses: 1) one inclined to be motivated due to teacher enthusiasm in providing entrepreneurship climate in the classroom; 2) another more inclined to be self-supportive and demonstrated a belief in autonomy; and 3) the third demonstrated an interest in hands-on experience. The result of this study has practical implications for entrepreneurship teaching across agricultural universities in Iran. If entrepreneurship teachers are to excel in their teaching endeavor, they need to be cognizant of their students' sources of motivation.

#008

### **A Living Laboratory: The Purdue Arboretum Enhancing the Educational, Research, and Outreach Mission of the University**

Paul C. Siciliano, Matthew A. Jenks and Peter Caldwell  
Purdue University, IN

The Purdue Arboretum currently serves as an important living laboratory and classroom for numerous Purdue courses taught in life science fields like horticulture, urban forestry, plant pathology and entomology and the fine arts like landscape architecture, drawing, and painting. It's common to see researchers on the campus exploring topics as diverse as plant-insect and pathogen interactions, taxonomy, microclimatology, urban ecology, and environmental sustainability. An important goal of the Purdue Arboretum is to create a world-class outdoor facility that expands teaching effectiveness and increases the opportunity for more useful, high impact scholarship. The Campus Arboretum idea began in 2008 with the goal to recreate the Purdue campus as a living laboratory to enhance learning and discovery and to improve its value as a resource for university engagement. As a public institution, the Purdue Arboretum seeks to serve the people of Indiana by providing a unique collection of plants, gardens, artworks, walking trails, and green spaces that can be used and appreciated by the broadest segment of Indiana's population. The success of the arboretum depends on significant involvement of faculty, staff, and students from across the campus, as well as individuals, community groups, and private organizations both locally and beyond. The mission of the arboretum is to collect and display landscape plants from around the world in a way that enhances the educational, research, and outreach mission of Purdue University, promoting environmental sustainability through example, and increasing the beauty of the campus.

#009

### **Increasing Multicultural Diversity in USDA Jobs: Education and Partnerships**

Nora R. Garza  
Laredo Community College, TX

Douglas G. Morrish  
Texas State University

Students were engaged early through a USDA NIFA grant. The Joint Admissions Process for students interested in agriculture science worked very well. Students enrolled in Introduction to Agriculture and a research course delivered via teleconference during the

fall and spring semesters of the freshman year at the community college. The agriculture professor also visited at the community college and the students visited the university several times during each semester. The investigators wanted to 1) increase the number of graduates at the community college with successful transfer to the university; 2) develop early linkages with the university through classes, mentors, internships, scholarships, and field experiences; 3) increase the number of Hispanic students pursuing agriculture degrees at the university by 2% per year; 4) increase the technology in the agriculture department at TX State; 5) disseminate information on successes and best practices; and 6) prepare students for the rigors of agriculture courses by early exposure to agriculture studies. To date the teleconferenced class has been offered for six semesters; teleconference equipment is installed in the Agriculture Building; summer agriculture academies for high school students have taken place, and students have visited the university Freedman Ranch. Four students have presented posters at the national conference for soil scientists, one participated in an NRCS internship, one student has received a scholarship from the Hispanic Employees in NRCS and participated in Leadership training in Washington, one has transferred to Texas State and one to Texas A&M Kingsville pursuing a degree in Agriculture Science.

**#011**

### **Estudiante Dietitico: Update on Participants and Mentoring Program**

Lisa A. Kessler, Sharonda Wallace, Bonny Burns-Whitmore, Aleida Gordon and Lizett Olivares  
California State Polytechnic University

The USDA-funded Estudiante Dietético (ED) curriculum was designed to improve cultural competence, confidence and Spanish skills of undergraduate dietetic students and consisted of six, one-unit courses taught in Spanish that mirrored the dietetics curriculum. At baseline, the first cohort of students was asked to describe their current confidence in their ability to function in a Spanish-speaking environment; 50% reported feeling “confident”. The confidence level was significantly higher ( $p=0.001$ ) for those students who did not require

additional Spanish language. After the first course, post-test scores indicated no significant difference in Spanish nutrition vocabulary by grade point average, initially assessed Spanish language capability, or ethnicity. Therefore, all Estudiante Dietético students gained similar knowledge from the first ED course. In addition to coursework, an optional retention-mentoring program based on Tinto’s Theory of Student Retention was developed and offered. Twenty-four of 30 students (cohort 1-January 2010) participated in the mentoring program. This mentoring program included four components: Retention Coordinator, workshops (topics such as: “Building Effective Study Skills”), mentoring/shadowing a nutrition professional (matched on similar backgrounds) and social events (group cooking activities and family dinners fostered group cohesion). Students reported a greater understanding of the importance of providing simple but consistent health messages to consumers; as well they reported that social events that include and recognize family “really means a lot to them”. The ED curriculum and mentoring program appear to be a promising way to improve the ability of students to better serve the Hispanic population and improve their satisfaction with their education.

**#012**

### **Strategies to Recruit Latinos to the Dietetics Profession**

C. J. Heiss, S. M. Henley, M. Bizeau, C. Dormer-Gillette and B. Rengers  
Metropolitan State College of Denver

P. Daniluk  
Colorado Department of Public Health and Environment

C. E. Fajardo-Lira and S. Plunkett  
California State University

Since Latinos are underrepresented in the dietetics profession, surveys were conducted to explore perceptions of the profession by Latino college students and Latino educators in the Special Supplemental Nutrition Program for Women, Infant and Children (WIC), and to identify recruitment strategies to increase the number of Latino registered dietitians (RD). A questionnaire was administered to all WIC

educators in Colorado and 500 students of all ethnicities at an urban college; 48 WIC educators and 70 Latino students responded. Bivariate correlations examined the relationship between acculturation and perceptions of dietetics. Less acculturated Latinos were significantly more likely to agree that it is important to increase awareness about dietitians and that previous experiences with dietitians were not positive. The majority of Latino students desired a career in a helping profession that they enjoyed, had high prestige, good employment opportunities, and pay. Over half of the WIC educators had considered becoming an RD; their primary reasons for interest in becoming an RD were interest in health/nutrition and desire to be in a helping profession. Reasons WIC educators did not pursue the RD were interest in a different field, expense, and length of the training. Reasons WIC educators and students cited for underrepresentation of Latinos in the field included lack of knowledge about dietetics, lack of Latino role models, and length/expense of training. Suggested recruitment strategies included scholarships, mentoring programs, and awareness campaigns with schools and community-based organizations that serve Latinos. These results provide important implications for recruiting Latinos to the dietetics profession.

### #016

#### **Building International Understanding through a Capstone Experience**

H. Charlotte Emerson, Natalie Coers, T. Grady Roberts and R. Kirby Barrick  
University of Florida

International experiences – semester-long study abroad, short-term study trips, internships, or integration of global issues into on-campus curricula – are widely accepted as a growing need for today's generation of students. This study examined how a capstone travel experience to Costa Rica impacted the knowledge and attitudes of nine students enrolled in a Leadership Institute at [university]. Agricultural and life sciences students traveled throughout Costa Rica on a 10-day trip in August of 2010, including San Jose, Jaco, and Arenal. The students were exposed to the Costa Rican culture as they attended a cultural event, toured local farms, and participated in

ecotourism activities. A core component of the trip included working with EARTH University, where students worked to build a biodigester for a Costa Rican family, learned about sustainable agricultural practices, and visited with staff and students. Data were collected before and after the trip using an instrument modified from the work of Connors that assessed general international agriculture awareness and cultural knowledge. Demographic information was also collected. Results revealed that after the trip, students demonstrated a greater knowledge of Costa Rica and understanding of Costa Rican culture. Results also revealed that after the trip, students expressed more favorable attitudes towards Costa Rica and international activities. Agricultural and life sciences faculty should consider implementing short-term study trips as a capstone experience for students to build international understanding.

### #017

#### **The Cornell Raptor Program – An Approach to Educating Tomorrows Raptor Conservationists**

John E. Parks  
Cornell University, NY

The Cornell Raptor Program (CRP) was established in 1993 with the objective of engaging and training students in raptor biology, natural history, and captive care and management. Program goals are centered on promoting raptor conservation through education, rehabilitation, captive propagation, and related activities. The CRP is administered by a faculty director and student assistant directors. Participants are student volunteers, primarily from the animal and bio-logical sciences. An external advisory board is comprised of experts with relevant program interests. Dedicated facilities house ~ 50 resident birds. The educational component of the CRP includes classroom instruction, a weekly practicum, public education training, weekly public education programs, and summer internships. Raptor rehabilitation is carried out in conjunction with the Department of Wildlife Medicine, NYSCVM, and includes post-clinical support and convalescence, medication, treatment and physical therapy, fostering young, evaluation, and release. Captive-propagation and release has been focused on North

American accipiters and red-shouldered hawks as species of special concern in New York State. Ancillary activities include banding released birds, census by trapping and banding of local raptors, and an on-campus kestrel nest box program. Over 1,000 students have participated on a significant level in the CRP since its inception. Most pursue graduate and professional studies while others pursue careers in zoological parks, nature centers, and environmental interpretation centers where raptor care, exhibition, and education are required. We hope all are better equipped to promote the intrinsic value and conservation of raptors based on their Cornell experience.

### #018

#### **Development of Online Teaching Tools for Plant Identification**

Kristin R. Campbell and Sandra B. Wilson  
University of Florida

Interactive review exercises were developed as an online learning component of an existing Native Plant Landscaping Course. The instruments were designed with specific goals for students to (1) test their plant identification knowledge, (2) associate landscape performance with native ecosystem characteristics, and (3) practice leaf terminology with specific plant examples. The course website was newly redesigned to showcase these learning tools, facilitate navigation, and improve overall appearance and use. The plant identification tool was developed within Microsoft Excel using formulas consisting of logic statements. This tests the students' ability to identify and spell the scientific and common names associated with high resolution plant images. The ecosystem tool was developed using Adobe Flash. It utilizes digital images captured for each of Florida's major ecosystems in conjunction with sets of plant combinations and site characteristics. Students select the appropriate choices and submit their answers online, after which they receive immediate feedback. The leaf terminology tool, also developed using Adobe Flash, utilizes a drag-and-drop interface where students are asked to associate a specific leaf term (i.e., margin, apex, base, texture, arrangement) with a scanned image that best matches the taxonomic term. Initial data shows an improvement in mean quiz

scores after students had access to these identification tools. These interactive learning tools will not only benefit students enrolled in this specific course, it can be adapted to a variety of online course components nationwide.

### #020

#### **Engaging Future Plant Scientists through a Summer Academy**

Sarah Lancaster  
Oklahoma State University

Increased student interest in plant and soil sciences (PaSS) is necessary to meet future demands for graduates. Experiential learning opportunities have been shown to increase student interest in science-based fields of study such as PaSS. Therefore, a summer academy was designed to encourage secondary students to study PaSS by providing experiential learning opportunities in plant science. Faculty in the PaSS department hosted students age 14-18 for three days in early June 2010. Students were housed in residential life facilities and had the opportunity to interact with faculty, students, and industry leaders. Scheduled events included a campus tour, personal development activities, and activities related to cropping system management and wheat breeding. Students were surveyed on the last day of the academy. Eight students registered for the academy; seven attended. Six participants indicated that being in the field was the best part of the event. However, students identified a variety of concepts as being the most important information learned. Four participants indicated that the academy increased their interest in a career in agriculture. For future academies, participants suggested extending the event and providing access to the campus recreation center. The Plant Science Academy is being offered again in June 2011. The itinerary has been extended by one half day and will include free time to visit the recreation center. This project is sponsored by a Dow Agro-Sciences Aid-to-Education grant.



#022

### **Cultivating Global Leaders in Agriculture: A Successful Effort to Engage Agriculture Students through International Learning Experiences**

Leonardo Lombardini and Gary J Wingenbach  
Texas A&M University

The objective of a 2009 USDA Higher Education Challenge Grant, "Cultivating global leaders in agriculture," was to provide students with leadership development opportunities through study of global issues in agriculture, enhance their critical thinking and analysis skills, and enable them to experience rural/impoverished communities of the United States and Latin America. To achieve this objective, a new course was developed at Texas A&M University in spring 2010. The spring semester course included educating students about global agricultural issues and leadership skills, and promoting their passion and enthusiasm for becoming horticulture educators. During the course, students practiced teaching hands-on activities to fellow students and children at local schools. Students applied for partially-funded (\$2,500 to \$3,500) international 4- to 6-week internships in Guatemala or Costa Rica. In summer 2010, five students traveled to Guatemala to teach youth Junior Master Gardener (JMG) activities and conduct horticultural programs in rural communities. Five students traveled to Costa Rica to conduct activities in collaboration with EARTH University and carry out gardening and environmental projects, community service projects, either in the field or in the local schools, also using the JMG curriculum. The international experiences not profoundly impacted students' lives, and increased their competitiveness and career preparation. The project's second year of the spring course attracted 20 students, of which 15 were accepted into the Guatemala and Costa Rica internships. Project partners include Texas AgriLife Research's Norman Borlaug Institute for International Agriculture, Amigos de las Americas, and the Texas AgriLife Extension Service's Junior Master Gardener Program.

#023

### **Engaging Stakeholders in Wildlife Curriculum Development: A Case Study**

Jesse Brant  
Littlestown High School, PA

John C. Ewing and Rama Radhakrishna  
Penn State University

Developing a wildlife curriculum is both a challenging and a time consuming effort. Curriculum comes in several formats. Determining the appropriate format is critical to its successful implementation. The purpose of this poster presentation is to share how key stakeholders were involved in the development, and assessment of, Wildlife Notes Worksheet Curriculum. It involved six major steps: proposing the idea to stakeholders, identifying key stakeholders involved in wildlife education, developing the curriculum, testing the curriculum for content validity, evaluating the curriculum, and final editing of the curriculum. Stakeholders were involved in every step of the curriculum development process. The most valuable input from stakeholders came in terms of providing advice on content, as well as an evaluation, and editing of the curriculum. Collectively, the input provided by stakeholders ensured the curriculum was up-to-date, contained recent facts and questions on wildlife, and met [State] education standards. The stakeholders also helped to make certain the curriculum was readable and user-friendly. Users of the Wildlife Notes can also update the curriculum worksheets in any way that meets their needs or personal preferences. One of the weaknesses of the current curriculum is that it is not hands-on. It is suggested that educators find hands-on activities that will complement the current curriculum to enhance the students' learning. Further research is needed to evaluate the effectiveness of the Wildlife Notes curriculum in enhancing [State] scores on the Envirothon Wildlife contest by designing an experimental study.

#024

### **A Comparative Analysis of Experiential Learning Models: Implications for Teachers**

Robyn E. Bechtel, John C. Ewing and Rama Radhakrishna  
Penn State University

Experience is central to the learning process and offers potential for creating a learning environment where teacher-learner experiences are shared and interpreted through dialogue. Teachers have used the experiential learning concept in number of ways using Dewey's argument that for true meaningful learning, new knowledge must be related to the students' own experience. The focus of this presentation is to showcase three models of experiential learning; Jolpin's, Kolb's, and Pfeiffer and Jones'. The critical components inherent in each model will be explained. Discussion on how these three models can be used in both formal and non-formal settings will be presented. A review of these models suggests that there are different structures to best utilize experiential learning in teaching. Jolpin uses an action-reflection representation allowing individuals to go through an unknown experience with support and feedback from teachers, while Kolb proposed a four-step model—concrete experience, reflective observation, abstract conceptualization, and active experimentation. Pfeiffer and Jones proposed a five-step model (experiencing, publishing, processing, generalizing and applying) which emphasizes the importance of sharing and reflecting about the experience. Three key components emerge from the review of these models—Do, Reflect and Apply. When teachers and educators provide and/or discuss these three components in their classroom, students go through a total learning experience by doing, reflecting on what was experienced and how the doing and experiencing can be applied and transferred into current and future life situations. Teachers and educators can use these models depending the goal and/or objectives of their instruction or program

#025

### **Student Ratings of Field Data Collection Methods in a Construction Surveying Course**

Michael R. Mohney, Martin R. McGann and Dan T. Stearns  
Penn State University

Horticulture 466, Landscape Construction II, is a senior level course in Penn State's Landscape Contracting major with an emphasis on land surveying and site layout techniques. Traditionally, site survey data is entered into a surveyor's field book using a pencil. In the fall of 2010, students compared three methods for recording site survey data, including: the traditional field books (paper and pencil), Livescribe digital pens, and Apple iPads. After employing all three methods, class participants completed a survey to determine their preferences regarding each method. 81% indicated that the traditional field book was easy or very easy to use, and 73% reported that using the book was an efficient or very efficient method for recording field data. 53% of respondents indicated that the Live-scribe digital pen was easy or very easy to use, and the same percentage thought it was efficient or very efficient. While 60 percent of students thought the Apple iPad was easy or very easy to use, only 30% indicated that it was an efficient or very efficient method for recording field data. In a ranking of the three methods, students indicated a strong preference for the traditional field book, with the Livescribe digital pen and iPad ranked second and third, respectively. The results indicate that although digital alternatives are valued by the students, traditional method of pencil and paper is preferred.

#026

### **The Contribution of Selected Instructional Methods Toward Graduate Student Understanding of Crisis Communication**

Christy Witt and Dr. David Doerfert  
Texas Tech University

Dr. Tracy Rutherford and Dr. Theresa Murphrey  
Texas A&M University

Dr. Leslie Edgar  
University of Arkansas

Providing quality instruction that meets students' diverse learning preferences and needs is a growing issue facing teachers of agriculture in higher education. A considerable amount of research has been devoted to assessing the effectiveness of various instructional methods, but so far the research is inconclusive in identifying a singular method of instruction that works well with all individuals. The purpose of this study was to examine students' perceived value of instructional methods in contribution towards their understanding of and confidence in risk and crisis communication content and practices using the classroom teaching model. This study also compared students from two semesters to determine if instructional methods incorporating new technology (i.e. Second Life) impacted the knowledge comprehension and self-confidence of students. The population was graduate students enrolled in Risk & Crisis Communications in Agriculture and Natural Resources at Texas Tech University during the fall 2009 and fall 2010 semesters (N=30). In this research study, the data showed that students did not identify one singular instructional method as being most beneficial and influential, but found a combination of instructional methods influenced their self-confidence about the content and corresponding practices. No significant differences were found in changes in students' content knowledge scores or end-of-course degree of confidence scores between the two semesters. This study provides support for the classroom teaching model by highlighting the observable changes in students from process to product through a combination of instructional methods and recommends additional study on instructional method effectiveness.

**#028**

### **Teaching Locally, Engaging Globally**

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University of Florida

K.E. Dooley  
Texas A&M University

M. Navarro

University of Georgia

Globalization is often addressed through strategies such as globally-focused courses, study abroad opportunities, and travel courses; however, these opportunities are accessed by a limited number of students. In order to provide students in agricultural and life science programs additional access to culturally-rich, yet contextually-relevant content, the multi-institutional Teaching Locally, Engaging Globally (TLEG) project was developed. Using a USDA Higher Education Challenge Grant, this three-phase project was designed to 1) provide faculty with an international experience, 2) teach them to create reusable learning objects (RLOs) and authentic case studies that address multidisciplinary issues from a global viewpoint, and 3) implement those resources within their undergraduate classroom. As of June 2011, Phase One has been completed for each of the three institutions. Each university was provided a series of experiences within a different country. Faculty from the University of Georgia worked in Costa Rica during the spring of 2010, while faculty from the University of Florida explored their content areas several months later in Ecuador. Finally, Texas A&M University visited Trinidad/Tobago this past spring (2011). Each team is currently working on creating the RLOs for use in undergraduate classrooms. Once complete, these RLOs will be placed in a repository for use by any faculty wishing to integrate this content into their curriculum. To date, analysis on qualitative pre-reflective and reflective data from the first two institutions has begun.

**#030**

### **Using Extension Program Development Approach to Address Climate Change Issues**

Rama Radhakrishna and John Ewing  
Penn State University

Naveen Chikthimma  
University of Wisconsin

The impact of climate change on agriculture is profound. Research on climate change has produced significant results. However, the emphasis on education and economics has been elusive, sporadic, and does not trickle

down to the grassroots level. The purpose of this poster is to showcase the use of Extension program development approach to address climate change issues. The poster documents the impact of climate change on agriculture and food security. A step-by-step process of using an Extension program development model with four key elements--situation analysis, program development, program delivery, and program impact is presented. Each of the four phases of program development in the context of climate change and its effect on agriculture is discussed. The proposed model calls for a multidisciplinary, integrated, collaborative approach to address climate change issues. In addition, roles that key stakeholders can play to address the effects of climate change are suggested. Educators must bridge the gap, link research to practice through education, and become proactive to challenges posed by climate change. If we are to chart a plan to address climate change issues, the following must occur: 1) development and delivery of educational programs at the grassroots level to create awareness, 2) systematic review and assessment of curricula at the primary and secondary school levels to include climate change as a subject of study, 3) development of courses and training programs at the post-secondary and higher-education levels, and 4) policy changes, both at the national and international levels.

### #032

#### **Integration of Interdisciplinary Techniques: Agricultural Biotechnology**

Gloria M. Rojas-Vázquez,  
University of Puerto Rico

The project Integration of Interdisciplinary Techniques: Agricultural Biotechnology (ITAB) has been developed to motivate students to continue their studies on areas of agricultural biotechnology by creating and offering them a new course and six summer workshops. This project is a collaborative effort between the University of Puerto Rico at Ponce (UPRP), University of Puerto Rico at Utuado (UPRU) and the USFS. ITAB strengthens the curriculum via experiential learning and scientific instrumentation. For the second semester of the first year (2009-2010), ten students from the Baccalaureate Degree in Biology with a Sub-concentration in Biotechnology from the UPRP,

and five students from the Associate Degree in Agricultural Production Technology from the UPRU were enrolled in a new course, Agricultural Biotechnology of Plants. A professor from the UPRP was also attending the course. It covers the theory and hands-on experiences on the areas of botany, agriculture and mainly biotechnology. Each student was requested to present a research proposal. Invited speakers, Blackboard, and Elluminate platforms were effective resources. Also, educational materials and tutors were provided. Following the course, students attended summer workshops focus on agricultural techniques in the field, the Research Area in the UPRP. In one of the workshops they learn how to install watering systems. According to the external evaluator the ITAB objectives were accomplished for the first year but suggestions were made in order to improve the course. A link to ITAB webpage is available at [www.uprp.edu](http://www.uprp.edu).

### #033

#### **Evaluation of Project: La Cena (Central Texas Education for Nutrition Advancement)**

Susan Kazen and Stephanie Burns  
Northeast Lakeview College, TX

Project La Cena addresses a goal of the American Dietetic Association by increasing underrepresented groups in nutrition careers. La Cena works with community colleges and universities to recruit, retain, and graduate students with nutrition degrees. The project recruits from high schools and community college by advertising in local media, posting flyers in every building on campus and some local businesses, health clubs, and hospitals, and by presenting information to classes on campuses in introductory biology, chemistry, and kinesiology courses. The project managers and directors also present to advisors and faculty groups across the campus who help with recruitment in their own courses which may be unrelated to the sciences. Once recruited, La Cena provides scholarships, mentors, advising, tutoring, trips to universities and professional conferences, memberships to dietetic associations, lectures, and volunteering opportunities to encourage student retention and successful transfer. The number of nutrition students at NLC/SAC has increased from 6 to

63 (40% from underrepresented groups). La Cena has awarded \$62,750 in scholarships which will be disbursed through Summer 2011 and has provided 66 student memberships to the San Antonio Dietetic Association. Project La Cena has been a proven success in recruiting nutrition majors, with semester-to-semester retention and successful transfer, leading to graduation. The most important retention tool we have is scholarships, and the project is actively seeking additional scholarship funding from community sources to supplement those in the current grant. We will also add student-led cooking demonstrations for the community, and an additional university partner.

**#034**

### **Engaging in Program Review: The Agricultural Degree Program Challenge**

Christopher T. Stripling and T. Grady Roberts  
University of Florida

To meet the demands of an ever changing society, educational institutions should routinely evaluate curricula and provide relevant knowledge and experiences that are based on present and future societal needs. Similarly, colleges of agriculture should engage in critical reviews of degree programs to ensure the needs of stakeholders and learners are being met. Program reviews aid colleges of agriculture in upholding their vital social responsibility of producing graduates that have the aptitude for meeting societal needs. With that in mind, a review of nine randomly selected agricultural teacher education programs was conducted to determine if their minimum mathematics coursework requirements were meeting the needs of pre-service agriculture teachers and secondary agricultural education. A researcher developed questionnaire was completed by 98 pre-service agriculture teachers. Results revealed that pre-service agriculture teachers were completing courses that are considered basic mathematics even though national secondary agricultural education standards require agricultural educators to possess intermediate mathematical competencies. This may suggest that the nation's agricultural teacher education programs are not providing an adequate mathematics education for their pre-service teachers, which may negatively

influence agricultural mathematics teaching in secondary classrooms.

By engaging in program reviews educational leaders can proactively seek to improve academic programs and serve the interests of society, the university, and the learner. We challenge agricultural faculty and academic programs to engage in critical reviews of their curricula and programs of study.

**#036**

### **Engaging Learners and Educators to Produce a Skilled Workforce and Strengthen Food Security in Hawaii**

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K.Gopalkrishnan, G.Witteman, G.Hontz,  
R.Takahashi, P.Millen, A.Emmsley, W.Sakai,  
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University of Hawaii

Being the most isolated populated landmass in the world, Hawaii, which imports ~85% of its food, is particularly vulnerable to disruptions in food supplies. Spanning ten years, the USDA-NIFA funded University of Hawaii (UH) Agribusiness Education, Training, and Incubation (AETI) Program, a consortium effort of nine UH campuses and UH's Agribusiness Incubator Program, has strengthened Hawaii's food security by producing a skilled agricultural workforce. Relying on hands-on learning, research, and internships, the AETI Program has offered new curricula, courses, certificates, and retraining modules on native plants, ethnobotany, forestry, biotechnology, aquaculture, hydroponics and aquaponics, food science and culinary arts, agritourism, and agribusiness. Sample AETI outputs and outcomes include: Trained 1000+ traditional and non-traditional students in bioscience, sustainable agriculture, and related areas. Placed 80+ interns and work-study students into agribusinesses and government and research organizations. Held student exchanges between Hawaii and Alaska, which yielded transformational experiences for students. Awarded 150+ scholarships, tuition waivers, and stipends to college students. Placed many graduates into attractive jobs or advanced degrees. Trained dozens of teachers in agriscience, who went on to teach and engage hundreds of secondary school students. Helped 3000+ grade schoolers and teachers learn about agriculture and natural resource

management, and related careers. Improved business management processes and planning for 100+ agribusinesses, and business knowledge for 150+ agripreneurs. Throughout, emphasis has been placed on Hawaii's rural agriculture community, which includes a large number of Native Hawaiians and other traditionally underserved minority

**#037**

### **Student Perceptions of an Online Collaborative Landscape Design Project using Google's 3D Warehouse**

Michael R. Mohney, Martin R. McGann and Dan T. Stearns  
Penn State University

Online environments such as Google's 3D Warehouse allow students to invite collaborators to explore multiple alternatives to meet specific landscape design criteria and to individually edit and track the progression of a digital model as each collaborator contributes. In the fall of 2010, class participants in Hort 120, Introduction to Computer Applications, were provided a Sketch-Up model consisting of an existing residential house and patio and a client design statement. Prior to this course, 42% of class participants had previous experience with CAD applications, while 61% rated their proficiency with Google SketchUp as "very little experience." Students had one week to make a contribution to the evolving model. At the end of the week, 35 revisions were submitted. Course participants were surveyed to measure their perceptions of working as individuals within the virtual group dynamic. While 45 percent of class participants preferred to work as individuals rather than in groups, 48% agreed that working with others on group projects was more beneficial than working alone. 61 percent agreed that the collaborative design project completed for the course was a worthwhile experience, and 52% felt that the project completed for the course had value for real-world applications. The results indicate that students' perceptions of group projects and the value of online collaboration are varied.

**#038**

### **Agricultural Faculty Capacity to Teach Cultural Competence and Multicultural Teambuilding: Opportunities for Research**

Mark E. Burbach, Gina S. Matkin and Shannon L. Moncure  
University of Nebraska

In order for college graduates in agricultural and natural resource sciences to more effectively lead in a globalized agricultural industry, faculty must weave cultural competency and multicultural teambuilding skills throughout course content and instruction. Students who participate in such learning opportunities are better prepared to address the specific issues surrounding markets, business competencies, trade issues, and global food security and hunger that are an integral part of modern global agribusiness. These skills cannot be taught or learned in isolation but must be a part of the curriculum in agricultural and natural resource courses. However, the vast majority of agricultural sciences faculty are not formally prepared in the instruction of cultural competence or multi-cultural teambuilding. By providing faculty with resources to aid in modifying their teaching strategies, as well as developmental opportunities to increase their own cultural competence so they may provide role modeling and examples, programs can meet industry's expectations for increasing graduates' cultural competence and multicultural teambuilding skills. Drawing from the literature on cultural competence, multicultural teambuilding, and relevant pedagogy, propositions are offered to explain the ways in which faculty and students will improve their cultural competence and multicultural teambuilding skills. Included are connections between faculty members' developmental experiences, their improvements in cultural competence and multicultural teambuilding skills, and those of their students. We also discuss implications for practice.

#039

### **Social Tasks and Sense of Community in Online Group Projects: Differences between Faculty and Student Perceptions**

Christine Wade, Bruce Cameron, Karen Williams and Kari Morgan  
University of Wyoming

This study investigated student and faculty perceptions of social tasks and sense of community in online group projects. Two different surveys asked students (n = 58) and faculty (n = 30) to rate the level of importance they placed on various social tasks that might help develop a sense of community. Faculty typically reported average group project durations of 4 weeks or less (75%). Most students and faculty rated basic group tasks as important or very important, such as trust (93% and 100%, respectively), identifying characteristics of group members (68% and 74%, respectively), and getting to know group members (63% for both). However, faculty more often rated developing supportive relationships and group etiquette as important or very important than did students (96% versus 75%; 100% versus 79%). Also, although faculty often reported social tasks that lead to a sense of community as important, students often did not report experiencing them in their groups. For example, at least 95 percent of faculty rated these items as important: that group members connect, trust, and support one another and exhibit a sense of community. However, students were less likely to report actually experiencing these social tasks (40% to 62%). This supports previous research suggesting that interpersonal relationships take time to develop. That is, if online group projects are typically short, there may not be time for students to develop deeper relationships within their group. Faculty members may wish to consider strategies to increase student awareness considering the importance they place on this element.

#040

### **Evaluating an Experiential Learning Agriscience Field Day**

Peter Skelton, Thomas Dormody, Jonathan Madrid and Patricia Dappen  
New Mexico State University

The Memorial Middle School Agricultural Extension and Education Center (MMSAEEC) is a youth science center serving predominately Hispanic students (89%) in Las Vegas, NM. MMSAEEC delivers experiential education programs through a partnership between New Mexico State University (NMSU) and a public middle school. In collaboration with on campus faculty from the Agricultural and Extension Education department, NMSU students, from the AXED 485 "Agriscience Laboratory Applications," delivered an agriscience field day to 7th grade students through the MMSAEEC program. Experiential learning topics for the field day included: water quality sampling, soil property analyses, environmental factors affecting plant growth, and decomposition processes. Program evaluation data were collected from middle school students, university students, and middle school science teachers using both qualitative and quantitative methods. Data collected included: 1) middle school student learning-style preferences and rating of learning experience (N=58), 2) benefits of field-based teaching opportunities and benefits of university student-led teaching (N=9); and, 3) teacher perceptions about the value of the teaching and learning experience and benefits from the college student/middle school student interactions (N=3). Seventy-six percent of middle school students indicated a preference for experiential learning and 95% rated the experience as good or excellent. University students responded that field-based teaching opportunities were invaluable for applying what was learned through the course. Science teachers found great value in the experience as a whole for both groups of students. Results are being used to improve the field day and to replicate it in other parts of the state.

#041

### **A Model for Strengthening Inquiry-based and Experiential Teaching Approaches for Agriscience Educators**

Thomas Dormody, Peter Skelton, Jonathan Madrid and Patricia Dappen  
New Mexico State University

In Spring 2010, a partnership was forged between New Mexico State University's (NMSU) Agricultural and Extension Education (AXED) 485 "Agriscience Laboratory Applications" class and the Memorial Middle School Agricultural Extension and Education Center (MMSAEEC) in Las Vegas, New Mexico. The MMSAEEC, located on a middle school campus and administered by the NMSU Cooperative Extension Service, serves a student population that is 92% Hispanic, 65% economically disadvantaged, and underrepresented in agricultural and natural resource careers. Integrated into AXED 485 was an agriscience field day at the MMSAEEC for seventh grade life sciences students that was planned and delivered by the university students. Four learning modules were repeated for seven class periods and a total of 58 middle school students: Analyzing soil texture and pH, setting up a decomposition experiment, testing pond and acequia water for dissolved oxygen and nitrates, and setting up an experiment to test the effects of different media on plant growth. A learning evaluation for the field day determined that the middle school students achieved 62%, 73%, 60%, and 76% correct responses on paired questions for each of the four modules, respectively. Middle school students' comments about what they learned at the field day were also collected. Evaluation results from the 7th grade students led to refinements in the college student experience for the 2011 agriscience field day including having the college students be more involved in writing the quiz questions from their learning module and adding a summary activity at the end of each module.

### #042

#### **C4 – Corrugated Cuboidal Collaborative Creation (The Box Project)**

Crystal A. Allen and Walter L. Hurley  
University of Illinois

An intelligence is defined as a computational capacity to process a certain kind of information and involves the ability to solve problems. Gardner identifies seven Multiple Intelligences (MI), including verbal, visual, logical, kinesthetic, interpersonal, intrapersonal, and musical, and believes that everyone possesses each MI at varying degrees. How can students be encouraged to effectively utilize their MI to

enhance their learning? The Corrugated Cuboidal Collaborative Creation (C4), or box project, is a course assignment that employs a cardboard box as a medium for classroom presentation. Course-related questions are derived from student input. Students self-select a question and form a group with the purpose of developing a presentation that addresses the question. Each group is given a cardboard box which may be altered in any manner that will make an effective presentation. Boxes often are painted or surfaces covered with paper or images, have items attached or placed within, and are redesigned to represent pertinent objects. This novel presentation medium encourages students to explore and capitalize on their capabilities in all the MI, and releases them from the uniformity of PowerPoint-based presentations. The MI strengths of the group become manifested through the planning and development of the C4 and its presentation. The majority of students think that the project "made information more memorable." They take ownership of their own learning, invest substantial time in developing a creative, yet meaningful presentation, and take pride in their project outcome. The C4 assignment can be adapted for most college courses.

### #043

#### **Analysis of Pre- and Post-Assessment Items in a Graduate-Level Risk & Crisis Communication Course**

Christy Witt and David Doerfert  
Texas Tech University

Tracy Rutherford and Theresa Murphrey  
Texas A&M University

Leslie Edgar  
University of Arkansas

Instructors attempt to create student learning assessments which are valid and reliable. Assessments quality can be improved by identifying items that are too difficult or too easy and selecting items that truly differentiate between those who have learned the content and those who have not. The purpose of this study was to analyze test items of instructor-created assessments for a graduate-level crisis communication course, examining both difficulty and discrimination of items. The assessments



were administered to graduate students enrolled in Risk & Crisis Communications in Agriculture and Natural Resources at Texas Tech University during the fall 2009 and fall 2010 semesters. The item difficulty level was determined by the proportion of students who correctly answer the item. Item discrimination examined how well each item accurately discriminated between students who differ on the construct being measured by determining the difference between those who score well on the overall assessment and those who score poorly. The item analysis revealed that 32 of 59 items were in the acceptable range of difficulty, 14 were too difficult and 13 were too easy. The average item difficulty for the assessment items was .79 which is within the optimal mean range for items with varying numbers of choices. The item analysis also revealed 17 of 59 items had acceptable discrimination index values, 17 were fair, and 25 were poor or flawed. Analysis shows that although the items seem to be of appropriate difficulty level, some modifications need to be made to improve the discrimination index scores.

### #045

#### **Engagement Results in Experiential Learning Courses at Virginia Tech**

Samuel O. Doak, Nicolas McKenna, Emerson Pulliman, Michael Goatley and Eric Ervin  
Virginia Tech

Two experiential learning classes at Virginia Tech (VT classes demonstrate that engagement with other University departments can enhance the educational opportunities for students. The Agricultural Technology Program (AT) is the only associate's degree program at Virginia Tech and stress a very applied and "hands-on" approach to our students' education. Several of our program's graduate's work in the VT athletic department and conversations lead to the formation of these courses which fill needs for our program and the athletic department. The athletic department is always looking for students to help with a wide variety of jobs. The AT program saw an excellent chance to give our students interested in athletic field maintenance some experiential learning while benefitting the field crews and the athletic department. The courses started as "special study" but success made them a permanent part of the curricula.

Students are required to work a minimum number of hours under the supervision of athletic department personal, prepare a biweekly log of the work experiences, complete a field dimension test and write a reflective paper. There is a list of tasks that are sport specific that help ensure students gain a broad understanding of several different NCAA sports' competition and practice fields and the technical nature that high level athletic fields demand. Students completing these courses gain valuable knowledge and a new set of skills that directly enhance their potential for future employment.

### #046

#### **Career Opportunities and Explorations in Natural and Agricultural Sciences (COENAS)**

Kurt Leuschner, Kathleen Fleming, Cameron Barrows, and John Jaramillo  
College of the Desert, CA

College of the Desert (COD) provides Career Opportunities and Explorations in Natural and Agricultural Sciences (COENAS) to students in the Coachella Valley. Intended impacts are to increase underrepresented student enrollment - retention in Natural and Agricultural Science majors by 58%, while increasing knowledge of the skill sets and related career opportunities in these areas. Our introductory Natural Resources course includes exploratory field/research experiences developed with UC Riverside's Center for Conservation Biology, and focuses on surveying local career opportunities in natural resource management, environmental science, agriculture, horticulture, turfgrass management, ecology, water, and alternative energy. COENAS serves a diverse population of COD students and is expanding in the coming months to include high school seniors from our rural agricultural and urban areas this year. A multimedia presentation that is viewed at nine high school counseling offices highlights local COD graduates working in the Agriculture - Natural Resources industry. Over 20% of students have changed their major to a Natural Resources or Ag Science after completing this course. COENAS students have recently completed five paid internships in related career areas performing research and administrative duties, and COENAS has awarded one

exemplary underrepresented student with a \$25,000 scholarship to pursue his Bachelor's Degree in Forestry. We will award one \$10,000 and one \$15,000 scholarship in the 2011-2012 school year to assist student with completing Bachelor's and Master's degrees in Natural or Agricultural Science.

**#050**

### **Engaging Departments to Create Opportunities for Experiential Learning, Community Service, and Sustainable Agriculture: A Case Study from Virginia Tech**

Joseph W. Guthrie, Pavli Mykerezi, Samuel Doak, Thomas Martin, Rachel Kohl, Kim Thurlow and Christy Gabbard  
Virginia Tech

This paper presents a case study of two Virginia Tech departments – Agricultural Technology (AT) and the Catawba Sustainability Center (CSC) - working together to enhance the missions of both while providing experiential learning, increasing the university's service to the community, and enhancing sustainability of agricultural production systems. AT is Virginia Tech's only 2-year associate's degree granting program. A strong emphasis is placed on highly applied and hands-on instruction, so faculty constantly seek new experiential learning opportunities for students while integrating learning between multiple courses and incorporating service-learning into instruction whenever possible. The CSC's 377 acres, formerly a farm for a hospital about 20 miles from the Virginia Tech campus, is virtually unused due to lack of funding, infrastructure, and labor. The CSC's leadership team has a master plan for it as a home to start-up agricultural related businesses, a site for extension programming and demonstrations, a place for research in sustainable agricultural production, and a gathering place for the Catawba community. AT faculty and CSC staff have devised and are implementing the first stages of a long range plan that includes students creating, designing, and implementing certain improvements to the CSC, which will allow it to provide services to the university and community. Three projects are ongoing and have already provided experiential learning for

students in both years and both options in AT. The projects include soil sampling and analysis, design and construction of a sustainable and esthetically pleasing landscaped entrance to the property, and a rotational grazing system

**#52**

### **Using VIEW™ to Enhance and Assess Students' Creativity in Solving Group Problems in International Engaged Research and Service Courses**

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Designing, planning, and conducting an international research or service learning course for undergraduates takes a tremendous amount of time and resources. VIEW™ questionnaire was used as an assessment method to test the hypothesis that these international engagement efforts will enhance student's creativity used in effective and efficient problem solving curriculum and increased self awareness of working with team member unlike oneself. The students enrolled in the research and service learning classes in Costa Rica and Romania within the agricultural disciplines took the VIEW™ as a pre departure assessment to establish a baseline of each student's creativity used in effective and efficient problem solving before cultural immersion. Upon their return they will take the VIEW™ and differences will be compared to before and after their experiences. The travel classes will be compared to students who did not self select to travel. VIEW™ provides results on three dimensions of problem solving style: orientation to change, manner of processing, and ways of deciding. Both courses (total n = 37 U.S. and 16 host students) include problem solving and community teamwork model instruction in their curriculum. We will share the descriptions of the learning experiences. VIEW™ proved to be a valuable assessment to the control class, however it is even more valuable establishing the self awareness that each of us has a unique problem solving style and how to work through team issues or difference. Instructors must be very deliberate to clarify the intent of the exercise and its personal value to the student.

#053

### **A Model for Retention and Transfer of Underrepresented Community College Students in Food Agriculture, Natural Resources and Related Science (FANRRS) Majors**

Cecilia Arriaza and Martha Vargas  
Santa Ana College, CA

The Partnership for Transfer Success in USDA Career Majors Program (PTSP) at Santa Ana College is designed to raise awareness about career options available in USDA-related fields. It also seeks to retain and facilitate transfer to a university among Food, Agriculture, Natural Resources and Related Sciences (FANRRS) majors. Phase I of the program impacted over nine hundred community college students by introducing them to USDA related educational opportunities and careers. Additionally, two groups of students were recruited to participate in a cohort program to receive individualized support and stipends. The PTSP student transfer rate was 95% and interviews with participants indicate that the financial and staff/faculty support provided by the program were most significant in their retention and transfer success. Also significant were the experiential learning opportunities students received through internships. In PTSP II, a high school outreach component has been included, as well as a learning community at the college level. The successful strategies and lessons learned from the implementation of PTSP I and II will be discussed, as well as future directions. By introducing USDA related career pathways starting in high school and bridging the transition from high school to community college and from community college to the university; the PTSP model has the potential to greatly influence the educational pipeline, increasing the number of underrepresented students prepared to enter the FANRRS workforce.

#055

### **Outside Commitments: Reasons for Taking an Online Summer Course Compared to a Traditional Fall Course.**

Shannon E. Pratt-Phillips  
North Carolina State University

In effort to better address the needs of today's students, institutions are offering courses multiple times per year and in different formats, including traditional face-to-face (F2F) classes and online distance education (DE) classes. This study was designed to compare influencing factors for taking a course online in the summer, versus live in the fall. Introduction to Equine Science is a course that meets program requirements for the Department of Animal Science, but also satisfies general education requirements for non-animal science students. Students in fall (n=111, F2F) and summer (n=38, DE) were surveyed at the start of the semester to determine what factors influenced their decisions to take this course at that particular time, using a Likert-type scale. It was found that 87% of the students in fall agreed (agree or strongly agree) to have an interest in horses, while only 73% had such an interest in the summer. In the fall, 56% of students agreed to be taking the course to satisfy general education requirements, while in the summer, 45% agreed to this question. In summer, 91% of the students agreed that work commitments affected their school schedule, while only 16% agreed in the fall. Similarly, 55% of the students in summer agreed that family commitments affected their school schedule, while only 13% agreed in fall. These findings suggest multiple offerings and formats help students with outside commitments.

#058

### **Mapping Progress of the Civic Agriculture and Food System Minor at Virginia Tech**

Susan F. Clark, Kim Niewolny and Steven Hodges  
Virginia Tech

The 2009 National Academies report, "Transforming Agricultural Education for a Changing World" leveled a series of recommendations to adapt to the changing landscape of agricultural education that align with our USDA Higher Education Challenge Grant, "Restoring Community Foodsheds". Faculty, staff, students, and community partners collaborated to fulfill project's objectives by developing: 1) a sustainability-based curriculum to strengthen students' understanding of the connections

among food, agriculture, and community that are essential for restoring community foodsheds; 2) experiential learning opportunities with community-based organizations; and 3) collaborative research between students, faculty, and/or community partners. In year 1, we earned approval for an undergraduate, multidisciplinary, experiential-based minor in "Civic Agriculture and Food Systems" (CAFS) within the College of Agriculture and Life Sciences. It included 4 new courses (2204-Introduction to Civic Agriculture, 3404-Ecological Agriculture, 4204-Concepts in Community Food Systems, and 4214-CAFS Capstone). In Fall 2010, 28 students added the minor and 19 were enrolled in the 2204 course. Spring 2011 course enrollments were 17 (3404) and 19 (4204). Each course requires students to participate in service-oriented experiences that meet actual community needs (objective 2). To fulfill other experiential dimensions with grant partner Heifer International, we have sponsored three alternative spring breaks with service learning opportunities (2 domestic; 1 international) to 43 students. Furthermore, 19 students are engaged in field work with local community partners. Two students to date have developed collaborative research projects with faculty. "Restoring Community Foodsheds" continues to blend interdisciplinary academic preparation with "real-life" learning opportunities and community partnerships.

**#059**

### **Service-Learning as a Strategy to Transition from Classroom to Workplace**

Nancy Harris, Virginia Carraway-Stage and Melani W. Duffrin  
East Carolina University

Service-learning enables students to culminate academic coursework preparation through the application of learned concepts and methods in actual real-life settings. The transition from classroom to community enhances the student's preparation for the transitions from the university to the profession. The purpose of this study was to create a senior-level, culminating, practice-based, course for Nutrition Science majors at East Carolina University. The goal of the required course was to ensure that graduates had an opportunity to apply knowledge and develop expertise instrumental in teaching

healthy life skills for underserved individuals and families in the community. Implemented in spring 2010 (N=26) and offered again spring 2011 (N=38) to senior-level Nutrition Science majors, the course coupled the extended training in community nutrition with expertise in curriculum development, delivery, and evaluation. Significant modifications were made to the course design from year 1 to year 2 based on faculty observations, student feedback, and input from community partners. Focus groups and surveys were used to assess student career goals, self-efficacy, and perceptions toward service-learning experiences at prior to and after the course. Initial observations have shown the experience develops personal skills and self-confidence in addition to academic enrichment. Overall, the final course design provided students with an interdisciplinary, team-oriented approach that improved desired educational outcomes for students and their target population. Reviewing the lessons learned and student outcomes from the development of a service-learning course will serve as a resource to those interested in project processes and/or the developed, piloted, and revised educational materials.

**#061**

### **Multidisciplinary Teaching Approaches to Food Science Maintain Student Attitudes and Improve Efficacy**

Nancy Harris, Sara McLeod, Virginia Carraway-Stage and Melani W. Duffrin  
East Carolina University

Providing access and quality experiences in foods courses can help retain interest in these disciplines. Incorporating innovative foods education techniques into food science courses can improve student synthesis and application of foundation knowledge and skills. The purpose of this study was to enhance a sophomore-level food science course for Nutrition Science and Family Consumer Science majors through multidisciplinary approaches using food science as a tool to understand the nature of living systems and the promotion of healthy living. Introductory food science knowledge content remained the core of the course content while incorporating information, materials, and activities that created relevance for the learner in the context of other disciplines such as nutrition,

health, environment, and consumer science. Researchers developed a 30-item self efficacy survey and a 41-item attitudinal survey using a five point Likert scale (5=Strongly Agree; 1=Strongly Disagree) to assess students pre and post participation in the food science course (N=32). Cronbach alpha coefficient of internal consistency for the survey was 0.942 (self-efficacy items) and 0.876 (attitude items) at post-test. Significant improvements were identified for 18 of the 30 efficacy items at post-test ( $p < .05$ ). Attitude scores remained consistent from pre to post test with the exception of improvement in ease of calculating the cost of a recipe ( $p=0.001$ ,  $SD=0.976$ ,  $\mu=0.625$ ). Maintaining positive student attitudes and improved efficacy towards challenging food science course content can serve to recruit and retain quality students to pursue careers in food, food science, nutrition, agriculture, biotechnology, and other related fields.

**#062**

### **Local Agriculture Engages Students in Classroom-Industry Partnership**

Nancy Harris, Melani W. Duffrin, William Forsythe, Stephanie Sullivan, Michael Wheeler, Virginia Carraway-Stage and Sara McLeod  
East Carolina University

A food product development (FPD) assignment incorporated into an introductory food science course can serve as an engaging tool for teaching basic research skills to college students. To enhance the FPD process, a classroom-industry partnership was formed to bring an element of local agriculture and real world industry applications into the classroom. Nutrition and dietetic students in an introductory food science laboratory course (N=42) were challenged with developing food products using Muscadine grape hulls. A five-point Likert scale (5=Strongly Agree; 1=Strongly Disagree) was used to assess student attitudes towards the project. At the end of the FPD experience, students felt confident with their research abilities ( $4.12 \pm 0.77$ ) and their ability to integrate basic science knowledge into the development of a food product ( $4.12 \pm 0.50$ ). Students also felt FPD was an important experience ( $3.98 \pm 0.90$ ) and that learning about the food industry would help in their future careers as nutrition

professionals ( $3.95 \pm 1.035$ ). Students appeared to have mostly positive experiences with their FPD partners. They reported their partners to be reliable ( $4.02 \pm 1.07$ ), producing high quality work ( $4.07 \pm 1.09$ ). Observation of students indicated that they were engaged with the process and industry partners appeared highly pleased with the outcomes.

**#063**

### **Engaging Urban K-12 Agriculture-Science Education by Training the Trainers**

Stephany Alvarez-Ventura, Mahadev Bhat and Krish Jayachandran  
Florida International University

In the urban setting, many teachers find themselves unequipped to integrate agriculture into classroom curriculum. As such, the Agroecology Program at Florida International University (FIU), a minority –serving, urban university, has designed a week-long workshop to train K-12 urban school teachers in food and agriculture sciences, and to help them integrate relevant concepts into their school curricula. The workshop has been conducted for three alternating summers (2006, 2008, and 2010). The purpose of this study is to: (1) evaluate the workshop's effectiveness in educating urban teachers on agro-ecology concepts, and (2) identify strategies for workshop improvement. After completing the workshop, participants evaluated on the workshop's content, presentation quality and organization, and provided comments for applications and/or improvement of the workshop. Further, we did a follow up survey in order to measure the extent of implementation of the workshop concepts. 85% of the participants thought the overall workshop content was excellent and 95% strongly agreed it increased their understanding of food and agriculture issues. In 2010, half of the participants indicated they would initiate a school garden. The preliminary results of our follow up survey confirmed that 25% of the participants introduced garden activities at their schools. In order to improve the workshop, 80% of the 2010 participants suggested that the organizers should stay engaged with schools to ensure further integration of the workshop concepts. Therefore, these results demonstrate that workshops to train urban school teachers

can make a significant impact in promoting food and agriculture education in K-12 schools.

**#066**

### **The Role of “Connectors” in Successful Student Career Development**

D.J. Minihan and K.J. Donnelly  
Kansas State University

In a 2010 study, Kansas State University agronomy students responded career opportunities available for graduates was the most important factor influencing major choice. Many also indicated if not for helping them reach their career goals, they probably would have chosen a different major. Therefore, insuring that students are connected with appropriate experiential and career options has become a priority in student service offerings at the departmental level. Over the past eight years, placement of agronomy graduates (283) has been tracked with over 95% placed prior to graduation. Placement includes 61% to industry related positions, 22% pursuing graduate studies, and 17% to production agriculture. A key component to this success, at Kansas State, is having a focused effort on connecting students with valuable experiential learning opportunities. Since internships are required in four of the five curriculum options, the department believes it has a responsibility to provide guidance and assistance for placement of students. Strong connections with industry have led to outstanding placement rates. Utilizing “Connectors” as a bridge between academia and industry has proven beneficial to providing a variety of internship and fulltime opportunities. This extends beyond traditional campus employment services and career fair contacts. Over 80 experiential announcements were emailed to students in a nine month period, with nearly 90% of those coming from departmental contacts. Awareness of the departmental commitment among faculty, advisors, and staff is critical to the process.

**#067**

### **Science Summer Camp in Molecular Biology for Hispanic High School Students of South Texas.**

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Texas A&M University

A three years science summer camp project was established at Texas A&M University-Kingsville Citrus Center to give research experience for high schools students and science teachers. During the project, 45 students and eight science teachers were trained. The summer camp was set up in four stations, each containing all pieces of equipment and supplies needed to perform the experiments. Four students, one teacher and one mentor were placed in each station. In the first day students and teachers learned about lab safety, had a pre-exam to measure their knowledge about the subject, and lectures about the experiments to be performed. Experiments consisted in isolating DNA\RNA from citrus leaves, performing reverse transcription and polymerase chain reaction (PCR) to copy a known gene, cloning the PCR products into e-coli, isolating plasmids and sending for sequencing. After sequencing the students had a brainstorm section to figure out why the gene sequences from DNA and RNA were different. They also searched the sequences in a database to find homologous genes. At the end of the summer camp, students and teachers had a post-exam to evaluate the knowledge gained. Most students and teachers shown at least 50% more knowledge in the post-exam compared to the pre-exam and 79% of the students shown interest in take advanced high school coursework in science due to the summer camp. To encourage the school to continue with hands research, the project provided about \$80,000 for equipping the high school laboratories.

#068

### **Authentic Soil Bacterial Genomics Research in High School Biotechnology Classrooms**

Marshall Logvin and Christine Remenih  
South Mountain Community College, AZ

In 2007, Arizona State University, Mesa College, and Mesa High School were awarded a three year National Science Foundation (NSF) Advanced Technical Education grant to teach and conduct genomic research in high school science classrooms, to , to help prepare a biotechnology workforce. Instructors from those institutions. Professors and high school teachers developed protocols for a Soil Bacterium Identification lab (SBI) that high school students could use to acquire genomic sequence data and receive dual-enrollment college credit for BIO107 – Introduction to Biotechnology. (BIO107 Introduction to Biotechnology). South Mountain Community College (SMCC) collaborated in 2009 and leveraged its U.S. Department of Agriculture Hispanic-Serving Institutions program USDA/NIFA HSI grant, Expanding Undergraduate Bioscience Engagement Track (eUBET), to provide college credits, supplemental equipment, consumables, and support personnel, enabling the SBI lab to spread from three high schools to eight, and impact over 450 students/yr (100+ minority students). In the SBI lab, students culture bacteria from local soils, isolate DNA, PCR amplify the 16s rRNA gene, and sequence results with universal primers to classify bacteria via internet comparative analysis. Students must learn and apply a variety of biotechnology techniques to collect authentic data, and then publish their results. The SBI lab is currently in press in a BIO107 lab manual approved by SMCC for high school dual enrollment. An SMCC partnership with USDA Arid Lands Agricultural Research Center (ALARC) and University of Arizona Cooperative Extension (UoACE) in a proposed A-UBET grant, applies the NSF/USDA collaborative model to develop and disseminate additional research curriculum. Additionally, AUBET will fund 6-8 SMCC student interns for ALARC and/or UoACE annually and earning SMCC college credit (if funded).

#069

### **Enhancing Educational Quality and International Competitiveness: Recruiting Traditionally Underrepresented Students into Global Agriculture through Experiential Learning**

M. O. Smith, D. E. Smith, K. R. Robbins, N. S. Eash and F. R. Walker  
The University of Tennessee

Research indicates that minorities and the economically disadvantaged continue to be grossly underrepresented in the pool of undergraduate students with study abroad experience. The current project, funded by a USDA Higher Education Challenge Grant, provided financial support for traditionally underrepresented students from the College of Agricultural Sciences and Natural Resources (CASNR) at the University of Tennessee (UT) for study abroad opportunities. The project targeted academically qualified ethnic minorities, financially disadvantaged, and first generation college students. The experiential learning activities, in which 43 students worked directly with faculty and students at UT, took place in five different international settings (Jamaica, Thailand, Vietnam, Ghana, Lesotho). The experiences involved studying agriculture and trade in the global environment, and spanned multiple disciplines including forestry, rangeland health and protection, and soil and water quality. Students were exposed to crops, livestock, and bioenergy systems. Students also learned about cultures and lifestyles of the societies they visited. Prior to departure, each student completed a pre-departure survey which included questions about their (1) personal attributes, (2) intercultural awareness, (3) knowledge of world affairs (4) career goals and (5) fear of traveling abroad. Upon completion of the respective program of study, each student completed a corresponding post-study assessment. Analysis of the data indicated that there was significant growth ( $P < 001$ ) in all areas examined, except career goals. Qualitative data corroborated those findings. The study highlights a particular group of students in the agricultural sciences that could benefit from targeted efforts to enhance their participation in experiential learning abroad.

#072

### **Development of a College Experiential Learning Structure to Encourage and Evaluate Student Engagement**

Karen Vines  
Penn State University

The 2008-2013 Strategic Plan for the Penn State College of Agricultural Sciences includes the goals that each undergraduate will participate in specific experiential learning activities and that these will be evaluated in terms of career-related outcomes associated with networking opportunities, communication, entrepreneurial and leadership skills. To work toward these goals a plan for the development of an experiential learning structure has been developed. The experiential learning structure includes six forms of experiential learning: Multicultural Experiences, Undergraduate Research, Service Learning, Clubs and Organizations, Internships and Other Work Experiences and Creative and Communicative Expressions. Within the plan are included mechanisms for promotion, data collection and evaluation. Also included are justification for inclusion of the model components, ideas related to faculty development and a rubric for evaluating student engagement. Students will be encouraged to continually increase engagement from initial exploration to increasing levels of responsibility as detailed in the plan. They will also be required to evaluate and reflect on their experiences as relates to their personal and academic growth and development. Students will be able to submit their experiences, with highly engaged students receiving recognition from the college at graduation. Through this presentation, participants will learn more about this model and how it is being supported and implemented in the college.

#074

### **Using Videos of Recent College Graduates to Recruit New Students**

Jean Bertrand, Brice Nelson, Maria Bowie, Emily Pitts and Stephanie Schupska  
University of Georgia

The objective of this project was to recruit new students into the College of Agricultural and Environmental Sciences by exposing them to careers of recent graduates. Recent graduates from the College were identified and video-interviewed, most taking place at their work location. They were asked to discuss their experiences as a student and in the work place. A variety of careers has been captured including a County Cooperative Extension Agent, a high school agriculture teacher, a golf course superintendent, a medical student, a large animal veterinarian, a food product developer for a national fast-food chain, an environmental educator, a food scientist, a sales representative for a large agribusiness, and a government employee. Additional videos were made of current students discussing student life and focusing on different majors. A total of 29 videos, including 17 highlighting alumni, 11 featuring students, and one featuring a staff member, are being produced and featured on our website. A focus group of high school students working on summer research projects was created. The videos and website features were reviewed by this group to gain the reaction of students in the targeted age group. Their feedback was considered and changes were made to increase the appeal of the videos and website. The videos are organized in a manner in which they can be used in a presentation to a group, or by someone browsing the college web site. They are being used in recruitment presentations to groups of potential students.

#077

### **Engaging Community Members in Student Learning through the Development of Expected Student Learning Outcomes**

Richard J. Bischoff and Paul R. Springer  
University of Nebraska

A challenge to developing meaningful community-based practicum experiences is engaging community members in the learning process. In establishing community-based practicums in rural communities, we recognized that the success of student experiential learning activities would be dependent on 1) developing expected student learning outcomes that matched the realities of rural practice and 2)



engaging rural practitioners (e.g., health care providers) in the learning process. In our mental health training program, we invited rural medical and mental health care providers to participate in focus groups to identify what students need to know to successfully provide mental health care in their community. Transcripts of the interviews were qualitatively analyzed. Results indicate that successful rural practice is dependent on willingness to 1) collaborate with other practitioners, 2) work within the local care culture, and 3) respect the local ways of doing things. These results led to the development of expected student learning outcomes and learning activities that would lead toward student achievement. Participation in the focus group increased local practitioners' investment in student learning and facilitated a partnership between university faculty members and community members in ensuring that students have the best possible experience in their practicum. Through this presentation we will describe the process of engaging rural practitioners in the learning process through the use of focus group methodology, the development of student expected learning outcomes, and assessment of student learning. We will describe the principles of collaboration and relationship development that underlie successful partnerships with community stakeholders.

### #078

#### **High School Students' Performance on a Dual-Credit Advanced Life Science Exam**

Lisa Keefe, Levon Esters, and Neil Knobloch  
Purdue University, IN

Public schools should provide vibrant science, technology, engineering and mathematics (STEM) learning environments for all K-12 students thus supplying opportunities to pursue STEM careers. Purdue University and the Indiana Department of Education created a new college prep curriculum to help prepare high school students for STEM college entrance and careers in agricultural contexts. The Advanced Life Science (ALS) program consists of three science-based high school agriculture courses: ALS Animals; ALS Plants and Soils; and ALS Foods. Biology, chemistry, plant and animal science professors developed the curriculum (i.e., courses, content and related materials) in

collaboration with education specialists from the state department. These three courses provide high school students college-level learning experiences and an opportunity to earn dual credit at Purdue University. Over 400 students received college credit last year with enrollment steadily increasing. Since college credits are equally based on course and exam performances, the purpose of this study was to examine students' performance on the 2010 ALS dual credit course exams overall and by specific ALS course. Of the students (N=259) who took the exam in 2010, more than one-third (35%) of the students failed the exam. Results were compared by course; Animals (N=207), Plants and Soils (N=27) and Foods (N=25). More than half (~56%) of ALS Plants and Foods students scored at "B" (80%) or higher. However, only 17% of ALS Animals students scored at this level. Further study is needed to assess curriculum alignment, instructional training and effectiveness, assessment quality, and student differences among schools.

### #080

#### **Development of Basic Meat Science Topics and Standards Survey Instrument by Expert and Delphi Panels**

John K. Duke, Thomas R. Dobbins, Philip M. Fravel and K. Dale Layfield  
Clemson University, SC

The purpose of this study was to develop basic meat science topics and standards for secondary agriculture education. Expert and Delphi panels were used to develop the instrument. The expert panel was made up of 5 meat science faculty from Land Grant Universities. While the Delphi panel was composed of four members from academia and the meat industry and four from the top ten national meat FFA Career Development Events coaches from 2000 to 2005. Two Delphi rounds were used to develop the survey instrument. The modified Delphi started with an outline of basic meat science topics developed by the expert panel from sixteen Land Grant Universities basic meat science syllabi. The Delphi panel added or deleted topics, topics were consolidated into an outline, and a Likert-type scale was added to the 31 topics. Topics with a mean < 2.5 were removed. The panel then added meat science standards to each of

the remaining 25 topics. A Likert-type scale was added to each of the standards. Standards with a mean < 2.5 were removed leaving 136 standards. Duplicate, similar, and those not specific were removed leaving a 100 standards.

**#082**

### **Enrichment Assignments: Keeping Breadth, Depth, and Sanity**

Maria Navarro  
University of Georgia

Most educators agree that enrichment readings are necessary components in their courses. On an adult education setting assumption, some educators leave the responsibility of their completion entirely to the students. However, many researchers have indicated that the percentage of students who engage in enrichment reading is much higher when instructors require and grade written proof of completion than when the instructors do not assign any grades. This creates a conundrum for instructors who recognize the need to check and grade student completion of enrichment readings, but do not want to be inundated with a plethora of topics and projects to grade, want to avoid giving students “busy work,” and prefer to leave enrichment possibilities open and broad to allow students to freely explore their passions and interests. The “Enrichment Conference” is an example of a semester-long, student-driven, on-line, asynchronous assignment given in an international agricultural development course. This assignment allows students to explore the breadth and depth of their passions in the world of international agriculture, complete enrichment activities at their rhythm and throughout the semester, gain knowledge, and interact with their peers. It also allows the instructor to guide students and give feedback, assure that the content covered by the student is directly related to the class, and grade quality of completion without unnecessary time burden. We will explain and justify the components of the “Enrichment Conference,” provide an example, and discuss how other instructors can adapt and use it in their courses.

**#084**

### **Student Experiential Learning: A Practical Approach to Traditional Teaching**

Sharon L. McWhinney  
Prairie View A&M University, TX

Students' involvement in experiential learning activities has proven to be a viable and important teaching method. This avenue incorporates new and innovative methods of learning, and reform already used teaching techniques in the learning process. Having students involved in experiential learning activities provides opportunities to address current real-world issues, prepare them as society-ready graduates, and ease the transition into their respective careers. This presentation will detail students' involvement in a school and community based research project and the impact of this experience had their academic preparation. Four students were selected to participate in a nutrition/physical activity/health disparity research project. They were introduced to qualitative and quantitative research, trained in conducting focus groups, structured interviews, and in administering surveys. Students completed all the necessary training & obtained approval from the Institutional Review Board as part of the learning process. Students worked with faculty to develop nutrition and physical activity lessons for 4th grade kids, and corresponding newsletters for parents. They were actively involved in teaching these lessons in the selected elementary schools, and in conducting presentations and demonstrations to parents and teachers. Their involvement in these activities resulted in numerous professional presentations given by faculty and students at local, state, national and international conferences. Two students received awards at the annual University sponsored research conference. Students' involvement in experiential learning has given them the experience in conducting research, and professional presentation.

#085

### **Global Horticulture – Engaging Undergraduate Students through International Experiential Learning**

John B. Masiunas, Dan Anderson and Meredith Blumthal  
University of Illinois

The production and trade of horticulture products such as tropical fruits, hybrid flower seeds, and unrooted flower cuttings, all occur at a global level. Undergraduate students majoring in Horticulture increasingly have careers requiring an ability to function in a global economy, yet few have courses or experiences with an international dimension. The objectives of Global Horticulture are to provide students with the requisite knowledge, management, and decision making skills necessary to operate cross-functionally and cross-culturally. Global Horticulture consists of a campus-based course, HORT 464 (International Hort Products) and a two-week immersion trip. HORT 464 includes both classroom lectures and field trips focusing on the production and distribution of a wide range of agricultural products. HORT 464 satisfies both 400-level requirements for Horticulture majors and requirements for students in the College's International minor. The two-week study abroad immersion trip is conducted over winter break, and rotated between Central America and Africa, regions supplying horticultural products to North America and Europe. While abroad the students visited major international companies such as Ball Horticulture, Ecker Ranch, Syngenta, Dole, and Del Monte. Cultural immersion activities such as service, rural marketplace visits, and family stays, are incorporated into the study abroad trip. Student rated the course and instructor for HORT 464 as excellent. Student surveys indicated that field trips were valuable for "real-life experiences" and resulted in job opportunities. Instructor-facilitated blogging and student reflecting writings indicated students

#086

### **Course Expo: Poverty in the Movies**

Maria Navarro  
The University of Georgia

The purpose of this poster is to present graphically the curriculum of the "Poverty in the Movies" seminar, designed by an instructor in a college of agricultural and environmental sciences for first year students. Some of the components of the poster include the syllabus and program of the seminar, as well as examples of lesson plans, case studies, and homework assignments. The primary goal of the seminar is to increase student awareness, knowledge, reflection, and commitment to the fight against poverty. After an overview of causes, effects, and solutions to local and global poverty, students explore several case studies. Each case is introduced through a popular film depicting poverty in different areas of the world (e.g., Blood Diamond, Slumdog Millionaire, City of God, The Grapes of Wrath). Students also read and report background information on each case; analyze the multidisciplinary and interdependent nature of the causes of poverty; and suggest, discuss, and evaluate possible solutions for each of the examples. Other goals of the seminar integrate the university's goals for first year seminars as part of the university's plans to enhance learning: Instill the love of learning and scholarship in students, create an environment conducive for student-faculty quality and sustained interaction, and introduce students to the multifaceted local and global role of land grant universities. The information shared in the poster can be used either to create similar courses, or to adapt ideas, strategies, and tools to enhance other courses and to help students analyze complex and global issues.

#090

### **Integrating Research into Capstone Course and Student Learning of a New Undergraduate Agronomy Program**

Grace Armah-Agyeman  
Southwest Minnesota State University

Research by undergraduate students and the redesign of the undergraduate capstone course from a seminar to research-based course have been carried out at Southwest Minnesota State University (SMSU). These were in line with recent calls by government, industry, and alumni of universities to incorporate research into student learning, which resulted in the United States House of Representatives voting on

November 16, 2010 to declare the week of April 11, 2011, as undergraduate research week. To overcome the difficulty in linking research and teaching and to ensure that research is formally incorporated in academic courses or curriculum, a three-year old agronomy program at Southwest State University incorporated research into student learning by introducing research-based term project into one of the classes. For their term project, students taking the grain and forage crop management class in 2009 worked on biodiesel related projects. The students were organized into two groups that examined weeds of Minnesota as possible sources of non-edible oils for biodiesel production. Their research findings were presented at the annual undergraduate research conference at SMSU in December 2009. The research was repeated in 2010 and results presented at the 2010 undergraduate research conference. Highlights of the research will be presented. In addition, the capstone course has been redesigned using research proposed by industrial collaborators. Students, taking the capstone course in the fall of 2011, will carry out research projects involving glyphosate and micronutrients. The research will be jointly supervised by a scientist from the company and the student's academic advisor.

**#091**

### **Teaching Turfgrass Identification Using Online versus Traditional Instruction**

Steven J. Keeley and Kenton W. Peterson  
Kansas State University

The ability to teach lab skills in a distance education format may be a barrier to the development of effective distance courses in turfgrass management. We conducted a study to compare the effectiveness of online versus traditional instruction for teaching turf-grass identification. An introductory horticultural science class with four lab sections and a total enrollment of 89 students was the study setting. Two of the lab sections were randomly selected to receive online instruction in identification of six turfgrass species, and the other two sections received traditional instruction. Students in the traditional sections had live samples to view as they were taught identification characteristics. Both traditional and online students were provided access to live samples in a greenhouse

for later practice. One week after receiving instruction, students took a quiz in which they were required to identify live samples (each species was included up to four times, and students were not told how many samples there were of each species), as well as answer "knowledge" questions regarding identification. Quiz scores showed no difference in ability to identify live samples of the six species between students receiving online versus traditional instruction. However, students receiving traditional instruction performed significantly better on "knowledge" questions. Student performance on the quiz was not correlated with time spent studying, overall course performance, or the perceived importance of turfgrass identification to the student. Our results show that students did not learn to identify live turfgrass samples better when given traditional versus online instruction.

**#095**

### **Enhancing Career Awareness and Develop through Experiential Learning.**

Dr. Darron L. Smith  
Eastern New Mexico University

This program is a multidisciplinary, multi-institutional project involving senior scientists at three education and research centers; Eastern New Mexico University (ENMU), USDA Livestock Issues Research Unit, West Lafayette, Indiana and USDA Livestock Issues Research Unit, Lubbock, Texas. The purpose of this experiential learning system is to provide an underrepresented student population the opportunity to improve their competitiveness when applying for graduate school or the industry. The objectives of this program are to: 1) provide research assistantship experiences at ENMU, to agricultural science students by hiring 10 undergraduate and 1 graduate student per year; 2) senior scientists educate undergraduate students with "hands-on" training using the latest methodologies for agricultural, animal science, feed and nutrition, and reproductive physiology research by teaching two laboratory-oriented science courses; and 3) involve the employed student research aides by giving the students an opportunity to present their own research at a regional or national scientific meetings. Our results to date for this on-going program include: providing 11 students with employment in the

university's research laboratories; allowing 11 students to conduct their own research, the results of which they will be presenting at three national conferences and a regional student research conference, a total of 15 poster or oral presentations; finally, the two laboratory-oriented science courses were successfully taught to 25 students. As a result of this program students will have gained advanced knowledge and skills allowing them to enter their future career at a higher earning capacity.

**#096**

### **High School Teacher Training in Food Science – Hands-On, Experiential Training and a Bloom's Taxonomy Evaluation on Learning**

Naveen Chikthimmah and Carolyn Barnhart  
University of Wisconsin – Stout

Rama B. Radhakrishna and John C. Ewing  
Penn State University

In this presentation, we describe two teacher training workshops that engaged high school teachers in Food Science concepts in a hands-on, experiential setting. The goal of the workshops was to train teachers in food science lesson plans that incorporated important science concepts for the teachers to execute the lesson plans in their classrooms. The effectiveness of workshop on teacher learning was assessed based on teacher feedback using a Bloom's Taxonomy rubric. Nine high school teachers based in Wisconsin enrolled in one day workshops in Food Science conducted by university faculty. The workshop content integrated concepts in protein structures and functionalities in food, stoichiometry and determination of acid content in beverages through acid-base titrations, and epidemiological investigation of a foodborne outbreak. The concepts were presented in a lecture format and anchored with hands-on experiments and demonstrations in a discussion intensive learning setting. In the lecture component, the instructor(s) presented the salient concepts including, relevance of the topic in broader areas of scientific inquiry. Teacher-led experimental observations served as the basis for discussion and active learning. Teachers were encouraged to work in groups and discuss methods,

modifications, and strategies to enhance the adaptation of the lesson plans into their classrooms. Teachers were also provided with resources to enhance and guide the out-of-class learning effort. Following discussion, teachers completed a Bloom's Taxonomy feedback to assess learning. Findings suggest that incorporating hands-on, experiential learning methods into lesson plans enhanced teacher learning, promoted high confidence, and interest in implementing the lesson plans in their classrooms.

**#098**

### **Experiential Learning Project Address Contemporary Issues Related to Energy, Environment and Sustainable Agriculture**

Abhijit Nagchaudhuri, Madhumi Mitra, Lurline Marsh, Jurgen Schwarz and Craig Daughtry  
University of Maryland Eastern Shore

The "Bio-Fuel, sustainability, and geospatial information technologies to enhance experiential learning paradigm for precision agriculture project", recently funded by USDA extends the environmental stewardship archetype of the preceding project titled "Environmentally conscious precision agriculture: a platform for active learning and community engagement". During the initial phase of the new endeavor the project team have demonstrated the production of biodiesel using waste vegetable oil(WVO)from campus dining services. Under the supervision of the project leaders, the participating students from "STEAM"(science, technology, engineering, agriculture, and mathematics) majors have worked in teams to collect, dewater, and filter the WVO, and supported the acquisition of supplies and installation of the biodiesel processor. Subsequently, the students have performed necessary titrations and laboratory tests on the WVO, and operated and monitored the 48-hour production and wash-cycle of the processor. The process produces glycerin as a byproduct, which the students have used to make soap. Students have tested the 'gelling' tendency of different biodiesel blends, and are currently working with the university farm manager to identify farm equipment for biodiesel use, and the university safety officer to refine safety considerations. The broader scope of the

project includes extending use of biodiesel, a carbon neutral energy source, as an alternative transportation fuel, to help address issues related to carbon footprint, climate change, and sustainable energy. Furthermore, the project will continue to focus on the use of remote sensing and advanced geospatial information technology tools to optimize the use of nutrients, water, and other resources for sustainable production agricultural practices.

### #100

#### **Broadening Student Food Perspectives Using Variety Meats and Other Non-Customary Agricultural Products**

M. Amstutz, and K. Wimbush  
Ohio State University

Many students, even those enrolled in our agricultural programs here at the Ohio State University Agricultural Technical Institute, know little of food history. Nevertheless, most endeavor to pursue a career in food animal production. One method of fostering discussion of food and its history, particularly with relation to cultural origination and regional preferences or peculiarities, was to introduce students to various preparations of variety meats and / or alternative animal products. Students enrolled in introductory animal science courses were provided the opportunity to sample a selection of variety meats or animal products. These products were not the student's standard fare and included things such as tripe, sweetbreads, testicles, tongue, chitterlings, sardines, and aromatic cheeses. In some instances the instructor selected and prepared the products, or alternatively students selected, prepared and discussed their dishes. Participation varied widely by class ranging from 30 to 85%. Students were not required to participate in consumption but were required to attend. Those completing the consumption portion of the exercise were awarded extra credit in the course. Completion rates were much lower than participation rates and averaged between 20 to 25%. Students referred to this class as "fear factor" and enjoyed learning not only about food history and various forms of preparation, but also developed an appreciation for items to which they had no prior exposure. Furthermore, all students actively participated in discussions of culinary history, cultural preferences, and food

origins. This exercise continually stimulated student interest and many were pleasantly surprised to find they actually enjoyed some of the products.

### #101

#### **The Role of Co-curricular Education in Enhancing an Agricultural Science Program in an Urban University**

Thelma I. Velez, Mahadev G. Bhat, and  
Krishnaswamy Jayachandran  
Florida International University

Urban public universities are increasingly finding a need to offer agricultural science education to urban-raised students and community members. These universities may not have the financial resources to provide extensive in-class curriculum. The Agroecology Program at Florida International University, an urban institution, has attempted to overcome this shortfall by engaging students in out-of-class learning activities. The co-curricular activities include a student-run organic garden club, weekly farmers' market participation, agroecology workshops, and community oriented internships, both local and abroad. This study serves as a quantitative and qualitative assessment of the performance of the Agroecology Program's co-curricular education. A survey instrument was distributed to past and current participants. Respondents were asked to gauge the effectiveness of the program using a four point Likert scale (3=strongly agree; 0=strongly disagree) in terms of two categories: (a) educational and professional learning outcomes, and (b) overall program's impacts. The sample comprised students, high school teachers, collaborators, and faculty; a sub sample of students (n=29) was selected for this research. More than 62% of the respondents participated in five, or more, co-curricular activities. Of the fourteen outcome measures, leadership and communication skills received the lowest ratings. The results show greater involvement in co-curricular activities aids students in obtaining significant subject knowledge and professional interaction. Over 96% of the respondents felt this program created an important agricultural educational opportunity in South Florida. Qualitative responses from those involved in the organic garden club and paid internships revealed

that these activities had potential for enhancing science, technology, and engineering education.

**#102**

### **Pre-Service Needs of Student Teachers Regarding Supervised Agricultural Experience (SAE) Programs**

Roger Hanagriff, John Rayfield and Lance Keith  
Texas A&M University

Dwayne Pavelock and Doug Ullrich  
Sam Houston State University

A supervised agricultural experience (SAE) program is an essential, experiential component of secondary agricultural education's three-circle model, with classroom instruction and FFA as other components. Sutphin and Newcomb (1983) found that 98% of respondents from a national survey of agricultural educators and administrators believed SAEs should be required of all high school agriculture students. Previous research has linked the educational value of an SAE to student achievement and knowledge. Data for this study was collected via online survey techniques from four Texas teacher training universities and included 72 students planning to student teach during the 2010 spring semester. The survey instrument included 15 questions relating to SAE definitions from National FFA educational materials and a newly developed Texas teacher SAE guide. Using the Borich Model of needs assessment students reported high discrepancy scores for all four SAE areas— entrepreneurship, placement, research and exploratory. Lower needs existed for FFA competitions and classroom training. Respondents scored in the 80th percentile on questions related to definitions for entrepreneurship and research SAEs but scored in the 60th percentile on placement SAE definitions, and the 40th percentile in exploratory SAE definitions. Knowledge of developing SAE entrepreneurship records was in the 50th percentile. This study illustrates needs assessment areas for SAE training and provides a preliminary model of assessment. Addressing these short-comings can increase the focus of SAEs by new teachers and potentially increase SAE focus and success in secondary agriculture programs.

**#105**

### **Agriculture Faculty's Comfort with Teaching Written and Oral Communication Curriculum**

Holli R. Leggette and Deb Dunsford  
Texas A&M University

Because Texas A&M University Writing Center requires students to take two communications intensive courses (W or C courses) to graduate, the authors wanted to identify the College of Agriculture and Life Sciences' faculty's concerns about their ability to teach writing in agricultural courses. The faculty, which represented 14 departments in the college, reported on average student writing assignments differ between W and non-W courses, they spend more time grading W course writing assignments, and about half of the students enrolled in W courses are juniors and seniors. Additionally, based on a 4-point Likert-type scale, faculty reported they were comfortable to extremely comfortable (M=3.44; SD=.47) with teaching characteristics—accuracy, style, word usage, grammar, clarity, and conciseness—of effective communication skills. They felt comfortable (M=3.19; SD=.51) identifying common student writing problems, such as cohesion, preposition use, grammar, spelling, pronoun case, and subject verb agreement. Overall, faculty reported they were not at all to not very satisfied with student writing abilities at the beginning of a course (M=1.87; SD=.62) and not very satisfied to satisfied with student writing abilities at the end of a course (M=2.49; SD=.65). Based on the results, the authors recommend universities continue to require students to integrate written and oral communication courses into their degree plans. However, such universities should continue providing faculty with resources and assistance to incorporate written and oral communication curricula into the agriculture classroom.

**#108**

### **Focusing Undergraduate Curriculum in Agricultural Biotechnology as a Tool to Engage Students and Faculty into the Importance of Agriculture and Modernization of Learning**

Alma Santiago-Cortés

Pontifical Catholic University of Puerto Rico

The main objectives of this project are to: 1) establish a BS-Biotechnology with special emphasis in Agrobiotechnology; 2) provide students with the appropriate laboratory and research experiences in biotechnology; 3) train faculty in state-of-the-art molecular methodologies to improve their professional and teaching capabilities; 4) retrain professionals; and 5) promote critical analysis of problems generated by biotechnology. We have offered trainings in: Bioethics, Bioinformatics, QTL Analysis, Doing Good Science, and Integration of Geomicrobiology into an undergraduate research program. Faculty from other campuses and institutions was invited and attended the workshops. Interested students also participated in the workshops. Overall evaluation for the workshop follows: 77% of participants were in-house faculty; the remaining 23% came from other institutions. Satisfaction rate for the workshops was 97%. Ninety-eight percent agreed that the workshops will aid in their course development, the workshops were offered in a suitable environment and good teaching materials. Eighty-five percent agreed that workshops promoted engaging in research and gave them new tools for teaching and student assessment. They would like to have more hands-on experiences of this kind. Faculty suggested open concluding remarks to summarize new concepts. T-test of 0.004221 and Pearson correlation of 0.989282 indicated that workshops can strengthen content of science courses and help enhance the teaching-learning process. New laboratory exercises created for the starting BS-Biotechnology will engage undergraduate students in research. Short courses will be offered to aid farmers in their professional development. Some of these courses include: Plant micropropagation, Applications of Biotechnology to Agriculture and Entrepreneurship.

**#110**

### **Undergraduate Research at Two Hispanic Serving Institutions, Assessment of a 10 Year Ongoing Research Education Program**

Michael W. Persans and Robert D. Wrinkle  
University of Texas Pan American

Hilda S. del Rio and Eliezer Louzada  
Texas A&M University

An undergraduate research education program in plant molecular biology and biotechnology was initiated approximately 10 years ago with the objective of channeling Hispanic undergraduate students to agricultural science careers. This program is a collaborative effort between the Texas A&M University-Kingsville Citrus Center (TAMUK-CC) and The University of Texas Pan-American (UTPA). The program during its tenure has been funded by the USDA-Hispanic Serving Institutions Education Grant Program. UTPA and TAMUK-CC are two institutions which are located in south Texas, a predominantly Hispanic region (approximately 90%) with high poverty rate. The under-represented students targeted by this program were junior and senior biology or chemistry majors. Recruitment was performed utilizing several methods including: information sessions in the classroom, advertisement on campus internet bulletin boards, through the offices of Career Services, word of mouth, and by posters posted in campus common areas. Students who participated in the program typically had a GPA at or above 3.0. In the past 10 years more than 60 students have participated in this program and approximately 50% of the student participants have matriculated into graduate school at the Masters degree (MS) level. Of these students, twelve have progressed to doctoral level (Ph.D.) degree programs. One student in a doctoral program has recently graduated with a Ph.D. degree in 2011. Surveys performed to assess the students after participation in the program showed increases in the areas of: self-confidence, critical thinking, capacity to analyze data, ability to overcome educational obstacles, working as a team, and improved time management skills.

**#112**

### **Perceived Challenges of Teaching a Blended Online Course: Observations from Faculty and Teaching Assistants**

Kimberly A. Moore and Luci Fisher  
University of Florida



Online headcounts are expected to reach almost 3.5 million by 2013. Blended courses with online and live components tend to be preferred over courses where all material is delivered online. In spring 2008 and 2010, the University of Florida offered Annual and Perennial Gardening with online lectures and live laboratories on main campus (Gainesville) and at four off-campus locations (Fort Lauderdale, Apopka, Plant City, and Milton). The lead instructor was responsible for the lecture material while faculty or teaching assistants (TAs) were responsible for the live laboratory. Students were required to enroll in both the online lecture and live laboratories at a location near them. The laboratory on main campus had 20 to 25 students while the laboratories at the other locations had 3 to 10 students. Laboratory TAs and faculty instructors were asked to list some of their challenges. Challenges noted by TAs were: 1) keeping laboratories and tools consistent at every location, 2) scheduling laboratory and exam times, 3) preparation time for laboratory sessions, and 4) monitoring student performance. Challenges noted by faculty were: 1) coordinating laboratory exercises with lecture material, 2) varied experiential background of students, 3) small/large laboratory class sizes, and 4) avoiding repetition of material while maintaining consistency. One improvement was to develop a common plant list for all sites and activities associated with the common plants. A suggestion for future offerings is to develop a lab book with common exercises that can be adapted to each location and class size.

**#114**

### **An Interdisciplinary Approach to Engaging Students in Active Citizenship and Community Service by Investigating Issues in Food and Agriculture**

Greg D. Pillar, Jessica Braswell and Melinda S. Harper  
Queens University of Charlotte, NC

It is well established that students in the United States who go on to earn a post secondary degree are more likely to volunteer and participate in political and civic activities. Although some argue that this is due to social benefits provided by a secondary education the

extent and nature of the educational experience is a factor in this phenomenon. However little research has been conducted looking at how specific topics or subjects could be used to foster civic engagement and community service in students. Over the last four years an interdisciplinary team of faculty at Queens University of Charlotte has developed a general education course, CORE 122 – Modern Citizenship, which encourages civic engagement and community service through the study of current issues in one of the following areas: education, communication (media), the environment or food and agriculture. Data collected from a validated citizenship survey and a community service project was used to assess student attitudes towards civic and community engagement. In 2009 the average score on the survey increased from 72.4% (pre-course) to 76.6% (post-course) ( $p=0.001$ ) in 2009 and from 70.4% to 74.3% ( $p<0.0001$ ) in 2010. In both years, students' scores on the citizenship survey increased by a greater margin in sections focused on food and agriculture than in other sections. However, the effect was only significant in 2010 ( $p=0.0034$ ). These results show that topics in food and agriculture can be used to promote civic engagement and community service among students.

**#115**

### **Engaging Students through International Experiences to Expand Diverse Perspectives**

Lisa Hightower Katherine Griffin, Yu-Ming Shen  
Mary A. Marchant, Eric Smith, Eric Vance, Bill Richardson and Ashley Bell  
Virginia Tech

Jolene Hamm  
Ferrum College, VA

Timothy Mack  
Indiana University of Pennsylvania

Study abroad projects offer a unique opportunity for students to engage in experiential learning. Kolb's Experiential Learning Theory divides learning into four components: concrete experience, reflective observation, abstract conceptualization, and active experimentation. International programs effectively provide

students an opportunity for reflective observation. Study abroad programs may be even more critical to students in the fields of agriculture and life sciences, where understanding agriculture within a global marketplace is a necessity. The objective of this study was to determine the impact study abroad programs have on student and faculty experiential learning. This research project explored study abroad programs with an agricultural and life sciences focus in 87 higher education institutions across the US. The research was conducted as part of USDA's Food and Agricultural Education Information System. Data were collected from 571 study abroad programs and analyzed using a mixed methods approach. In addition to the survey data collected, study abroad program directors were interviewed to determine what specifically these study abroad programs are doing, what is unique about their program, and the impact these programs have on the students, faculty, and country where the program travels. Programs predominately traveled to China (n=21) and Malawi (n=19), and focused on agricultural economics (n=16) and environmental science (n=15). In conclusion, international programs engage students through experiential learning and provide them the chance to travel throughout the world.

**#124**

### **Internalization of Agricultural Curriculum at Florida International University: Evaluation of Student Experiential Learning Outcome Poster Presentation**

A. Jungman, M. Bhat, and K. Jayachandran  
Florida International University

In the age of globalization it is becoming ever more important to engage students and faculty members in international food, agricultural and natural resources issues. While travel abroad programs focus on many things such as learning a foreign language, humanitarian missions, art and architecture, or personal growth, the program at Florida International University (FIU) aims at engaging students in international food and agricultural issues through experiential learning abroad, short research studies, and knowledge sharing. This program is part of an initiative to internationalize the existing agro-

ecology curriculum at FIU. Students engage in short experiential and research studies in selected developing countries of Asia, Africa and South America, and seek to increase their competence and knowledge of international agricultural issues. The purpose of this study was to assess the effectiveness of this global experiential learning program in terms of students learning outcome through post-travel semi-structured surveys. The survey gathered information on students' perception about experiential learning, awareness of a given international issues, and ability and comfort level to study or work abroad. More than 30 students participated in the program between 2006 and 2011. The majority of the representative students agreed that the experiential learning aspect of the program was an effective way of increasing students' knowledge of agriculture in other countries in a short period of time. Students felt that their level of understanding, interest and tolerance to other culture have significantly improved as well as their preparedness for longer-term research or careers abroad.

**#126**

### **Educational Resource Use and Information Delivery Methods Preferred by Virginia Cooperative Extension Agents**

C.A. Porr, T.W. Broyles, A. B. Phillips, R.S. Pleasant, R.M. Brooks, and R.K. Splan  
Virginia Tech

C.E. Smith  
West Virginia University

Web-based extension programming and online learning environments, such as extension, capitalize on ways 21st century audiences seek and utilize instantaneous, research-based information. However, the importance of face-to-face interaction remains strong. The objectives of this project were to determine information resources and methods used by extension agents to respond to stakeholder questions and deliver educational programming relative to the Virginia equine industry. A survey instrument was developed and distributed electronically to all 463 4-H and agriculture extension agents. Of 67 responding agents, 43 conducted equine

programming or routinely answered equine-related questions. Only 22.3% of agents answered questions personally; 43.8% consulted with another extension agent or specialist. Nearly 42% directed stakeholders to an extension specialist rather than answer the question directly. Although 6.3% regularly used extension as an information resource, 37.2% had visited the extension website. Over 65% of agents reported that they conducted equine programming one or more times annually. While 69.8% strongly or somewhat favored hands-on teaching methods, only 30.2% felt the same about online programming. Conversely, 27.9% somewhat or strongly opposed online methods while none opposed hands-on. Despite increasing availability and use of online resources, Virginia Cooperative Extension agents are slow to utilize this method of information delivery for their equine stakeholders. Since most educators tend to teach as they learned, it is possible agents are unfamiliar with and uncomfortable using newer teaching methods. Educational programs aimed at familiarizing agents with online technology and information delivery may increase the use of this tool in equine extension programming efforts.

### #129

#### **Success of Entering College Freshmen in Agriculture Based on College Credits Earned in High School**

Dwayne Pavelock and Marcy Beverly  
Sam Houston State University

Secondary school students have increasing opportunities to gain college credit while in high school. Such opportunities enable students to experience the subject matter on a more rigorous level while permitting them to enter postsecondary education with advanced credits, usually at a significant cost savings. But does the earning of college credits in advance translate into greater success once that student enrolls full-time at a postsecondary institution? The primary objective of this study was to determine whether entering college freshmen have greater success, as measured by GPA, based on the number of college credits earned while in high school. Utilizing data acquired from the Sam Houston State University Office of Institutional Research and Analysis, and considering the number of advanced hours

earned, researchers examined selected characteristics for full-time entering freshmen (n=51) in the Fall 2010 semester majoring in some field of agriculture at Sam Houston State University. Freshmen entering with more than 21 hours had a first semester GPA of 3.46, while those entering with 12-21 hours had a 2.86 GPA, and those with 3-11 hours had a 2.78 GPA. Students with more than 21 credits prior to entering the university also had the highest average high school ranking (8.7%) and SAT score (1154) compared to those with 12-21 hours (21.5% and 1028) or 3-11 hours (29.0% and 983). The study concluded that earning college credits while in high school can result in greater success for entering freshmen, and that students with a low number of advanced credits may need additional academic services to ensure postsecondary success.

### #138

#### **An Online Master's Program in Agriculture and Natural Resources – Reflections on the First Ten Years**

B.A. Darroch and T.N. Burcham  
University of Tennessee

An online Master of Science degree in agriculture was first offered at the University of Tennessee at Martin in fall 2001, when online education was still in its infancy. Since then, 38 students have graduated from the program, and enrollment has grown to 40 students in spring 2011. Blackboard® course management software has been used from the beginning as a tool to disseminate information and to assess and track student performance within each course. Choice of lecture delivery method was limited early in the program. However, in the ensuing decade, a wide variety of technological tools have been developed to enhance online learning. Instructors can choose from a wide variety of programs to add audio to online lectures. In the Department of Agriculture, Geosciences, and Natural Resources, instructors use Adobe® Presenter™, TechSmith® Camtasia Studio®, Echo 360®, and/or LiveScribe® Pulse™ Smartpen to add audio to lecture materials. Software choice is influenced by course content and ease of use. Students find that audio-enhanced lectures are important additions to online courses, making even difficult course material easier to

comprehend. Frequent communication between the instructor and students is essential to ensure that students remain on-task and do not fall behind in their course work. Communication tools such as discussion boards help students to interact with each other. Experience from the past ten years has shown that successful online courses incorporate the use of audio-enhanced lectures and regular student assignments/quizzes to monitor student progress.

**#140**

### **External Accreditation Process Provides Valuable Feedback and a Form of Outcomes Assessment**

Ann Marie VanDerZanden  
Iowa State University

Seeking external accreditation is one way to complete an outcomes assessment of an undergraduate program. The accreditation body provides a valuable analysis from an unbiased third party of the curriculum, facilities and other components that constitute the program. In the fall of 2010 the Iowa State University Department of Horticulture undergraduate program in Landscape Design, Installation and Management completed the accreditation process provided by the Professional Landcare Network (PLANET). PLANET is the national professional organization for the field of landscape contracting and accredits both two- and four-year landscape horticulture programs. As part of the accreditation process we provided PLANET with a comprehensive self-study report that addressed the program's mission statement, educational objectives, analysis of the overall curriculum and how it meets industry needs, program strengths and weakness, trends in both the landscape industry and in academic landscape contracting programs, as well as strategic planning for the future of the option. As a result of this extensive self-study all of the components of the program were evaluated individually and in combination as the whole program providing a comprehensive assessment of the program's multiple outcomes. Further, during the on-campus visit the accreditation team met with students, faculty and administration to learn more about the program and promote it where appropriate to internal audiences. The end result has been a stronger

focus on student learning outcomes, a better alignment of curriculum with the needs industry has of our graduates, and increased visibility and recognition of the program by administration.

**#144**

### **Assessing Student Attitudes toward Contemporary Issues in Animal Agriculture**

M.M. Beverly, K.J. Stutts, S.F. Kelley, B. Mund, and B. Freel  
Sam Houston State University

The objective of this study was to determine if the participation in a contemporary issues in animal agriculture course had an effect on student attitudes towards food safety, resource use, and animal use. Graduate students (n=22) enrolled in Contemporary Issues in Animal Agriculture in the fall semester of 2010 at Sam Houston State University were administered a pre-course survey the first week of the semester and a post-course survey the final week of the semester. The survey examined three main issues: food safety, natural resource use, and animal use as they relate to animal agriculture. The students ranked each issue on a scale of 1 to 4 (1 = significant issue, 4 = insignificant issue). Least squares means for student responses were calculated using the mixed procedure of SAS. There were no significant differences in means for any issue between the pre-course survey and post-course survey. Issues with the largest change in mean score were animal waste, antibiotic use, and growth promotants. Animal waste increased in significance in the opinion of students while both the use of antibiotics and growth promotants decreased in significance. Issues with the smallest change in mean score were deforestation, water for animals, and cloning. Mean scores for each of these issues remained virtually unchanged. Results of this study indicate student attitudes towards these issues changed modestly by completing this course. Students ranked animal waste, microbial contamination of food, and proper cooking and storage of food as the most significant issues facing animal agriculture.

#145

### **Introduction of Freshman and Sophomore Undergraduate Agriculture Students to Animal Husbandry and Animal Behavior via Working One-On-One with a Recently Weaned Beef Cattle Heifer**

K.W. Lovercamp  
University of Central Missouri

Challenges arise when teaching an introductory animal science course because some agriculture students may not have a basic knowledge of animal husbandry and animal behavior. Therefore, a 'Heifer Project' has been implemented to give agriculture students one-on-one experience with a beef cattle heifer. In this project, each student in the course is randomly assigned a recently weaned Simmental or Angus heifer. Heifers used for the project weigh between 450 and 550 lbs and receive a docility score of 1-3 on a 6 point docility scale. Lectures on animal husbandry and animal behavior are given before the project begins. In addition, students are shown how to safely approach and interact with the heifer and are instructed on how to make their own rope halter for use in the project. During the three week project, students are responsible for working with the heifer outside of class time by grooming, bathing and halter breaking the heifer. The project culminates with a mock show in which the students bathe, fit, lead and answer questions about their heifer. Students are assigned grades based on time spent working with the heifer and willingness to take instruction. In order to receive an 'A' or 'B' grade, students must work with their heifer for at least two hours over two sessions per week and write a short reflection paper on the project. Overall, feedback from the students has been positive with many students stating their knowledge about animal husbandry and animal behavior was improved through the project.

#148

### **Effect of Class Time and Day on Attendance and Academic Performance in Undergraduate Animal Science Courses**

K. J. Stutts, M. M. Beverly, S. F. Kelley, M. L. McMillan, A. N. Bullion and L. A. McMillan  
Sam Houston State University

The objective of this study was to evaluate the effect of class time and day on academic performance and attendance in undergraduate animal science courses. Data were collected on 2,313 students enrolled during the 16-week fall and spring semesters of 2007 through 2010. Data collected included number of absences and final course grade for each student, and the time and day of the week that each course met. Least squares means for final course grades and number of absences were calculated using the mixed procedure of SAS. Significant differences existed for time of day and day of week for final course grades and attendance. Mean final course grade was lowest ( $P<0.01$ ) for courses that met early in the morning (before 10am; 76.94) compared to courses that met late morning (10am-12pm; 82.05) or early (12-3pm; 82.27) or late (after 3pm; 82.71) afternoon. Mean number of absences was also highest ( $P<0.05$ ) for early morning (4.55) classes. Mean final course grade was highest ( $P<0.01$ ) for courses that met on Thursday-only for 3 hours (86.21) and lowest for courses that met on Monday, Wednesday, and Friday (76.01). Mean number of absences was lowest ( $P<0.05$ ) for courses that met only once per week ( $\leq 1.95$ ), intermediate for course that met twice per week ( $\leq 3.75$ ), and highest for courses that met three times per week (6.29). These results indicate that student performance and attendance are lowest in courses that meet early in the morning and in courses that meet three times per week.

#149

### **Evaluation of Note Taking Method on Academic Performance in Undergraduate Animal Science Courses**

K. J. Stutts, M. M. Beverly and S. F. Kelley  
Sam Houston State University

Many books and articles on how to succeed in college emphasize the importance of taking good lecture notes. The objective of this study was to evaluate the effect of note taking method on academic performance and attendance in undergraduate animal science courses. During the first year of the study, students were provided with an outline of material presented in

lecture. In the second year, students were provided with a detailed set of notes. Final course grade and attendance data were collected on 814 students enrolled in the fall semesters of 2009 and 2010. Note taking method data were collected on a subsample of 159 students. Least squares means for final course grades and number of absences were calculated using the mixed procedure of SAS. There was no difference in mean final course grade or mean number of absences for the general population of students between the two years. There was no difference in mean number of absences between the two note taking methods, but there was a significant difference in mean final course grade. Students that were provided with only an outline of the material had a higher ( $P < 0.05$ ) mean final course grade (83.70) than students that were provided a detailed set of notes (80.45). These results indicate that students provided with only an outline of course material, and took a more active role in learning by taking additional notes, performed at a higher level than students that were provided with a detailed set of notes.

**#151**

### **From Classroom to Reality: Global Leadership Engagement in Guatemala and Costa Rica**

Meghan Lockett, Caleb Shane, Leonardo Lombardini and Gary Wingenbach  
Texas A&M University

A combination of the USDA Higher Education Challenge Grant Program, the Norman Borlaug Institute for International Agriculture, Amigos de las Américas, and the Junior Master Gardener (JMG) program produced successful international internships for agricultural students. The purpose of this poster is to present students' perspectives of the transition from domestic classroom theory to international onsite applications of teaching youth horticultural science lessons. The JMG program engages youth and their communities to work together on sustainable food sources, maintain environmental and ecological preservation, and promote health and nutrition practices. University students traveled to Guatemala and Costa Rica in summer 2010 to engage school children in a variety of horticultural science activities using experiential learning techniques.

Prior to departing, students completed a 15-week course to learn the JMG program and cultural awareness/ expectations while working abroad. Three main lessons emerged from the Global Leadership Engagement experiences. First, foreign language skills were found to be very important, especially when establishing trust with local community leaders. Second, university students relied on their classroom preparation to become effective change agents and JMG program facilitators. Third, students deemed the most important lesson from their international internships was to remain flexible in new situations, an especially important skill when they needed to modify JMG horticultural science lessons to match local youths' interests in the subject matter. Although university students experienced unique differences between Guatemala and Costa Rica, all students agreed that mastering these three lessons was essential for successfully engaging youth in experiential learning situations.

**#154**

### **Does the Lincoln University Agriculture Club Engage Students?**

B.C. Shanks, E.A. Backes, J. D. Caldwell and C. L. Thomas  
Lincoln University, PA

The Lincoln University Agriculture Club (LUAC) was founded during the spring semester of 2006 to bring together students with similar interests and goals, to inform members of career options within agriculture fields, and to provide members with various agriculture activities such as field days, livestock shows, and field trips. Although the LUAC's popularity and membership have steadily increased since inception, no relationships between LUAC membership and academic performance have been established, nor has it been suggested as a motivation of students for joining the LUAC. Therefore, the objective of this evaluation was to compare cumulative grade point average (GPA) and graduation rates between LUAC members and non-LUAC members. Data on 212 Lincoln University (LU) students declaring agriculture as a major from the spring semester of 2006 through the fall semester of 2010 was obtained. Data collected included classification, gender, cumulative GPA, graduation rate, membership status in the LUAC, and year. Cumulative GPA

was higher ( $P < 0.05$ ) in LUAC (2.80) than in non-LUAC (2.55) members and was higher ( $P < 0.05$ ) in female (2.78) versus male (2.57) LU students. Graduation rates were greater ( $P < 0.05$ ) in LUAC (77.4%) than in non-LUAC (33.3%) members, but did not differ ( $P > 0.10$ ) between genders. Membership in the LUAC seems to engage students through improved advisor/student mentorship, discovery with peers, and other forms of active learning, thereby leading to enhanced grades and improved graduation rates.

**#155**

### **Experiential Learning, Does the Medium Matter? Traditional Case Studies vs. Second Life®**

Tracy Rutherford, Holli Leggette, Kim Dooley and Theresa Murphrey  
Texas A&M University

David Doerfert and Christy Witt  
Texas Tech University

Leslie Edgar  
University of Arkansas

Experiential learning was introduced to education by Dewey and has continued to be reinforced by theorists and researchers. While it is widely accepted that learning through experience can result in the creation of new knowledge, educators continue to struggle to identify mediums that provide the best pedagogical opportunities to engage in learning opportunities. Case studies are a common medium used to allow students to reflect on real-world situations. Second Life® simulations have been used in medical and psychological education programs to enhance diagnostic role-playing experiences. The purpose of this study was to compare two experiential learning mediums used in a risk and crisis communication course: case studies in 2009 and Second Life® in 2010. A qualitative content analysis was used to analyze a common course assignment, student reflective journals. Reflective journals help students clarify the lessons learned, reevaluate the experience from the outside, and make sense of the new knowledge gained from the experience. The constant comparative method was used for data analysis. The student journals indicate that case

studies and Second Life® simulations are valuable to understanding risk and crisis communication. Case studies helped students recognize specific influences of the media and the value of a communication plan in a crisis. Whereas, reflections on the Second Life® simulation generated more expression on the role of a crisis communicator and exposed students' emotional responses to the experiential activities.

**#158**

### **Peer and Professional Mentoring to Enhance Student Learning Outcomes**

Ralphenia D. Pace, Norma L. Dawkins, James Shikany, Geraldine Perry and Judy Ford Wilson  
Tuskegee University, AL

Funding for a Bachelor of Science Undergraduate Program in Public Health Nutrition (UPPHN) was requested from the United States Department of Agriculture, National Institute of Agriculture, Capacity Building Grant Program (USDA/NIFA/CBG) in 2008. The Tuskegee University administration approved the program and it was established in 2009. The program was designed to improve student learning outcomes through two key mechanisms: 1) The graduation of highly qualified undergraduate students capable of identifying and providing solutions to chronic disease problems that plaque rural communities mainly in the southern USA; and 2) Participation in a mentoring program focused on chronic disease prevention during the four year tenure of students in the program. Overall, several benefits have been observed that students derive from peer and professional mentoring. They include: a significant measurable understanding of core knowledge on chronic disease prevention; the building of self-confidence; gaining of skills required to participate in a team community chronic disease prevention effort; and improved health benefits derived from interaction of students with individuals and families living in the Black Belt communities of Alabama. The Black Belt region in Alabama suffers disproportionately from health disparities associated with education, economic and gender issues. Utilizing mentoring tools allow students during their undergraduate program to acquire skills that enable them to enter the work

force. These tools can also be applied in other food and agriculture related areas.

**#159**

### **The Impact of Advisory Boards on Student Learning Outcomes: Internships, Mentorships and Scholarships**

Dr. Ralphenia D. Pace and Dr. Norma Dawkins  
Tuskegee University, AL

The Tuskegee University Food and Nutritional Sciences Advisory Board (FNSAB) was established in 1995. Its mission was to serve as a support arm for faculty and students in the department. Specifically, it provides students with the opportunity to matriculate through internships at major food industry companies that serves as a national experiential learning laboratory away from academia. The FNSAB provides support for all of the department undergraduate programs. In addition to internships, other functions of the advisory board include mentoring and the provision of scholarships for students who meet a pre-selected criterion. All three opportunities function to increase student retention, impact student learning outcomes, and increase job placement upon graduation. The internship program offers a two-way evaluation system between employer and intern. Both intern and employer have evaluated their experiences positively. Approximately 25% of students who have completed internships have been hired by major food industry companies. Students are professionally mentored by the FNSAB members in three key areas: understanding of core knowledge for the industry through a professional seminar series; career explorations; and developing effective communication skills. FNSAB meetings are held twice annually, one on the university campus in the fall and the other in the spring at one of the major FNSAB food companies where faculty participate in numerous development experiences.

**#164**

### **Academic Performance in a Two-Year Turfgrass Management Program as an Indicator for Career Success and Program Assessment**

David A. Willoughby  
The Ohio State University

The literature indicates that the importance of student academic performance, based on grade point average, tends to have a greater impact on career success in selected professions, most notably in the fields of law and medicine. The literature also indicates that the main focus of career success relies heavily on personal earnings and career advancement. Turfgrass management students typically view achieving success in the industry as being determined by securing professional positions such as golf course superintendents, sports turf facilities managers, landscaping managers, and associated industry sales managers. Graduates have determined their major academic program being directly related to successfully pursuing these career paths. This study examines the relationship between student academic performance (GPA), in a two-year turfgrass management program, as a determining factor to measure the success level achieved by graduates at least five years after graduation. This work centers around Ohio State University Agricultural Technical Institute turfgrass management graduates between the years of 1995 to 2005. Results from this study have also yielded significant information associated with graduate's assessment of their college learning experience as effectively preparing them for their careers.

**#165**

### **Teacher Performance Assessment: What Did Faculty and Students Learn from a Pilot Study?**

Lyle E. Westrom  
University of Minnesota

Minnesota is following the model of California and other states in requiring more intensive and directed student teacher performance assessment. The framework includes three



tasks: Task I – Planning and Instruction Assessment, Task II – Engaging Students and Supporting Learning: Analysis and Reflection, and Task III – Assessing Student Learning: Analysis and Reflection. Three student teachers were the focus of the Minnesota Model in this pilot year. The objective was to determine changes that must be made to successfully complete this model next year when it becomes mandated for a larger cadre of student teachers. Intense study of high school students was required. Careful analysis of content that students Learned was conducted by the student teachers. Questions such as: “Is the academic language supported?” were evaluated. Features of this process involved producing a 60 minute video that was edited and reduced to no more than two unedited sections totaling ten minutes. Focus of the video analysis was engagement between the classroom students and the student teacher. Two high school students were examined more closely than other students; one was a “special” student with an IEP or identified as gifted. The student teachers identified implementation challenges. In conclusion, student teachers determined that: 1) the “Teacher Performance Assessment” should be completed in the last third of student teaching, 2) the written portion should be completed following student teaching in a workshop setting and, 3) an instructor microphone was needed during video-taping.

**#168**

### **Enhancing the Ability of Faculty to Succeed in their Efforts to Teach at a Distance**

A. C. Morgan, M.S. Pollard, J. Rucker, D.L. King, J.B. Peake, N.E. Fuhrman, F. Flanders, D.W. Duncan, J. Sylvia, J.A. Bertrand and M. Navarro,  
The University of Georgia

Efforts to increase the quantity and quality of distance education courses continue to grow, and include changes in both formal and operational aspects of the curriculum. Faculty are essential drivers and agents of this change; however, they cannot engage successfully in the distance education process if they do not have the necessary knowledge. The purpose of this project is to provide professional development opportunities for college of agriculture faculty to

enable them to develop and deliver distance learning courses. Some of the outputs of the project have been: 1) Assist faculty in determining if they want to teach a distance education course; 2) offer several mini-grants to assist faculty with course development; 3) develop and deliver two one-day workshops on instructional design and distance education tools; 4) coordinate a series of one-hour on-line sessions on distance education topics requested by faculty; 5) provide one-on-one technical assistance; 6) create a Distance Education Laboratory; and 7) facilitate four Faculty Learning Communities (FLC). The FLCs provide an environment whereby faculty and project personnel support each other in efforts to increase and enhance distance education opportunities for students. One of the FLCs includes project personnel and faculty receiving mini-grants (24 people in three campuses), and the other three FLCs group faculty interested in three topics: student-faculty interaction, technology tools and software, and laboratory classes. At this time, faculty are each developing new distance education courses to be offered in the 2011-2012 academic year. Plans for continued professional development, support, and evaluation are in place.

**#172**

### **The Capstone Course as a Means of Measuring Assessment in an Animal Science Program**

A. Pescatore, S. Burk, E. Vanzant, M. Rossano, W. Slivia and R. Rarmon  
University of Kentucky

The following learning objectives were developed by the Department of Animal and Food Sciences at the University of Kentucky: A. Students will demonstrate knowledge of scientific principles and the application of those principles to animal and food production systems. B. Students will formulate and coherently support positions using written, oral, and visual communication skills. C. Students will recognize and respect diverse viewpoints when deriving solutions to challenges related to animal and food systems. D. Students will effectively acquire, assimilate, analyze, and report scientific information. E. Students will demonstrate the ability to work effectively in team environments. The capstone course (ASC470) for seniors in

the Department of Animal and Food Sciences is a key component of the curriculum that serves to meet the learning outcomes of the animal science program. The course is designed to accomplish five objectives: • Refine the critical thinking skills of students • Develop their understanding of issues facing animal agriculture • Develop the students' skill in interpreting and communicating data and information • Develop in the students an appreciation of the political and regulatory process • Use standardized tests (the California Critical Thinking Skills Test and the California Critical Thinking Disposition Inventory) to inventory and verify critical thinking skills. Key components of the class are student presentations on animal agriculture issues that are identified by the class. Students must also develop solutions to these issues and communicate the potential solutions to the public and to policy makers. The role of the capstone course in meeting the department's learning outcomes continues to evolve.

**#175**

### **Measures of Successful and Not-so-successful Efforts in Transforming Agriculture and Natural Resources Education in Hawaii**

Traci Y. Sylva, Charles M. Kinoshita and Pauline Chinn  
University of Hawaii

In 2009, a Strategic Plan for Transforming Agriculture and Natural Resources Education in Hawaii was developed to assess the workforce needs of the Agriculture and Natural Resources Management employment sectors. The conclusion was that more individuals with education and training at all levels are needed to support the industry in Hawaii. A variety of efforts have been undertaken to address this deficiency, including the development of the Plant Bio-science Technology (PBT) Certificate at Leeward Community College (LCC), which is intended to be a workforce development initiative to address the needs of the agriculture industry. The development of the PBT program has been a collaborative effort between faculty from LCC and CTAHR (College of Tropical Agriculture and Human Resources) and industry, as evidenced by the active participation

in the PBT Advisory Committee, and is a pathway to a 2 - year associate degree and allows for transition into a 4 year agriculture science program. This has been attractive to post-secondary students, and represents one of the successes that will be discussed in this presentation. Other efforts include hosting events and ongoing training and activities for elementary, high school and college students. Events appear to be more popular with younger students whereas one on one or small group training, mentoring or advising seems to be effective with the high school and college students. We will present details about what has been successful and not so successful in working with each of these different student age groups, as well as with the agriculture and natural resource management industry.

**#178**

### **Engaged in the Horticulture Profession**

Helen T. Kraus  
North Carolina State University

Horticulture is a diverse science where specialization is needed but can lead to a lack of understanding and engagement between disciplines. The landscape industry complains that the nursery industry doesn't grow a wide enough selection of unusual plants; while, the nursery industry says landscapers don't buy unusual plants. If bridges between these disciplines could be built before graduation, this cycle could be broken. Therefore a new methodology of teaching nursery labs using a teaching nursery where nursery students are the staff and grow a wide variety of plants that they offer for "sale" to Landscape Design and Landscape Maintenance (design/maintenance) students. Nursery students select one of four working groups: Marketing, Propagation, Production, or Inventory to staff. Each week, a brief concept is taught in the classroom then the working groups are assigned a series of tasks some of which related to the material just covered in the classroom some of which relate to the needs of the plants in the nursery. Each working group has a crew leader assigned (which rotates each week) who guarantees that the group's tasks are completed well and seeks clarification if needed. Nursery students select what plants they think the nursery should grow based on an evaluation of what makes a plant

an asset in a landscape and communications with design/maintenance students. Design/maintenance students can then “buy” the plants for use in their designs and installations. The supply and demand chain made real!

**#180**

### **Student Perceptions of DVM Admissions in a Pre-Veterinary track Professional Development Course**

Shweta Trivedi, Brandon K. Maddox and Dustin C. Orr  
North Carolina State University

A new professional development course (ANS 495) for pre-veterinary track students was developed at the NC State University with the objective of educating students about the expanse of veterinary profession and to assist them in developing an understanding of the DVM application procedure. During introductory class of the course, 45 students were surveyed for their opinions on DVM admissions committee's consideration of the areas that assist in building diversity in the DVM application. The five areas that students were surveyed on were (a) Double Major (b) Advanced degrees (c) Research Experience (d) Study Abroad (e) Number of GRE attempts. In response to the double major question, 47% students responded that have two majors during undergraduate could be reviewed favorably. Over 73% students expressed that having an advanced degree (Masters/PhD) was deemed to be advantageous. An overwhelming 97% of the students understood that having a research experience might be ranked highly by the admissions committee. For study abroad experiences, 83% of the students indicated that DVM admissions committee might consider it favorably. Finally, majority of the students were unsure about the impact of multiple GRE attempts on DVM admissions. This study has attempted to gain an understanding of student behaviors and perceptions on the level of importance of various criteria included during DVM admissions at NC State University and across the USA. Recognizing these perceptions is key in comprehending the choices that the pre-veterinary track students make while planning their undergraduate curriculum, internships and extra-curricular experiences.

**#181**

### **Building Expertise on Energy Sustainability (BEES) Model**

Jose F. Espiritu, Heidi A. Taboada and Virgilio Gonzalez  
The University of Texas

The purpose of a model called “Building Expertise on Energy Sustainability (BEES) Model” is to increase research and education in Renewable Energy Systems. The BEES model is a comprehensive approach composed of four key components, which are: 1) Education, 2) Research, 3) Outreach, and 4) Connection. Each component consists of a set of structured activities to help increase education and research in renewable energy systems. For the education component, a systems approach for curriculum development is used. The new curriculum on Energy Sustainability provides an overview of the major energy flows and the issues associated with production and end-use. Major current sources of energy include fossil fuel, hydroelectric, Bioenergy, solar energy and wind energy. In the research component, a Pair-2-learn (PAL) model is used to form teams of undergraduate and graduate students to work in specific research projects. In the outreach component, different lesson plans are developed for high school teachers participating in the UTeach Miners program. The products provided under this component are complete handouts including (i) student activities, (ii) classroom modules, extensions, and homework and, (iii) teachers handouts in the Renewable Energy Systems and Natural Resources area. The main goal in the connection component is to build stronger connections among different institutions, therefore guest speakers are invited to come to our University with the objective of providing a seminar, reviewing the curricula developed, share all material developed and explore ways for future collaborations. Formative and summative evaluations are used to assess the objectives of the BEES model.

**#182**

### **A Model to Incorporate Sustainability Topics into the Engineering Curricula**

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The University of Texas

According to The Engineer of 2020 (National Academy of Engineering, 2004), to maintain the nation's economic competitiveness and improve the quality of life for people around the world, engineering educators and curriculum developers must anticipate dramatic changes in engineering practice and adapt their programs accordingly. The main goal of the proposed model is to broaden the treatment of Agriculture in the overall undergraduate and graduate Engineering and Science curricula. According to Section 1404(9) of NARETPA (National Agricultural Research, Extension and Teaching Policy Act), Renewable Energy and Natural Resources is found as one of the areas of interest in the Food and Agricultural Sciences. Therefore, the proposed project is a STEAM project because it supports the integration of Agriculture with the basic and applied aspects of the traditional STEM disciplines (National Research Council of the National Academies 2009, Transforming Agricultural Education for a Changing World). The present work shows how Sustainability topics have been included into the Engineering curricula to respond to current demands to produce environmentally conscious engineers capable of understanding sustainable practices and their implications. In this work, we present the approach used to integrate sustainability engineering content into the engineering curriculum at our University. The approach involves offering a multidisciplinary class in sustainability engineering which was offered to junior or senior engineering students as a technical elective class with no prerequisites. The class was divided in four main modules which are Life Cycle Assessment, Energy Management, Design for Sustainability, and Ethical Consumerism.

**#185**

### **Virtual Reach: A Pilot Collaborative for Head Start Employees Seeking the Baccalaureate**

Dr. Tara Newman and Dr. Brandon Burr  
Stephen F. Austin State University, TX

As a result of recent federal mandates, many current Head Start employees nationwide must

earn a baccalaureate degree in order to keep their jobs. To help meet this demand, Stephen F. Austin State University (SFA) has formed partnerships with two community colleges in Texas. Through these partnerships, the Virtual Reach Project reaches out to employees in regional Head Start centers and provides virtual resources to progressively prepare them to obtain the baccalaureate degree. To aid in this process, the institutions have built upon existing articulation agreements to significantly facilitate transfer of credits earned from the associate degree to the baccalaureate degree. In addition to a fully online baccalaureate completer program offered by SFA, project enhancements to existing degree programs have been designed to recruit and retain the Head Start target population. For example, students receive access to 24/7 online live tutorials, personal mentoring, and a laptop for their use while enrolled in the project. As a result of the project, funded through the Higher Education Challenge (HEC) grant, university enrollment has increased from 14 to 69, seven students have earned the baccalaureate degree and a total of 44 students currently enrolled at the partner colleges are on track to transfer to the online completer program in the next 2 years. Attendees will: • Identify ideas about forming and maintaining successful community college-university partnerships in their own area; and • Analyze effective support services for non-traditional learners.

**#191**

### **Incorporating Agriculture into Elementary School Curriculum while Enhancing Undergraduate Education in Agriculture**

Michelle S. Burrows, Davin Thain and Dale W. Holcombe  
University of Nevada

An agriculture literacy internship has been developed which offers University of Nevada Reno (UNR) undergraduate students, across majors, the opportunity to become engaged in enhancing their own education. In this pilot program students participate in their community, through service learning, to improve the education of and inspire elementary students and teachers in the importance of agriculture in today's society. In the current educational

climate, it is also important that teachers understand the value that education about agriculture holds for their students. It provides vital information as well as brings diversity and variety to the learning environment, all while actively engaging the students. This internship introduces undergraduates to the needs of the education and agriculture communities. During the first six weeks of the semester they learn to incorporate their previous knowledge and experiences into elementary grade lesson plans that meet the needs of both communities. The lessons used are taken from the Ag in the Classroom Food, Land and People curriculum and delivered by the undergraduates. During the first semester of this internship, 17 undergraduates are visiting 25 elementary classrooms, connecting with more than 500 elementary students and teachers. Participating teachers and their students provide valuable feedback to the university students through an online teacher survey as well as elementary student pre and post tests. This internship enhances undergraduate education while increasing agriculture literacy among elementary students.

**#192**

### **Effectiveness of a Science Agricultural Summer Experience (SASE) In Recruiting Students to Natural Resources Management**

Edward Martinez, Jennifer Lindline and Michael Petronis  
New Mexico Highlands University

The Bureau of Labor Statistics projects an increase in natural resource management (NRM) jobs within the next 10 years due to baby-boomer retirements and a 12% increase in demand for these occupations. Despite this, college enrollments in NRM disciplines have declined. Even more critical is the fact that the soon to be majority Hispanic population is underrepresented in these disciplines. The goal of this study was to determine if an in-residence two-week summer science program for underrepresented minorities (URM) would (1) increase interest in science; (2) increase science knowledge; (3) increase perceived science knowledge and; (4) have an overall impact on URM students decision to attend college and major

and pursue a career in science. In four years, 76 high school students have participated in SASE. A pre/post science-knowledge exam and pre/post and overall satisfaction Likert scale surveys were administered to participants. Participants improved significantly ( $p < .05$ ) in all areas measured. Students comfort with science field/lab activities and perceived science knowledge increased. A significant increase was determined in students finding science exciting and easier after participation. Student's interest in pursuing a degree and career in science increased post participation. A difference between expected and observed student satisfaction for all science activities and extracurricular activities was found. Of the 76 SASE participants within graduation age (44), all have graduated from high school, of these, 38 students have enrolled in college (86%). This SASE program initiative was clearly effective in recruiting and increasing the confidence and abilities of URM students in the sciences.

**#194**

### **Engaging Communities through Distance Education**

Elisabeth Meyer and Helen Kraus  
North Carolina State University

Budget difficulties require educators to be competitive in recruiting new. They are also expected to provide quality information and service to a variety of communities. In the department of Horticultural Science at North Carolina State, distance education (DE) is a valuable tool for extending our engagement of communities. The Horticultural Science department offers three online programs: an undergraduate certificate, a graduate certificate, and a Masters of Horticultural Science (MHS). Additionally, the AG\*IDEA program allows a consortium of universities to share DE courses with a common tuition. Although the courses for these programs are offered online, they actively involve the learner. This learning takes many forms, including online discussions, propagation of plants, and design of landscaping projects in students' yards or for non-profit organizations. Each program serves a different purpose. The undergraduate certificate serves non-majors on campus, recruits new majors, and engages the greater communities of Raleigh, North Carolina, and beyond. An undergraduate certificate

student might be a university student considering changing their major, a high school student seeking an early start on college credits, or a homeowner who wants to further develop their skills. The MHS and graduate certificate cater to industry professionals seeking to add to their qualifications and remain current on new developments in horticulture. Finally, AG\*IDEA allows collaboration with other universities and increases course offerings available to our own students. Together, these programs enable us to leverage technology to engage communities of learners both near and far.

**#203**

### **Perspectives on the Undergraduate Research Experience**

Wendy J. Dahl and Amanda Ford  
University of Florida

Although many undergraduate students participate in research activities, little is known about their motives to pursue such research and the outcomes of their participation. The purpose of this study was to explore the attitudes, perceptions and expectations of undergraduate students participating in research in the Food Science and Human Nutrition Department at the University of Florida. Fifty students were contacted through email, and 34 (68%) completed a 43 item questionnaire through SurveyMonkey™. Responders (47% seniors) agreed or strongly agreed that they play an important role in research (76%), have learned by taking part in research activities (88%), are excited to discuss what they have learned with other students (85%), and are actively engaged (82%). In addition, 79% of responders look forward to their research activities and 91% indicated they would recommend participating in research to other students. However, 35% of the responders reported that their research tasks

are monotonous and highly repetitive. The results of this study suggest that research activities may provide engaging learning opportunities for many participating undergraduate students. Further research is needed to identify specific learning outcomes for undergraduate research experiences, as well as appropriate methods for assessment of these outcomes.

**#204**

### **Phylogeny of Nebraska Algae**

Cheryl Bailey  
University of Nebraska

The larger goal of this project is to connect algal biology to biofuels production for undergraduate life sciences students. We have designed a laboratory module focusing on the core concept of cellular flow of information. In this project, summer undergraduate research students will collect algal samples from across Nebraska. Nebraska has diverse water sources, including salt and alkaline lakes. Algal samples will be assessed for oil production under stress conditions. Students in laboratory classes will extract genomic DNA from these algae and clone the 18S sequence, which will be submitted for sequencing. Analysis of the resulting sequences will include generating and interpreting a phylogenetic tree. Phylogenetic trees will grow each semester with new 18S sequence from University of Nebraska, Lincoln, Doane College, and Creighton University. Active learning materials will support these laboratory experiments, and assessment will include a pre- and post-survey with questions about algae, biofuels, sequence data, and phylogenetic trees. Active learning, assessment, and laboratory protocols shared in this poster will also be shared with the wider education and scientific community as the project progresses.



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