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# NACTA

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## Abstracts from the 2010 NACTA/SERD Conference

Supplement to the *NACTA Journal*

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COLLEGES AND TEACHERS OF AGRICULTURE

# **Abstracts from the 2010 NACTA/SERD Conference**

Supplement to the *NACTA Journal*

## **Notes from the Editor:**

This abstract booklet is divided into oral and poster abstracts. The oral abstracts begin at the end of the insert providing each scheduled presentation time during the Conference at Penn State. The poster abstracts are after the oral abstracts and at the end of the insert providing each scheduled presentation time during the Conference at Penn State (the page numbered 32)

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# 2010 NACTA/SERD Oral Presentation Abstracts

Penn State  
June 22 - 25

**#103**

## **Bio-fuels Unit Operations Course Development**

David Grewell, Thomas Brumm, and  
Charles Hurburgh  
Iowa State University

We have developed an undergraduate/graduate engineering and technology educational modules of course work that will educate students on the operation, troubleshooting, and optimization of biorefineries. Currently, most biofuel plants train technical staff through seminars and rely on “on-the-job-training” to fine-tune their skills. This curriculum not only replaces the traditional training mechanism, but will greatly enhance the learning experience by giving the students a broader base of fundamental principles and practical experience, as well as allowing the students to develop problem solving skills through simulated plant experiences. This approach is novel to the developing biofuels industry, where the education of technical staff within the industry is critical. The control software allows a nearly seamless transition from the classroom to industry. Virtual plants are operated through the developed simulation control rooms. At the completion of the curriculum, the students are required to start-up, optimize and trouble shoot a dry-grind ethanol and bio-diesel plant for approximately one month of 24/7 operation. Curriculum success will be determined through assessment of student learning outcomes and immediate spot placement of students into existing biofuel industrial plants. Dissemination of the curriculum to other institutions, including two and four year institutions, will be completed through faculty-to-faculty seminars as well as web-based modules.

**#105**

## **Plant Breeding Recruitment and Education: A Puerto Rico-North Dakota Collaborative Initiative**

Linda Wessel-Beaver and Feiko H. Ferwerda  
University of Puerto Rico

Richard D. Horsley  
North Dakota State University

Puerto Rico is home to off-season nurseries of many seed companies. Plant breeding activities are an important component of agriculture on the island. The

demand for graduates in plant breeding exceeds supply both in Puerto Rico and across the U.S. Using funding from the USDA-Hispanic Serving Institutions (HSI) Education Grants Program, the University of Puerto Rico at Mayaguez (UPRM) is carrying out activities with the objective of recruiting and educating students for careers in agriculture, especially plant breeding. The Department of Plant Sciences at North Dakota State University (NDSU) is collaborating in this effort. Twenty-four undergraduate and graduate students from UPRM have participated in the NDSU Intern Program over the past four summers working in a plant breeding research program for two and a half months. UPRM faculty have participated in two 3-day workshops related to plant breeding, enabling participants to more effectively serve on graduate committees of plant breeding students. Research projects of 11 undergraduate and five graduate students have been partially supported. Nearly 200 high school students have learned about plant breeding via classroom visits. Educational materials have been developed. As of spring 2010, seven former UPRM students are pursuing graduate degrees in plant breeding at NDSU, including a Ph.D. student supported by this grant. The most successful aspect of the project has been the summer internship program which provides students with new language, cultural, and agricultural experiences. Success of the internship program has encouraged other universities to collaborate with UPRM in similar programs outside the HSI program.

**#107**

## **Faculty Mentoring Faculty Program**

Samantha Gill  
California Polytechnic State University

Getting through the tenure process can be difficult. It is often difficult to know the right questions to ask or even to whom to ask. In 2004, CAFES started a faculty mentoring program with the objective of helping people through the RPT process. The vast majority of positions at Cal Poly are 100% teaching, so much of the RPT process is based on teaching. In this program, non-tenured faculty are paired with a tenured faculty. Mentees are encouraged to be paired with a faculty member who is not directly involved in their RPT process. In this way, the mentee is freer to ask questions and explore options. This mentoring

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program has been active for six years and more than 90 mentees have participated. In February 2010, a survey of mentees and mentors was conducted. Both mentees and mentors state that they have benefited from the program. Several mentees stated that the program helped them get more quickly connected to the university, helped them feel a sense of “fitting in” and helped them learn university procedures. Mentors stated that they benefited because it allowed them to get to know younger faculty and helped them to remember what it is like to go through RPT. At Cal Poly, the requirements for tenure have been shifting over the last decade. Since mentors are often on tenure review committees for other faculty, it gives them a better sense of what is now required for receiving tenure. Overall the mentoring program has been a success.

### **#112 Collaborative Decision Making: A Capstone Agricultural Business Management Course Goal**

Thomas H. Paulsen  
Iowa State University

Capstone courses give students the opportunity to apply technical content knowledge and skills from previous coursework, internships and other experiences to authentic challenges in a real-world setting. A student managed farm serves as the context for a capstone agricultural business management course in the Agricultural Education and Studies Department at Iowa State University. The purpose of this presentation is to describe the methods used by students in this course to make and implement management decisions for operation of the Ag 450 farm. The AgEdS 450 course utilizes a committee structure supporting each of the primary operations of the Ag 450 farm. These committees include finance, marketing, public relations, buildings and grounds, crops, machinery, and custom operations. Each committee is responsible for collaboratively researching, developing, and prioritizing a potential list of critical short- and long-term goals for the operation of the farm. Due to the limited resources available, committees must collaborate in determining the best allocation of these resources. During weekly business meetings, management issues are presented to the entire class membership for consideration through written and oral presentations. These meetings are administered by elected officers and committee chairs, follow parliamentary procedures and provide class members with the opportunity to collectively determine the management decisions for operation of the Ag 450 farm. Through

this capstone course structure, students become deeply engaged in the decision making process, enhancing their critical thinking and problem solving skills, while simultaneously preparing to meet the challenges of the real world of agricultural business.

### **#114 Implementing “Multiple Chances for Success” in the University Classroom**

Nicole R. Brown  
Penn State University

The University environment has long fostered an institutional model for assessing student achievement, where relatively few, high-stakes tests have been the key assessment tool. While tests may reflect students’ mastery of desired outcomes at some point in the semester, it can be argued that what truly matters—and what should be reflected in student grades—is their ultimate mastery of the concepts or desired outcomes at the end of the semester. Employing relatively few, high stakes tests is an easy approach for an instructor, but may not be the best means of providing quality education to students. Over the past six years, two of my courses have provided grounds for experimentation with the “multiple chances for success” philosophy. My primary objective was to employ this new philosophy, then ascertain whether students participated in multiple learning assessments (more work for them), or whether they preferred the traditional, high-stakes approach (less work required). Data considered included overall student performance in the courses (grades), and also evaluative comments provided by students at the conclusion of the semester. In each case, student reviews were incredibly positive with regard to employing “multiple chances for success.” Perhaps surprisingly, overall student grade distributions changed relatively little when the “multiple chances for success” approach was employed. Methods of employing the “multiple chances for success” model will be discussed, and observations regarding its relative advantages and disadvantages will be discussed. Time will be provided for audience participation regarding the “multiple chances for success” model and its implementation.



**#123**

**Students' Perceptions of Entrepreneurs and Entrepreneurship Education Strategies**

Awoke D. Dollisso  
Iowa State University

Interest in and demand for entrepreneurship education is growing. Universities and colleges are responding to entrepreneurial education demand with new and modified courses and programs. Kauffman Foundation (2007) showed that entrepreneurship education expanded rapidly in the last two decades; postsecondary entrepreneurship courses increased from 250 in 1985 to 5,000 in 2007. Although entrepreneurial skills are now commonly taught in college classrooms, questions about how to teach these skills linger. This focus group study was designed to provide insight into students' perceptions regarding 1) entrepreneurs/entrepreneurship; 2) interest in entrepreneurship classes; and 3) teaching methods for entrepreneurship. Participants were students in an experiential capstone undergraduate farm management and operations class at a land grant university. Two focus group interviews were conducted using 15 questions, each with seven participants. These participants defined an entrepreneur as someone who starts or tries to start his/her own business, is self-employed, invents new methods, is very creative, and looks for improvements in businesses. Participants with one exception indicated interest in taking an agricultural entrepreneurship class. However, they stated that teaching methods should not be a typical lecture. Participants suggested that 1) students talk to entrepreneurs to learn from previous successes and failures; 2) entrepreneurs be brought in to the classroom as guest speakers; and 3) instructors create informal interactions between students and entrepreneurs/ or businesspeople. These students clearly defined an entrepreneur and expressed interest in agricultural entrepreneurship classes that utilize varied teaching strategies.

**#126**

**Student Evaluation Scores for Courses Delivered by Interactive Videoconferencing**

Mark Rieger, R. Elaine Turner, and R. Kirby Barrick  
University of Florida

The College of Agricultural and Life Sciences offers several baccalaureate degree programs outside of its main campus in Gainesville using a combination of live and distance delivery. The primary means of

distance delivery has been interactive videoconferencing (IVC), where a live class is delivered synchronously to one or more remote sites. Instructors were concerned that scores on student evaluations were lower at remote than live sites, although only anecdotal information was available to support this concern. This study compared student evaluation scores between live and remote sites in a sample of 22 courses offered between summer 2005 and spring 2008. Live section scores were compared to scores from all remote sections combined using a Wilcoxon Signed Rank test on the differences between Likert scale scores (1=poor, 5=excellent) on an 11-question student evaluation. Results showed the live sections were scored higher than the remote sections 64-86% of the time, depending on question, and for 10 of 11 questions the differences were statistically significant ( $P < .05$ ). This included the overall ratings of the instructor and the course, which are used to document teaching performance in faculty evaluations. Differences between scores for live and remote sections ranged from 0.23 to 0.47, depending on the question. The data suggest that students receiving instruction at remote sites via IVC are less satisfied than students at live sites, supporting the concerns of faculty. However, remote site scores were on-par with departmental and college means, suggesting that IVC courses are rated satisfactorily relative to other courses in the College.

**#127**

**Developing Critical Thinking Skills through Experiential Learning through Stocker Cattle Management**

Jason Roberts, Clay Bailey, Joey Mehlhorn, Philip Smartt, and Tim Burcham  
University of Tennessee at Martin

There is a need for increased experiential learning opportunities for students planning to enter the animal science and veterinary profession. The shortage of large animal veterinarians and veterinarian technicians points to a lack of understanding and desire among students to consider working in a large animal practice. This shortage will have a negative impact on rural production agriculture economies in the future. The linkage between classroom knowledge and real world application is essential for student success and understanding of large animal agriculture. An ongoing research project was conducted using two sets of stocker cattle randomized into four treatments. Student groups from five animal science courses ( $n=100$ ) were responsible for the management and care of

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each treatment. Students learned data collection and analysis techniques, which enhanced their critical thinking/problem solving skills. The project also connected classroom material with applied application giving students a systematic methodology for making decisions. Research data was compiled on the different treatments as well as student survey responses. Initial results showed that students did gain knowledge that reinforced classroom concepts and increased the capacity for critical thinking. Students also responded positively to experiential learning activities and were more likely to take additional courses employing this methodology. The experiential activities positively impacted student perceptions about working with large animals and enhanced their appreciation for the body of knowledge required to work in the fields of animal and veterinary science.

### **#128 Connecting Students to the Veterinary Profession through Service Learning**

Jason Roberts, Clay Bailey, Joey Mehlhorn,  
Tim Burcham, and Philip Smartt  
University of Tennessee at Martin

The use of service learning projects is an effective way to build bridges between the classroom and profession. Students can benefit from interaction with other students, faculty, business, and the community. Students gain practical experience while providing service to the community. Experiential learning is essential for students attempting to enter veterinary programs. As the entrance requirements for veterinary programs become more competitive, faculty can improve student success rates through increased experiential learning opportunities. Faculty at the University of Tennessee at Martin began a pilot program in the summer of 2009 with the development of a companion animal teaching laboratory. The program has continued in subsequent semesters with a new cohort of fifteen selected students participating in the companion animal service-learning project (in cooperation with local Humane Society). Student selections are based on eligibility and interest in the program. Under faculty (veterinarian) supervision, students provide for the daily care of the animals, disease testing, and routine preventive care. They also gain valuable communication skills through interaction with the public humane society personnel. Student outcomes are determined by a series of laboratory practicums and completion of service hours. Students must demonstrate knowledge in the area of animal husbandry as well as maintaining daily animal

care records. Feedback from the Humane Society personnel and participating students has been very positive. Interviews with Humane Society personnel cited increased adoption rates and better health practices from the project. Student surveys revealed specific benefits of the project, including better understanding of companion animal issues and employment opportunities.

### **#131 Student Demographics in an Introductory Animal Science Class Before and after the Introduction of Inquiry-Based Learning**

F.E. Robinson, D.C. Penrice, G. Kendall,  
M.J. Zuidhof, and T.A. Reimer  
University of Alberta

In the fall term of 2004 the introductory animal science class in the Faculty of Agriculture, Life and Environmental Science (ALES) at the University of Alberta was modified with the addition of two inquiry-based projects. While lecture content remained very similar for the class, the projects entitled "Name That Tool" and "There's a Heifer in Your Tank" provided students with the opportunity for public oral and written communication, group work, class community building and undergraduate research. To assess the impact of these changes on student demographics, historical institutional data were accessed for 10 cohorts of this class prior to the change, and 12 cohorts since the change. The mean number of students in the class increased from 41.2 to 50.8 with the change, with no change in the number of students in the B.Sc. Agriculture program during this time. The number of ALES students decreased from 80.0% of the class to 70.6% while students from other science-related faculties increased from 13.4% to 20.4%. The mean student age decreased from 21.1 to 19.9 years of age due to more students that were 18 or less years of age and fewer students over 25 years of age. There were no significant changes in gender demographics (approximately 70% female) or in the number of rural, urban, out-of-province or international students with the change. While definitive cause/effect relationships are not known, these data support the hypothesis that inquiry-based learning initiatives coupled with effective communication was associated with growth in student enrollment in a cornerstone agriculture class.

**#140  
Post-Secondary Agricultural Teaching Faculty  
Need for and Use of a Methods Resource Sharing  
Web Site**

Tanner Robertson, Sarah Lancaster, and Bruce Dunn  
Oklahoma State University

Agricultural teaching faculty utilize a wide array of teaching methods and theories that can improve student learning; however, information about these methods, including examples (course syllabus, video-taped lectures, or sample grading rubrics), are not readily accessible in one location. The objective of this study was to determine the need for a centralized teaching resource that fosters faculty interactions and resource sharing among agricultural faculty. As part of a NACTA-funded project, 803 professors and administrators representing land-grant, public, and private universities as well as state and junior colleges with active standing in NACTA were administered a post secondary agricultural instructors resource assessment instrument. The survey began December 27, 2009, and 38% responded during the four-week assessment. The majority of respondents (74%) worked at a land-grant institution and had at least a half-time teaching appointment (61.5%). Findings indicated respondents seek information on classroom management (72%) and teaching methods (81.6%) from colleagues at their university, while they seek information on educational resources such as videos and graphics (76.3%), and slides and/or lectures (57.9%) from the Internet. The majority of respondents indicated that convenience and trust in the source were important factors in choosing sources of information regarding classroom management, teaching methods, learning styles and educational resources. Almost half (46.0%) sought educational videos or graphics most often. About 40% (n=119) indicated their teaching resource needs were being met; yet, a majority of respondents (72.7%) are interested in a teaching resource Web site containing resources from agricultural faculty across the U.S.

**#143  
Engagement among Agricultural and Environmental  
Sciences Students: Results of Three Years  
of Strengths-based Education**

M.A. Nicodemus and F.D. Mills, Jr.  
Abilene Christian University

From 2007-2009, freshmen and transfer students in the Department of Agricultural and Environmental

Sciences (A&E) at Abilene Christian University (ACU) were introduced to Clifton's StrengthsQuest™ Model of Positive Psychology (StrengthsQuest™) through laboratory exercises in the introductory major's course. The premise of the experience was increased student engagement will translate into greater student academic performance and retention. Before implementation of StrengthsQuest, A&E students and a sample of the general student population were assessed using the "College Student Engagement Survey." Students in A&E scored significantly lower before implementation in three categories of self assessment and higher in one area. They reported lower satisfaction for the questions: "In the last seven days, I have received recognition or praise for doing good schoolwork" (P = 0.0852), "I have a best friend at this school" (P < 0.0001), and "My past experiences have prepared me well for my future" (P = 0.0918). They reported greater satisfaction for the question: "At this school, my opinions seem to count" (P = 0.0110). At the end of the semester, following StrengthsQuest™ implementation, A&E students reported statistically significant improvements in two of the three areas of deficiency. The question, "In the last seven days..." showed the most improvement after StrengthsQuest implementation (P = 0.0012). These results are encouraging and suggest this program can improve student engagement. However, A&E retention over the same time period remained relatively flat and was not significantly different from retention before StrengthsQuest's™ implementation. Additionally, A&E retention remained below the general ACU student population retention rate.

**#144  
Participant Perceptions of Value of an Equine  
Emergency Responder Training Program**

C.A. Porr  
MARE Center, Virginia Polytechnic Institute and  
State University

J.A. Brown  
Veterinary Sports Medicine and Surgery

R.K. Splan  
MARE Center, Virginia Polytechnic Institute and  
State University

With approximately 9.2 million horses in the United States, there should be adequate training for emergency personnel who may respond to an event involving horses. A pilot study to assess potential train-

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ing needs revealed that over 60% of emergency personnel surveyed had responded to emergencies involving horses. However, less than 24% were comfortable handling horses and only 21% had formal training in large animal emergency rescue. In response, faculty in the Virginia Tech Department of Animal and Poultry Sciences and Virginia-Maryland College of Veterinary Medicine developed a one-day training program combining theoretical and practical instruction to familiarize emergency responders with horse behavior, first-aid, and safe handling techniques. The program was conducted eight times over two years, with 137 emergency responders participating. Pre- and post-program surveys (n=120) were collected to evaluate previous participant experience and comfort level, as well as perceived value and effectiveness of the program. Over 82% of participants had received no formal horse handling training prior to the program. While 15% indicated they were “not comfortable” handling horses, none held this view after the program. In total, 94% reported an increased comfort level with handling horses as a result of the training. Over 61% reported learning “a lot” about the topics covered and nearly 95% reported that they “highly valued” the knowledge gained. All participants stated they would recommend the program to a colleague. Single day training programs appear to be effective in improving knowledge and confidence in horse handling, behavior and first-aid topics in emergency responders.

### **#146 Student Development and Usage of a Dust Explosion Simulator for Teaching Agricultural Safety**

Duane Bajema  
Dordt College

Combustible dust explosions are a serious hazard in grain and food handling facilities and have resulted in serious injury and loss of life and property. Serious dust explosions in local elevators within a year have prompted the inclusion of dust explosion safety information in the curriculum in an introductory freshmen course titled Orientation and Ag Safety. The objective is to present the simulator design and curriculum work of two students who were enrolled in a junior and senior course titled Directed Study. The students were challenged to develop enhanced educational materials for the freshman safety course to improve the instruction associated with the prevention of dust explosions. After an information search, the students designed and built a dust explosion simulator that was portable, safe, and effectively dem-

onstrated the five factors that constitute a dust explosion: dust as fuel, dust suspension, oxygen, ignition source, and an enclosed area. The simulator underwent tests and redesigns so that the simulator safely gave a predictable visual representation of the necessary properties associated with a dust explosion. The result was a simulator that met the objectives of portability, safety, and educational effectiveness. The curriculum utilizing the simulator was presented to high school and college students and has been scheduled for presentations to fire departments. The simulator and curriculum materials have been shown to be effective in educating students about the dangers of dust explosions.

### **#151 A Research Based Approach for Developing Printed Recruitment Material for Undergraduate Landscape Architecture Students**

Charles Klein, Maria Kalyvaki, and David Mullins  
Texas Tech University

In order to be effective, developers of marketing media must know and understand their target audience. When developing printed recruitment material for a landscape architecture program at a southwestern university it was important to determine target audiences, the most effective means of reaching them, and what issues should be addressed. The theoretical framework for this study was the Chapman Model of Student College Choice. Primary research was conducted and included interviewing two faculty, a focus group of 35 students, and a survey of 10 guidance counselors.

The faculty interview highlighted the need to inform high school students and guidance counselors of the program as well as the profession in general. The student group revealed why students chose the major and when. Discussions also centered on when they first learned of the profession and what influenced them to attend this specific university. A survey of local guidance counselors determined their knowledge of the profession, the specific program, and what media would be most appropriate for them as well as high school students.

Results indicated that both guidance counselors and students identified brochures and handouts as the most effective print media. They also indicated information about the profession should include income potential and types of projects. Important information about the program should include necessary skills and the personal, individualized approach of the faculty. The study also indicated that personal

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contact, e-mail, Web pages and social networking sites are important, leading researchers to conclude that a coordinated, multi-faceted approach would be ideal.

### **#153 Living to Serve as an Interdisciplinary Agriculture Teaching Methodology**

Robin Peiter Horstmeier  
University of Missouri

Educators continually strive to enhance the academic content through interdisciplinary learning in their classrooms. However, educators often find it difficult to design creative activities that engage students in their learning. Learning to Serve is a service learning civic engagement initiative conducted by the National FFA Organization and funded by the United States Department of Agriculture. Agricultural Educators work with students to design, implement, and evaluate a service learning project focused on a community need. Objectives of this study was to 1) determine the chapter's planning process for the service learning project, 2) describe methods used throughout the process, 3) analyze student learning outcomes, 4) evaluate the community benefit, and 5) evaluate the members' level of engagement in chapter leadership activities. Both qualitative and quantitative research methodologies were used for this study. Results indicated that students engaged in Living to Serve civic engagement projects conducted a needs assessment as part of the planning process prior to implementation of projects. Students explored various strategies to implement their projects utilized group decision making to determine methods used. Although students faced many challenges throughout the process, this led to positive student learning outcomes for both agriculture content and leadership development. Community members and the entire community at large greatly benefited from these agriculture service learning projects. FFA Chapter member engagement also increased as a result of student participation in service learning. Service learning methodology is an active interdisciplinary approach to teaching agriculture. It provides opportunities for students to collaborate, communicate, and celebrate community engagement.

### **#155 Assisting in the Movement from STEM to STEAM: An AIMED Learning Approach**

Bart E. Gill, Kirk C. Edney, and Tim H. Murphy  
Texas A & M University

According to Transforming Agricultural Education for a Changing World (p. S3), "Agriculture now so thoroughly combines basic and applied aspects of the traditional STEM disciplines of science, technology, engineering, and mathematics that the acronym might rightly expand to become STEAM, joining agriculture with the other fundamental disciplines." So the question remains, How can post secondary educators assist in the movement to adapt STEM to STEAM? The purpose of this presentation is to provide STEM scaffolding for professors to assist students in appreciating and examining the interconnectedness of the various STEM fields and agriculture: the chemical, biological, physical, and mechanical properties of soils, agronomy, animal science, genetics, mechanics, etc. Educators in all facets of agriculture should be able to identify math and science concepts that are utilized to learn agricultural concepts. Utilizing an AIMED (Academically Integrated Methods of Enhanced Demonstration) learning approach, educators within Colleges of Agriculture will identify STEM concepts that are utilized in their content area. In addition to the AIMED learning approach, a list of online resources that will assist in connecting STEM and agriculture will be provided. Providing educators with online resources that link STEM concepts and agricultural concepts will assist in advancing the movement towards transforming STEM into STEAM. By providing interdisciplinary resources and examples, teachers will be better able to plan more efficiently and provide instruction to students that will further their knowledge of STEM concepts and display the connections between STEM and agriculture to professionals in the STEM fields.

### **#156 AgricultureBridge: Connecting Students and Practitioners to Enhance Multidisciplinary Expe- riential Learning**

James P. Lassoie, R. Jamie Herring, and  
Louise E. Buck  
Cornell University

Reconciling the conflicting needs of meeting growing food demands while maintaining healthy agricultural landscapes will be the central challenge facing agri-

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culture professionals throughout the 21st century. Narrowly focused education must change, as solving these problems requires that multiple disciplines work together to create innovative solutions. To this end, an educational network and on-line platform called AgricultureBridge was designed to readily incorporate different disciplines into existing university curricula. The network provides a flexible infrastructure for creating case studies and the Internet platform provides communication tools that enable collaboration on problem statements that arise from practitioners in the diverse case study locations. The AgricultureBridge.org site links students, professors and practitioners to examine 'real-world' issues related to agricultural landscapes. The site has been populated with ten high-quality, multimedia cases that illustrate complex relationships between food systems, livelihood security, and the environment in the U.S. and overseas. The cases highlight diverse challenges and innovations in maintaining healthy agricultural landscapes that are relevant to multiple disciplines. During the past academic year, six cases were pilot tested in four courses involving eight different universities. Preliminary results indicate that students gained a more comprehensive understanding of subject material compared with traditional lecture formats. Results further indicate an increase in the quality of agricultural education by motivating students through authentic learning experiences and building their confidence to work in multidisciplinary settings. Rigorous testing of the educational outcomes of using the AgricultureBridge system will be conducted during academic year 2010-2011 in strategically selected universities in the U.S. and elsewhere.

### **#158 Community-based Learning: Connecting Classroom to Community through a New Civic Agriculture and Food Systems Minor**

Susan F. Clark and Thomas W. Broyles  
Virginia Polytechnic Institute and State University

Community-based learning is an effective teaching/learning strategy where the community becomes a partner in the educational process. Linking partners with instruction and reflection enriches the scholastic experience, teaches civic responsibility, and strengthens communities. Faculty, staff, students, and community partners collaborated to conceptualize, develop, and propose an experiential-based curriculum in Civic Agriculture-Food Systems (CAFS). The goal was to develop a curriculum that provided stu-

dents with knowledge/skills to identify, examine, strategize, and incorporate agriculture and food system sustainability philosophies and activities into personal/ professional practice. The framework for the curriculum was built around knowledge and skills employers seek and core values that embody the definition of CAFS: food sovereignty, civic engagement/democratic participation, strong local economies, ecological stewardship, healthy people/communities, collaborative teaching, and experiential learning. It uses community-based learning in order to apply the principles of reciprocity embedded in the civic agriculture concept. The four sequential courses include: Introduction to Civic Agriculture, Ecological Agriculture, Concepts in Community Food Systems, and Capstone: CAFS build upon each other and integrate phased experiential-learning elements. Students draft a community food systems proposal and continue to refine it through the additional required coursework until its implementation in the capstone course. This curricular approach promotes academic enhancement, personal growth, and civic engagement while strengthening students' capacity to learn about CAFS through reflection and experiential practice to solve "real-world" problems. Thus, the experiential-based curriculum enables students to build connections between their academic work to the world beyond which prepares them to serve a diverse and complex marketplace.

### **#164 Pathways to Agricultural Degrees and Careers**

Robert N. King and Timothy A. Tatakis  
Monroe Community College

The Developing Pathways to Agriculture Careers is a project developed to address the agricultural and environmental employers' growing demand for educated workers in fields such as food product development, alternative fuel technology, agricultural business development, and natural resource planning. The purpose of this presentation is to share the efforts of Monroe Community College to increase awareness of agriculture as a degree program and a career opportunity. Several goals included the development of an introductory agricultural seminar course, recruitment and advisement materials; development and distribution of a brochure highlighting information about agricultural career pathways at MCC; the incorporation of agriculture content into ten existing courses and, a professional development training seminar for faculty and staff at Cornell University regarding agricultural career options. Partnerships with

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Cobleskill, Morrisville, Cornell, Alfred, and SUNY Delhi have been strengthened to attract students to the field, provide strong academic career paths and facilitate transfer into agriculture and life sciences degree programs. Results indicated an increase in awareness of favorable attitudes about agriculture within MCC and its partners based on mails, interviews, inquiries to admissions, and requests for presentations and agricultural subject matter expertise. Conventional thinking has been challenged among MCC faculty regarding course development and delivery. Additional curriculum in agribusiness and additional integration of agriculture in existing courses is under consideration with emphasis on learning styles, deaf and visually impaired, and underrepresented populations.

### #168

#### **Learning Style Preferences of Freshman and Senior Students in Agricultural Sciences**

Dwayne Pavelock, Dominick Fazarro, and  
Doug Ullrich  
Sam Houston State University

Scarpaci and Fradd (1985) suggested that learning styles are “ways in which individuals perceive, organize, and recall information in their environment” (p. 184). The term learning style includes cognitive, affective, and physiological domains influenced by the environment (Keefe, 1987). The purpose of this study was to determine learning style preferences of freshman and senior students majoring in a field of agriculture, and determine whether any differences exist in these preferences between the two classifications or by gender. Participants were enrolled in either a freshman seminar course or a senior seminar course and were administered the Productivity Environmental Preferences Survey (PEPS) instrument (Price, 1996), which is based on the Dunn and Dunn Learning Style Model (1993). The instrument contains 20 elements/learning styles used to assess one’s learning style, and utilizes a Likert-scale to assess “how students like to learn,” not “why” (Price, 1996). Eighty-seven freshman and 42 senior students participated in the study. Freshmen students were found to prefer more structure than senior students, and female students (regardless of classification) also preferred more structure; thus, freshmen and female students need clearly stated objectives, itemized instructions, clearly indicated time requirements, and a listing of resources that may be used. Senior female students exhibited more tactile (touchable, readable, real objects) preferences than senior male students; there-

fore, female upper-level students should be taught with realia, hands-on approaches, or demonstration methods. While freshmen female students were found to prefer the afternoons for accomplishing difficult tasks, no other difference existed between classifications or gender.

### #174

#### **Year One of Project LinC Extend: Educating Undergraduates about the Extension and Land-Grant Systems**

Marc T. Braverman, Katherine B. Gunter, Karlie Friesen, Helen Berry, and Clara C. Pratt  
Oregon State University

This presentation describes the initial year of LinC (“Learning in Communities”) Extend, a three-year project funded through USDA’s Higher Education Challenge. Using principles of experiential learning and student engagement, LinC Extend aims to create a model for undergraduate instruction that promotes students’ interaction with Extension in classroom and community environments. The project’s overall plan incorporates three connected experiences for undergraduates: an introductory on-campus class, a summer class focusing on Extension field experiences, and a variable-credit internship built around specific Extension projects. This presentation reports results from the introductory course’s initial delivery in fall 2009.

The one-credit introductory course included presentations, discussion, and interactive activities. Sixteen students enrolled and 11 completed pre- and posttest evaluation questionnaires. At posttest, 73% reported the class had increased their understanding of community-level programming; 55% reported greater interest in potential Extension careers; 46% reported greater interest in careers relating to food, nutrition, or agriculture. Furthermore, students expressed significantly higher personal value on volunteering in their communities (pre-post t-test;  $p < .05$ , despite the small sample). A post-class focus group sought students’ suggestions for class improvements; based on their input, the class was expanded to two credits and now includes field visits and more complex assignments.

LinC Extend’s summer class will be offered initially in summer 2010. Our focus is on structuring experiences to provide maximum benefit for both students and Extension programs. This presentation will describe our ongoing evaluation, instructional development activities, and progress in building a

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program that connects the teaching and Extension missions of land-grant universities.

### #178

#### **Integrating Humanities and Social Sciences into the Engineering Curriculum: Guiding Principles from the Model Teaching Team**

Maria Navarro, Tim Foutz, Sid Thompson, and Kerri Patrick Singer  
The University of Georgia

Most engineering design requires engineers to integrate multiple perspectives into their design solutions. While the engineering profession requires this interdisciplinary perspective be utilized in the “practice” of engineering, it is not emphasized in the “education” of engineers. Many students find integrated critical thinking difficult because they are unable to meld technical skills with disciplinary knowledge. The purpose of this program was to provide tools for engineering faculty to employ when helping students acquire the competencies needed to solve complex problems. Faculty with a broad range of expertise (English, Education, International Development, Life Sciences, Social Issues in the Workforce, Community-based Nutrition, Arts and Creative Exploration, and Engineering) worked as a Model Teaching Team and outlined guiding principles and learning modules for engineering faculty to use while developing their curriculum. The guiding principles are summarized as follows: 1) Engineering must be viewed as a social process that develops a range of potential solutions; 2) Engineering education should prepare students to identify problems, recognize conditions and constraints, and realize the consequences of their actions; 3) Engineering education should guide students through a holistic course of inquiry and include deep understanding; 4) Engineering education should cultivate reflection and critical thinking in individual and group environments; and 5) Engineering education should view technology as an engagement, not application, between science and domains of society. In summary, we have developed a pedagogical model for a more integrated and socially conscious engineering education. Future efforts include transferring this model to other agricultural and biotechnology oriented disciplines.

### #182

#### **Enhancing Confidence in Turfgrass Management through the Inclusion of Experiential Learning Activities**

Jonathan J. Velez and Rob Golembiewski  
Oregon State University

Students often take classes that fail to connect academic learning with practical application. All too often, the students sit, memorize facts, and then promptly forget not only the facts, but any practical application as well. In an effort to improve the connection between academic classroom content and practical application, and hopefully improve student confidence in the applied aspects of turfgrass management, the researchers developed four unique experiential learning activities. The goals of this research study were to determine student perceptions of confidence prior to and after completing four turfgrass projects and assess their task value motivation associated with experiential learning. Participants (n = 20) were assessed using a quantitative then/post design and asked to rate their confidence on a scale of 1 to 4, in all four project areas. The out of class, field-based projects included trials in seeding rates, retail mixes, nitrogen sources, and germination. Participants indicated a mean increase in confidence for all four projects including a mean increase of 1.77 for the seeding rates, 1.83 for the retail mixes, 1.75 for nitrogen sources, and 1.44 for germination. On the task value instrument, scaled 1 to 6, participants reported a mean of 5.73 relating to their motivation towards the experiential learning offered in this course. Students expressed clear confidence gains after completing the experiential learning activities. Instructors who are interested in bridging the gap between classroom academic content and applied skills are encouraged to consider the potential benefits of adding experiential learning to college of agriculture courses.

### #184

#### **Agriculture Science Education in Minority-Serving, Urban Universities: Service Learning, Collaboration, and Community Engagement**

Mahadev G. Bhat and Krish Jayachandran  
Florida International University

Urban and non-land grant universities are increasingly sought to play a role in expanding the agriculture education capacity of the country. Often faced with budget issues and other challenges, these institutions



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have to rely on community and cross-institutional resources. The purpose of this study is to assess, and share lessons learned from, a comprehensive Agroecology Program at Florida International University (FIU), a minority-serving, urban university. Started in 2005, the program received the support of six different USDA Science and Education Resources Development grants. It is founded on a multi-institutional collaboration with local schools, research institutions, community gardens, and farmers. The program offers an undergraduate certificate, multi-cultural and international travel scholarships, service learning projects, and school teachers' training workshops. Based on the evaluations gathered from program participants and external evaluators, we conduct a qualitative assessment of various program components and chronological events, in terms of their contributions to student learning, professional advancements, and impacts on the community. In a short span of time, the program has had quite a success in engaging students in service learning activities and creating a sense of 'community of learners' on campus. Students now manage a campus community garden, which is now recognized as a USDA People's Garden. They also collaborate with the weekly farmers' market, intern at community and private farms, and organize the local chapter of a national student agricultural organization. Majority of the students are urban-raised and from minority groups. The FIU Agroecology Program can be a model for other urban, minority-serving institutions.

### #186

#### **Impacting Students Preparation beyond the Classroom**

Sharon McWhinney  
Prairie View A & M University

In an era of increased competitiveness for entry into graduate and professional programs and the employment arena, it is imperative that students be given the tools necessary for success. This project aimed to increase awareness, understanding and participation in research and community activities, increase involvement in professional organizations, and to positively impact student recruitment/retention. Academically qualified students successfully competed for tuition awards resulting in six recipients to date. On campus workshops, seminars, training, and presentation activities were incorporated to increase students' awareness, motivation, and skills. Knowledge of the benefits of involvement in this project has lead the university to provide additional funding for the ad-

vanced teaching laboratories and associated equipment, student training and support in an amount exceeding \$500,000 from the Department of Education Title III funds. Students' participation in activities included (a) training in data collection and display management using the GPS Garmin eTrex Vista sponsored jointly by the Department of Chemistry, the Nutrition program, and the Office of Surface Mining (b) workshops at the Texas State Dietetic Association and the American Dietetic Association conferences, and (c) technical presentations. There has been a significant increase in student membership, elected positions and participation in professional organizations at the state and national levels. The impact of this project at Prairie View A&M University can be summed up by the significant increase in student professional membership, local and national organizations, (2) enhanced student participation in workshops and service learning activities, and (3) the number of state and national elected student officers.

### #188

#### **Immersive Learning Platforms - Development of Educational Simulations Based on Food Processing**

R. Paul Singh and Robert Burnett  
University of California

For food safety, it is essential that the workforce in a modern food industry be fully versed in how various hazards that create unsafe situations proliferate in a food processing plant. In a typical food science curriculum, students learn the basic microbiology and chemistry of such hazards; they often do not get any meaningful opportunity to synthesize such topics in a setting that mimics a food processing plant. The goal of this study is to develop computer-based immersive learning platforms of selected food processing plants that provide highly engaging contents to enhance student learning. The specific objectives were as follows: 1) Develop immersive simulations of a food processing plants namely, a brewery. 2) Integrate multidisciplinary educational contents into simulations with introductory, intermediate, and advanced level and assess its suitability for freshman to senior level students enrolled in the food science curriculum.

A processing plant simulation of a brewery has been created as a video game using software including Maya™ and Unity™. The key elements of this simulation include: selection of water source, evaluation of barley and hops, malting, kilning, brew house operations, and packaging. For each segment

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of the simulation, student interaction involves science-based questions and problem solving approaches to develop relevant solutions. The user is given full control to navigate through various steps of the processing operations. The responses to questions are given an appropriate score. The video game is set up for use over the Internet and it is platform-independent.

### #189

#### **Establishment of a Certification in Rural Development at Louisiana Tech University**

Aaron K. Lusby  
Louisiana Tech Rural Development Center

The Rural Development Certification Program, a funded SERD 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. While the rural development certification will appeal to traditional baccalaureate students, 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. This presentation describes the program, the issues with starting the program, and progress to date. The program consists of five courses, designed for online delivery: Introduction to Rural Economic Development, Grants and Grant Writing, Global Electronic Commerce for Agricultural Applications, International Trade and Policy, and Overview of Geographic Information Techniques for Rural Development. The courses, a mix of graduate level and undergraduate level work, represent the collaborative efforts of professors in Economics, Agricultural Business, Forestry, and the Louisiana Tech Rural Development Center. Promotional efforts have been limited while project directors prepared a program proposal for the University of Louisiana System Board of Regents. The Board recently gave preliminary approval to begin, pending a final meeting on March 26, 2010. This approval, rare given tightening higher education budgets in Louisiana, means that program completers will have the certification indicated on official transcripts and shows how important production of graduates with economic development skills has become in the current economic climate.

### #190

#### **Cooperatives and their Impact on the Human Condition: Utilizing a Liberal Education Course to Communicate Across the University**

Dixie Watts Dalton  
Virginia Polytechnic Institute and State University

About a third of farm inputs (outputs) are purchased through (sold through) farmer-owned cooperatives. With the recent downturn in the economy, grocery co-ops have been utilized as a mechanism for battling rising food costs. In the heated healthcare reform debate, co-ops have been viewed as an optional way of providing healthcare. In this time of economic struggle, co-ops have often been touted as a way to meet the needs of member-owners. Given the prevalence of co-ops in our society, the Ag Econ Department at Virginia Tech developed a course on co-ops that was intended to reach beyond the College of Agriculture. Rather than focusing on technical details, the course was designed to highlight cooperatives as a self-help mechanism. With this emphasis, the course was approved for the humanities area of the university's liberal education requirement. What has been the impact of this course being in the university core? Each fall, the course is filled to capacity (capped at 60 students to maintain a discussion-oriented focus). Students from every college on campus enroll in the course, ensuring various perspectives and rich discussion. The majority of students enter the course having no idea what a co-op is and leave the course wondering why more people are not aware them. Surveys determined the value of the course for creating collaboration across students of different backgrounds and enhancing communication. Results indicate that students improve their communication skills, broaden their understanding of different cultures, and gain an appreciation for the cooperative way of doing business.

### #197

#### **Undergraduate Journal Clubs: Challenging Students to Think Critically and Professionally**

Christina McIntyre, Stephanie Riviere, and  
Kyle Resendes  
Virginia Polytechnic Institute and State University

Journal clubs provide an environment and opportunity to discuss research articles from peer reviewed journals. Professionals, faculty, and graduate students often use journal clubs as a form of formal and in-

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formal continuing education. The use of journal clubs for undergraduates is limited. During these discussions participants begin to learn and use the vocabulary of their field in the context of current research. This past year we used the journal club concept in three different formats in order to provide undergraduates a weekly venue to discuss current research articles in a safe, non-judgmental environment. The discussions focused on evaluating the robustness of the study methodology, results, and limitations of the work. Students participating in these discussions increased their awareness of the opportunities for research in the field and strengthened their background knowledge base, such that they became more comfortable talking about a range of topics from basic to applied research. This presentation will provide a short simulation of a journal club, introducing the concept and structure of a journal club. We will discuss the use of journal clubs with undergraduates within the context of various fields. Two of the co-presenters are students who participated and served as peer leaders in journals club in the past year. They will share the student perspective of the value journal clubs within the undergraduate experience.

### #202

#### **Collaborate and Communicate: Enhancing the Classroom Lecture**

Gary Moore  
North Carolina State University

Research continues to show that traditional lecture methods, in which professors talk and students listen, continues to dominate college classrooms. Yet, research on the effectiveness of lecture indicates there are some major effectiveness issues. Revell and Wainwright (2009), utilizing undergraduate focus groups, found three keys to improving lecture (i) student participation, (ii) structure and (iii) an enthusiastic lecturer. Research based strategies for achieving the first two points will be described. Student Conducted Lecture Interlude - This technique is used in a university soils class. Half way through each lecture, a student makes a five minute presentation about any soil related topic of their own choosing. The instructor then attempts to relate what was presented to the topic for the day. Student evaluations of this interlude have been extremely positive. Mid-class student activity - An agronomy professor interjects a student activity half way through each lecture. Students are given one or more questions to answer based on the lecture or text. Students are given 5-8 minutes to answer the question(s), can use their notes or text and

can work in groups. As a result of this activity student scores on final exams have risen and class attendance has increased. Guided Notes - Guided notes are instructor-prepared handouts that provide students with some background information but there are blanks for the student to write key facts and concepts during the lecture. Guided notes require students to actively respond during the lecture, improves students' notes, and increase students' retention of course content.

### #203

#### **Community Connections: Helping Dietetics Students Explore Careers in Public Health Nutrition**

Elizabeth B. Kelley and Susan Nitzke  
University of Wisconsin-Madison

Community Connections for Wisconsin Dietetics Students is a collaborative project among the six dietetics programs in Wisconsin. Students seek opportunities for experiential learning that will help them develop skills, explore careers, and gain experience with diverse audiences. Local agencies and coalitions addressing issues such as child obesity, food insecurity/hunger, and nutrition policy have projects they would like to accomplish. A USDA Higher Education Challenge Grant helped the six programs collaborate better with local partners to create new opportunities for students, and developed some sustainable resources to help future students gain experience and explore careers in community nutrition. For example, one program built a relationship with a public health clinic serving migrant workers so that students could contribute to the clinic's educational outreach and gain experience with the Latino community. A library of video clips discussing careers in community nutrition and a website connecting students with placements around the state were developed for use at all the schools. Students reflected on their experiences in class assignments and students, faculty and partners were interviewed to evaluate the project's success. Students mentioned personal growth, as well as professional skills development and "making a difference" as their most notable gains from participating in community placements. Partners discussed the challenges of determining projects that work with students' schedules and skills while meeting their agency's needs. The grant's support of faculty time allowed relationship building with local public health nutrition entities. Collaborative projects such as these can be an effective way for students at unrelated programs to benefit from common resources that expand their opportunities around the state.

**#205**

**Enhancing Participation and Quality of the Undergraduate Experience for Minorities in Food Agricultural Sciences**

L. Wicker, R. Walcott, J. Bertrand, and K. Thomas  
University of Georgia

Food and agricultural sciences offer excellent venues for application of training in science, technology, engineering, and math (STEM) disciplines. Assuming that effective mentorship is critical for recruitment, retention, graduation, and placement of underrepresented students, we provided opportunities for effective mentorship within the College of Agriculture and Environmental Sciences (CAES) at UGA. The approach to this project was three fold. First, seminars for faculty, staff, and graduate students, were offered that presented information on the need and value of diversity. Second, diversity climate surveys of CAES faculty, staff and students were conducted. Third, undergraduate students were paired with a faculty mentors to participate in independent research. A series of Lunch and Learn seminars on topics that included diversity as a strategic advantage, recruitment and retention of faculty and students, mentoring across differences and others were presented. These seminars were recorded for wide dissemination by podcast on iTunes U. The climate surveys were completed in mid fall 2009, with options for electronic or paper copy. Results of the climate survey are being analyzed. Eleven underrepresented undergraduate students were paired with faculty mentors in Poultry Science, Food Science, Horticulture, Pharmacy, Veterinary Sciences, Plant Pathology, and Environmental Sciences. Students participated in independent research as well as contributed to ongoing research projects. Products of student projects include presentations by four students to the CAES freshman Ag seminar in fall 2009 and acceptance of two abstracts for the MANRRS conference.

**#206**

**A Collaborative Model for Linking Faculty, Industry Representatives and, High School and University Students for Awareness and Education**

Linda Moody, Dennis Brink, Matt Spangler, and Sara Ellicott  
University of Nebraska-Lincoln

The Nebraska Youth Beef Leadership Symposium (NYBLS) is an educational program designed to increase awareness of high school youth to educational

opportunities and careers in the beef industry. In addition to student participant learning outcomes of increased beef industry knowledge and leadership skills, NYBLS is an effective means of communication and collaboration for faculty, the beef industry, and secondary and undergraduate students. The major activities of the symposium are: 1) team development of a new beef product, 2) interactions with professionals representing the University and segments of the beef industry, 3) discussion with College of Agricultural Sciences and Natural Resources Career Services and Animal Science staff and upper level students to demonstrate the benefits of education in animal and meat sciences, and leadership and communication, and 4) touring the Animal Science Complex and the beef research facilities to demonstrate classroom environments and experiential education. Participant survey results indicated 100% of the participants either strongly agreed (80%) or agreed (20%) "If I have a question regarding an Animal Science undergraduate program, I know who to call." The survey (Reliability Score = .97) indicated improvement (pre, then post) in knowledge of all 29 criteria related to beef production, beef product development, power and influence, and teambuilding skills. The average improvement was 0.82; increasing from 3.77 (pre) to 4.59 (post). Evidence of the effectiveness of the program in fostering communication and collaboration outside of the academic institution includes strong endorsements by leaders of the Nebraska Beef Council and the Nebraska Cattlemen and continuous funding from these organizations and others.

**#208**

**Enhancing Student Retention: Impacts of a First Year Seminar Course**

Dixie Watts Dalton and Mary A. Marchant  
Virginia Polytechnic Institute and State University

As universities seek to enhance student retention, a positive first year experience can be critical for student success. The objective of this research is to determine whether a Virginia Tech Agricultural and Applied Economics (AAEC) Departmental first-year seminar course improves retention rates. The course provides an opportunity for students to learn about their discipline, while also gaining insights into college success strategies. Qualitative analyses, using student evaluations, senior exit interviews and student surveys, assess the impact on student success. Quantitative analysis of data from the University's Institutional Research Division examines whether Departmental retention and graduation rates improve

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after course implementation in 1998, and compares Departmental retention and graduation rates to those of the College and University. Results indicate that the AAEC First Year Seminar course successfully meets its stated course goals. Qualitative analyses indicate the value of the course to students in regards to community-building, information gathering, transitioning to college life and the opportunity to make lifelong friends, thereby achieving social integration into college. Quantitative results show that retention and graduation rates improve following course implementation. Retention, four-year graduation rates and five-year graduation rates for the Department exceed those for the College of Agriculture and Life Sciences, and the Departmental four-year graduation rate exceeds that of the University. Student retention is an important issue for higher education, and this research indicates that communicating with students via a semester-long first year seminar course can enhance student success. Implementation of a First Year Seminar course at other colleges/universities could yield similar results.

### #209

#### **Unique Opportunities for Multicultural Scholars at the University of Georgia**

Jean Bertrand, Ron Walcott, Louise Wicker, and Josef Broder  
University of Georgia

The University of Georgia (UGA) was funded for five USDA Multicultural Scholarships in 2009. The objective of this presentation is to discuss the unique opportunities offered to the Multicultural Scholars at UGA. The College of Agricultural and Environmental Sciences (CAES) at UGA offers several successful pre-collegiate programs that attract a substantial number of high quality minority students. These programs include Young Scholars, a six-week summer research program for local high school students, and Georgia Plant Science Scholars, a week-long residential experience. In past years, however, we were unable to interest a significant number of these students in applying as undergraduates. The ability to offer the USDA Multicultural Scholarships greatly increased their interest. In addition, email solicitations were sent to all minority students accepted to UGA as freshmen for fall 2009. Over 100 students initiated the scholarship application process although some did not complete the process. The top 13 applicants were selected for interviews and the top five students were selected based on academic achievements and potential for success in a food/agricultural sciences

career. The students are majoring in agribusiness (2), animal health (1), and biological sciences (2). Students meet monthly with the project advisors and speakers who deliver topics to help improve their academic success. Students also have access to dedicated academic tutors. One student conducted undergraduate research through the Honors program. Another student will participate in a USDA summer internship. Minority students in CAES increased from 13.7% in fall 2008 to 14.5% in fall 2009.

### #214

#### **Service-Learning Experiences for Graduate Students at a Distance: Their Role as Program Evaluation Consultants**

Nicholas E. Fuhrman  
University of Georgia

Providing graduate students with authentic, field-based service-learning experiences can be challenging. Promoting these experiences can be particularly difficult with graduate students at a distance. In an effort to provide evaluation resources to statewide programs and enhance the relevance of program evaluation skills for graduate students, 24 Master's level students participating in a distance-delivered (synchronous) program evaluation course served as evaluation consultants. In this presentation, participants will: (1) acquire step-by-step recommendations for developing a service-learning component where students serve as information consultants and (2) become aware of the impact of this project on graduate students and their participating organizations. During the weeks prior to their consulting, students were trained in participatory evaluation principles, including stakeholder involvement/ownership, gathering, analyzing, and interpreting data, and sharing evaluation findings with stakeholders using practical and "fun" methods. Working in teams of three (based on programming interests and location of residence), students were assigned a local Extension program or organization to assist, including the Georgia Master Gardener and Master Naturalist Programs, a nature center, 4-H center, and the Georgia Sea Turtle Center. Students kept a reflection journal, provided their clients with self-developed evaluation handouts, created an evaluation plan, and presented their recommendations to clients in an evening reception. Reflection journals indicated a higher level of competency in program evaluation stemming primarily from teaching clients and a more positive attitude toward data collection, analysis, and interpretation. In their role as consultants, distance graduate students

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provided local evaluation assistance benefiting programs, organizations, stakeholders, and the overall graduate learning experience.

### #215

#### **Agricultural Communication and Forestry Undergraduates Collaborate to Teach and Recruit Urban High Schoolers: The ACE Program**

Nicholas E. Fuhrman and A. Chris Morgan  
University of Georgia

Carolyn A. Copenheaver and John R. Seiler  
Virginia Polytechnic Institute and State University

Saskia van de Gevel  
Appalachian State University

Undergraduate forestry programs are at risk because of dwindling enrollment numbers and limited student diversity. A recent study of the workforce training needs of the agribusiness industry reported that the demand for graduates with degrees in agricultural communication is nearly three times that of the current supply. The Ambassadors for Conservation Education (ACE) Program was created to recruit a larger, more diverse student body to forestry and agricultural communication degree programs. In this presentation, participants will: (1) become aware of best practices for training undergraduates to teach high schoolers and (2) acquire results of a pilot program with high schoolers in Washington, D.C. Forestry undergraduates taught agricultural communication undergraduates about tree identification and soils. Likewise, agricultural communication undergraduates taught forestry undergraduates about teaching methods and public speaking. The forestry and agricultural communication “ambassadors” then applied these skills to teach urban high schoolers from Washington, D.C. and Atlanta, Georgia during a “citizen scientist” field day at two parks. Allowing high schoolers to partner with undergraduates builds their interest in life science-related majors and establishes a point of contact. Preliminary results from a pilot in Washington, D.C. indicated that the experience significantly helped build high school students’ confidence and communication skills. A “pen pal” experience between high schoolers and university educators revealed that students were surprised by the leadership of their peers and gained an appreciation for accurately collected data. Involving high schoolers in citizen scientist experiences with undergraduates builds skills relevant for those seeking employment in agricultural communication, forestry, and beyond.

### #221

#### **Collaboration and Communication Create Innovation Celebrations**

Daniel Tilley, Paul Weckler, Cindy Blackwell, Rodney Holcomb, Shelly Sitton, Angel Riggs, and Ron Delahoussaye  
Oklahoma State University

Marcia Tilley, Richard Cavaletto, Mark Zohns, and Wayne Howard  
California Polytechnic State University

David Jones  
University of Nebraska-Lincoln

Innovation in agribusiness manufacturing requires that firms develop new product ideas that can be added to their product line and profitably marketed. Universities are asked to create graduates who are ready to collaborate and communicate on cross-functional (multidisciplinary) agribusiness innovation teams. Innovation teams in industry produce innovations that are celebrated because customers have problems solved and needs satisfied. Agribusinesses celebrate innovations that increase profits. As part of the activities of a USDA Higher Education Challenge Grant, we have developed integrated, multidisciplinary classes that cause multidisciplinary innovation student/faculty/industry teams to focus on innovation projects for small agribusiness manufacturers. The disciplines involved at three universities include agricultural engineering, agricultural communications, agribusiness, mechanical engineering, agricultural economics, and biomedical engineering. The project includes collaborative, team-based, real-world, problem solving experiences in integrated senior design/capstone classes. Evaluation criteria for best practices in manufacturing innovation instruction are presented. The evaluation criteria are modeled after best practices for manufacturing innovation. Two product development case studies are used to demonstrate that when best practices for manufacturing innovation instruction are better met, the likelihood of innovation celebration increases and the capacity of graduates to participate on innovation teams is enhanced. Students learn how to collaborate on teams, the importance of communication within the team, and the importance of communication with their industry partners and faculty.

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#223

### **Engaging Students through a Multi-Course, Multi-Discipline Experiential Learning Project**

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

Educators across the country continually seek diverse methods of instruction which actively engage students and promote hands-on learning opportunities. With this need in mind, faculty at West Texas A&M University collaborated to develop a multi-course, multi-discipline experiential learning project. The objectives of the project were to engage freshmen through creation of peer-based learning communities; to improve critical thinking skills among students; and to provide teaching experience for Agricultural Education students enrolled in a Supervised Agricultural Experience Program (SAEP) course. A traditional student-led livestock showmanship competition (Little International) was modified to involve the students from the two courses. The showmanship competition involved ANSC students that trained, prepared, and exhibited livestock at a student-organized show and who were lead by upperclassmen from SAEP. Course instructors developed specific learning objectives for the two classes. The objectives for ANSC were related to breeds, market animal characteristics, anatomy, and safe handling of livestock. Learning objectives for SAEP were related to student engagement, student motivation, and project management. The show was scheduled for October and course schedules were coordinated. Four weekly ANSC lab periods and four SAEP class periods were dedicated to the project. First-semester ANSC students became engaged in learning because of the need to interact directly with livestock and fellow students. Students in the SAEP course were required to actively manage real students in a situation that closely simulated the environment in which Agricultural Science teachers and county agents perform. Course instructors were able to build relationships and effectively evaluate student performance.

#224

### **Effective Methods in Educating Extension Agents and Farmers on Conservation Farming Technology**

K.S.U. (Jay) Jayaratne and Lauren Mouton  
North Carolina State University

Harry H. Schomberg, Randy Raper, Kip Balkcom,  
David Archer, and Bryan Kaphammer  
USDA ARS

Adoption of new technologies requires transfer of information from developers to end users. Efficiency of the transfer process influences the rate of adoption and ultimate impact of the technology. Various channels are used to transfer technology from researchers to farmers. Two commonly used ones are direct (face to face) and indirect (through Extension Agents or publications). Conservation farming systems technology provides environmental and economic benefits over time that may not be readily apparent in the short term. Since benefits are not readily observable, it has been challenging to convince farmers to adopt this technology. We explored how agricultural scientists face this educational challenge by determining scientists' perceptions about effective methods to educate farmers and Extension agents on conservation farming technology. Scientists from 18 states in the USDA Agricultural Research Service's (ARS) Agricultural Systems National Program answered questions in a descriptive survey. We received 90 usable responses comprising a 67% response rate. Research publications, field demonstrations, and one-on-one meetings were the methods ARS scientists most commonly used in educating Extension agents and farmers. ARS scientists perceived that direct contact through one-on-one meetings, field demonstrations, training workshops, and group discussions were the most effective educational methods in teaching farmers and Extension agents. Even though, ARS scientists commonly used research journals as the main outlet in communicating research results, research publications were identified as the least effective method in educating farmers. In addition, ARS scientists perceived that videos and web postings were less effective methods in educating farmers compared to direct communication.

**#225**

**Influence of Course Delivery Method and Proctoring on Performance in Introductory Economics**

Cheryl Wachenheim  
North Dakota State University

There is considerable debate about the quality of on-line course offerings. We compared student performance on the final exam in introductory economics courses taught in the classroom with those taught online. Performance was estimated as a function of student performance on exams and class (class, term of offering, online versus classroom offering, proctored or non-proctored final). The included variables explained 62.7% of variation in final exam performance. The coefficient on average percentage on chapter or midterm exams was significant and, at .816, as expected, it was reasonably close to one. When the student sample was limited to only students in introductory macroeconomics, the correlation between average exam and final exam scores was lower when the final exam was proctored (.534,  $p = .004$ ) than when it was not (.917,  $p = .000$ ). When other differences were accounted for, students who took the course in the traditional classroom environment did substantially better than those students taking the courses online. And, all else equal, those students taking a non-proctored final exam did substantially better than those taking a proctored final exam. Resulting recommendations include the following: Use a proctored final exam in distance-taught classes whenever possible; Focus exam questions on application of material rather than awareness or knowledge, as the latter can more easily be answered without understanding during online exams; Include assignments that require students to apply course concepts; Work to keep students on track in completing work by establishing frequent deadlines; and Engage students throughout the course.

**#227**

**The Successful Development of an Integrated Biotechnology Course: Challenges Faced and Lessons Learned**

Elizabeth Wilson, Charlotte Farin, Chad Jordan, Kevin Curry Jr., Elizabeth Compton, and Michelle Kim  
North Carolina State University

An introductory distance education course titled "Agricultural Biotechnology in Today's Society" was developed through a collaborative effort. This course

integrated topics in plant, animal, and environmental biotechnology, and mirrored the disciplinary expertise of the three professors involved in the project. The method of integration implemented was interdisciplinary, meaning the three science subject matters were brought together under one theme. The course was targeted for freshman/sophomores and was designed to appeal to both science and non-science students. The course was made possible by a USDA Education Challenge grant (#2007-38411-18125) which provided development and TA support. After a pilot offering during the summer of 2008 ( $n=13$ ), the course was offered in the spring ( $n=21$ ) and fall ( $n=23$ ) semesters of 2009. The course was successfully implemented as evidenced by positive course evaluations. Mean overall course satisfaction ratings for the spring and fall semesters were 4.4 and 4.2 respectively. These scores were greater than either the mean college (4.1) or university (4.0) course ratings. The success of the course coupled with the fact that it is entirely web-based, makes this course a model that can be easily adopted for future interdisciplinary courses. With three semesters of data and experience, the collaborators will chronicle the development of the course and discuss the challenges and successes they experienced during the collaboration process.

**#230**

**Teaching from a Combat Zone**

Cheryl Wachenheim  
North Dakota State University

From the desert of Kuwait to the agricultural land surrounding Joint Base Balad in Iraq, the author taught introductory microeconomics and introductory macroeconomics online. Distance teaching was complicated by satellite-based Internet connections, not available during dust storms or unit or base emergencies ranging from hours to days, command-directed missions, and frequent, unpredictable travel. These challenges resulted in greater expectations on students but results of a follow-up survey by email indicated that students were satisfied with the course and that it did not differ substantially from online courses taught from traditional locations. The experience provides unique insight into student-learners, dependency on technology, the importance of contingency plans for instructors, and how being in an environment with differing resources and rules affects teaching. Lessons learned include the following: Don't just meet student expectations, manage them; Use a range of content delivery venues; Even well designed



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courses require flexibility; Try out performance assessment plans in the expected environment before implementing them; Regularly share your own-ongoing experiences as they relate to the class with the students, novel situations are interesting to students and can help them understand course content; Assess your course as you go; there is an amazing amount to be learned from students if we listen well; Use every resource available to you to offer a quality course; Always have a contingency plan. Teaching from a new environment can change many of our long-held assumptions about learners, course offerings, and technology.

### **#236 A Community Engaged Fellows Program for Targeting Child Obesity**

Marybeth Lima and Carol E. O'Neil  
Louisiana State University

We are reporting on a Community Engaged Fellows program for graduate students using a multidisciplinary service-learning approach to address childhood obesity. We are working with a local public school to establish a model program that will increase consumption of fruit and vegetables, improve the built environment through construction of a playground, and execute a play curriculum for the playground that will enable students to meet national physical education standards. The goal is for Fellows to be well versed in community engaged action research so that they can add to the scholarship in this area and contribute to public scholarship as faculty members or as community partners. The Fellows are working with undergraduate students completing service-learning courses and will conduct community engaged action research projects to analyze the success of the interdisciplinary approach to address obesity. The proposed project represents a community-based, interdisciplinary approach to address pediatric obesity and builds on the strong existing service-learning programs in Human Ecology and Biological and Agricultural Engineering, which will also be discussed.

### **#238 College Agriculture Instructors' Classroom Use and Preferences for Social Media**

Quisto Settle, Ricky Telg, and Tracy Irani  
University of Florida

Emily Rhoades  
The Ohio State University

Tracy Rutherford  
Texas A & M University

Social media are ubiquitous. It is necessary to assess social media's place in education. College agriculture instructors who attended the Southern Association of Agricultural Scientists meeting were surveyed for use and preferences for social media in education (N = 149). The majority have used social media for class. The most used were online forums (70.5%) and the least used were non-Facebook social networking sites (33.5%). Ratings questions were asked using five-point scales. The only social media instructors would like to give instructional information through was online forums (M = 3.62); instructors were on the negative end of the scale for all other types. In regard to it being required to use a social media type for class, instructors were only positive about teaching a class if it required online forums (M = 3.27) or video-sharing sites (M = 3.06). Participants felt social media in education would increase communication (M = 3.77) and student productivity (M = 3.12), but would hurt the quality of work (M = 2.76) and communication (M = 2.78). Generally, instructors felt students should know how to use social media for future careers, except for non-Facebook social networking sites (M = 2.67) and microblogs (M = 2.93). The disparity between instructors not wanting to use most social media in class but still thinking it is important for students to use them for future careers is interesting. It also needs to be understood why the differences between social media types has occurred for uses and preferences.

### **#240 Upgrading Pesticide Safety Education Curriculum and Increasing Student Participation**

Kerry Richards and Christina Becker  
The Pennsylvania State University

Many students are interested in adding additional certifications to their degree to help increase their marketability after graduation. One certification that

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could be offered is a pesticide applicator certification, which is required at some level in all fifty states. Many academic programs offer some pesticide safety education, which is the primary foundation of this type of certification. However, instructors have indicated that more hands-on activities and detailed curriculum would help incorporate these topics into the courses. Furthermore, educators highly value the ability to have interactive demonstrations as it engages the students and increases active learning. This program follows a model of several successful three-day train-the-trainer Northeastern Region Pesticide Safety Education Center Workshops, where quality core pesticide safety demonstrations were presented. Participants learned how to do these demonstrations and they went home with all the needed materials so that they could begin giving these demonstrations immediately. Over the four years it was hosted, the Workshop's overall rating ranged from 4.76 to 4.91 on a scale from 1-5, with 5 being "excellent." The hands-on activities regarding pesticide safety that our program has used, which we will showcase, include toxicity (signal words), formulations (types and pros/cons), and exposure reduction (personal protective equipment). We will provide information on how to do these hands-on demonstrations and what materials are needed. We are excited to present this topic to a new audience as it provides new opportunities for collaborations and ideas for future interactive demonstrations.

### **#241 Collaborate to LEARN**

Jonathan Weekley, Tiffany Drape, Richard J. Rateau, and Jerzy Nowak  
Virginia Polytechnic Institute and State University

To address the changing climate in agricultural education and promote interdisciplinary studies, a team of researchers at Virginia Tech collaborated and developed an innovative teaching method to meet the educational needs of millennial learners entering secondary and post secondary education. Consistent with the universities mission statement of collaboration across disciplines, the interdisciplinary team included researchers from horticulture, mechanical engineering, teaching and learning, and agricultural education with each researcher contributing his/her unique skills and experiences to the effort. Following the National Research Agenda on Agricultural Education and Communications, the team's efforts focus on fostering the idea of non-formal learning in youth and adults across the spectrum of agriculture. Grounded

in experiential learning theory and constructivist framework, the researchers developed The LEARN (Low-input Education and Research Node) Soil Science System. Through the LEARN system, students are introduced to the concepts of soil health and sustainability. The LEARN system provides students with the ability to manipulate soil and/or plant growth media health and structure in real-time through amendments (e.g. water and fertilizer); thereby, promoting scientific exploration and discovery through critical thinking and problem solving when properly implemented. The LEARN system promotes content learning in multiple STEM disciplines including math, biology, chemistry, physics, and technology through the integration of wireless communication and environmental sensors. LEARN offers a unique opportunity to engage students in education through traditional and non-traditional delivery methods of instruction.

### **#245 Utilization of Career Services by Undergraduate Students in a College of Agriculture**

Tobin Redwine, Cindy Akers, Todd Brashears, Scott Burris, Lori Dudley, Rachel Bobbitt, and Kelsey Hall  
Texas Tech University

Many universities offer career services to prepare students in all disciplines for employment and to educate students about career skills. The purpose of this study was to describe the level of use of 12 services offered by a western university's Career Services. A researcher-developed questionnaire was administered online to 1,157 students enrolled in a College of Agriculture in the spring 2009 semester. Researchers received 368 completed questionnaires, a response rate of 31.8%. The total number of services students indicated to use was negatively coded in a range of 1-13 (1 = participant used all services and 13 = participant did not use any career services). The mean recorded for the career services score was 10.74. Of the career services offered, students used résumé reviews (n = 124; 41.5%), career fairs (n = 118; 39.5%), assessments (n = 112; 37.5%), and mock interviews (n = 70; 23.4%) the most. Students used salary negotiation tips (n = 13; 4.3%), career development seminars (n = 21; 7%), and individual college career center liaisons (n = 24; 8%) the least. Nearly one quarter of the students did not use any career services. Future research should determine why students use certain services more than other services offered to them. Universities continue to spend money to implement career services programs.

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In order to ensure that students take advantage of the opportunities offered by their universities for student success, faculty, counselors, and advisors in colleges of agriculture should promote these services and encourage students to utilize them.

### #246

#### **Motivating Millennials: Using New Media to Recruit the Next Generation into Academic Programs of Agriculture**

Lauri M. Baker, Tracy Irani, Katie Abrams, and Ricky Telg  
University of Florida

Academic programs of agriculture continually strive to recruit qualified students. New media is often cited as a way to engage the next generation of students, but are these students looking for career and major advice in these realms? The purpose of this study was to determine students' preferred mode of communication in an effort to assess appropriate recruitment techniques for the next generation of agriculturalist. A set of three focus groups (N=28) were conducted, which consisted of 1) students inside a specific academic program, 2) students outside of the program but within the College of Agriculture, and 3) students outside of the College of Agriculture but enrolled in an introductory agriculture class for non-majors. Questions were asked regarding students' preferred information channels and sources when receiving career and major information. Additionally, they were asked what type of characteristics they preferred in an industry where they would potentially work. The results showed students desired to have contact with someone in the industry initially, followed by going to an interactive website for more information. All groups indicated Facebook was a place where they would like to be contacted about job opportunities or internships. Participants favored being contacted directly by the industry through multiple channels and desired visibility of the industry in which they would work after graduation. Implications of this study include: aligning recruitment needs of students with communication materials, the need for branding and marketing on behalf of all agricultural programs, and investment in interactive new media recruitment programs.

### #249

#### **The Effect of an Agricultural Communications Workshop on Urban High School Students: Comparison between Agriculture and Non-agriculture Students**

Quisto Settle  
University of Florida

Cindy Akers, David Doerfert, Erica Irlbeck, Kelsey Hall, and Leah Martinez  
Texas Tech University

Agriculture faces a shortage of workers at the same time that fewer bachelor's degrees in agriculture are being awarded. A possible solution to this shortage could be conducting workshops that expose minority students to agriculture. The "Big City Big Country Road Show" was a workshop supported by Texas A&M University, Texas Tech University, and Howard College as a means to recruit minorities into colleges of agriculture. The workshop allowed participants to complete experiential learning opportunities in several areas within agricultural communications, and industry tours provided real world applications of what was taught. This study compared the differences for agriculture and non-agriculture students in terms of their self-efficacy and career interests before and after participating in the workshop. The El Paso, Texas, and Atlanta, Georgia, workshops comprised students without a formal agricultural background, while the Chicago, Illinois, and San Antonio, Texas, workshops comprised students from agriculture programs. Researchers administered a two-part online assessment containing a career interest section and a self-efficacy section. Post-hoc reliability scores for the self-efficacy and career interest sections were greater than 0.80 for pre-workshop and post-workshop. Interest in a career that requires at least a bachelor's degree was the highest for all four workshops in both assessments. Additionally, non-agriculture students were more likely to increase in self-efficacy and career interest after the workshop. Until more urban agricultural education programs are established, colleges of agriculture should implement similar workshops in other academic majors to recruit urban, minority students who have little agricultural experience.

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#253

### **Animal Breeding and Quantitative Genetics Online: A Solution to a Dilemma in Graduate Education**

Ron Lewis, Barbara Lockee, Matt Ames, Gabi Mrquez, Mark Enns, Janice Rumph, and John Pollak  
Virginia Polytechnic Institute and State University

Faculty numbers in quantitative genetics have fallen substantially over the past decade. With less advanced coursework offered, training of experts in this discipline for academia and industry has reduced. A potential solution to this dilemma is distance learning driven by across-institutional collaboration. In 2006 a U.S.-wide survey was conducted to assess demand and feasibility of distance-delivery for offering graduate-level training in quantitative genetics. In total, 125 faculty members from 73 universities were contacted: 47% responded. The stated need for such training was overwhelming, with 90% of respondents supporting distance-delivery to redress short falls in their curriculums. A consortium of four universities combined effort to develop eight Masters degree-level asynchronous courses. Learning was facilitated through a variety of strategies, including recorded lectures and discussion board activities. One course was a game-based genetic simulation played across-universities using a web-based interface. The curriculum began in fall 2007, with students from 28 universities since participating. Feedback was provided anonymously by 63 of 80 students enrolled. Content was evaluated as overwhelmingly positive. Student opinions regarding the technology and ethos of on-line learning were sought. The technologies used were deemed successful with 97% of students comfortable with audio-presentations. Interaction was encouraged through on-line discussion boards and e-mails. Most students felt they had enough interaction with the instructor (77%) and classmates (92%) through the asynchronous tools provided. Concerns regarding the 'distance' in distance-delivery were not realized. Inter-institutional distance-delivery of advanced training in quantitative genetics appears to be a viable strategy to meet student, industry, and academic needs.

#256

### **Putting Theory into Action: Results of Curriculum Modifications in a Dietetics Program**

Carole A. Conn and Linda F. Freeman  
University of New Mexico

Carmine J. Russo  
Central New Mexico Community College

Crystal A. Connors and Eileen B. Hanson  
University of New Mexico

We designed curriculum modifications to afford previously absent food-handling experiences for dietetics students. Our grant emphasis is on Hispanic foods, and the modules were designed to improve the knowledge and confidence of dietetics students related to talking with others about safe preparation of nutritious Hispanic foods. We will describe the results of the implementation of the first curriculum module related to Basic Food Sanitation and Safety and the second module on Food Demonstrations. The Safety module included an interactive presentation of food safety and sanitation concepts, with in-class practice in hand washing and safe food-handling in the preparation of a snack. We tested students using 15 questions related to safety and sanitation concepts both pre and post implementation, and then tested their recall one month later. Paired data for 26 students were analyzed using SPSS. All pre-post data showed trends in improvement, however, for three of the concepts least known to students at pre-test, knowledge improved significantly ( $p < 0.05$ ) by 66.7%, 55.6%, and 18.5% from pre-test to recall. For the Food Demonstration module, 33 dietetics students were coached and then asked to deliver a demonstration of preparing a simple recipe of their own choosing. Before and after the experience, they responded to five questions to rate their confidence with regard to cooking and showing others how to create a dish from a recipe. All five pre-post ratings for confidence improved and two improved significantly ( $p < 0.05$ ). We conclude that both modules were effective in enhancing student knowledge and confidence.

#259

### **Learning and Sharing Hundreds of Miles Apart, Ahhhh, the Power of Virtual Worlds**

Marcia Owens Kloepper, Ed Zweischer,  
Patricia Curtis, and Amanda Evert  
Redlands Community College

Redlands Community College is a progressive Agricultural College and has many pieces of animal science including bovine, equine, ovine, and caprine studies but, does not have poultry science. Auburn University, Auburn, Alabama, is one of six universities with a Department of Poultry Science. Collabo-

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rating with faculty and staff of Auburn has provided RCC students an opportunity to visit Eagle Island which is agricultural-focused and built by the AU Department of Poultry Science, using the virtual environment to educate about “farm to fork” efforts that ensure a safe, wholesome and high quality product. This learning environment has been built based on brick and mortar facilities with creative liberties taken. The island has locations to highlight the poultry industry and includes a Research Unit, Egg Processing Facility, “Dawghouse” Movie, Landmarks of Interest, Virtual Chicken Amphitheater and Museum, and a Microlab where microscopes are set up for student use. Web resources are shared to show that Second Life can have linkages outside the virtual world and to provide additional resources for those visiting the island. The overall purpose of Eagle Island is to provide a more engaging learning experience than a traditional classroom. Real life facility tours are difficult, if not impossible, to schedule. With the help of experts from Auburn, RCC utilizes Eagle Island to augment classroom presentations and encourage critical thinking. Learning and sharing, hundreds of miles apart, ahhh the power of virtual worlds.

### **#260 Perceived Team Cohesion and Individual Effectiveness during a Collaborative Service-Learning Experience**

Brian D. Lee  
University of Kentucky

Many students have limited formal experience in engaging learning as a collaborative and communicative team member in a university setting prior to degree completion. Employers continually indicate they value employees who can contribute to work teams. For an undergraduate degree in landscape architecture, students are required to complete a semester-long six-credit hour service-learning course. This course involves individualized student projects that are components of team-based products intended to communicate project ideas to a community sponsor as part of an integrated and comprehensive set of materials. This course, which comes at the end of a five-year degree, uses multiple team building interventions, including an off-campus challenge course. This study has involved 75 students in five cohorts over four years. Team members provide an assessment of perceived student experiences using a 35-item Likert-scaled questionnaire instrument. Assessments are administered on the course’s first and last

days for each cohort and periodically administered throughout the semester to document student perceptions over time. There have not been any statistically significant differences perceived by team members on any of the typically reliable measures ( $\alpha = .76 - .98$ ) using a Wilcoxon signed-rank test. Testing for perceived changes at the beginning and end of the course has not shown statistically significant differences; however, intervening surveys have shown perceived differences. The results have implications for how, when, and what the expected benefits are of incorporating team-based productivity/learning at the end of a course of study.

### **#264 Collaborating to Create an Ag Banking Degree in Partnership with Bankers**

Ron Hanson  
University of Nebraska-Lincoln

Collaborating with external sources is an effective strategy to create new and innovative academic programs. The Nebraska Bankers Association warned of an approaching shortage of college graduates trained as agricultural lenders. Through collaboration with Nebraska Bankers Association, a curriculum for an Agricultural Banking and Finance major was developed at the University of Nebraska. This Ag Banking major offers a balanced curriculum between courses in Agricultural Economics and the College of Business in finance and accounting. Further collaboration with the Nebraska Bankers initiated a four year scholarship program to recruit and retain students as ag banking majors. Student learning activities were implemented to insure and to assess the success of this Ag Banking degree project. To engage students, a required banking internship is part of their curriculum requirements. An Agreement of Understanding between the host bank and student outlines the bank management training program each intern must accomplish during their internship. A Mentoring Program partners a senior bank officer with each intern to guide the student through the bank’s training program and evaluation process. A faculty visit is made to each host bank to evaluate the progress of the internship training. Each host bank and student writes an internship assessment report. There are 47 students majoring in Ag Banking with 42 students receiving a \$6000 scholarship. Graduates return back to their rural communities to begin a career in agricultural lending. No other university has a similar academic program in direct partnership with their state banking association through this collaboration.

**#267**

**Development of a Managerial Mentoring Program for Underrepresented Animal Science Students**

Jeff S. Pendergraft  
Sul Ross State University

Hispanic and other underrepresented students make up a very small portion of the Animal Science student body at most universities. Therefore, the main objective of this project was to develop a managerial mentoring program that would model a realistic workplace experience. The managerial mentoring program provided 70 students with real-life experiences in livestock management and research activities. Thirty-one percent of the participants in the mentoring program were underrepresented students. In addition, 35% of the mentors were Hispanic students. Seven students from the mentoring program conducted research projects and six of these students were Hispanic. Of the 23 students who graduated during this project, 18 of them participated in the mentoring program. Furthermore, all of the Hispanic students who participated in the mentoring program and graduated are now working in the agricultural industry, and one has started her Master of Science at New Mexico State University. The development of the managerial mentoring program from this project has allowed animal science students at Sul Ross State University the ability to work collaboratively with the University of Arizona, Kansas State University, New Mexico State University, The Ohio State University, Texas A&M, the University of Puerto Rico and with the Facultad de Medicina Veterinaria y Zootécnia de la Universidad Nacional Autónoma de México (UNAM) in Mexico. The HSI Grant Program has provided Sul Ross the ability to attract outstanding students from underrepresented groups and produce graduates who have real skills for real life that will enhance the agricultural scientific and professional work force.

**#269**

**The Creative Project: An Old and New Teaching Strategy**

Maria Navarro and Antoine Jefferson  
The University of Georgia

More than two decades after Winrich posited that “the creative skills involved in the process of artistic expression translate very well into the problem solving world of technology” (1984, p. 3) many educators

are still deciding whether or not they venture to include creative projects in their teaching. Though most accept that creative projects have the potential to support the shift to a more student-centered learning environment, many still believe that too much time devoted to these projects will compromise the quality and reduce the breadth and depth of knowledge “gained” by the students. The objectives of this presentation are to: 1) Present how creative projects have been used for ten semesters in an international agricultural development course; 2) Discuss, using examples of student projects, how they have helped improve student learning; and 3) Confer the challenges encountered, and strategies used to address them. Some of the contributions of creative projects include increase of the following: 1) Student motivation, initiative, and active participation (student-centered education); 2) Student depth of inquiry (content knowledge acquisition); 3) Student ability to analyze the project theme and present multidisciplinary solutions (problem-solving skills); and 4) Student willingness to critique and celebrate each others’ projects (analytical skills), give public presentations (communication skills), and collaborate with students from different backgrounds and majors (interpersonal skills). A major challenge encountered was the self-alienation of some students, which has been increasingly minimized by expanding the choices and examples presented to the students with each of the creative project assignments.

**#272**

**Using Peer Evaluations for Assessment and Promoting Collaboration**

Cory Epler, Thomas W. Broyles, and  
Holly J. Kasperbauer  
Virginia Polytechnic Institute and State University

Educators have the responsibility of helping students learn how to work with others and how to become members of workplace teams and groups. Even though team and group projects have many benefits, there are also challenges. One challenge associated is evaluation. Should students be evaluated for their participation in team or group projects? How do educators evaluate students for their participation in team or group projects? In response to concerns associated with team or group projects, peer evaluation (or assessment) is a method of assessment that helps ensure accountability for all team or group members. Peer evaluations allow students to give input into the assessment procedure by evaluating each other’s performance. The benefit of using peer evaluations is

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multidimensional. First, and most importantly, peer evaluations shed light into the inner workings of a team or group. Group members are in a position where they could offer evaluations of their peers and potentially negate “free riding.” In addition, the use of peer evaluations can help students become better team or group members. Participation in team or group activities does not ensure an individual’s ability to work within a team or group will improve. Improvement requires practice and feedback that many peer evaluations provide. Peer evaluation instruments are available in many different forms, and an educator must decide which evaluation instrument is most appropriate to use. Despite the challenges of peer evaluations, they provide valuable information about team or group member participation and contributions.

### #274

#### **Using YouTube Video Projects in a Class to Develop Communication Skills for Students and to Create Agricultural Awareness in a Broader Community**

D. Penrice, F. Robinson, M. Zuidhof, and J. Holdstock  
University of Alberta

Social media is becoming an important method of communication for the agriculture industry. One of the objectives of the Animal Science 200 class in the Faculty of Agricultural, Life and Environmental Sciences at the University of Alberta is to provide opportunities for small groups of students to develop problem-solving skills and to improve oral and written communication skills. As a major project for the course, student groups were asked to create a four-minute video that included at least ten “science points” in answering a quirky question about agriculture. The videos were presented at a public forum and subsequently posted on YouTube. Compared to live presentations, which had been produced by students in the previous semesters, students had to take into account an anonymous audience on the World Wide Web. Eight video presentations were posted on YouTube and after approximately two months, the video views totaled 773 and averaged 97 views per video. Views have come from Canada, the United States and Australia. By monitoring the number of views, viewer location, and comments for the videos, the instructors as well as the students can receive feedback about the relevance of the topic, effectiveness of communication and the viewing value of the video. This information will be used to develop future con-

tent in the course and techniques for communicating with the public to create agricultural awareness. Examples of video projects will be presented as well as data from the posted videos and anecdotes from students about their project.

### #275

#### **Engaging U.S. College Students in Eco-Village Design for Disadvantaged Youth in Rift Valley, Kenya**

Janelle Larson and Sjoerd Duiker  
Pennsylvania State University

The social and economic reintegration of street-dwelling children and youth is a serious problem in the developing world. Pennsylvania State University (PSU) and the Children and Youth Empowerment Centre, (CYEC), Nyeri, Kenya, have started a unique initiative to establish a system of eco-villages in Kenya to facilitate the successful exit of former street-dwelling young people from rehabilitation centers to become independent and self-reliant when employment is not available. The initial eco-village will be located in Lamuria, a small community in a semi-arid part of the Rift Valley. The eco-village will employ locally appropriate and sustainable technologies, which will be developed as small-scale businesses for the youth living in the village. In spring 2010 ‘Agricultural Systems in East Africa,’ a new multidisciplinary course was team taught by an agricultural economist and a soil scientist with support from a rural sociologist, an agricultural engineer, and an extension education specialist. Students documented socioeconomic and agroecological conditions in the region, explored promising technologies and products, and collected outreach materials for use in the eco-village. At the end of the semester the class will travel to Kenya to engage CYEC youth and the local community to further develop a strategy for the eco-village. This global initiative engages PSU agricultural science students in international service-learning and requires them to use higher-level thinking skills such as integration, application, and synthesis across courses and disciplines. Students report a greater appreciation of the complexities of food security, the application of content from other courses and enhanced research skills.

#276

**Cross Cultural Immersion in Cooperative Extension: A History and Analysis of a Georgia Program**

Jenna Brown, Maria Navarro, and Dennis Duncan  
The University of Georgia

In recent years, the Hispanic population has been one of the most rapidly growing groups in the United States. Cooperative Extension educators are now charged with the task of creating innovative programs, organizing educational seminars, and working with clubs and organizations to better meet the needs of this population. The University of Georgia began a Cross Cultural Immersion (CCI) Program in 2002, with its objectives defined by Ames and Atilas (2008) as: "1. To provide participants with a knowledge of social, cultural, and environmental issues of Latin America; 2. To compare and contrast cultural values between Latin America and the United States and to interpret these values relative to the Hispanic and non-Hispanic communities in Georgia; 3. To learn about globalization and its impact on Latin America; and 4. To be exposed to basic Spanish language instruction to improve Extension professional's language skills."

Following their trip, cross cultural immersion participants completed a survey regarding their experience and knowledge gained from the CCI Program. The survey consisted of 32 questions and four constructs were identified including, Program Objectives, Personal versus Professional Gain, Extension programming, and Ability to Serve the Hispanic Population. All results were analyzed using SPSS and each construct was tested for reliability using Cronbach's alpha prior to creating summated scale scores within constructs. This presentation will serve to further delineate the history of the University of Georgia Cross Cultural Immersion program, a typical experience, summarize qualitative and quantitative data results, and provide recommendations for future Cooperative Extension CCI programming.

#279

**Competitive Use of Teams and Industry Study Tours Enhanced the Learning Environment of an Introductory Animal Science Course**

Bryan A. Reiling and Sarah Novotny  
University of Nebraska-Lincoln

Students perceive large classes as stereotypically comprised of boring lectures, optional attendance,

and minimal engagement. It was hypothesized that team-based activities incorporating competition and industry study tours could function to enhance student engagement and facilitate student interest and learning. Ninety-six students were enrolled in an introductory four-credit Animal Science course. Six member student teams were designated by stratifying students across teams based upon animal species interest and background. During lab, teams worked within an educational, but competitive environment. For example, relay races tested knowledge of feedstuff identification, and mini-judging, and skillathon competitions helped review livestock evaluation and management concepts. As an incentive, winning teams received a perfect score on the associated laboratory quiz. Upon conclusion of the semester, 92 of 96 students completed an anonymous survey of their learning experience. During lab, 96% enjoyed teams, and 88% indicated they studied more when competition was involved. Also, 94% agreed that team quizzes stimulated learning, and 68% indicated greater personal preparation for team quizzes. Only 11% believed they did more work than other team members. As students interacted, a sense of community was established. Students were required to attend one of three different day-long study tours, but each team had representation on all tours. Tours helped students visualize (92%) and learn more (93%) about Animal Science. After all tours were completed, teams were given one hour to share information and develop a six to eight minute summary presentation. Sixty-one percent indicated they learned more after observing other groups' presentations. Teams enhanced the learning environment.

#287

**Use of an Audience Response System to Collect Real-Time Student Feedback**

Brian G. Bolt and K. Dale Layfield  
Clemson University

Audience Response Systems (ARS) may be used for multiple purposes in the classroom, most notably as a tool to engage students by polling the class throughout the lecture period. The ARS tool encourages active participation of the students by the act of self-reporting. Previously in large classes, there were few opportunities to gauge student engagement without soliciting a direct response. This study focused on describing students' self-reported levels of engagement in varied teaching formats in an introductory animal science class of 155 students. Ten to fifteen minutes of class time were allocated to use of one of



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three teaching formats. The three teaching formats were labeled as traditional, technology-enhanced or Web-enhanced lecture. The literature suggests that disaffected students are not involved with classroom activities and are not taking advantage of taught materials. At the conclusion of allocated time, students were posed a knowledge question, germane to the presented material, and they were also asked to respond with a perceived level of engagement in classroom activities. The responses were collected via a five-point Likert-type scale (1=Completely Disaffected to 5=Completely Engaged) using the i-Clicker® ARS. This method of student observation yielded findings that can provide a baseline for measuring relationships between teaching formats and student engagement with negligible disruption of valuable class time.

### #288

#### **Student Video Project Influences Consumer Perceptions about Antibiotic Usage in Livestock Production**

M.J. Zuidhof, M. Clarke, M. Wallace, A. Tuckwood, R. Taylor, S. Jeffery, D. Penrice, and F.E. Robinson  
University of Alberta

A sustainable livestock industry depends on consumer confidence. Educating producers and consumers enables both to understand the other's point of view on specific production issues. As part of a capstone animal science class, students at the University of Alberta created a YouTube-style video that presented both producer and consumer perspectives on issues surrounding prophylactic antibiotic use in livestock production. The video was presented to a public audience of approximately 450 people, and volunteer participants in the audience (n=105) provided feedback by way of iClickers. An identical set of questions was asked before and after people watched the video to directly measure changes in level of concern about the following issues: prophylactic antibiotic use for growth promotion; bacterial resistance; antibiotic residues; cost of products; and animal health and welfare. Audience participants responded to these questions using a five-point scale: not at all concerned; slightly unconcerned; neither concerned nor unconcerned; slightly concerned; or very concerned. Chi-square analysis was conducted using the frequency procedure of SAS to determine the significance of differences in the levels of concern prior to and after viewing the video. There was a significant ( $p < 0.05$ ) decrease of 14.6% in the level of concern about antibiotic residues in meat after watching the

video. A 12.8% increase was observed ( $P=0.07$ ) in the level of concern about prophylactic antibiotic usage for improving animal health and welfare. In addition, 60% of the audience voted in favor of a complete ban on prophylactic antibiotics effective immediately. Students demonstrated effective use of edutainment to influence consumer perceptions about an important agricultural issue.

### #290

#### **Enrichment of Biochemistry Laboratory and Research Experiences for Hispanic Nutrition Students**

Michelle Schelske Santos  
University of Puerto Rico

Simin Nikbin Meydani  
Tufts University

Puerto Ricans rank among the top five of 52 United States and associated territories in overweight and obesity, low physical activity, low fruit and vegetable intake, and diabetes. An USDA project was developed to enhance the quality of Hispanic nutrition student academic preparation through equipping a biochemistry lab with scientific instrumentation for teaching, and strengthening the course with curricular revision and materials development. Over \$80,000 was invested in scientific instrumentation, technological equipment and materials for the biochemistry laboratory. Ten lab experiences with a conceptual framework in nutrition and clinical applications were developed or selected and compiled into a bilingual laboratory manual. Three sets of videoconferences were delivered to UPR, Rio Piedras, from Tufts University, Boston. An e-Education platform was used to enrich the course with electronic discussion boards on integrative and controversial topics. Eight students received support to attend professional conferences and one student received a \$50,000 scholarship to pursue graduate studies in nutrition. The project has served 207 students in the Biochemistry course and 15 students in Independent Study since 2006. Students' skills and interest in nutrition research, and their understanding of the scientific method and published scientific research have increased. Overall student satisfaction with the new lab equipment and experiences is high. Involving Hispanic students in cutting-edge nutrition research through use of state-of-the-art laboratory equipment, stimulating their passion for learning through videoconferences and increased use of technology, and supporting them in

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their studies and career choices in nutrition, have great potential for lasting impact on public health.

**#292**

### **Developing Future Teachers through Children's Water Festival Presentations**

Kellie Claflin and Tim Buttles  
University of Wisconsin - River Falls

Collaboration between the agricultural education department and organizers of a county wide children's water festival provides a unique opportunity for future agricultural education teachers. Presenting at the festival gives agricultural education majors several opportunities not readily available in school-based field experiences. Interaction with middle school age students is limited by a lack of middle school courses in the agriculture programs near campus. The festival provides hands-on water resources education to nearly 750 fifth-grade students in September each year. Unlike many classroom-based field experiences, the university students teach the same activity numerous times throughout the day. Presenters evaluate each session and implement changes for the next group. After the day is complete, university students submit a reflection paper based on the entire experience. Since the partnership began in September 2007, 85 university students have presented at the festival. Increasing interest in serving as a presenter demonstrates that students see the benefit of this experience. The festival organizers also recognize the value of university student participation. A leader of the festival organizing committee, a county water resources manager, stated "I believe that the UWRF student participation in the Festival is a major reason the festival is a success." In 2009, the festival organizers covered the full cost for 41 university students to receive water education training and the Project WET Curriculum and Activity Guide. Serving as festival presenters demonstrates how service learning activities help students learn both disciplinary knowledge and civic knowledge.

**#295**

### **Growing Community-University Collaboration through Food System Study**

Yona Sipos and Art Bomke  
University of British Columbia

Community-university engagement is a rapidly growing paradigm that encourages collaboration and partnerships to address pressing societal questions and

needs. Recognition of the value of such collaboration has led to a chorus of calls, particularly from universities, to provide ever-more opportunities for undergraduate students to engage in community-based learning (CBL). Post-secondary educators face daunting questions of how to effectively and efficiently 'scale-up' or 'grow' CBL opportunities for more students while ensuring those strategies are manageable and productive for community partners. We respond to these questions through the case study of the UBC-based Community Food Assessment Project (CFAP) and provide best practices to transition toward and frame community-university collaborations in large post-secondary classes or programs. The CFAP is a collaborative community food security action research project, housed in the Faculty of Land and Food Systems at UBC, Canada. It has evolved in response to formal and informal input from students, community partners and teaching teams through course development surveys and semi-structured interviews. The project serves as a microcosm of broader theoretical and praxical investigations into community-university collaboration due to its size, scale and scope; since 2006, the CFAP has included over 800 undergraduate students and 30 community partners from ten communities across British Columbia. The inclusion of urban, suburban, and rural perspectives allows students to explore global issues of food system sustainability through a local lens. Our best practices are easily generalizable to other post-secondary environments.

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### #296

#### **Establishing an AG\*IDEA Degree Program in Soil, Water, and Environmental Sciences**

John Havlin  
North Carolina State University

Michael Mullen and Mark Coyne  
University of Kentucky

David Radcliffe  
University of Georgia

Wes Wood  
Auburn University

Tom Thompson  
Texas Tech University

Ed McCoy  
Ohio State University

Dennis Shannon  
Auburn University

Master of Science (MS) non-thesis degrees are an increasingly popular approach to meeting the demand for enhanced education and professional development by practicing professionals. Since many potential students are unable to simultaneously accommodate career, family, and academic responsibilities with a traditional on-campus MS degree, distance education programs leading to a non-thesis degree or certificate would serve this growing demand. Through the Agriculture Interactive Distance Education Alliance (AG\*IDEA), faculty from collaborating universities are establishing interdisciplinary MS degree and certificate programs in soil, water, and environmental sciences (SWES) by distance education. AG\*IDEA, an affiliate of the Great Plains IDEA, is a national consortium of land grant universities offering programs and courses in agriculture disciplines. The graduate degree program will be comprised of several required core courses and electives that provide flexibility to meet individual interests. Core courses include soil physics, biology, chemistry, hydrology, and genesis/morphology. Graduate certificates are increasingly recognized as an important avenue for professional development, although the coursework is less extensive than a master's degree program. Based on survey data, developing a comprehensive degree and certificate programs through distance education will serve a rapidly growing demand for graduate education related to professions in SWES.

The AG\*IDEA SWES graduate programs will be available in January 2011, and will substantially enhance educational and professional development opportunities for practicing professionals in soil, water, and environmental sciences.

### #298

#### **Agriculture Content and Technology in a Language Classroom: A Case Study**

Rosita L. Rivera Rodriguez and Catherine Mazak  
University of Puerto Rico Mayagüez

This presentation reports the results of a year-long, content-based, technology-enhanced, and English as a second language course for agriculture students. The course fused agricultural content, English language, technology, and academic strategy learning to increase the motivation and academic English proficiency of thirty incoming agriculture majors at the University of Puerto Rico in Mayagüez. The researchers assessed the program using both qualitative and quantitative approaches. (1) Authentic assessment instruments were developed to assess students' academic progress in reading and writing. (2) Pre-assessment and post-assessment surveys were administered at the beginning and at the end of the course to measure students' technology learning. (3) Focus groups and interviews were used to assess the students' motivations and attitudes toward agriculture and English learning for retention purposes were conducted at the end of the course. (4) Field notes by teachers external to the project gave insight into the effective integration of agriculture content, English teaching and learning strategies as well as the integration of technology. Assessment results showed that all thirty students were able to improve their reading and writing skills. Analysis of interviews, focus groups and field notes showed that the combination of technology, agricultural content, and English increased student motivation and positive attitudes towards the field of agriculture. The materials developed for this agriculture majors' course will be shared and techniques for implementation in different contexts will be offered.

**#311**

**Plant Biotechnology Academic Subject Certificate at Windward Community College**

Ingelia White  
Windward Community College

Agribiotech companies in Hawaii need highly trained and skilled biotechnologists. Windward Community College is celebrating ten years achievement of the Academic Subject Certificate in Plant Biotechnology (ASC-PB). The program is supported through US-DA-NIFA grants. A total of 26 credits are required to receive the certificate. Graduates are prepared for careers in biotechnology, bioprocessing entrepreneurship, and transfer to higher degree institutions, majoring in agribiotechnology, horticulture, ethnobotany, biology, pharmacy and pre-medicine. Hands-on learning and research training are provided through campus biotech facilities: the Tissue Culture and Plant Biotech Facility, the Kuli La'au – Tropical Plant and Orchid Identification Facility, the climate-controlled greenhouse, and the Bioprocessing Medicinal Garden Complex (BMGC). Collaborative research/teaching has also been developed with the Hawaii Agriculture Research Center, and the University of Alaska, Fairbanks-Kuskokwim campus. Forty-five students (38% are Native Hawaiians) have received the ASC-PB, 42% of ASC graduates have entered the agribiotech workforce, 76% have transferred and received higher degrees, and 24% have become agribioprocessing entrepreneurs (the total percentage exceeds 100% because different categories overlap). Student research projects have resulted in the publication of two Ethnopharmacognosy Series, scientific articles and posters. The Plant Biotechnology program has educated over 8,000 Liberal Arts AA graduates through courses offered for the ASC-PB. More than 2,000 high school students and community members have visited the BMGC since its opening in June 2007, gaining an awareness of pharmaceutical/nutraceutical research and agbioproduct manufacturing. Number of students declaring a major in Plant Biotechnology has increased by 33.3% due to exposure to the BMGC.

**#312**

**Peer Review of Group Performance: Rewarding Low Contributors?**

Chris Morgan, Natalie Coers, and Antoine Jefferson  
The University of Georgia

The ability for students to work effectively in workplace team environments upon graduation necessitates the need for group or team projects in college courses. Instructors, however, are faced with the challenge of creating an environment that encourages all group members to put forth the same high level of effort. Likewise, students can become frustrated with group work in the classroom setting due to scheduling conflicts and concerns of social loafing, in which one or more group members performs below their expected level and causes the remaining members to shoulder an unequal amount of the work. To minimize social loafing, instructors can incorporate peer evaluation of team members into each student's grade, offering the opportunity for confidential analysis of group members' contributions throughout the project. But how likely are peers to provide appropriate grades for fellow students guilty of social loafing? For this study, written statements from group members justifying the grades they provided for each of their peers were analyzed and compared to the grades assigned. In addition, a questionnaire was used to determine the likelihood for students to provide appropriate grades for their peers based on different level of performance, from low to high. Results showed that low performing students, i.e. a performance that would not be acceptable in the workplace, received passing grades from peers, usually at the level of "B." Conclusions include suggestions for encouraging students to provide appropriate peer evaluation grades and the use of effective feedback to minimize social loafing.

**#313**

**Leadership Courses: Where Do Students See the Value?**

Chris Morgan, Natalie Coers, and Antoine Jefferson  
The University of Georgia

Soft skills – skills that enable an individual to effectively work in a collaborative environment – are increasingly among the top skills desired by employers today. In order to provide students with a smooth transition to work, transferable soft skills, such as interpersonal communications and team building, are appearing in higher education institutions through

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courses focused on leadership and personal development. These leadership and personal development courses combine leadership development theory and practice with additional experiences for a truly applicable course, adaptable for each student. However, what value do students truly place on such skill development? Throughout these courses, objectives relating to the students' personal goals and professional aspirations are taught and students are able to reflect upon the semester's work through a final paper and course evaluation. This study utilized students' reflective essays in which students shared their perceptions of course experiences and the perceived value of those experiences. Information gathered from these assignments was used to modify course activities in future semesters, providing more material related to the top-valued skills developed in a specific course. Illustrations for how reflective assignments can be used in other agriculture courses will also be presented.

### #315

#### **Integrating Spatial Educational Experiences (Isee) into Crop, Soil, and Environmental Science Curricula**

Darrell G. Schulze, Phillip R. Owens, Stephanie Mitzman, Lori Unruh Snyder, George E. Van Scoyoc, John G. Graveel, Christopher C. Miller, Marianne Stowell Bracke, Ronald J. Glotzbach, Laura A. Kocur, Bedrich Benes, Purdue University

Travis Neely, Mike Wiggington, Rick Nielson  
Indiana State Office, USDA, Natural Resource Conservation Service

Many of the concepts that our students must master in soil, crop, and environmental science courses are inherently spatial. Our ability to make these spatial patterns clear to our students has been limited, however, by the lack of a comprehensive spatial data set and a fast, easy to use spatial data viewer. Students, however, need more geospatial skills to understand and address the increasingly complex societal problems that will confront them throughout their careers. We are developing a web-based geographic information system based on Google Earth that will allow students to access a large variety of soil and other maps for any area of the state of Indiana (<http://isee.purdue.edu/>), and we are integrating this new spatial educational experience into our curricula. We have two goals: (1) to develop the ability of our students to use geospatial information to understand

how and why soils and landscapes vary spatially at scales ranging from individual fields to a region as large as Indiana, and (2) to develop our students' understanding as to how the spatial distribution of soils and landscapes impacts the distributions of crops, cropping systems, land use, and environmental and natural resource issues. We asked 51 students in a beginning soils class to create concept maps prior to, and a few weeks after, completing an exercise that required the use of the Isee web resource. We used a consistent scheme to score all the concept maps. After completing the Isee exercise, scores increased an average of 15% over the scores of the initial concept maps.

**2010 NACTA Conference – Poster Presentations**  
**Penn Stater Conference Center**  
**Wednesday, June 23, 2010**

**Poster Session A:**  
**Time: 9:00 – 10:30 a.m.**  
**Penn Stater Lobby**

<b>Poster No.</b>	<b>Abstract No.</b>	<b>Title</b>
1	0137	A New Online Graduate Program in Ecological Restoration: Lessons Learned from Course Evaluations <i>Shibu Jose, Michael Barnister, Leda Kobziar</i>
2	0138	Undergraduate Research Experiences in Microbiology and Developmental Entomology <i>Patricia Baynham, Lisa Goering</i>
3	0139	Student Computer Use in Undergraduate Agriculture Courses: A 10-Year Study <i>Casandra Cox, Leslie Edgar, Karisha Munsie, Donna Graham, Don Edgar, Donald Johnson</i>
4	0323	Building Connections that Expand Bioscience Education in Arizona <i>Marshall Logvin</i>
5	0148	Developing an Instrument to Measure the Value of Field Experiences as Perceived by Agricultural Education Candidates <i>Jeremy Falk, Ryan Foor, Jon Simonsen, Jamie Cano</i>
6	0149	Improving the Educational Pipeline to Develop Educational Capital: A Public Policy Approach <i>Jolene Hamm, Daisy Stewart</i>
7	0150	Internationalizing the Undergraduate Experience <i>H. C. Emerson, M. T. Rodriguez, T. G. Roberts, R. K. Barrick</i>
8	0154	Balancing the Scale: The Advisor-Graduate Student Relationship <i>Bart Gill, Billy McKinn, Summer Odom</i>
9	0157	The Development, Recruitment and Implementation of Estudiante de Dietética: A Spanish Nutrition Curriculum for Undergraduate Dietetic Majors <i>Lisa Kessler, Sharonda Wallace, Bonny Burns-Whitmore</i>

<b>Poster No.</b>	<b>Abstract No.</b>	<b>Title</b>
10	0159	Training in the Development and Application of Quantitative Methods and Tools for Animal Genomics <i>Jack Dekkers</i>
11	0160	Sustainable Agriculture in Western Wisconsin <i>William Anderson, Faith Durham, Susan Frame, Faye Jones, Juliet Tomkins</i>
12	0162	Training Future Faculty in Sustainable Sciences Through an Interdisciplinary Ph.D. Program in Rural Sociology (IPPRS) <i>Linda Lobao, Robert Birkenholz, Molly Bean Smith</i>
13	0165	Communicating Agricultural Science Careers to Urban High School Students <i>Tracy Rutherford, Cindy Akers, Gary Wingenbach, Cash Berry</i>
14	0169	Effect of Student Absenteeism on Academic Performance in Undergraduate Animal Science Courses <i>K. J. Stutts, M. M. Beverly, S. F. Kelley, M. L. McMillan, A. N. Bullion, L. A. Rakowitz</i>
15	0172	Multicultural Culinology Courses: Real-Time Experiential Learning <i>Ginger Lordus</i>
16	0176	Reporting Your Research Results <i>Jesus Cuellar Fuentes</i>
17	0180	Engaging Students in Physicochemical Analyses Using Modern Instrumentations: A Practical Approach to Teaching Courses in Food & Nutritional Sciences <i>J. D. Kelly, N. L. Dawkins, R.D. Pace</i>
18	0181	Chef-Scientists: A Collaborative Cross-Disciplinary Program <i>Priscilla Bloomquist, Lisa McKee</i>
19	0183	Student Perceptions of Hybrid vs. Traditional Courses: A Case Study in Plant Identification <i>William Hoch, Tracy A.O. Dougher</i>
20	0185	Creating Individualized Instruction in College Courses Through Online Collaboration Tools <i>Barry Croom</i>
21	0187	Fostering Political Activism in Animal Agriculture Courses <i>Mike Amstutz, Karen Wimbush</i>
22	0192	Creation of an Arboretum for Botanical Education at Delaware State University <i>Susan Yost</i>
23	0193	Student Experiential Learning in the Natural Resource Sciences <i>Wiebke Boeing, Martha Desmond, Raul Valdez, Marnie Carroll, Vicente Lombrana, Angeline Sells, Jennifer Smith, Richard Wiedenmann, Joseph Zebrowski</i>
24	0194	Preparing for the PACT: Modifications to a Teaching Methods Course <i>Wendy Warner, Ann De Lay</i>
25	0196	Project PAW (Peers Affirming Wellness) Pals. <i>F. M. Walker, B. Dixon, R. McWhorter, E. Duffus, S. McWhinney</i>

Poster No.	Abstract No.	Title
26	0199	Teaching Agriculture in Higher Education Institutions – What the Data in the FAEIS System Tells Us <i>Timothy Mack, William Richardson, Jolene Hamm, Shea Dunifon, Whitney Martin, Mary Marchant</i>
27	0200	FAEIS: A Resource for Agriculture Faculty and Institutions <i>Mary Marchant, Joseph Hunnings, Jolene Hamm, Timothy Mack</i>
28	0204	Curriculum Enhancement in the College of Agricultural and Life Sciences <i>R. Elaine Turner, Mark Rieger, R. Kirby Barrick</i>
29	0212	The Moments We Miss: Using Facial Reader Software as an Educational Research Tool <i>Tiffany Drape, Rick Rudd, Donna Moore, Marie Vogler</i>
30	0213	Development of a General-Interest Course in Agricultural Terrorism to Attract Students in Majors from Outside Agriculture. <i>Nick Hill, Ronnie Silcox, Jean Bertrand, Sarah Workman</i>
31	0216	Using a Social Network Site as a Tool for Communicating With Alumni <i>Michael Mohney, Michael Reinert, Dan Stearns</i>
32	0217	Abilities and Beliefs of Mentor Teachers <i>Ryan Foor, Jamie Cano</i>
33	0220	Implementing Sustainability Engineering Curricula Across the College of Engineering at The University of Texas at El Paso <i>Heidi Taboada, Jose Espiritu, Connie Gomez, Noe Vargas</i>
34	0222	Virtual Learning Forests: An Online Learning Tool for Natural Resource Students <i>Michael Bannister, Howard Beck, James Oliverio</i>
35	0228	An Interdisciplinary Agricultural Biotechnology Course: Student Perceptions of Agriculture, Biotechnology, and Integrative Techniques <i>Elizabeth Wilson, Kevin Curry Jr., Charlotte Farin, Chad Jordan</i>
36	0307	A Descriptive Analysis of Social Cognitive Career Theory Variables Related to Agricultural Careers <i>Levon Esters, Ryan Wynkoop</i>
37	0255	Changing Seats vs. Staying in the Same Seat Increases Participation Contrary to Student Perception in a Senior Level University Class <i>Olivia Hoopes, Dennis Eggett, Tory Parker</i>
38	0257	Motivational Strategies for Recruiting Talented Students in Agricultural Sciences at The University of Arkansas at Pine Bluff <i>Mohammad Jalaluddin, Shahidul Islam, Sixte Ntamatungiro</i>



**2010 NACTA Conference – Poster Presentations**  
**Penn Stater Conference Center**  
**Thursday, June 24, 2010**

**Poster Session B:**  
**Time: 9:15 – 10:30 a.m.**  
**Penn Stater Lobby**

<b>Poster No.</b>	<b>Abstract No.</b>	<b>Title</b>
1	0229	West Hills College Lemoore USDA Abstract <i>Joel Ruble, Dave Bolt</i>
2	0231	Integration of Interdisciplinary Techniques: Agricultural Biotechnology (ITAB) <i>Gloria Rojas-Vazquez</i>
3	0232	What's the Issue?: Critical Thinking about Current Events in Agriculture and Natural Resources <i>Karen Cannon, Greg Gifford, Nicole Stedman</i>
4	0234	A Conceptual Model of Learning Activities for College Instructors <i>T. Grady Roberts, Christopher Stripling, Christopher Estep</i>
5	0235	An Experiential Learning Model for College Educators <i>Christopher Stripling, T. Grady Roberts</i>
6	0237	Development of Online Courses in the Dietetics, Foods, and Nutrition Programs at Lehman College <i>Andrea Boyar</i>
7	0239	Changes in Participant Knowledge Level and Intended Lesson Topics for an Emerging Pathogens Workshop <i>Quisto Settle, Tracy Irani, Lauri Baker, Katie Abrams</i>
8	0242	Assessing the Written Communication Assignments in a Workforce Preparation Course in Animal Sciences: Lessons Learned <i>Mark Tucker, Inez Ponce de Leon, Mark Russell</i>
9	0243	A Description of Factors Effecting Student Retention within a College of Agricultural Science and Natural Resources <i>CassiDe Street, Cindy Akers, Steven Frazee, Lori Dudley, Rachel Bobbitt, Kelsey Hall</i>
10	0100	Recipe Development Project: A Successful Integration of Undergraduate Service Learning and Extension Programming at the University of Kentucky <i>Tammy Stephenson, Laura Stephenson, Kwaku Addo, Janet Johnson</i>
11	0101	National Model Training Program for Veterinary Homeland Security <i>Sandra Amass, Marianne Ash, Thad Blossom</i>
12	0104	Helping Agriculture Students Analyze Non-Profit Organizations <i>Maria Navarro</i>

Poster No.	Abstract No.	Title
13	0106	Using Journaling and Surveys to Assess Student Outcomes from Study Abroad Programs in Agriculture <i>Joey Mehlhorn, Sandy Mehlhorn, Andrew Brown</i>
14	0108	Student Perception on Virtual Laboratories <i>Kimberly Moore</i>
15	0109	Time to Celebrate: Collaboration and Communication Bring Student Success <i>Nora Garza, Douglas Morrish</i>
16	0110	Agriculture Courses During Summer School: Community College Students' Interests and Preferences <i>Steve Keith, Cindy Akers, Gary Wingenbach</i>
17	0111	CASE: Enhancing the Traditional Delivery Model of Secondary Agricultural Education <i>Daniel Jansen, Marlene Mensch</i>
18	0115	The Alliance for Cooperative Course Exchange in the Plant Sciences <i>Michael Evans, Donna Graham, Janet Cole, Edwin Miller, Richard Harkess, Walter Taylor, Jeff Kuehny, Elizabeth Gerrison</i>
19	0116	USDA National Needs Fellowship in Bio-Fuel Systems at Virginia Tech <i>Jeffrey Alwang, John Cundiff, Richard Hirsh</i>
20	0118	Integrating Collaboration, Communication, and Celebration Into Short-Term Study Abroad Experiences <i>Thomas Kuzmic</i>
21	0119	Collaborative Project to Enhance High School Science Curricula <i>Corrie Cotton, Anugrah Shaw, Courtney Harned</i>
22	0120	Searching the Deep Sea for Clues to Enhance Agricultural Carbon Fixation: An Undergraduate Research Program to Isolate, Characterize, and Sequence Novel Autotrophs <i>Sharyn Freyermuth, Kathleen Scott, Cheryl Kerfeld</i>
23	0122	Preparing Global Ready Leaders in Agricultural and Life Sciences - CALS LI <i>H. Charlotte Emerson, R. Kirby Barrick</i>
24	0124	Reedley Colleges Partners in Agricultural Leadership: USDA-HSI Grant-Funded, Competitive Agricultural Leadership and Education Program for High School Students <i>Karri Hammerstrom</i>
25	0125	Livescribe Pulse™ - A Digital Pen and Paper Solution for Online and Traditional Teaching Methods <i>T. Burcham, S. Mehlhorn, S. Parrott, P. Smartt, J. Roberts, J. Mehlhorn</i>
26	0129	Swine Science Online <i>Margaret DenBeste, David Meisinger, Tom Baas</i>
27	0130	Assessing the Impact of an Academic Internship Experience <i>Mark Kistler, Jacklyn Bruce, Emilou Phelps</i>
28	0132	Do Agricultural Courses Abroad Really Influence Student Global Engagement? <i>L. Snyder, A. J. Lamm, J. Brendemuhl, T. Irani, T. G. Roberts, M. Rodriguez, J. Navarro</i>
29	0133	An Agribusiness Management Simulation for Undergraduates <i>Lisa House, David Barber, Freddie Barnard, Liza Braunlich</i>
30	0134	Expanding Opportunities in the Hospitality/Food Industries, NACTA10VLG <i>Valorie Gehman</i>
31	0289	Assessment Method for Quantifying Knowledge Level of Students at the Beginning and End of a Course <i>K. W. Lovercamp</i>

<b>Poster No.</b>	<b>Abstract No.</b>	<b>Title</b>
32	0244	Effectiveness of a Science Agricultural Summer Experience in Attracting Rural New Mexican Students to Natural Resources Management Tracks <i>Jennifer Lindline, Edward Martinez, Michael Meyer, Michael Petronis</i>
33	0248	Strengthening Team Facilitation and Communication Skills of Upperclassmen Through Collaborative Responsibilities in a Freshman Animal Sciences Orientation Class <i>Barry Delks, Mark Russell</i>
34	0251	Using Student Content Engagement to Improve College Teaching <i>Christopher Estep, T. Grady Roberts</i>
35	0252	Identifying How Educators Prefer to Learn About Technologies for the Classroom <i>Kelsey Hall, Courtney Meyers</i>
36	0258	Measuring Student Adoption of High Cognitive Teaching Techniques and That Relationship to Their Ability to Answer Higher Cognitive Questions <i>Carla Jagger, M. Susie Whittington</i>
37	0263	Food for Thought: A Collaborative Effort to Incorporate Food and Agriculture Disciplines into a Liberal Arts Curriculum <i>Greg Pillar, Jessica Braswell, Suzanne Watts Henderson, Melinda Harper, Dorothy McGavran</i>
38	0171	Student Attendance and Academic Performance in Undergraduate Animal Science Courses that Include Laboratory Exercises <i>K. J. Stutts, M. M. Beverly, S. F. Kelley, M. L. McMillan, A. N. Bullion, L. A. Rakowitz</i>

# 2010 NACTA Conference – Poster Presentations

## Penn Stater Conference Center

### Friday, June 25, 2010

**Poster Session C:**  
**Time: 8:00 - 9:15 a.m.**  
**Penn Stater Lobby**

Poster No.	Abstract No.	Title
1	0270	Teaching Controversial Issues Through Guided Group Discussion: An Approach To Cognitive Dissonance And Conceptual Change <i>Chaney Mosely, Thomas Broyles</i>
2	0271	Communicating Student Outcomes Using E-Portfolios <i>Holly Kasperbauer, Thomas Broyles, Cory Epler</i>
3	0278	Teaching Soil Conservation in an Introductory Soil Science Laboratory <i>Laura Eskridge, Jeff Hattey</i>
4	0281	Knowledge and Skill Perceptions for Careers in Agriculture and Agribusiness <i>Michelle Mullins Santiago, Michael Lau, Art Wolfskill</i>
5	0282	Impact of Planning Agricultural Study Abroad Courses on Faculty Globalization <i>Lori Unruh Snyder, Alexa Lamm, Joel Brendemuhl, Tracy Irani, Grady Roberts, Mary Rodriguez, Jula Navarro</i>
6	0283	Pathways to Public Health <i>B. A. Montelone, L. C. Freeman, M. McElroy, D. Retzlaff, K. Choma, S. Hai-Jew, D. Taylor, T. Gordon, H. Naima, L. Wolfgram, E. Mulcahy, D. Gillum</i>
7	0285	Incorporating Service Learning Projects to Improve the Student Experience <i>Tom Martin, Pavli Mykerezzi, Sam Doak</i>
8	0136	Using Bloom's Taxonomy as a Writing Rubric to Enhance Critical Thinking in a Large Enrollment Class <i>Naveen Chikthimmah, Rohit Ananth, John Ewing, Rama Radhakrishna</i>
9	0291	More Than Just Cows, Sows, and Plows: Altering Perceptions of Agriculture <i>Ashley Renck</i>
10	0297	Land and Life: An Undergraduate General Education Soils Course <i>John Havlin</i>
11	0299	Do Your Best Prepared Students Receive the Highest Grades? Assessing the Practice of Assigning Grades Based on Position within a Normal Curve <i>Gary Bailey, Ronald Steed</i>
12	0300	Roll Out the Rain Barrel Service-Learning Project <i>Jean Gleichsner</i>
13	0301	Advising Students With a Passion Without Faculty Burnout <i>Ron Hanson</i>

<b>Poster No.</b>	<b>Abstract No.</b>	<b>Title</b>
14	0302	Broadening STEM Curricula and Student Experiences through Multi-Instructor Team Taught Course <i>Abhijit Nagchaudhuri, Madhumi Mitra, Lurline Marsh, Tracy Bishop, Craig Daugtry, Geoffrey Bland</i>
15	0304	Undergraduate Experience with Multicampus Collaborative Research <i>Bonnie Walters, Todd Bauer, Joseph Dart, Pamela Wipperfurth</i>
16	0305	Attracting Underrepresented Minorities through Contextualized Learning Experiences <i>Levon Esters, Neil Knobloch</i>
17	0306	Life Science Education Signature Area (LSESA): An Interdisciplinary Approach to the Contextual Application of STEM Learning <i>Neil Knobloch, Levon Esters</i>
18	0308	Student Perceptions of the Effectiveness of Different Learning Modes <i>Mark Headings, Bob Rupp</i>
19	0309	Global Resource Systems: an Interdisciplinary Major for the Development of Future Food and Agriculture Global Leaders <i>Gail Nonnecke, David Acker</i>
20	0310	Sparsely Populated Agricultural Education: Delivery System for High School Students Using Technology with a Live Component One Day per Week. <i>Lyle Westrom, Amanda Fickes</i>
21	0314	Development of an Online Introductory Turf Course Lab Based on Lessons Learned from Teaching at Multiple Universities <i>Rob Golembiewski, Jonathan Velez</i>
22	0316	Establishment of a New BS Biotechnology Program and Faculty Capacity Building Workshops <i>Alma Santiago-Cortes</i>
23	0317	ThinkSpace: An Online Platform to Help Students Solve Complicated Multi-Disciplinary Problems in Agriculture <i>Ann Marie VanDerZanden</i>
24	0318	Plant Biosecurity Short Courses to Enhance Urban Forestry Education and Training at Southern University and A & M College. <i>Daniel James Collins, Kamran Abdollahi, Zhu Ning, Andra Johnson, Fulbert Namwamba, Yadong Qi</i>
25	0319	Influencing Critical Thinking Disposition in Undergraduate Agriculture and Natural Resource Students <i>Mark Burbach, Gina Matkin, Travis Searle, Courtney Quinn</i>
26	0320	Experiential Learning Approach to Promote Agricultural Bioinformatics Training at Virginia State University <i>Glenn Harris</i>
27	0321	Collaborative Learning Strategies in Graduate College Courses <i>Kiumars Zarafshani</i>
28	0322	Reporting the Results of an Experiment using a Biogas Example <i>Marsella Gonzalez</i>

<b>Poster No.</b>	<b>Abstract No.</b>	<b>Title</b>
30	0324	Career Opportunities and Explorations in Natural and Agricultural Sciences <i>Kurt Leuschner</i>
31	0325	Partnership for Transfer Success in USDA Careers <i>Cecilia Arriaza, Martha Vargas, Maribel Pineda</i>
32	0145	Course Sequencing and Integration: A Foundation for Teaching and Learning <i>Rama Radhakrishna, John Ewing, Naveen Chikthimmah</i>
33	0166	Collaborating with Parents to Communicate the Importance of Agricultural Science Careers to Inner-city Youth <i>Tracy Rutherford, Cindy Akers, Gary Wingenbach, Cash Berry</i>
34	0170	Characteristics of Students that affect Academic Performance in Undergraduate Animal Science Courses <i>K. J. Stutts, M. M. Beverly, S. F. Kelley, M. L. McMillan, A. N. Bullion, L. A. Rakowitz</i>
35	0218	Student-Developed Video Tutorials Using e-Learning Software Technologies <i>Michael Mohny, Dan Stearns, Michael Reinert</i>
36	0265	Agricultural Scholars: A Collaborative Student Enrichment Program <i>Kerry Priest, Keyana Ellis, Donna Moore</i>

# 2010 NACTA/SERD Poster Presentation Abstracts

Penn State  
June 22 - 25

**#100**

## **Recipe Development Project: A Successful Integration of Undergraduate Service Learning and Extension Programming at the University of Kentucky**

Tammy Stephenson, Laura Stephenson, Kwaka Addo, and Janet Johnson  
University of Kentucky

The 2009 “Human Capacity Development” strategic plan developed by the Board of Agriculture and the Association of Public and Land-Grant Universities identifies the need to integrate research and extension engagement into the undergraduate experience. There is specifically a need to strengthen service learning in the classroom through integration with Extension programming. This has successfully been accomplished through a recipe development project at the University of Kentucky. Family and Consumer Science (FCS) agents identified a need for quality-tested and nutritionally-sound original recipes for use in extension programming. Dietetic and human nutrition students in an upper-level Food Experimentation course were charged with the task of developing such recipes using Kentucky-grown produce including broccoli, strawberries, asparagus, sweet potatoes, turnips, and blackberries. An advisory committee solicited agent recipes and students worked in pairs to modify these recipes. Students prepared both the original and modified recipes in our state of the art food kitchen, completing sensory and objective evaluations. Thirty-seven recipes have been developed in the past two semesters and the project will continue for at least two more years. Recipes to be utilized this summer include watermelon tomato salad, fresh green beans with dill, peach and blackberry cobbler, corn salsa, blackberry lemon cake, and “Not your momma’s” eggplant. Students determined the nutrient make-up of their recipes and supplied menu-planning ideas which will be included with each recipe. This successful collaboration promotes locally-grown produce, encourages healthy eating, educates future health-care professionals on the nutrient-profiles and uses of Kentucky produce, and engages students in service learning.

**#101**

## **National Model Training Program for Veterinary Homeland Security**

Sandra F. Amass  
Purdue University School of Veterinary Medicine

Marianne Ash  
Indiana State Board of Animal Health

Thad Blossom  
Purdue University School of Veterinary Medicine

The objectives of this project were to develop, disseminate, and evaluate an online graduate certificate program to address the educational problem of efficient and rapid attainment of a critical mass of professionals able to effectively prevent, prepare for, and respond to animal-related emergencies. The project is a collaboration among USDA, Purdue University School of Veterinary Medicine, Indiana Board of Animal Health, the Indiana State Police, and many others. One hundred twenty-six experts world-wide have contributed lectures to the program curriculum to date. APHIS declared the curriculum in compliance with NAHEMS Guidelines. Fourteen graduate level courses (12 credit hours) were developed and delivered online with 24/7 access to students. Our 101 participants, including 25 graduates, to date come from 31 states, the District of Columbia, and four countries. Students represent: private veterinary practice (42%); government (26%); veterinary technicians (4%); DVM students (9%); academia (5%); military (8%); and industry (6%). Forty-seven students have completed service learning projects including plans for addressing animal emergencies in their communities and identifying community resources to be used in the event of an animal emergency. A blended learning format was used in which students could select a delivery style that most effectively met their learning needs. Student evaluations showed delivery options utilized were transcript (54%), video (38%), and audio (8%). As a result of student demand, the program is undergoing approval to be expanded to an online MS degree. This program was funded through a USDA NIFA SERD HEC grant.

**#104**

**Helping Agriculture Students Analyze Non-Profit Organizations**

Maria Navarro  
The University of Georgia

With the increase of efforts by colleges of agriculture to offer service learning opportunities, discussions between faculty and students about agricultural development non-profit organizations is increasing. Many faculty are aware that different frameworks of analysis yield different results about the “goodness” of an organization, but do not feel prepared to help students evaluate organizations. The purpose of this poster is to provide a series of graphs that teachers of agriculture can use to help students recognize, differentiate, and assess relationships between different frameworks that could be used to analyze agricultural development non-profit organizations. Using the poster as a summary tool, teachers will be able to help students evaluate non-profit organizations, and make decisions about their willingness to get involved in their programs. The graphs will cover the following: 1) Some of the traditional indexes in non-profit literature (e.g., organizational efficiency and capacity); 2) Modifications of the dimensions proposed by Crutchfield and Grant in 2008 (e.g., networking capacity, flexibility and adaptability, capacity to both advocate and serve, leadership structure, capacity to inspire); 3) Philosophical questions (Who benefits? Who is likely to lose? What are the likely intentional positive results? What are the possible unintentional negative consequences? What are the funding sources and how do these affect the ability of the organization to make independent decisions?); and 4) A series of new dimensions presented as a dichotomies with no right or wrong answer (e.g., short term vs. long term; local vs. global; planner vs. searcher; disciplinary vs. multidisciplinary; grass-roots vs. top-down).

**#106**

**Using Journaling and Surveys to Assess Student Outcomes from Study Abroad Programs in Agriculture**

J.E. Mehlhorn, S.A. Mehlhorn, and A. Brown  
University of Tennessee at Martin

There are many reasons why students and faculty choose to study abroad during their education experience. The list can include language acquisition, cultural awareness, resume building, or simply

learning more about self. This study focused on the impact on cultural awareness and learning about self. Many students who enroll in agriculture programs tend to have limited access to international experiences. This is unfortunate since agriculture is such a large global industry. The objective of this study is to identify and assess the attributes that impact global competence and to understand if personal growth is taking place through participation in study abroad programs. A group of five students and two faculty participated in an agriculture travel study program (seven days) and a study abroad language program (30 days) with two different university partners. Participants were pre and post tested regarding their perceptions of international agriculture and cross-cultural competency. Participants were also required to keep a travel journal to document their experiences. While the surveys served as a measure of student competency, the journal responses focused more on the personal growth of the travelers. Survey data revealed increased student understanding of international agriculture and cultural awareness compared to a control group. The journals revealed that students and faculty were similar in their anxiety and lack of preparedness for the in-country experience. Data also revealed that more work needs to be done on the pre-planning portion of international travel experiences for agriculture students.

**#108**

**Student Perceptions on Virtual Laboratories**

Kimberly Moore  
University of Florida

At the University of Florida, Introductory Nursery Management has been developed for online delivery. This course has a laboratory component. It is well accepted that laboratories are essential for training and providing a hands-on experience. However, most live laboratories have evolved into lessons in following directions rather than a mechanism for providing new experiences in which students get to apply knowledge from lecture. The recent report from the Department of Education indicated that the inclusion of online simulations as well as manipulations trigger leaner activity and enhance learning. Students enrolled in Introductory Nursery management in fall 2009 were asked their opinions about the online ‘virtual’ laboratory as well as the virtual field trip. At the beginning of the course, the instructor acknowledged that although most students prefer a live laboratory the intent of this laboratory



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was to expand student problem solving skills. Of the 30 students enrolled in the class, 47% completed the survey. Student responses were ranked and the rankings were analyzed using ANOVA. Overall students rated their experience with the online laboratory as excellent (5) or above average (4) (5 = excellent; 1 = below average). Similarly, they ranked their experience with the virtual field as excellent (5) or above average (4). Students also were given the option of visiting a local greenhouse and many rated this option highly (4.5). Overall, they did not feel that the technology interfered or hindered their learning. These results suggest that students appear to be open to online laboratories where they can apply what they are learning in lecture.

### #109

#### **Time to Celebrate - Communication and Collaboration Bring Student Success Increasing Multicultural Diversity in USDA Jobs: Education and Partnerships**

Nora R. Garza  
Laredo Community College

Douglas G. Morrish  
Texas State University

Through a CSREES (NIFA) grant two community colleges and one university collaborated to create a path for Hispanic students to complete degrees in agriculture science to qualify for USDA jobs. They created a Joint Admissions Process so that students interested in agriculture science could dually enroll at the college and university. 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 Texas 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 Joint Admissions process is being used, a teleconferenced class has been offered for four semesters; teleconference equipment is installed in the university Agriculture Building; summer academies have taken place, and students have visited the University and Freedman Ranch. Four students have presented posters at the national conference for soil scientists, one high

school student has received a scholarship by the minority NRCS organization, and one will transfer to Texas State with a scholarship pursuing a degree in Agriculture Science. Forty high school graduates have applied for the 2010 summer academy at Laredo Community College. Success has been slow, but as the project gains momentum all objectives should be met.

### #110

#### **Agriculture Courses during Summer School: Community College Students' Interests and Preferences**

S. Keith and C. Akers  
Texas Tech University

G. Wingenbach  
Texas A & M University

Students (n=48) currently enrolled at a community college in Texas were asked about factors influencing their decision to enroll in summer school courses. Identifying significant factors may help educators improve the scheduling and marketing of summer school courses for their institution. This study investigated students' levels of interest in agriculture courses during summer school, preferred subject area(s), and delivery format. The results showed that common factors influencing students' choices to attend summer school has changed very little over the past few decades. This study also found that a large percentage of students who had never enrolled in summer school courses were interested in such courses, including students from three categories of current educational goals: associates degree, core curriculum basics for university transfer, and technical certificate. Additional analyses revealed that many students who were not interested in agriculture summer courses had never enrolled in any non-agriculture summer school courses. Students indicated animal science and equine science as the most preferred subject areas and Monday through Thursday for five consecutive weeks as the most preferred delivery format. Community college educators and administrators should continue investigating students' preferences for summer school agriculture courses and use the findings from this study to evaluate their current course offerings for summer school.

**#111**

**CASE – Enhancing the Traditional Delivery Model of Secondary Agricultural Education**

Daniel J. Jansen and Marlene J. Mensch  
Curriculum for Agricultural Science Education

Curriculum for Agricultural Science Education (CASE) is an ambitious project started by the National Council for Agricultural Education in 2007. The project goal is to implement a national curriculum for secondary agricultural education that provides a high level of educational experiences to enhance the rigor and relevance of agriculture, food, and natural resources (AFNR) subject matter. Besides elevating the rigor of AFNR knowledge and skills, CASE provides purposeful enhancement of science, mathematics, and English language understanding. CASE develops curriculum utilizing science inquiry for lesson foundation and concepts are taught using activity-, project-, and problem-based instructional strategies. Besides the curriculum aspect of CASE, the project ensures quality teaching by providing extensive professional development for teachers that leads to certification. The final component of CASE is assessment. CASE curriculum is designed to promote common understanding of agricultural concepts by all CASE students. By providing instruction based on common concepts, national assessments of agricultural education programs can be accomplished in ways that are valid and meaningful. Currently CASE curriculum is being field tested in 38 programs across 10 states. The presentation will focus on the preliminary impressions and evaluation of the curriculum from the teacher, student, and administrator perspectives. Included in this evaluation is the standards alignment with core academic subject matter and the value that CASE provides to agricultural education. CASE is the complete approach to change the culture of secondary agricultural education. This enhancement of the traditional approach to agricultural education will foster a renewed collaboration throughout all levels of education.

**#115**

**The Alliance for Cooperative Course Exchange in the Plant Sciences**

Michael Evans and Donna Graham  
University of Arkansas

Janet Cole and Edwin Miller  
Oklahoma State University

Richard Harkess and Walter Taylor  
Mississippi State University

Jeff Kuehny and Elizabeth Garrison  
Louisiana State University

Reductions in teaching resources and the loss of teaching positions have made it difficult for departments in the plant agricultural sciences to provide courses, maintain high quality curricula and offer courses related to emerging issues. The participating institutions created the Alliance for Cooperative Course Exchange in the Plant Sciences (ACCEPtS) which served as the mechanism to create and share courses among the institutions. To initiate the project, an initial group of eight courses were developed and shared by the participating institutions in their plant agricultural science curricula. A memorandum of agreement was executed by the participating institutions that governed the operations of the ACCEPtS program as well as revenue sharing. In fall semester 2009, Greenhouse Management and Greenhouse Management Laboratory were offered to students at the four participating institutions. A total of 48 students enrolled and completed the course. Pre- and post-test evaluations were used as an assessment tool to evaluate student learning. Students showed significant gains (scoring 40% on pretests and 80% on posttests) in their understanding of both general concepts as well as specific factual information related to greenhouse management. In spring semester 2010, the alliance offered Horticultural Crop Physiology, Temperature Stress Physiology, Sustainable Landscape Management and Sustainable Nursery Management to students at the four participating institutions. A total of 93 students enrolled in these ACCEPtS-offered courses.

**#116**

**USDA National Needs Fellowship in Bio-Fuel Systems at Virginia Tech**

Jeffrey Alwang, John Cundiff, and Richard Hirsh  
Virginia Polytechnic Institute and State University

This presentation will describe a unique teaching program sponsored by the NIFA National Needs Fellowship Program. The broad program objective is to train three PhD students using an interdisciplinary approach to biomass energy production and distribution. We have selected three students from different disciplines to participate. Each follows core training in their respective discipline, but also

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participates in a number of cross-cutting activities designed to broaden their perspectives and create scholarly dialogue that synthesizes points of view from diverse disciplines. Students gain a comprehensive understanding of technologies to produce biomass-derived energy and the economic and policy issues involved. They also study how social and institutional contexts affect development and success of such energy systems. These objectives are accomplished by employing a group problem-solving approach to learning. Team members have regular meetings where literature is discussed and critiqued. Each student takes leadership in identifying the literature, presenting, and guiding discussion. Students and faculty then analyze the literature from their disciplinary perspective. The program is also unique because strong academics are bolstered by a thematically linked series of internships. Students participate in internships at Oak Ridge Laboratory and the Fraunhofer Institute for Systems and Innovation Research in Karlsruhe, Germany. Each student has now successfully completed coursework and degree candidacy exams. Their dissertation research is focusing on various dimensions of biofuels production, distribution, and policy. They have presented papers at more than four national and international meetings and the discussions conducted during the meetings have sharpened and improved the technical quality and multidisciplinary breadth of their papers.

### **#118 Integrating Collaboration, Communication, and Celebration into Short-Term Study Abroad Experiences**

Thomas Kuzmic  
Oklahoma State University

Short-term study-trips to developing countries can be meaningful and life-changing for university students if they are carefully crafted with genuine opportunities for rich cultural interaction, hands-on activity with people in a diversity of settings, service-learning experiences, and participation in cultural traditions and events. Twelve years of experience with a short-term program focused on examining the relationship between people and the land in the Latin American tropics of Honduras, Central America, demonstrates effective strategies and techniques for creating memorable opportunities for students to broaden their cultural awareness, understanding, sensitivity, and ideology. Evaluation of student journals, creative components, written self-

assessments submitted by students, and their participation in a campus-wide open-house after the trip demonstrate a broadened sense of a realistic global perspective in program participants. Students experience and understand dramatic differences in life and living in a developing nation in dramatic contrast to their lifestyle at home in the USA, and come to recognize and appreciate the value of community capacity-building and sustainable living for all people regardless of nationality, culture, socio-economic status, and ideology. Further, they develop cognizance and appreciation of the reality that all people aspire to higher order needs beyond subsistence living, and that there are many benchmarks of happiness, prosperity, and quality in life beyond the acquisition and ownership of material possessions, among them, strong family ties, a sense of community, and self esteem regardless of one's station in life.

### **#119 Collaborative Project to Enhance High School Science Curricula**

C.P. Cotton, A. Shaw, and C.P. Harned  
University of Maryland Eastern Shore

W. Waller  
Wicomico County Public Schools

A capacity building project entitled "Collaboration with Secondary Education to Enhance Agricultural Science Curricula" was funded in 2007. A team approach has been used to incorporate agricultural concepts and applications into high school science curricula to broaden students' awareness of the extensive nature and diversity of the food and agricultural sciences. During summer 2009, University of Maryland Eastern Shore (UMES) collaborated with two teachers from Parkside High School in Salisbury, Maryland, to develop instructional units on drinking water quality and the interactions of species and organisms within their environment. One unit incorporates hands-on activities that educate students about the origin of their drinking water, biological contaminants that can cause health concerns, and ways to protect and conserve their drinking water. The second unit encompasses a variety of experiential learning activities and multimedia to capture student attention, and engage students to consider the requirements of life that are provided through symbiosis and biodiversity and relate them to symbiosis. The teachers worked closely with agriculture research

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faculty, content specialists, and a curriculum specialist to plan and develop their units. The technology liaison worked with the teachers to develop large format materials to support the project. By the end of July 2009, each teacher had developed a three to four week instructional unit that includes hands-on experiments to be used by students. During 2009-2010, the units were pilot tested and initial results indicate that the experiential activities were considered very beneficial and student learning was enhanced.

### #120

#### **Searching the Deep Sea for Clues to Enhance Agricultural Carbon Fixation: An Undergraduate Research Program to Isolate, Characterize, and Sequence Novel Autotrophs**

Sharyn Freyermuth  
University of Missouri

Kathleen Scott  
University of South Florida

Cheryl Kerfeld  
University of California-Berkeley/DOE Joint Genome Institute

There is an urgent need to prepare all students entering life science-related fields, from agriculture to medicine, to be fluent in genomics, bioinformatics and the ability to connect sequence data to the organism and its environment. Increasingly, investigators in the agricultural, energy, and basic life sciences rely as much on bioinformatics-based experimentation as on experiments at the lab bench. In this project we address the need to integrate bioinformatics tools with bench science to create opportunities for discovery at the undergraduate level. We have designed curricular materials which allow students to isolate and characterize novel autotrophic microbes. Students have worked to discover "model" organisms that can be used by future students for functional genomics. Currently, students have isolated and characterized 120 strains from East Pacific Rise and Juan de Fuca Ridge hydrothermal vent samples, all of which are closely affiliated with the thiomicrospiras. Phylogenetic characterization was performed by amplification of marker genes via PCR. The strains were characterized physiologically and tested for their ability to conjugate with *E. coli*. Two strains from the Juan de Fuca samples have been selected for sequencing by the JGI. They are representative of

two of the major clades of isolates and demonstrate differences in physiology (e.g., growth temperatures, ability to mate with *E. coli*). Once these isolates have been sequenced, we will design curricula to characterize the microbes via gene annotation and conventional genetics.

### #122

#### **Preparing Global Ready Leaders in Agricultural and Life Sciences College of Agricultural and Life Sciences Leadership Institute (CALSLI)**

H. Charlotte Emerson and R. Kirby Barrick  
University of Florida

The objective of the CALSLI is to create a sustainable leadership development program for College of Agricultural and Life Sciences undergraduate students through integrated curricula, mentorship, a practicum experience, personal development modules, and an international leadership education experience. Students have been asked to establish an individual Personal Development Plan as it relates to agricultural business in a global society. To date students have completed eight of the 14 leadership/agricultural business modules. Plans are underway to establish a faculty-instructed formal colloquium focusing on the globalization of agricultural business, markets and trade. Each of the nine CALSLI participants has been paired with an industry mentor with similar career goals and leadership interests. Mentors have been chosen from University of Florida Alumni and others in the agriculture industry. This community/industry relationship has strengthened the connection between current students and alumni while providing an opportunity for contextual learning. At the conclusion of the experience students will travel to Costa Rica for the international component of the program which will broaden their perception of leadership and agribusiness in a global market.

CALSLI plans to begin an intense recruitment campaign for the second cohort, develop additional learning activities to accompany the current curriculum and modules, coordinate with other leadership development programs, and maintain current staffing support and mentors while encouraging others to participate and offer their professional advice and support. Future initiatives are also to expand CALS leadership services and programs and expose students to a variety of business markets and trades.

**#124**

**Reedley College's Partners in Agricultural Leadership: USDA-HSI Grant-funded, Competitive Agricultural Leadership and Education Program for High School Students**

Karri Hammerstrom  
Reedley College

PAL is a collaborative effort of Reedley College (RC) with CSU Fresno, Cal Poly-SLO, UC Davis, USDA-ARS (Parlier), UC-Kearney Research and Extension Center, and the agricultural industry to provide a hands-on learning opportunity for the betterment of future agriculture-focused university graduates.

The two-year program is designed for local high school agricultural students with the goal of educating them in a seminar setting about agricultural career pathways, while developing their potential for being future advocates for agriculture. PAL participants have already participated in seven of twelve seminars which included or will include leadership training (i.e. True Colors, Myers-Briggs, presentation development, social media advocacy), agricultural issue awareness, laboratory workshops, campus tours, expert panels, discussions, and assignments. RC students act as mentors to the 39 PAL-Class I participants representing 14 local high schools.

The overall program objectives are two-fold: increase PAL participants' knowledge of agricultural issues; and increase the number of declared agriculture major enrolling at RC and transferring to universities by creating linkages between career pathways and courses of study. Pre-assessment surveys indicate students strongly agree agriculture is important; two-thirds have interest in pursuing an agriculture-related career; and general knowledge scores of agricultural facts and issues awareness averaged 78% and are anticipated to increase to greater than 83% upon program completion.

The USDA-HSI grant funding includes a \$50,000 scholarship for one participant that cannot be divided for multiple recipients. Efforts are underway to seek scholarship funds from PAL partners and industry so that all successful participants will receive some scholarship aid.

**#125**

**Livescribe Pulse™ - A Digital Pen and Paper Solution for Online and Traditional Teaching Methods**

T. Burcham, S. Mehlhorn, S. Parrott, P. Smartt, J. Roberts, and J. Mehlhorn  
University of Tennessee at Martin

The rapid proliferation of technology continues to impact higher education paradigms. The use of digital media technologies can provide an additional conduit for students to better understand classroom concepts. However, many of these technologies require adoption overhead that is unpalatable for some faculty. Teachers that frequently use symbolic nomenclature (mathematics, chemistry, etc.) need technologies that allow them to effectively share concepts with online and traditional learners. In the fall of 2009, faculty evaluated the Livescribe Pulse™ pen for applicability and ease of use in developing support materials for graduate (online) and undergraduate (traditional) courses. The Pulse™ pen uses special paper and microcomputer technology to accurately digitize handwriting, while recording audio. The user may access the "linked" audio from the handwritten notes by simply "double-tapping" that portion of text. The Pulse™ provides unprecedented ease in posting handwritten notes (with linked audio) to the Internet. The software provides a link (URL) for the uploaded materials that can be easily placed in an email or posted in a course management system. The technology has a minimal learning curve and is relatively inexpensive. Since the Pulse™ uses pen and paper; late-adopters feel reasonably comfortable incorporating it in their teaching architecture. It provides Tablet-PC features without the technology overhead associated with Tablet PCs. Generally, faculty describe the Pulse™ pen as: "quite liberating." Numerous faculty at the University of Tennessee at Martin have adopted the Pulse™ for enhancement of both online and traditional lecture-based teaching formats. Presentation will feature survey results from participating faculty.

**#129**

**Swine Science Online**

M.A. DenBeste, D. Meisinger, and T.J. Baas  
Iowa State University

Swine Science Online is a distance-based education program comprised of 15 courses and two resident

lab courses. These courses make up an undergraduate program within AG\*IDEA, a national consortium of land grant universities, offering programs and courses in agricultural disciplines. The Swine Science Online program is targeted toward students who are earning a four-year degree, with a secondary audience of individuals currently working in the pork industry and looking to further their education. The online-based program makes swine specific courses more available to students by providing the opportunity to take swine science courses that are not offered at their own university. The program will target students who are seeking to be managers of production units, those who will see seek employment in allied industry, and/or those who will be future leaders in the pork industry. The goal of the Swine Science Online program is to teach students the problem solving and analytical skills that will be needed in the pork industry today and in the future. In developing the courses, professors with swine experience from across the country serve as curriculum leaders and instructors. Currently, there are six courses being beta-tested (Nursery and Finishing Management, Environment Management, Health and Biosecurity, Business and Records Analysis, Product Quality and Safety, and Feed Mill Management) by students from seven universities across the U.S. After completion of the courses, students participate in a course evaluation. Results of the evaluation are used to improve the courses.

**#130**  
**Assessing the Impact of an Academic Internship Experience**

Mark J. Kistler, Jacklyn A. Bruce, and Emilou Phelps  
North Carolina State University

As part of the undergraduate extension education curriculum, students are required to complete an academic internship during their senior year as a capstone to their academic program. This study assessed the impact of the academic internship experience on the academic and career direction and the personal development of former students. Students interning between spring 2007 and summer 2009 (N=40) were surveyed using an online instrument. Useable responses were received from 29 participants (72.50% response rate). Most respondents interned in a county Cooperative Extension Center (76%) while others interned in agribusiness/industry (24%). There were more male (59%) than female respondents (41%). Respondents indicated their internship site supervisor helped them

to learn about their position as an intern and about the organization for which they were interning; and were available daily to answer questions, provide direction and feedback. Additionally, the departmental internship coordinator contributed to making their internship experience successful by providing advice, direction, and feedback. Respondents increased their personal and professional skills (pre-skill level M=3.36, SD=.470; post-skill level M=4.11, SD=.476; skill change M=.753, SD=.413; t-value=9.81, df=28, p<.01, d=1.82). They reported the internship impacted their career choice and helped to prepare them for their current career. They also indicated the educational components of the internship were valuable to their experience. The academic internship is an important educational experience due to its impact on student's personal and professional development by providing an experiential learning opportunity to put theory into practice in a real world setting.

**#132**  
**Do Agricultural Courses Abroad Really Influence Student Global Engagement?**

L. Snyder, A.J. Lamm, J. Brendemuhl, T. Irani, T.G. Roberts, M. Rodriguez, and J. Navarro  
Purdue University

International learning experiences are increasingly considered critical elements by university academic administrators in order to address the breadth of knowledge and skills needed by food and agricultural scientists in the global future. When students are introduced to an international exposure abroad, it helps create an awareness of global perspectives and prepares them for the future workforce dealing with international engagement. Therefore, the objective of this study abroad course in Costa Rica was to address global agricultural sustainability including rural development, plant diagnostics, organic agriculture, animal production, entrepreneurship, and agricultural business, while enhancing their global perspective. A pre-test, seven-week intervention, post-test design was used to assess participant's knowledge, skill, and attitude changes over time. On a scale of 1 to 5, participants reported that they strongly agreed the course enhanced their cultural awareness (M = 4.42, SD = 1.17), that as a student studying agriculture, it is important for them to understand other cultures (M = 4.33, SD = 1.23) and that they will be able to apply what they learned to their work in the U.S. (M = 4.25, SD = .75). In addition, within the open ended question section, 15 of the 17 students participating

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in the course reported that as a result of the course they would like to work with agriculture in an international capacity in the future. Educator's success in combining agricultural education and global perspectives illustrates the need for innovative courses which prepare students for the global workforce.

### **#133 An Agribusiness Management Simulation for Undergraduates**

Lisa House, David Barber, Freddie Barnard, and Liza Braunlich  
University of Florida

The objective of this presentation is to summarize the development of a new simulation game to teach agribusiness management principles. The simulation has been tested at two major universities and pre and post-tests were conducted with students to determine whether or not learning objectives were achieved. The presentation will identify the major learning objectives of the simulation and how it can be used by other faculty who want to teach similar principles. Supporting materials for professors, such as an introduction to the simulation, de-briefs, and teaching plans are also being prepared and will be summarized in the presentation.

### **#134 Expanding Opportunities in the Hospitality/Food Industries**

Valorie Gehman  
Houston Community College

Houston Community College, Spring Branch Independent School District, and University of Houston are working together to recruit and educate underrepresented students into the food industry. The interest that is sparked in these students will culminate in the completion of a baccalaureate degree.

We have collaborated to produce three objectives in the Educational Need Area.

1. Increase students' knowledge in colleges, universities, and careers. Representatives from the university presented college enrollment and degrees in the culinary field. UH held a Fall Blitz for high school and community college students to tour the campus and hear graduates speak on their careers. One hundred students attended each function.

2. Increase the number of students who enroll in classes at SBISD, HCC, and UH. One hundred nine high school students attended the class on chocolate held at the HCC campus. At the summer camp, hosted at the community college and the university campuses, 25 students will learn the application and registration process, hear about college life, and be mentored by college students.

3. Increase the number of students who complete culinary classes at SBISD and HCC, and graduate with Bachelor of Science degrees from UH. Forty-two students were enrolled for dual credit culinary classes in the spring of 2010 and two students were awarded scholarships to begin college at HCC and finish at CNHC.

As we present educational activities and college life, we spark interest in students and are able to provide scholarship funds to help them fulfill their goals.

### **#136 Using Bloom's Taxonomy as a Writing Rubric to Enhance Critical Thinking in a Large Enrollment Class**

Naveen Chikthimmah, Rohit Ananth, John C. Ewing, and Rama Radhakrishna  
The Pennsylvania State University

An effective pedagogical tool for promoting critical thinking among students is a valuable asset in an instructor's teaching portfolio. The objective of this research was to determine the effectiveness of discussing Bloom's Taxonomy (BT) in the classroom using written assignments as a method to enhance critical thinking skills of students. The study was conducted in a 100-level general education food and health class with an enrollment of 160 students at a Northeastern University in the United States. As part of the course, students were to complete three written assignments in the areas of food systems, dietary analysis, and evaluation of nutrition information in popular media. Following evaluation of assignment one, the BT of learning objectives was discussed in class and contextualized for its pertinence to the writing assignments, specifically with regard to critical analysis and synthesis of research information. A BT descriptive rubric was also given to students prior to writing assignments two and three. All written assignments were evaluated on a scale of 1 through 6, with each increasing number indicating an ascending BT-level of learning. Results indicated that students score distributions for each of the three assignments followed a Gaussian pattern.

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Discussing Bloom's Taxonomy resulted in the increase of the class average from assignment one to assignments two and three from 3.22 to 3.35 and 3.77, respectively. This evaluation method also served as an effective feedback instrument on critical thinking since the BT descriptive rubric replaced extensive and time-intensive instructor comments on student assignments.

### #137

#### **A New Online Graduate Program in Ecological Restoration: Lessons Learned from Course Evaluations**

Shibu Jose, Michael Bannister, and Leda Kobziar  
University of Florida

The University of Florida has launched a new Master's non-thesis graduate program in Ecological Restoration that address a national need for professionals trained in this field. Agencies and private companies involved in ecological restoration are striving to re-tool their work force with a solid academic training in ecological restoration. This online program provides working professionals with a chance at a graduate education, reach those disadvantaged by limited time or distance, and update the knowledge base of workers at their places of employment. The poster shares experience from evaluation of the first of the several courses offered online in this graduate program. Students completed online questionnaire regarding the instructor's use of e-learning tools, design and ease of use of the course web site, online learning experience, comfort with and support of the technology used, and student interest in the new MS program. The high response rate (86% opposed to 33% for campus online average), indicated the effectiveness of awarding extra credit points and reminding students several times. Overall, students gave all categories of questions high ratings, falling between agree and strongly agree that the instructor did a good job of using e-learning tools to communicate with students, the course web site was well designed and easy to use, students were satisfied with the online learning experience, the technology used in the course (the course management system and the method for presenting lectures) was useful and well supported by the help desk, and there was interest in the online MS program.

### #138

#### **Undergraduate Research Experiences in Microbiology and Developmental Entomology**

Patricia J. Baynham and Lisa M. Goering  
St. Edward's University

This project seeks to enhance student experiential learning by engaging 18 St. Edward's undergraduate students in research projects over the course of three years. Students are involved in research projects during two consecutive summers, at both St. Edward's University and the University of Texas at Austin. All participants will also spend one week at the USDA-ARS in New Orleans, Louisiana. The current cohort of six students has started the program with a Research Skills course designed to enhance scientific skills through discussion of current literature and experimental design, and hands on training in techniques that will be used for their independent research projects. Student scores on pre- and post-research skills tests rose by an average of 30% after completing the course. Participants will begin their independent research projects examining aspects of *Drosophila* development and microbial aspects of food safety this summer. This project was designed to offer students an optimized learning experience that will enhance the likelihood that they will pursue careers in agricultural science through their participation in collaborative research projects and their increased awareness of career opportunities. This work is supported by a USDA HSI Education Grant.

### #139

#### **Student Computer Use in Undergraduate Agriculture Courses: A Ten-Year Study**

Cassandra Cox, Leslie Edgar, Karisha Munsie, Donna Graham, Don Edgar, and Donald Johnson  
University of Arkansas

Computers play an important and increasing role in agriculture. The purpose of this study was to identify trends for required student computer use in selected undergraduate agriculture courses in a land-grant university. Faculty members were surveyed in 1999 (n=63), 2004 (n=55), and 2009 (n=64). There were no significant differences (p=.09) in the total number of computer tasks required in 1999 (M = 6.16), 2004 (M = 7.61), or 2009 (M = 8.46), and no significant differences in the number of word processing (p=.89), computer graphics (p = 0.13), spreadsheet (p = 0.97), database (p = 0.50), specialized application



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( $p = 0.89$ ), or miscellaneous ( $p = 0.10$ ) computer tasks by year. However, there were significant increases in the number of required electronic mail ( $p < 0.0001$ ) and Internet ( $p < 0.0001$ ) tasks by year. In 1999, 50% or more of courses required students to (a) “type a lab or project report,” (b) “receive electronic mail from the instructor,” and (c) “search the Internet for information on a specific topic.” In 2004, these same three tasks, plus “send electronic mail to the instructor,” were required in 50% or more of courses. In 2009, these four tasks plus two additional tasks, “submit course assignments as ‘attached files’ using e-mail” and “use Blackboard© to acquire course information” were required in 50% or more of undergraduate agriculture courses. These results indicate that fairly simple tasks in word processing, Internet, electronic mail, and course management are the primary computer activities required by faculty in undergraduate agriculture courses.

### #141

#### **Academic Coaching in the Classroom: Teaching Academic Skills for Student Success and Retention**

Andrew Barkley  
Kansas State University

There is large and growing concern about the level of academic preparedness among entering University students. Many first year students lack basic academic skills such as note taking, studying, reading course materials, and test taking. Many programs offer “orientation” courses for entering students or “college life” courses for at-risk students. Recent research and experience suggest that the integration of study skills and strategies for success into disciplinary courses could improve the level of student success, and the ability of colleges and universities to retain students. Merging study skills and life skills into a disciplinary classroom meets student needs at their “point of readiness,” or “window of opportunity.” Study skills presented simultaneously with academic material are likely to be more useful than if presented asynchronously in a separate course or program. The flow of information between students and instructors is enhanced, and instructors can adjust course pace and objectives to better meet student needs and abilities. Providing students with the tools to create success often leads to dramatic motivational increases. This research provides justification and support for the integration of study skills into disciplinary courses. This “academic coaching” is used to engage students in

skill development and personal accountability at a much higher level than is typically demanded in a typical disciplinary course.

### #145

#### **Course Sequencing and Integration: A Foundation for Teaching and Learning**

Rama Radhakrishna, John C. Ewing, and Naveen Chikthimmah  
The Pennsylvania State University

Teaching basic concepts of a subject and transitioning into advanced concepts is both a challenge and opportunity for teachers. This is especially true for teachers who teach both undergraduate and graduate level courses of same subject matter content. This poster presentation will showcase how an undergraduate extension program development course is sequenced and integrated into a graduate level extension program evaluation course. In addition, it has also helped to link with levels of Bloom’s Taxonomy (BT) to determine higher order learning. A quadrant analysis was used to sequence and integrate the two courses using a Program Life Cycle (PLC) approach. The PLC approach links basic courses and advanced courses, thereby providing a strong foundation for teaching and learning. The four quadrants depict the PLC with the Lower Left Quadrant (LLQ) reflecting the basic concepts to be taught and activities to be provided to enhance learning (lower levels of BT), while the Upper Right Quadrant (URQ) reflecting the advanced concepts to be taught (higher levels of BT). Further, both quadrant analysis and PLC approaches also serves as a formative/summative assessment tool to make changes in content and teaching style. In summary, applying quadrant analysis and using PLC has helped to sequence courses and integrate concepts from basic to advance for better learning. The author(s) conclude that this approach is useful to both students and teachers. For students, it shows a gradual progression of concepts and for teachers, it helps develop strategies for higher order learning and critical thinking skills.

**#148**

**Developing an Instrument to Measure the Value of Field Experiences as Perceived by Agricultural Education Candidates**

Jeremy M. Falk, Ryan M. Foor, Jon C. Simonsen, and Jamie Cano  
The Ohio State University

Teacher preparation programs strive toward the goal of developing highly qualified secondary educators by designing courses and experiences based on professional standards. Field experiences provide teacher candidates with the opportunity to engage with real students and move toward a practical understanding of teaching. Similarly, field experiences are a vital element in preparing candidates to meet the challenges they will face as teachers. The preparation and continual development of teachers is an essential task for teacher preparation programs now and in the future. Programs that strategically evaluate and implement the findings from program evaluations will graduate well prepared teachers because the field experiences were designed to fit the candidates' needs. The purpose of the study was to develop an instrument to measure teacher candidates' perceived value of field experience activities and assignments. Additionally, the researchers sought to validate the instrument for content validity and face validity, as well as establish reliability for the instrument. The researcher-developed instrument was validated by a panel of experts and through a field test. A reliability coefficient was calculated based on the results of a pilot test. Future use of the instrument will serve as one evaluation tool in determining the effectiveness and efficiency of the teacher education program field experiences. Teacher educators can use data collected from pres-service candidates and in-service alumni to make the value of activities and assignments more meaningful and transparent for teacher candidates.

**#149**

**Improving the Educational Pipeline to Develop Educational Capital: A Public Policy Approach**

Jolene Hamm and Daisy Stewart  
Virginia Polytechnic Institute and State University

In recent years, legislative bodies at the federal, state, and local levels have expressed concern about the development of educational capital. The authors of this paper explore ways in which educational capital could be enhanced through the stages of the

educational pipeline. They examine public policy methods and strategies described in the literature and compare these strategies to the attainment levels of high school graduation, entry into higher education, persistence in higher education, and completing higher education. The paper also includes suggestions related to college accessibility. The authors propose a unique set of policies that influence the desired outcomes for each of level attainment. For the high school graduation level, policy changes proposed include the need for foundation skills at the lower elementary levels; intervention programs to assist in reducing the socioeconomic achievement gap; parent, employer, and community involvement; and assisting schools with high dropout rates to receive resources to alleviate this problem. To improve persistence and graduation from college, researchers prescribe policy improvements for enhancing the first year experience by relating to the needs of the individual learners, requiring introductory coursework, scheduling courses to accommodate the learners, enhancing affordability of four-year colleges, and improving transfer of community college credits. The authors conclude that interconnectivity between federal, state, and local public policies is paramount to increasing educational capital.

**#150**

**Internationalizing the Undergraduate Experience**

H. Charlotte Emerson, Mary T. Rodriguez, T. Grady Roberts, and R. Kirby Barrick  
University of Florida

The need for increased international experiences for undergraduate students is widely accepted. These experiences can occur as semester-long study abroad or integration of global curricula into on-campus courses. This study examined how a short study trip to the Arab Republic of Egypt impacted the knowledge and attitudes of 15 students enrolled at the University of Florida. During a 14 day trip in May of 2009, students were exposed to a blend of historical sites including the Great Pyramids of Giza, The Valley of the Kings, The Citadel, the Coptic Christian Area, the Egyptian Museum and a cruise down the Nile River. Students also visited several cities in the Arab Republic of Egypt including Cairo, Luxor and Hurghada. One of the most beneficial components of the trip included a visit to Mafa Farms, a very large and economically sound agricultural export farm. Visits with students and administrators from the University of Cairo, South Valley University, and a local Luxor High School

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added a human aspect and provided a global connection for both American and Egyptian students. Data were collected before and after the trip. Results revealed that after the trip students expressed more favorable attitudes towards Egypt and international activities. Results also revealed that students demonstrated more knowledge about Egypt and Egyptian agriculture after the trip. Agricultural faculty should consider implementing similar short term study trips as one mechanism for internationalizing the undergraduate experience.

### #154

#### **Balancing the Scale: The Advisor-Graduate Student Relationship**

Bart E. Gill, Billy McKim, and Summer Odom  
Texas A & M University

Graduate advisors face challenges in helping students progress through their graduate education. The role of a graduate advisor can be ambiguous, and to be effective requires a deeper understanding of the needs of graduate students. The purpose of this study was to investigate the graduate student – graduate advisor relationship regarding degree planning, student interests, advisor knowledge, support, communication, and meeting schedules, guided by Selke and Wong's (1993) mentoring empowered model, and Vygotsky's (2005) scaffolding model. Three objectives guided this study: 1) Describe graduate students' perceptions of their professional relationship with their advisor; 2) Describe graduate students' perceptions of their accessibility to their advisor for questions regarding their degree plan or course offering; and 3) Describe graduate students' perceptions of their advisors' ability to help graduate students improve their knowledge and ability in their focus area. A Web-based questionnaire was distributed to a random sample of graduate students (n = 273) in the College of Agriculture and Life Sciences at a land grant university. Preliminary results indicate that most graduate students are satisfied with their advisor. Most graduate students indicated that they were able to meet with their advisor when they had questions about their degree plan and research. Further, advisors provide graduate students opportunities to improve their research skills and improve knowledge in their focus area. Graduate students also believe that their advisors were knowledgeable about courses offered in their department; however, most graduate students did not perceive their advisors as being knowledgeable about courses offered outside of their department.

### #157

#### **The Development, Recruitment and Implementation of Estudiante de Dietética: A Spanish Nutrition Curriculum for Undergraduate Dietetic Majors**

Lisa Kessler, Sharonda Wallace, and Bonny Burns-Whitmore  
California State Polytechnic University

The Commission on Dietetic Registration (CDR) of the American Dietetic Association (2009) reports that only 3% of the Registered Dietitians are Hispanic. According to the Centers for Disease Control, Hispanic Americans experience higher than average nutrition-related disease conditions, however they are less likely to seek traditional care. This reluctance may be due to frustration with practitioners who make culturally inappropriate treatment recommendations.

In an effort to eliminate nutrition-related health disparities among Hispanic populations and increase the number of Hispanic Dietetic students, the California State Polytechnic Pomona Department of Human Nutrition and Food Science developed the Estudiante de Dietética Curriculum.

**Purpose:** To increase cultural competency and comfort level of undergraduate dietetic majors by teaching nutrition and health messages in Spanish.

**Recruitment:** In the first year, thirty participants were recruited through an informational Blackboard site, announcements in classes and student organization meetings, and two- one hour information sessions.

**Methods:** Interested students submitted an application with two academic references, non-official transcripts and participated in a 15-minute interview that assessed applicant's baseline Spanish language capabilities.

**Results:** Thirty students (75% Hispanic) were chosen to participate in the curriculum, which consists of six (1-unit) activity Spanish classes, which mirror major core classes in the dietetic curriculum. Approximately 65% of the students did not require additional Spanish language coursework.

**Conclusion:** Hispanic students are especially interested in this curriculum. The authors believe that students that participate in the Estudiante de Dietética curriculum will experience increased self-efficacy and capability when disseminating nutrition information to Hispanic populations.

**#159**

**Training in the Development and Application of Quantitative Methods and Tools for Animal Genomics**

Jack C.M. Dekkers  
Iowa State University

Recent technological developments have opened tremendous opportunities to advance study of the genetic basis of traits of importance to animal agriculture. These technologies now put agricultural industries in a position to capitalize on molecular genetics and genomics. Successful implementation of these technologies however requires training in the integration of statistical genomics, quantitative genetics and bioinformatics, with molecular genetics and genomics. The objective here is to describe a transdisciplinary graduate program that aims to address this need. A collaborative group of 15 faculty from Animal Breeding and Genetics, Statistics, and Computer Science provides the core of the training program. Three gifted students were recruited and started in the fall of 2007 with two month rotations with three faculty from different disciplines. This formed the basis for their choice of academic advisor. Now in their third and final year of fellowship funding, all three fellows have now completed most core course requirements and are well on their way in their doctoral research. Both courses and research integrate at least two of the targeted disciplines in an integrated manner. Training includes an international research internship and opportunities to interact with industry stakeholders. To date, the three fellows have presented a total of 11 abstracts at scientific conferences as first author and been author or co-author of four refereed scientific papers and nine industry-oriented articles. Although results are preliminary, the program is successful in providing training in this integrated area and productive in terms of scientific publications. Funded by USDA NIFA National Needs Fellowship Grant # 2007-38420-17767

**#160**

**Sustainable Agriculture in Western Wisconsin**

William A. Anderson  
University of Wisconsin-River Falls

Faith Durham  
Midwest Organic and Sustainable Education Service

Susan Frame

Chippewa Valley Technical College

Faye Jones  
Midwest Organic & Sustainable Education Service

Juliet Tomkins  
University of Wisconsin-River Falls

The United States Department of Agriculture provided \$459,849 in SERD Challenge Grant funds to Chippewa Valley Technical College (CVTC), the Midwest Organic and Sustainable Education Service (MOSES) and the University of Wisconsin-River Falls (UWRF) to collaborate from 2007 to 2010 on a number of projects to enhance educational opportunities related to sustainable agriculture in Western Wisconsin. Grant work focused on curriculum development and outreach activities. Grant partners developed seven new courses, enrolling 90 UWRF students and 45 CVTC students. MOSES created 11 special guest lectures for potential infusion into existing courses and helped to present them along with other local professionals and educators. CVTC developed a new horticultural degree, and UWRF put together a new sustainable agriculture minor. Jointly, partners engaged in community outreach, sponsoring sixteen conferences/workshops that served nearly 1000 people, including faculty, staff, community members and students; conference topics included high tunnel production, sustainable agricultural systems, and purchasing locally grown foods. Partners engaged a UWRF student organization in a community garden project and CVTC students in the construction of a high tunnel. Partners collaborated with 20 additional entities, including six other higher education institutions, in their outreach efforts. Partners staffed booths and exposed their sustainability efforts related to nearly 8500 attendees at three workshops and nine conferences. Partners successfully promoted sustainable agriculture by completing the majority of their stated project objectives.

**#162**

**Training Future Faculty in Sustainable Sciences through an Interdisciplinary Ph.D. Program in Rural Sociology (IPPRS)**

Linda Lobao, Robert J. Birkenholz, and Molly Bean Smith  
The Ohio State University

Creating a more sustainable food and agricultural system is a widespread concern throughout the

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United States. Training Future Faculty in Sustainable Sciences through an Interdisciplinary Ph.D. Program in Rural Sociology (IPPRS) is designed to provide advanced interdisciplinary training in the sustainable sciences and to develop the next generation of food and agricultural leaders able to the world's pressing food and agricultural issues. The objectives of this presentation are to describe the innovative features of the training program and the outcomes expected. Fellows study food and agricultural issues through an innovative framework developed by the College of Food, Agriculture, and Environmental Sciences at The Ohio State University – the Ecological Paradigm, which provides a conceptual and didactic foundation for analyzing food and agricultural issues from a holistic, systems-oriented perspective. This holistic approach is widely recognized as necessary to conduct ground-breaking research in the food and agricultural sciences and to provide sound scientific information for public stakeholders. The interdisciplinary training is expected to result in three outcomes: a) a theoretical understanding of sustainable sciences research within an interdisciplinary framework; b) an applied understanding of sustainable sciences within an interdisciplinary framework; and growth and development of fellows professionally.

### #165

#### **Communicating Agricultural Science Careers to Urban High School Students**

Tracy Rutherford  
Texas A & M University

Cindy Akers  
Texas Tech University

Gary Wingenbach  
Texas A & M University

Cash Berry  
Howard College

Urban high school students without agricultural production backgrounds can change their perceptions about agricultural science careers following hands-on agricultural communications summer workshops. The workshops focused on careers in agricultural communications such as digital photography, news writing, digital video, and Web site design to help students realize new perspectives about career opportunities in the agricultural industry. The purpose of this project was to determine the influence

of workshop participation on students' perceptions about careers available with an agricultural degree. A purposive sample (n = 38) was derived from four summer workshops (El Paso, Atlanta, Chicago, and San Antonio). Post-workshop analyses showed significant increases in students' perceptions of agricultural communication careers such as public relations officer (100%), engineer (75%), photographer (73%), chemist (61%), and Web designer (60%). No perceptible changes occurred in students' perceptions of other specific agricultural communications' careers such as journalist or media personality. The significant difference between students' pre- and post-test scores for specific information technology careers highlights the importance of information technology as a critical factor for students' career decisions. Educators, especially in large urban settings, should use information technologies associated with the agricultural industry to foster students' awareness and interest levels for agricultural science careers. Continued research in recruitment programs for non-traditional, inner-city youth into post-secondary agricultural sciences should include a variety of assessment methods to further clarify the factors affecting students' decision making processes about agricultural science careers.

### #166

#### **Collaborating with Parents to Communicate the Importance of Agricultural Science Careers to Inner-city Youth**

Tracy Rutherford  
Texas A & M University

Cindy Akers  
Texas Tech University

Gary Wingenbach  
Texas A & M University

Cash Berry  
Howard College

The USDA funded an innovative college recruitment program for underrepresented, inner-city high school students with no agricultural background. The program focused on careers in agricultural communications through hands-on activities in digital photography, news writing, digital video production, and Web design to deepen students' interests in pursuing post-secondary degrees in the agricultural sciences. The purpose of this research was to explore

the impact of forming collaborative relationships with students' parents to communicate the importance of agricultural science careers to inner-city youth. High schools in six major cities participated in the summer workshops from 2007-2009. Pre-workshop "parents' meetings" and school visits were held in Houston and San Antonio (two years) to convince parents about the value of having their sons and/or daughters enroll in non-mandatory summer workshops for agricultural communications. The parent meetings were augmented by additional follow-up visits with high school teachers and administrators. Significantly more students registered for the summer workshops in Houston and San Antonio (twice) than did students in other workshops (Atlanta, Chicago, and El Paso). The Big City, Big Country recruitment project helped change underrepresented, inner-city high school students' perceptions about agricultural science careers. However, an essential component for changing students' perceptions is preceded by changing inner-city parents' perceptions of agricultural science careers. Collaboration and communication with non-agricultural parents can lead to a celebration of increased numbers of underrepresented urban youth in agricultural science careers, an especially important outcome for USDA careers.

### #169

#### **Effect of Student Absenteeism on 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. Rakowitz  
Sam Houston State University

The objective of this study was to evaluate the effect of student absenteeism on academic success in undergraduate animal science courses. Data were collected on 2,129 students enrolled in animal science courses at Sam Houston State University during the 16-week fall and spring semesters beginning with the fall semester of 2007 through the fall semester of 2009. Data collected included number of absences, gender, classification, and final course grade for each student. Mean number of absences for all students was 3.75 per course. Students were divided into three groups based upon number of absences in a course during the semester: low (0-2), average (3-6), and high (7 or more). Least squares means for absences and final course grades were calculated using the mixed procedure of SAS. Students with a low number of absences had the

highest ( $P<0.01$ ) mean final course grade (83.6). Students with an average number of absences (79.5) had a higher ( $P<0.01$ ) mean final course grade than students with a high number of absences (69.5). In addition, males (4.2) had a higher ( $P<0.01$ ) mean number of absences than females (3.4), and seniors (3.3) had a lower ( $P<0.01$ ) mean number of absences than freshman (4.2) and sophomores (4.0). These results indicate that students with a greater number of absences attained a lower final course grade in undergraduate animal science courses. Male students and students classified as freshmen or sophomores had a greater number of absences than females or students classified as juniors or seniors.

### #170

#### **Characteristics of Students that Affect 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. Rakowitz  
Sam Houston State University

The objective of this study was to evaluate the effect of several student characteristics on academic performance in undergraduate animal science courses. Data were collected on 2,022 students enrolled in animal science courses at Sam Houston State University during the 16-week fall and spring semesters beginning with the fall semester of 2007 through the fall semester of 2009. Data collected included gender, classification, major field of study, and final course grade for each student. Least squares means for final course grades were calculated using the mixed procedure of SAS. All main effects and all two-way interactions were included in the model. There was a significant effect of gender and student classification on final course grade. Female students (81.3) had a higher ( $P<0.01$ ) mean final course grade than male (77.3) students. In addition, students classified as juniors (80.4) or seniors (81.6) had a higher ( $P<0.01$ ) mean final course grade than students classified as freshmen (78.2) or sophomores (77.0). There was no difference ( $P=0.58$ ) in mean final course grade between animal science majors and non-majors. These results indicate that females outperformed males and upper classmen outperformed lower classmen in terms of final course grade in undergraduate animal science courses. In addition, non-majors performed at the same level as animal science majors in these courses.

#171

**Student Attendance and Academic Performance in Undergraduate Animal Science Courses that include Laboratory Exercises**

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

The objective of this study was to determine if a difference in student attendance and academic performance existed between undergraduate animal science courses that consisted of both lecture and laboratory versus those that were lecture only. Data were collected on 2,009 students enrolled in animal science courses during the 16-week fall and spring semesters from 2007 through 2009. Least squares means for absences and final course grade were calculated using the mixed procedure of SAS. All main effects and all two-way interactions were included in the model. A student classification by course type interaction existed ( $P < 0.01$ ) for final course grade. Freshmen and sophomores had a higher ( $P < 0.03$ ) mean final course grade in lecture-only courses than courses that included laboratories, whereas, juniors and seniors had a higher ( $P < 0.03$ ) mean final course grade in courses that included laboratories. Course type had a significant effect on mean number of absences and a student classification by course-type interaction existed ( $P < 0.01$ ) for mean number of absences. Overall, students in courses that included laboratories had a higher ( $P < 0.01$ ) mean number of absences (4.0) than students in lecture only courses (3.5). Freshmen and sophomore students had a higher ( $P < 0.01$ ) mean number of absences in courses that included laboratories whereas there was no difference in mean number of absences for juniors and seniors between the two course types. These results indicate that freshmen and sophomores had higher course grades and fewer absences in lecture-only courses whereas juniors and seniors had higher course grades in courses that included laboratories.

#172

**Multicultural Culinology: Real-Time Experiential Learning**

Ginger Lordus  
Allan Hancock College

Allan Hancock College's Culinology degree program uses real-time experiential learning and is a success. Students go beyond traditional knowledge and comprehension-focused learning. They learn through

online tutorials; apply course information through projects and presentations; and analyze their performance using peer reviews and self evaluations. Pre and post tests were completed by 55 nutrition students during a 16 week long semester. Students identified their eating habits, beliefs about eating habits, life situation pertaining to health, and physical activity level. Body weight, percent body fat, abdominal girth measurements, and blood pressure were used as anthropometrical tools. Improvements occurred in all areas by most students. Pre and post tests were completed by 20 students in a Food Nutrition Customs and Culture course during a 16 week long semester. Students identified their food knowledge, eating habits, sensory appeal and culinary skills related to cultural foods. Peer evaluations identified student's ability to master, exceed or achieve performance in five student learning outcomes areas: communication and professionalism; cognitive ability to succeed in their profession; writing proficiency; social and emotional cultural competence; and innovation of art and science. Most students achieved mastery level in these areas. Enrollment in the Culinology program went from zero in 2007 to seventeen in 2010. Student internships went from four between spring 2003 and spring 2006 to nineteen between spring 2007 and spring 2010. One student was accepted into California Polytechnic State University's Food Science and Nutrition program. Culinology student's real-time personal and professional success indicates that the program is a success.

#176

**Reporting Your Research Results**

Jesús Cuéllar Fuentes  
University of the Incarnate Word

You just obtained a grant to research an interesting idea. But how can you conduct the research so that you can quantitatively assess the results of your research? The objective of this presentation is to learn how to state specific research objectives that facilitate the identification of dependent and independent variables. We also discuss the development of the operational definition of a variable to enable its quantification. Furthermore we discuss ideas of how to reduce the error of measurement to ensure the exact and precise quantification of a variable. Then we proceed to present basic ideas of experimental design, types of experiments and different strategies to collect data, so that the objectives of the research can be

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quantitatively assessed. Finally, we present suggestions to analyze, summarize and display the data collected, using simple summary statistics and easy-to-understand graphical display and tables.

In summary, at the end of this presentation you will have a set of guidelines to assist you in planning your research, executing your plan, and analyzing and presenting the results of your investigation. This approach will enable you to quantitatively demonstrate whether or not your proposed ideas are correct and provide guidelines for further investigations.

### #180

#### **Engaging Students in Physicochemical Analyses Using Modern Instrumentations: A Practical Approach to Teaching Courses in Food and Nutritional Sciences**

J.D. Kelly, N.L. Dawkins, and R.D. Pace  
Tuskegee University

Teaching students in the 21st century has its challenges. It is important to engage students in problem-based activities that will provide a practical approach to the learning process. To achieve optimum learning outcomes necessary for the workforce and/or post baccalaureate degrees, a technology-enhanced learning approach was applied to selected courses in Food and Nutritional Sciences. The project engaged students in hands-on investigative activities to improve learning outcomes and competencies. Students were provided with materials used in product formulation and guided through the theory of food chemistry and analysis. Groups of students produced and analyzed a product that produced information on the chemical and physical characteristics of the end product. This experience exposed students to selective physicochemical analyses through the utilization of modern instrumentation: CEM SmartTrac, TA XT Plus Texture analyzer, gas chromatography etc. Group leaders presented the results with support from the group members. Grouping students allowed them the opportunity to improve their problem solving, interpersonal, and communication skills as they worked to accomplish the assigned task. Furthermore, it exposed students to the scientific and technical fundamentals of food, and nutrition while unveiling the myths generally surrounding the discipline as a non-science and non-technical area. In conclusion, this project allowed students to utilize modern technology in acquiring technical, analytical

and research skills appropriate for application to food, nutrition, and related sciences.

### #181

#### **Chef-Scientists: A Collaborative Cross-Disciplinary Program**

Priscilla Bloomquist and Lisa McKee  
New Mexico State University

Agriculture is an important part of New Mexico's economy, and a critical part of the state's culture. However, farmers and ranchers struggle to make a profit selling products at the elevator or feedlot. Through vertical integration farmers and ranchers are more frequently beginning to sell "food" rather than just commodities. For example, instead of selling onions and chilies, they are realizing that they need to sell salsa. The state of New Mexico has recognized that changes in the agricultural industry are necessary for survival, so it is actively working to attract industries that both support agricultural production and those that add value through packaging or processing before going to consumers. In an effort to facilitate this strategy, NMSU has been exploring ways it could prepare professionals cross-trained in food science/nutrition and culinary arts. These individuals are highly valued by food manufacturing/processing companies that produce ready-to-eat meals and other food products. NMSU's School of Hotel, Restaurant, and Tourism Management offers a comprehensive program with a commercial food production and service laboratory. However, the curriculum does not address many of the specific competencies culinary arts and R & D needs of commercial restaurant and food manufacturing companies. Therefore, there was a need to collaborate with other programs. This poster will illustrate:

- The curriculum development process.
- The development of articulation agreements.
- The renovation of the teaching laboratory.
- The recruitment and retention strategy.

### #183

#### **Student Perceptions of Hybrid vs. Traditional Courses: A Case Study in Plant Identification**

William. A. Hoch and Tracy A.O. Dougher  
Montana State University

In the spring of 2009 the herbaceous ornamentals course at Montana State University was converted to a hybrid course format, with all lecture and



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supplemental materials online and the plant material maintained in a teaching greenhouse where it was available to students at all times. The only in-class component was a weekly lab where students took quizzes and exams, were introduced to new plant lists and participated in a variety of lab activities. Twenty-two students enrolled in this hybrid course were surveyed at the end of the spring 2009 semester. The majority of students, 81.8%, preferred a traditional course format to this hybrid course. All of the students who preferred a traditional course disliked the reduced instructor contact of a hybrid course, while 75% of students who preferred a hybrid course favored the greater independence of the hybrid format. Correlations among student responses to the survey indicated an overall negative opinion of the hybrid course among students who had taken the traditionally-formatted woody ornamentals identification course, while 80% of students who had not yet taken woody ornamentals indicated overall satisfaction with the hybrid course. Students who expected to receive an "A" grade were significantly more satisfied with this hybrid course than were students who expected a "C" grade. These results indicated a student preference for a traditional course format that was largely dependent upon having previously taken a traditional-format plant identification course.

### #185

#### **Creating Individualized Instruction in College Courses through Online Collaboration Tools**

Barry Croom  
North Carolina State University

Learning occurs in the mind of the individual student, but how do instructors craft lessons for an individual student while teaching in a crowded lecture hall? Teachers recognize the need to connect students to lesson content, but many find themselves teaching to a whole class instead of teaching to the individual student. Individualized instruction seems impractical in large classes and multiple course sections, but it can be accomplished through collaborative web-based tools. Individualized instruction is important because it engages student learning processes by drawing upon the students' prior experiences, regardless of their preferred learning style and ability. It causes students to think critically about previous learning experiences and how these experiences compare to the new lesson content. Individualizing instruction creates multiple pathways to the concepts being taught, providing students with choices in how

they learn without changing what they must learn. There are web-based collaboration tools that organize the lesson around the unique learning preferences of the individual student. The use of social media and collaborative web-based tools such as wikis, weblogs, and Google™ documents creates a fundamental shift in the role of the student, moving students from consumers of knowledge to creators or knowledge. This presentation explains how college teachers can effectively use social media and collaborative web-based tools to individualize instruction in key facets of learning - introducing new lesson content, creating strategies for practicing and deepening lesson content, and engaging students in cognitively complex tasks. Learning is an individualized process, but knowledge creation is a collaborative process.

### #187

#### **Fostering Political Activism in Animal Agriculture Courses**

Mike Amstutz and Karen Wimbush  
Ohio State University ATI

Many studies have documented that younger voters consistently fail to engage in American politics. College students rarely view political issues as pertinent enough to warrant active participation. A proposed animal rights issue on the November 2009 Ohio state ballot presented a unique opportunity for agricultural educators to encourage active student participation in the political process. The proposed constitutional amendment would create an Ohio Livestock Care Standards Board responsible for establishing statewide animal care guidelines. This proposal, the first of its kind in the U.S., was in response to animal rights legislation passed in other states. Fifty-nine students enrolled in three undergraduate animal science courses were surveyed to determine their familiarity with the Issue. Eighty-one percent correctly identified the Issue topic; however, student self-rated awareness was only 5.3 + 2.9 (scale 1-10). Subsequently, students were presented unbiased information outlining the major aspects of the proposed issue and were asked to conduct a public awareness survey. Members of the local community (n = 781) were surveyed with 70.4% indicating they were registered voters. Of registered voters, 40.2 % indicated they were familiar with the Issue. Students were then asked to research and develop creative strategies for public education. They then implemented and reported on their public education projects. Student projects included passive

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education, social networking, website development, email, and active campaigning. Post assignment quizzes showed student knowledge of the Issue had increased appreciably. Most students indicated in the concluding survey they enjoyed becoming politically active and learned greatly from this experience.

### #192

#### **Creation of an Arboretum for Botanical Education at Delaware State University**

Susan E. Yost  
Delaware State University

An Arboretum is being created at Delaware State University as a component of the educational programs of the Claude E. Phillips Herbarium (DOV). Trees on college campuses have excellent potential as educational resources. Labels are already placed on over 80 different existing tree species, with a preliminary map of tree locations forming a loop walk around campus. Approximately 25 additional new species of native and non-native trees are being planted and labeled. The campus trees are utilized for undergraduate and graduate courses in the Department of Agriculture and Natural Resources including Systematic Botany, Dendrology, Field Botany, Economic Botany, Horticultural Plant Materials, and Ecology, as well as in other departments, for example Biology, English, and Mass Communication. The trees are also used for community outreach, including Master Gardener classes, teacher in-service classes, garden clubs, nature societies, scout troops, and visiting schoolchildren in our Woodlands Classroom Program. A monthly Campus Nature Walks program, attended by University faculty, staff and students as well as members of the community, features topics such as tree identification. Undergraduate students hired as Herbarium trainees assist with educational outreach, place tree labels, and prepare herbarium specimens. These voucher specimens are deposited in the Herbarium, where they are used for education and research. The new Delaware State University Arboretum will have over 100 different tree species, with accompanying booklet and map. Use of the outdoor educational resources is being quantified. The Arboretum will enrich the curriculum and outreach, and increase botanical knowledge of students and the public.

### #193

#### **Student Experiential Learning in the Natural Resource Sciences**

Wiebke J.Boeing, Martha J. Desmond, and Raul Valdez  
New Mexico State University

Marnie K. Carroll  
Diné College

Vicente Lombraña  
New Mexico State University – Alamogordo

Angeline Sells  
Southwestern Indian Polytechnic Institute

Jennifer Smith  
New Mexico State University – Alamogordo

Richard Wiedenmann  
New Mexico State University – Grants

Joseph P. Zebrowski  
New Mexico Highlands University

Student enrollment in Natural Resource disciplines is declining nationwide while vacancies in resource agencies are projected to increase sharply due to employee retirements. This leaves employers struggling to replace their workforce with qualified and diverse individuals. To address this national need, institutions across New Mexico are working collaboratively and formed the New Mexico Natural Resources Consortium (NMNRC). The NMNRC consists of high schools, two- and four-year institutions, tribal, non-governmental and government agencies across the state. Together collaborating institutions represent the diverse populations that exist across our state. We recognize that many of our students fair better in an active learning environment. This project (1) places qualified and motivated students from six core New Mexico Institutions and affiliated institutions on internships with mentors from Natural Resource Agencies, (2) match student research teams (4-7 students) with university faculty, and (3) provide students with international internship and exchange opportunities. Undergraduates then might have to take a class and present about their experiences at local high schools. In its first year 34 students, which include minority and high school students, benefited from this program and worked for 13 different agencies or research programs. Twelve presentations

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were given at high schools to over 250 high school students. The feed-back from students, employers and high schools was overwhelmingly positive. Since its inception the enrollment in the program has doubled and is expected to continue to grow, serving young people in New Mexico.

### #194

#### **Preparing for the PACT: Modifications to a Teaching Methods Course**

Wendy J. Warner and Ann M. De Lay  
North Carolina State University

Concerned with the quality and consistency of teacher preparation, the California State Legislature passed SB 2042 in 1998 to standardize teacher preparation across programs in the state. One of the requirements established is the successful completion of a state approved teaching performance assessment to obtain a preliminary teaching credential ([www.pacttpa.org](http://www.pacttpa.org)). As a result, agricultural education student teachers at California Polytechnic State University are required to complete the Performance Assessment for California Teachers (PACT). The assessment requires students to plan for instruction, teach a three to five hour learning segment, analyze student work, reflect on their teaching performance, and promote the acquisition and use of academic language. In addition, students must provide artifacts and written narrative as additional evidence in each of the areas. The completion of this assessment has been demanding for student teachers. In response, several changes were made to the teaching methods course to help prepare student teachers for PACT completion. First, each student is required to present on an educational theory. This helps students make a stronger connection between theory and practice and assists them in “describing the theoretical framework and/or research that informs your instructional design” (PACT, 2009, p. 10). Instructor feedback is presented to students using the PACT scoring rubrics. The format familiarizes students with the expectations through the products they submit. Following their microteaching experiences, students must submit a written reflection guided by specific prompts, connecting the experience to theory and to their recommended “next steps” for planning, instruction, and assessment.

### #196

#### **Project PAW (Peers Affirming Wellness) Pals**

F.M. Walker, B. Dixon, R. McWhorter, and S. McWhinney  
Prairie View A & M University

Projects PAW (Peers Affirming Wellness) Pals educates, motivates, and promotes nutrition practices and physical behaviors that contributes to the health and well-being of young adults in a university setting. This is to be accomplished in three one year waves, using one of three instructional methods, (face to face, web assisted and hybrid) to determine the effectiveness of each method on student learning outcomes. The project focuses on adapting existing curricula and related materials traditionally used in teaching basic nutrition and dietary principles to include information and the application of activities related to stress management, physical activity, and effective weight management strategies. Twenty nutrition majors were trained to be Pals to their peers in exercising, food portion identification, and nutrient analyses. Changes in nutritional knowledge, food choices and behavior, physical activity, and stress management will be recorded. BMI values and stress levels will be determined pre-course, followed by the development of personal goals evaluated by each student. Preliminary results after the first year indicated that 80% of students (n-120) showed an increase in awareness of basic nutrition principles and made positive dietary behavior changes. Results of stress inventories indicated that 30% of the participants had test scores above 300, indicating an eighty percent chance of illnesses or accidents in the near future. BMI values ranged from 17 to 40, where the normal range is 18.5 to 24.9. Changes in nutrition awareness and dietary behaviors were determined by Pre/Post – assessment measures and daily food and activity records, including determinants of food choices.

### #199

#### **Teaching Agriculture in Higher Education Institutions - What the Data in the FAEIS System Tells Us**

Timothy P. Mack  
Indiana University of Pennsylvania

William W. Richardson, Jolene D. Hamm, Shea N. Dunifon, Whitney R. Martin, and Mary A. Marchant  
Virginia Polytechnic Institute and State University

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FAEIS (The USDA's Food and Agricultural Education Information System <http://faeis.usda.gov>) has collected annual enrollment and degree data from agriculture institutions since 1979. Data collected since 2002 resides in the FAEIS Report Builder system and is available for all to use, with data by degree, discipline, gender and ethnicity for over 728,000 agriculture students and 8,700 agriculture faculty from 139 institutions.

This presentation will use FAEIS data to answer some questions:

What are the standard ways to categorize colleges, schools and departments of agriculture?

What disciplines comprise "agriculture"?

What other disciplines are commonly taught at agriculture colleges?

What is the "non-land grant" component of agricultural higher education?

Where are the most undergraduates receiving four-year agriculture degrees?

What states have the highest numbers of graduates in traditional agriculture disciplines?

### #200

#### **FAEIS – A Resource for Agriculture Faculty and Institutions**

Mary A. Marchant, Joseph R. Hunnings, and Jolene D. Hamm  
Virginia Polytechnic Institute and State University

Timothy P. Mack  
Indiana University of Pennsylvania

The Food and Agricultural Education Information System (FAEIS <http://faeis.usda.gov>) compiles nationwide higher education data for agriculture, natural resources, family and consumer sciences/human sciences, veterinary medicine and other related disciplines. These data include undergraduate and graduate student enrollment, degrees awarded at all degree levels, placement and faculty numbers and salaries by rank and discipline. FAEIS is used by the United States Department of Agriculture (USDA) in responding to Congressional inquiries to support higher education and related USDA programs. Higher education administrators use FAEIS data in recruiting and benchmarking students and faculty, as well as institutional planning, and regional and national comparisons. Faculty use FAEIS for USDA - Higher Education grant proposals. FAEIS data can help you learn about enrollment trends, emerging disciplines, student placement, and faculty numbers and salaries. You can

study these data by discipline, institution or even institution type. FAEIS allows you to track trends of students and faculty by gender and ethnicity. Multi-dimensional reports can be created in seconds with FAEIS Report Builder. You can select, filter and present the data exactly as you need it. The online Report Builder is fast, convenient, clear and easy to learn and use. FAEIS team members will demonstrate customized reports to answer questions related to student enrollment, degrees awarded, student gender and race, faculty headcounts and salaries by rank, discipline and institution.

### #204

#### **Curriculum Enhancement in the College of Agricultural and Life Sciences**

R. Elaine Turner, Mark Rieger, and R. Kirby Barrick  
University of Florida

In response to the 2006 Leadership Summit to Effect Change in Teaching and Learning, the College of Agricultural and Life Sciences (CALs) at the University of Florida embarked on a process of curriculum enhancement to transform its undergraduate and graduate programs. CALs participants in the conference developed a situation statement for college academic programs and proposed a process of comprehensive curriculum enhancement. The Dean, in consultation with unit leaders and the CALs Curriculum Committee, appointed a college-wide Coordinating Committee of six faculty. Departments were charged to establish a committee to envision curriculum enhancement that included opportunity for faculty, student and industry input. Departmental committees develop a report for the Coordinating Committee that includes 1) current program status, 2) proposed changes and justification, 3) enrollment targets, 4) curriculum goals and learning outcomes, 5) outcome measures, 6) advising approaches, and 7) implementation plan. Programs meet with the Coordinating Committee to discuss their report and receive input from the committee. Committee comments and recommendations are forwarded to the Dean, who then meets with the unit leader. By the end of May 2010, all graduate programs and all but seven of the college's 24 undergraduate degree programs will have met with the Coordinating Committee. Committee input has included suggestions for reorganization of courses, consolidation of majors/program tracks, and recommendations for tracking program graduates. Issues of course/program duplication have been identified and discussed. Future college efforts will

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focus on outcome measures and review of progress of implementation plans.

### #212

#### **The Moments We Miss: Using Facial Reader Software as an Educational Research Tool**

Tiffany Drape, Rick Rudd, Donna M. Moore, and Marie Vogler  
Virginia Polytechnic Institute and State University

The constant use of technology has changed the way students engage in their educational classes. While definitions vary, engagement is linked to meaningful and thoughtful approaches to tasks. When students are deeply engaged, they go beyond the requirements of the assignment, they exhibit preferences for challenge and risk-taking, and they make effort to master the knowledge and skills. How long is too long to lecture, go over notes, or work on a hands-on activity? These questions were raised at Virginia Tech and are being explored in the Department of Agriculture and Extension Education. Graduate students in the teaching and learning program have begun examining what an engaged student looks like, if engagement is related to other factors such as relationship, content, or the instructor, and what teaching methods students respond too during a laboratory setting through video analysis and observations made by the research team. A Teaching and Learning Laboratory (T&L) was constructed to examine students as a learning group, how they learn, assess engagement levels, and determine how educators can tailor curriculum in agricultural education to meet the needs of learners. The lab is equipped with five cameras, microphones, three InfaRed (IR) ports, a SmartBoard system, and DVD Recording system. The second portion of the T&L Lab is the control room equipped with seven Digital Video Recording systems, a control panel to operate each camera, and a computer to upload data, edit, and conduct data analysis from the data gathered in the laboratory using Noldus FaceReader and Observer software.

### #213

#### **Development of a General-Interest Course in Agricultural Terrorism to Attract Students in Majors from Outside Agriculture**

Nick Hill, Ronnie Silcox, Jean Bertrand, and Sarah Workman  
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 U.S. 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. Proportionately fewer students had an understanding of agriculture as the class grew in size but the proportion of students that had three or more college-level science courses increased. Students were attracted to the course because of the subject matter, and the proportion of students learning about the course from their advisor or a University webpage increased as those who learned about the course from friends decreased over time. We were successful at attracting non-agriculture majors by applying science to current events.

### #216

#### **Using a Social Network Site as a Tool for Communicating with Alumni**

Michael Mohny, Michael Reinert, and Dan Stearns  
Pennsylvania State

The social network site Facebook is the preferred communication system for many students and for an increasing number of faculty. At the urging of recent alumni, a Facebook group was established to strengthen communications between faculty in the department of horticulture at Penn State and graduates of the department's landscape contracting curriculum. The group, titled Penn State Landscape Contracting Alumni, debuted in July 2007 with no marketing or general announcement to graduates. After two months 21 alumni had discovered the group and joined. After 12 months membership had increased to 71. After 32 months membership reached 177, which represented 24.8% of the total number of graduates from the program. The site is

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used for group communications as well as for individual contacts. General announcements and events can be posted by any member. Career opportunities and position announcements received by faculty are disseminated via group email. A side benefit of the Facebook group is increased communication among alumni classmates.

### #217

#### **Abilities and Beliefs of Mentor Teachers**

Ryan M. Foor and Jamie Cano  
The Ohio State University

Nearly 50% of all new teachers leave teaching within the first five years of entering the profession. The flight from the teaching profession has placed teacher recruitment and retention as an important challenge for education in the United States. One component of induction is mentoring, the pairing of an experienced teacher with a novice teacher to provide personal guidance for the novice teacher. Over the past decade, a number of studies determined that a positive relationship exists between mentoring and induction programs and teacher retention. While studies have reported characteristics important for a positive mentoring relationship, little is known about the extent to which mentors perceive their abilities and beliefs in the mentoring relationship. An understanding of how mentor teachers perceive their abilities and beliefs is critical in the selection of mentor teachers for field experiences, like the student teaching experience; and to serve as mentors for early career (novice) teachers. The purpose of the study was to describe mentor teachers' abilities and beliefs related to the mentor – novice teacher relationship. Preliminary results indicate that mentor teachers agree more with the statements related to their beliefs about mentoring and agree less with the statements related to their ability to mentor. A substantial association exists between mentor teachers' level of agreement with abilities and beliefs. Ultimately, the results of the study will provide the field of teacher education with a better understanding of the abilities and beliefs of mentor teachers in order to develop quality mentor training programs.

### #218

#### **Student-Developed Video Tutorials using e-Learning Software Technologies**

Michael Mohney, Dan Stearns, and Michael Reinert  
Pennsylvania State University

E-Learning is a resource for enhancing teaching and learning. Screen capture technology has improved, allowing instructors to disseminate information in new and innovative ways. Horticulture 120, Computer Applications in Landscape Contracting, is a computer literacy course in Penn State's Landscape Contracting major and is designed to introduce students to various landscape applications currently available to landscape professionals. Traditional teaching practices in this course have centered on lecture-delivery of information by the instructor. During the fall of 2007, students in the class created a course wiki designed around "The Seven Things You Should Know" about technology relating to the discipline: computer aided drafting, computer modeling, photo imaging, and computer rendering. Included within the wiki were written tutorials defining procedures and processes. In the spring of 2009, class participants were surveyed to assess their preference regarding the use of lecture, live demonstration, self exploration, text book, or video demonstration. Students indicated video tutorials were useful as a supplemental resource for learning. Using the wiki tutorials as a starting point, student groups wrote and recorded video tutorials during the fall semester of 2009. The video tutorials integrated recorded PowerPoint presentations and screen capture video to illustrate tasks relating to software tool function. The finished tutorials were three to five minutes in length, with the recorded PowerPoint between two to three minutes and the screen capture video between one and two minutes. The final video tutorials were published online through the Horticulture department's server and linked to the course wiki.

### #220

#### **Implementing Sustainability Engineering Curricula across the College of Engineering at the University of Texas at El Paso**

Heidi A. Taboada, Jose F. Espiritu, Connie Gomez,  
and Noe Vargas  
The University of Texas at El Paso

Changes in our environment and the rising needs for natural resources are prompting societal demands for the inclusion of sustainable engineering in every facet of modern day life. These demands are pressing researchers and industry to develop new and better materials and processes that will allow industries as well as the average consumer to be significantly greener. Unfortunately, there is a lack of sustainability education in the engineering curricula.

Therefore, the main objective of the present project is to develop and implement sustainability engineering research and education within the College of Engineering at UTEP. The project incorporates a multi-disciplinary approach at several levels including cooperation among faculty, input from industry, and direct collaboration between students, faculty, and administrators. The team developed a sustainability engineering course which was team-taught for the first time during the Spring 2010 semester and offered to junior and senior engineering students. Throughout the course, different hands-on learning experiences were developed to enable students address different environmental as well as economic concerns using different software such as GaBy® and CES EduPack ®.

The course will be offered every fall semester for both undergraduates and graduate students and the PI has negotiated with the administration the continuous offering of the course to guarantee its offering beyond the duration of the grant. Moreover, different research opportunities will be provided for undergraduate and graduate students through faculty collaboration and the materials generated are being disseminated to the general public through a bilingual website, poster presentations, K-12 outreach, and conference presentations.

### #222

#### **Virtual Learning Forests: An Online Learning Tool for Natural Resource Students**

Michael Bannister, Howard Beck, and James Oliverio  
University of Florida

With the support of a CSREES Higher Education Challenge grant a team at the University of Florida is developing an innovative teaching approach, a Virtual Learning Forest (VLF) created in the open-source environment Java Wonderland, where natural resources students can extend and enhance their field laboratory exercises. This poster shows progress after nine months and presents the long-term objectives of the project. Similar to a video game interface and operated from a personal computer, this prototype VLF depicts a small stand of longleaf pine (*Pinus palustris*); data are attached to each tree. It allows groups of students to create and manipulate avatars which take and record measurements of tree diameter and height using built in tools, with the possibility of making mistakes due to improper technique, and a chat window allowing real time communication.

Students can repeat exercises many times at no cost in travel time or instructor supervision. This prototype will be tested by forestry students at the University of Florida and Virginia Tech beginning August 2010. The long-term goals are to create several forest types from around the globe at resolution sufficient to identify trees by species, to attach growth models supporting mensuration and silviculture exercises, and to facilitate international collaboration between teams of natural resource students represented by their avatars working together in their respective virtual forests. We believe this will enhance learning and promote and link natural resource management to international collaboration early and throughout the students' education.

### #228

#### **An Interdisciplinary Agricultural Biotechnology Course: Student Perceptions of Agriculture, Biotechnology, and Integrative Techniques**

Elizabeth Wilson, Kevin Curry Jr., Charlotte Farin, and Chad Jordan  
North Carolina State University

A postsecondary interdisciplinary agricultural biotechnology course was implemented through distance education during the spring (n=21) and fall (n=23) semesters of 2009. Content included environmental, plant, and animal biotechnology with a focus on how current issues in biotechnology impact society. Instructional methods that encouraged inquiry learning, problem solving and analytical thinking were utilized extensively. To ascertain the effects of the course on students, three surveys were administered: a biotechnology perceptions survey, an agriculture perceptions survey, and an integration perceptions survey. Each instrument with the exception of the integration survey was given in a pre/post fashion to detect any changes as a result of the course. Pre/post data were analyzed using t-tests, only for those respondents that could be matched. The biotechnology perceptions survey (n=19) demonstrated that students had a 5.7% increase in positive perceptions toward biotechnology after being exposed to the course. This increase was significant (p=.013). The agriculture perceptions survey (n=21) displayed a 2% increase in positive perceptions toward agriculture (p=.36). The integration perceptions survey (n=16) highlighted that future agriculture teachers had positive perceptions towards integration, and were more likely to integrate curriculum as a result of the course.

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Respondents had a mean perception of 3.55 (4-point likert scale) on all integration items. The results indicate that this course favorably impacts the perceptions students have toward agriculture, biotechnology, and curriculum integration.

### #229

#### **West Hills College Lemoore USDA Abstract**

Joel C. “Jody” Ruble and Dave Bolt  
West Hills College, Lemoore

West Hills College Lemoore is located in the Central Valley of California. Our economy is largely agriculturally based. West Hills College Lemoore serves many industries in the food production chain, from growers, to packers, processors, distributors, and food preparation and service. To keep pace with the ever-increasing demand to enhance the food and agricultural scientific and professional work force, West Hills College Lemoore is in the process of creating two new certificates, Biotechnology and Quality Assurance Technology, and a degree in Biotechnology. This degree and certificates will create career pathways for food safety and agricultural manufacturing and could lead towards the achievement of further postsecondary instruction. Curriculum will be primarily developed based on input from regional community partners and potential employers. Our community partners and employers gather for advisory meetings to consider issues pertinent to the curriculum, industry needs, available jobs, etc. These include local farmers, large processing concerns, and producers as well as food safety regulatory officials. Some members of our advisory committee have served as guest speakers in a lunch forum for students. Our lunch lecture series has served as a program recruitment tool as well as a point of contact between our students and employers in the area. Students will be recruited from the area high schools, displaced manufacturing workers, and from the existing college student body. The project serves a 3,654 sq. mile region and 16 small communities with high numbers of Hispanic residents in the rural Central Valley of California.

### #231

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

Gloria Rojas-Vazquez  
University of Puerto Rico in Ponce

The project entitled: Integration of Interdisciplinary Techniques: Agricultural Biotechnology (ITAB) was developed for encouraging students for continuing post graduate studies on agricultural biotechnology areas. The project is a collaborative effort between the University of Puerto Rico in Ponce (UPRP), University of Puerto Rico in Utuado (UPRU), and the U.S. Forest Service. ITAB strengthen the UPRP and UPRU existent curriculum by implementing active learning experiences including the use of specialized instrumentation. During the second semester of this first year (2009-2010), ten UPRP students (BS in Biology with a Sub-specialty in Biotechnology), five UPRU students (Associate Degree in Agricultural Production Technology) and a UPRP faculty member attended to the new ITAB sponsored course Agricultural Biotechnology of Plants. It was approved as PREH 4990-B01, with an academic load of three credits equivalent to 45contact hours. It integrates theoretical concepts and hands-on experiences on the areas of botany, agriculture, and biotechnology applications. Field trips, invited speakers, and the use of Blackboard and Elluminate were used as part of the activities. As additional support to participants, written educational materials and tutoring services were provided. The students from the course PREH 4990-C01 participated in six summer workshops (six hours each), offered during the first weeks of June 2010. The workshops were focused to integrate agricultural techniques on the field, especially at the recently developed Research Area located in the UPRP. The webpage of the project ITAB is already available at the site of the University of Puerto Rico in Ponce at [www.uprp.edu](http://www.uprp.edu).

### #232

#### **What’s the Issue?: Critical Thinking about Current Events in Agriculture and Natural Resources**

Karen J. Cannon, Greg Gifford, and Nicole Stedman  
University of Florida

Current events, public policy and decision-making impact agriculture and natural resources at local, state, national and international levels. In an effort to incorporate current issues into the classroom and boost students’ critical thinking skills, the instructional team for an undergraduate agricultural communications and leadership capstone course collaborated to create a problem-based learning assignment designed to engage students in agriculture and natural resources issues. Students delivered a 10-minute “elevator speech” outlining an issue of their



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choice and subsequently submitted a two-page written brief summarizing points made in the presentation. Designed to provide an opportunity for students to examine a current issue and present their analysis to the class in written and oral formats, both portions of the assignment are scored on content and quality of information provided, focusing on Facione's (1990) critical thinking skills: interpretation, analysis, evaluation, inference, explanation, and self-regulation. Topics ranged from the impacts of the Haitian earthquake on the agricultural industry to a new eco-friendly soda bottle design. To date, 20 of 25 students have completed oral presentations; scores have been above 80%. Written briefs will be submitted and scored in the next month. Of primary importance are students' abilities to describe the issue and its accompanying perspectives completely, discuss stakeholders involved, describe the issue's importance, and during the presentation, the ability to answer questions clearly and completely. Students have engaged in lively discussions during the question period following presentations, generating new perspectives about current issues and events in the agricultural and natural resources industries.

### #234

#### **A Conceptual Model of Learning Activities for College Instructors**

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

A universally accepted model or taxonomy outlining the plethora of potential learning activities that could be taught in a college teaching course does not exist. The Taxonomy of College Learning Activities Model was developed to address this void. The model presents individual learning activities in a manner that allows the instructor to conceptualize the relationships between learning activities that are divided into three categories: teacher-centered activities, social interaction activities, and student-centered activities. The first category, teacher-centered activities, was defined as activities that consist of the teacher providing instruction to students with no learner-learner interaction. Learning activities in this category are lecture and demonstration. The second category, social interaction activities, was defined as reciprocal teaching among the students and teacher. Learning activities in this category are characterized by substantial amounts of teacher-learner, learner-

teacher, and learner-learner interactions. Learning activities in this category are questioning, discussion, and cooperative learning. The third category, student-centered activities, was defined as learning activities that give students the opportunity to develop knowledge from their experiences. Learning activities in this category are inquiry and individualized application. The model also aids the instructor in visualizing the regulation of learning continuum. As one moves from teacher-centered to student-centered activities more regulation is required of the learner. College instructors can use the model to aid in selecting appropriate learning activities based on learning objectives and the type of desired interaction: teacher-learner, learner-learner, or learner-teacher. The model can also be used to conceptually aid future instructors in a college teaching method course.

### #235

#### **An Experiential Learning Model for College Educators**

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

This presentation introduces a Model of Experiential Learning for College Educators, that combines the experiential learning process theory of Dewey, Lewin, and Kolb and common teaching practices to create a meaningful learning experience as described in the theoretical framework of constructivism. The model consists of six sub experiences that theoretically result in transferable knowledge. The first sub experience, Common Introductory Education Experience, is an activity that provides a link between prior knowledge and a common educational experience that should ignite interest in new knowledge. The second sub experience, Importance Experience, emphasizes why new knowledge to be learned/discovered is important and reveals implications for future use in a real world context. During the third sub experience, Contextual Learning Experience, (agriculture related curriculum) the educator chooses the most appropriate teaching method(s) to facilitate dissemination and discovery of new knowledge in relation to current knowledge, prior experiences, and future use. During the fourth sub experiences, Reflection Experience, students think critically about the new experience and its connection to current knowledge and future and past experiences. During the fifth sub experience, Connection/Generalization Experience, students assimilate, generalize, and connect new knowledge

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being experienced to future uses and prior knowledge/experiences. In the final sub experience, Culminating Application Experience, the students use/test new knowledge gained in a real world context. The combination of experiential learning process theory, the use of multiple learning experiences, and a variety of teaching methods within daily classroom lessons may be key in helping college educators assist students to develop meaningful transferable knowledge.

### #237

#### **Development of Online Courses in the Dietetics, Foods, and Nutrition Programs**

Andrea P. Boyar  
Lehman College

Faculty in the Dietetics, Foods, and Nutrition (DFN) programs at Lehman College received release time to attend workshops from fall 2006-Spring 2009 designed to assist in the development and implementation of hybrid and/or asynchronous formats in DFN courses while maintaining excellence in didactic content. Faculty learned the use of Blackboard, the course management system, launched 15 web-enhanced course sections, and met with experts to discuss the online opportunities for student writing and teacher-student and student-student interaction. Total enrollments in all DFN courses increased 43% from 208 (fall 2006) to 298 (spring 2010). Student enrollment in either hybrid or asynchronous courses increased from 30 in fall 2006 to 228 in spring of 2010, an increase of 760%. The major increase was in blended or hybrid courses, as fully online courses only increased from one course to three courses, and hybrid courses increased from one section to twelve sections in the same time period. Faculty reported satisfaction with the use of technology and student learning outcomes in the online courses. The majority of recent program graduates who answered an online survey (n=39) rated the quality of online/hybrid classes as excellent (36%) or good (46%). Faculty look forward to improving student experiences by learning from and collaborating with successful innovators in online education. We aim to identify, investigate and incorporate successful strategies and best practices in online teaching such as the use of wikis, blogs, laboratory simulations, multimedia learning, narrated lectures, narrated slide presentations, video streaming of lectures, and podcasts in online courses. (CSREES SERD GRANT 2006-38422-17082)

### #239

#### **Changes in Participant Knowledge Level and Intended Lesson Topics for an Emerging Pathogens Workshop**

Quisto Settle, Tracy Irani, Lauri M. Baker, and Katie M. Abrams  
University of Florida

Secondary science teachers participated in a two-week workshop led by faculty members at a land-grant university in 2009. The purpose was to have teachers learn about science developments that could then be transferred to classroom use. Participants completed questionnaires before and after the workshop regarding knowledge of science and teaching, topics covered in their classes, and confidence teaching certain topics. Knowledge of emerging pathogens increased the most (+1.0) while knowledge of science and scientific processes increased the least (+0.4). On the actual knowledge portion, the pretest averaged 53.0% of participants correct per question and the posttest had 82.7% of participants correct per question. For the amount topics are covered in class, participants increased the most for intention to include emerging pathogens (+1.1), biotechnology (+0.8), scientific discoveries (+0.7), and new inventions and technology (+0.7). The areas to increase the least were environmental and natural resources (+0.1), foreign policy (+0.2), agriculture (+0.3), and business conditions (+0.3). For confidence teaching topics, participants increased the most for emerging pathogens (+1.2) but were still more confident in teaching science overall ( $M = 4.9$ ). The results indicate the program has been successful at increasing knowledge of emerging pathogens, as well as knowledge related to science, science careers, and pedagogy. The workshop also appears to be successful in regard to improving instructors' intent to include more science topics in class. Future work needs to be done to assess whether or not the results of this workshop have made their way to the classrooms of the participating teachers.

### #242

#### **Assessing Written Communication Assignments in a Workforce Preparation Course in Animal Sciences: Lessons Learned**

Mark Tucker, Inez Ponce de Leon, and Mark Russell  
Purdue University

The objectives of this presentation are to aid those in attendance in consistent assessment of writing

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assignments with customized rubrics and that attendees will take home examples of various writing style assignments, student peer review strategies with face-to-face feedback, and writing rubrics. This Animal Sciences “Leadership for a Diverse Workplace” course serves as a written communications elective for majors. The class meets for 75 minutes on Tuesdays and Thursdays and is co-taught by faculty in Agricultural Communications and Animal Sciences. We are comparing student writing comfort and competency when general assignments were given and rubrics utilized to assess the assignments (n=30, 2009) with the rubrics and more detailed assignments given before the assignments (n=48, 2010). Students were more likely to use rubrics as a writing aid if their instructors use and refer to them across five different writing style assignments. Students in this project improved their comfort level writing a business memo, position paper, letters, reflective essay, and summary report when clearer assignments and rubrics are provided in advance. They improve the competence at face-to-face peer reviews and actually writing skills as evidenced by the assessment of the writing against the rubric. It is essential to forge a close partnership between the subject matter faculty member and the faculty in communication for this to work well. Both disciplines must have expertise represented and the students respect the credibility of each separately. This Animal Sciences course is a place to begin this interdisciplinary approach to teaching writing in other agricultural departments.

### #243

#### **A Description of Factors Effecting Student Retention within a College of Agricultural Science and Natural Resources**

CassiDe Street, Cindy Akers, Steven Frazem, Lori Dudley, Rachel Bobbitt, and Kelsey Hall  
Texas Tech University

Higher education institutions consider a student’s Grade Point Average, class rank, and ACT or SAT before accepting the student into the educational institution. These qualifications are considered predictors for academic success in higher education. Researchers have used the Student Readiness Inventory (SRI) to help predict academic success and retention. The SRI contains 108 questions measuring 10 higher order factors and three secondary factors. Motivation’s higher order factors include conscientiousness, goal focus, and academic self-confidence. Study skills, problem solving skills,

communication skills, and emotional control skills are higher order skills for academic-related skills. Social engagement includes teamwork, social activity, and social connection as higher order factors. The purpose of this study was to describe the factors that influenced retention of incoming freshmen in a college of agriculture at a western university using the SRI. The SRI was administered to 206 entering freshmen at the completion of a college of agriculture new student orientation sessions. The highest predictors for retention were commitment to college at 2% prediction and general determination at 3% prediction. The strongest relationship for first semester GPA and SRI factors was at the moderate relationship with academic discipline ( $r = .39$ ). GPA had a low relationship with academic self-confidence ( $r = .27$ ), goal determination ( $r = .19$ ), and commitment to college ( $r = .15$ ). SRI scores might benefit colleges of agriculture through academic advising. SRI scores may help advisors and student services centers get to know their students better and how to help them more specifically.

### #244

#### **Effectiveness of a Science Agricultural Summer Experience in Attracting Rural New Mexican Students to Natural Resources Management Tracks**

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

Here we report three years of results from a two-week Science Agricultural Summer Experience (SASE) program funded by the USDA Hispanic Serving Institutions Initiative. The project recruited regional high school and community college transfer students to participate in a summer institute exposing them to content and careers in natural resources management. The program goals were to grow interest in, and career paths towards, natural resources management among New Mexican youth from demographic groups (Hispanic and Native American) that are greatly under-represented in the workforce. The SASE curriculum included field-based experiential learning modules in Soil Science, Surveying and GIS, and Water Science that used the local agricultural culture and traditions as a learning framework. Anecdotal data suggest that a curriculum that makes connections between students’ lives and their communities is an effective means of building natural resources management awareness. Pre- and

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post-experience surveys indicate that the summer program clearly had a positive impact on the participants' impressions of natural resources management, but whether this is enough to convince them to major and work in natural resources management is unclear. Tracking data indicate that all or nearly all of the SASE participants are attending four-year universities, which is significantly higher than the state average (<45%). We continue to follow the participants' college choices to assess the effectiveness of the summer program as a strategy for enhancing and diversifying the national pipeline for natural resources management specialists.

**#248**

### **Strengthening Team Facilitation and Communication Skills of Upperclassmen through Collaborative Responsibilities in a Freshman Animal Sciences Orientation Class**

Barry Delks and Mark Russell  
Purdue University

The objectives of this presentation include 1) how to measure the confidence and competence of the teaching assistants, and 2) how to maximize the effectiveness on the student population being served. This Animal Sciences Orientation course included approximately 160 students during 2009 and 2010. This class is a freshman retention seminar and each freshman must meet with their team once weekly. The class relies heavily on the teams and their activities to accomplish its goals. Team facilitators are expected to facilitate discussion of seven animal industry and personal development topics. The 20 team facilitators in 2009 and the 35 in 2010 were selected, trained and the average team size was reduced from 5.2 in 2009 to 3.6 in 2010. We assessed the self-perceived confidence of the team facilitators as well as the competence and effectiveness of the team facilitators on the population served through student course evaluations. With 1.0 being best, team facilitator effectiveness was ranked at 2.8 in 2009 and 1.75 in 2010. The highest results were in "My team facilitator was an effective discussion leader" (1.67) and "My team facilitator made a positive impact on my course experience" (1.65). Effectiveness was higher at 3-4 team members when compared to 5-6 team members. Team facilitators reported that they gained skills in group facilitation and struggled to sustain interaction between all members of the team. The involvement of undergraduate team facilitators added value to the freshmen experience and just as

importantly strengthened the team facilitator's confidence leading teams.

**#251**

### **Using Student Content Engagement to Improve College Teaching**

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

Effective teaching is important to student achievement, so the goal of much educational research has been to identify the characteristics of good teaching that contribute most to student learning. The impact from teaching quality has been determined, but isolating what exactly makes teachers effective has been the problem. Certain traits shared by effective teachers have been discovered; however a prescribed list is not available for one to follow to become a master teacher. Because of the lack of findings on effective teachers and teaching characteristics, McLaughlin et al. (2005) proposed the Student Content Engagement (SCE) framework for studying teacher characteristics in the context of student learning. The framework is divided into four categories: subject matter content level, occasion for processing, physiological readiness, and motivation; each representing areas identified through research as essential to student learning. The purpose of this philosophical study was to develop a visual model of the SCE framework. This model should help college teachers understand students' learning needs when developing their teaching approaches. In addition this model gives instructors unfamiliar with learning theories an avenue to develop research grounded in established theory, which could be beneficial for teachers interested in the Scholarship of Teaching and Learning. This tool should prove useful for researchers and practitioners looking to improve student learning through higher quality teaching.

**#252**

### **Identifying How Educators Prefer to Learn About Technologies for the Classroom**

Kelsey Hall and Courtney Meyers  
Texas Tech University

Students today are more "connected" than ever and are technologically savvy. As these students enter colleges and universities, educators should engage them by using technology. Some secondary and post-secondary educators have already integrated blogs, podcasts, wikis, videos, mashups, discussion boards,

or social networking technology into courses. The purpose of this study is to discover what technologies educators at a southwestern university have adopted and how they prefer to learn about potential new technologies for the classroom. Six members of the university's Teaching Academy participated in semi-structured face-to-face interviews. The participants were asked open-ended questions to gather their opinions of incorporating technology, specifically what technologies they use and how they prefer to learn about new technologies for their classrooms. The interviews were recorded then transcribed. The constant comparative technique was used to analyze responses looking for similarities and dissimilarities. Participants believed technology serves as a tool for working with students when it is used appropriately and fits with the learning objectives of courses. Electronics incorporated into their classroom instruction included digital cameras, whiteboards, DVDs, and clickers. Participants used software to teach skills and communicate with students: iLife, Adobe Creative Suite, PowerPoint, Internet browsers, and course management systems. Preferences for learning technologies included university workshops, online tutorials, individual sessions, and academic journals. These preferred outlets should be used to introduce classroom technologies to faculty members. Future research should explore the effectiveness of these outlets and make necessary adjustments to further assist with technology adoption.

**#255**

**Changing Seats vs. Staying in the Same Seat Increases Participation Contrary to Student Perception in a Senior Level University Class**

Olivia R. Hoopes, Dennis L. Eggett, and Tory L. Parker  
Brigham Young University

Physics students initially assigned to sit in the front of a classroom demonstrated improved performance even after being moved to the back of the classroom. This study's objective was to evaluate random seating location as well as seat reassignments on class participation in a 55 student senior nutritional biochemistry class. Alternating every other seat, half of the class was randomly assigned a permanent seat while the other half was moved to a different seat each class period. It was hypothesized that the move group would participate more than the stay group, even when in the back of the classroom. On a scale of 1-9, both the move group ( $5.4 \pm 1.8$ ) and the stay

group ( $5.8 \pm 1.9$ ) reported perceived participation as slightly above average as a result of the move and stay assignments. Actual participation among the move group was  $1.19 \pm 0.13$  comments per student per day and  $0.73 \pm 0.20$  in the stay group ( $p=0.054$ ) using repeated measures ANOVA. Students sitting in the front of the classroom in the stay group made  $1.09 \pm 0.19$  comments per student per day, while the back made  $0.40 \pm 0.18$  comments ( $p=0.012$ ), in agreement with other studies. Moving, however, increased overall participation as well as removing the difference between front and back of classroom ( $1.27 \pm 0.28$  front vs.  $1.05 \pm 0.28$  back,  $p=0.58$ ). In this cohort of students, changing seats each class period is as effective at increasing class participation as sitting in the front of the classroom.

**#257**

**Motivational Strategies for Recruiting Talented Students in Agricultural Sciences at the University of Arkansas at Pine Bluff**

Mohammad Jalaluddin, Shahidul Islam, and Sixte Ntamungiro  
University of Arkansas

The University of Arkansas at Pine Bluff has a remarkable history of producing minority graduates in agricultural sciences; especially in the Agronomy (plant and soil science) area. However, in the past few decades enrollment in Agronomy has dwindled. In the past three years, only about 6% of the enrollees signed up for Agronomy as against 65% for Agricultural Business option. The fear of science and negative image of agriculture seemed to be a part of the problems. To offset this situation, we planned strategies to motivate high school students to explore careers in modern agricultural sciences. Beginning 2007, we conducted three summer internship programs in plant, soil, environmental, and biotechnological sciences (SIPSEBS). About 40 high school juniors and seniors from Arkansas and neighboring states have participated in SIPSEBS. Through structured mentor-protégé arrangements, research apprenticeships, and scholarly seminars, we exposed high school students to the agricultural sciences and its promises to prestigious career opportunities. Faculty, parents, and community leaders were engaged in discussion, teachers' workshops, and mass-media outlets to facilitate effective exposures of the college-bound students to career opportunities in agriculture. As a result, a modest increase in enrollment is evident. About 50% of the interns have enrolled at UAPB; half of them in

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agricultural sciences. The enrollment in Agronomy has increased from two in 2007 to seven in 2009. Although increased interests in agricultural, environmental, and biotechnological sciences have been noticeable, more efforts are to be made to alleviate the fear of science and negative image of agriculture among minorities.

### #258

#### **Measuring the Relationship between Student Use of Cooperative Learning Techniques and High Level of Competency on the Final Examination**

Carla Jagger and M. Susie Whittington  
The Ohio State University

Engaging learners in content during class sessions is vital to their long-term retention and transfer of that content across the life span. In this study the researchers sought to describe the relationship between using cooperative learning techniques (CLT) in microteaching and student high cognitive competency on the final examination. All learners received identical lectures that contained the following CLT: timed-pair share, jot-thoughts, paraphrase passport, window-paning, inside-outside circle, and Q-approach. A convenient population of 14 students, enrolled in a ten-week university methods of teaching in non-formal environments course, were used. Analysis was conducted using videos from each student's microteaching labs. Researchers conducted a frequency count of how often the students used CLT in their lessons. Researchers also analyzed each student's final examination by giving both the final examination and each student a high cognitive weighted score using only the questions asked at the application, analysis, synthesis and evaluation levels of Bloom's Taxonomy. Findings were that out of the 27-microteaching lessons recorded, 12 CLT were used by five of the students. The high cognitive weighted score of the final examination was 47.5. Student high cognitive weighted scores ranged from 41.2 to 46.8 with a mean of 44.7. Four of the five students using CLT scored in the upper half of the population on the high cognitive weighted scale. A preliminary conclusion is that students who used CLT responded positively to higher cognitive questions. A recommendation is that professors further explore using cooperative learning techniques in class sessions.

### #263

#### **Food for Thought: A Collaborative Effort to Incorporate Food and Agriculture Disciplines into a Liberal Arts Curriculum**

Greg D. Pillar, Jessica Braswell, Suzanne Watts Henderson, Melinda S. Harper, and Dorothy McGavran  
Queens University of Charlotte

Food is perhaps the weak link in our pursuit of social, political, and environmental sustainability. With a world population approaching nine billion people, issues related to food including hunger, obesity, environmental impact, food safety, and food security pose critical problems that demand responsible solutions. Historically, liberal arts colleges have done little to address the social implications of agriculture or related disciplines, but a group of seven professors from a variety of fields has adapted an interdisciplinary general education course to cultivate our students' response to these issues. Over a three year period, professors from psychology, religion, English, environmental science and agronomy have created CORE 122 – Modern Citizenship: Food for Thought. The course comprises three parts. Part One explores the topic of active citizenship in the modern world. Part Two exposes students to a range of topics including food production, hunger and poverty, eating disorders and biotechnology and uses service and experiential learning to build a deeper learning experience. In Part Three, students participate in a model Congress where they have proposed "bills" to change food policy, advocating for such issues as farmland preservation, limited advertising of low-nutrition food to children, and labeling of genetically modified foods. Yearly assessment data and course evaluations indicate that the course is a success and may serve as a model for incorporating food and agriculture into a liberal arts curriculum.

### #265

#### **Agricultural Scholars: A Collaborative Student Enrichment Program**

Kerry Priest, Keyana Ellis, and Donna Moore  
Virginia Polytechnic Institute and State University

Agricultural education research initiatives have identified that leadership opportunities for underrepresented student populations are vital for the advancement and future of agriculture. Support and programming aim to encourage minority high school students' awareness and access to college by

providing them with tailored resources, models, networks and strategies for academic success and retention. Agricultural Scholars was a collaborative summer enrichment program between Virginia Polytechnic Institute and State University and Uniondale High School, NY. Objectives were to provide a structured research assistantship for gifted and talented high school agriscience students, while exposing them to academic opportunities and social aspects of campus life.

Seven students spent one month living on campus and working alongside faculty and graduate students on advanced research projects. Students were paired with an instructional faculty/research mentor based on their interests and educational aspirations. The program involved four-to-six hours in the lab per day, independent study, weekly lunch-and-learn sessions, campus tours, and social activities ranging from a high-ropes course to hiking. Students attended life-skill workshops on applying for college, personality types, and developing personal-strengths, as well as goal setting and leadership coaching sessions.

Upon completion of the program, students communicated their findings through formal research presentations on topics ranging from genetic engineering to bio-fuels. A send-off celebration with mentors, faculty, and staff concluded the program. Students attained competitive research outcomes, and several have gained acceptance into Virginia Polytechnic Institute and State University as a result of their participation. Lessons learned from a planning and facilitation perspective, in addition to participants' perspective, offer insights for agricultural educators, faculty, and administrators.

### #270

#### **Teaching Controversial Issues through Guided Group Discussion – An Approach to Cognitive Dissonance and Conceptual Change**

Chaney W. Mosley and Thomas W. Broyles  
Virginia Polytechnic Institute and State University

Many controversial issues, social and political, are debated in the world, and much of these topics become infused into various curriculums throughout colleges and universities. It is questionable whether instructors can maintain neutrality when teaching such topics. The purpose of this study was to look into using guided group discussion as a method for providing instruction on controversial issues, steered by the overarching question of whether or not teaching controversial issues through guided group

discussion was an effective approach to cognitive dissonance and conceptual change. Participants were undergraduate students (N=22) in a public speaking class. Two instruments were used in a pretest to assess the attitudes toward two specific controversial issues – sustainable agriculture and animal welfare. Students were separated into groups for participating in a discussion. After receiving neutral, topic specific research questions, group discussions were held. After the discussions, the same instruments were used in a posttest. Results were compared to determine conceptual change, defined by the researcher as an increase or decrease of one pretest standard deviation in attitude scores on the posttest. Five students experienced conceptual change regarding sustainable agriculture and no student experienced conceptual change toward animal welfare. This teaching method has positive implications for teaching controversial issues. First, students are encouraged to consider both sides of a controversial issue. Secondly, the method allows the teacher to maintain neutrality and avoid bias. Finally, in cases where conceptual change did occur, it was the students who were responsible for their individual conceptual change, not the instructor.

### #271

#### **Communicating Student Outcomes Using E-Portfolios**

Holly J. Kasperbauer, Thomas W. Broyles, and Cory Epler  
Virginia Polytechnic Institute and State University

With changes in technology, electronic portfolios (e-portfolios) are being utilized to assess learning and to provide a method for students to communicate with instructors and potential employers. E-portfolios provide a medium for students to track growth during their education, demonstrate adequate knowledge and skills, and to share materials using protected software. Students go through the process of creating documents to place in the portfolio, critically reflect on what they learn, and organize the material to be shared with an audience. Two strategies for implementing e-portfolio have been used in an academic department at a land grant university. First, e-portfolios are used in a graduate program for teacher certification. Students keep record of teaching artifacts, including a philosophy statement, professional development, experiential learning activities, and lesson plans. The e-portfolios are used to assess student's professional growth, accreditation evidence, as well as providing students with a tool

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that can be used in job interviews. The second strategy for incorporating e-portfolios is through an undergraduate course. Throughout a semester, students place assignments and reflections in a portfolio to reflect on leadership growth. The portfolio serves as a repository and assessment tool for the work in the class and to encourage students to keep an ongoing record of their growth in the area of leadership during their undergraduate career. When used effectively, e-portfolios can provide a record of growth for students, a way for them to communicate learning outcomes, and as a tool for communicating and showcasing their work to potential employers.

**#278**

### **Teaching Soil Conservation in an Introductory Soil Science Laboratory**

Laura Eskridge and Jeff Hattey  
Oklahoma State University

Within soil science literature, there are adequate examples of soil conservation lesson plans; however, the majority of these lessons have not been empirically tested to validate their efficacy. The objective of this study is to determine the effectiveness of two soil conservation teaching methods in terms of knowledge retention and student report. Data was collected over two semesters with procedural changes occurring in the second semester. For the simulator method, students took a field trip to use a rainfall simulator and a wind tunnel to illustrate the concepts of water and wind erosion which were followed by questions and calculations. The lecture method was a combination of lecture and small group activities in the classroom, which were also followed by calculations and questions. During the second semester, an additional lecture was added, lab procedures were modified, and additional quiz questions were created. For both semesters, students completed a pre-test, two post quizzes, and an opinion survey; a second survey was added during the second semester for students to state preferences after completing both methods. Analysis using MANCOVA across both semesters showed that there was no significant impact of pre-test scores on quiz scores and that there was no significant difference between quiz scores based on teaching method. For survey one, across both semesters, students who participated in the lecture method felt that they learned more than students who went on the field trip; however, the second survey showed a preference for the simulator method in ten out of sixteen categories.

**#281**

### **Knowledge and Skill Perceptions for Careers in Agriculture and Agribusiness**

Michelle Mullins Santiago, Michael Lau, and Art Wolfskill  
Sam Houston State University

Agriculture and agribusiness are diverse, complex industries. The sciences of production coupled with the interdisciplinary aspects of business and a global supply chain present unique challenges for students majoring in agriculture, especially agribusiness. Students entering the agriculture field have a wide range of prior subject knowledge, work experience, and learning experiences. In order to deliver the most effective curriculum in a manner that motivates student learning, it is necessary to understand current student perceptions of agricultural issues and skills they feel will be most important to their future agribusiness careers. Students at Sam Houston State University majoring in agriculture were surveyed to measure their perceptions on major knowledge issues and skills important to their industry. The survey used a Likert-based scale with five response levels. Knowledge of issues identified as important include general business, sales and entrepreneurship, and food/agribusiness markets. Skills and experiences identified as important include critical thinking, interpersonal communication, oral presentation, and leadership. Knowledge of issues identified as least important include macroeconomics/international trade, liberal arts, foreign language skills, and international experiences. Statistical differences were found based on GPA, gender, academic major, and background place of residence. These differences suggest that while students have an understanding of the interdisciplinary nature of agriculture and agribusiness and as a whole their appreciation of the global nature of the agriculture industry needs to be developed.

**#282**

### **Impact of Planning Agricultural Study Abroad Courses on Faculty Globalization**

Lori Unruh Snyder, Alexa Lamm, Joel Brendemuhl, Tracy Irani, Grady Roberts, Mary Rodriguez, and Julia Navarro  
Purdue University

International learning experiences are turning into critical elements of an undergraduate's education as



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the need for agricultural scientists continues to increase. Since it is important for our students to gain global perspectives, whether in the classroom or through study abroad opportunities, it is important for faculty to also have that global perspective. One way to get exposure to international issues is to engage in planning, developing, and leading a study abroad course. The objective of this research was to describe how faculty engagement in the creation and implementation of a study abroad course impacted their views of addressing global issues while teaching. The course being examined was conducted in the U.S. and Costa Rica, lasted seven weeks, and focused on the principles of sustainable agriculture and entrepreneurship. Of the faculty involved, previous experience teaching abroad ranged from no experience to seven times. The course had 17 students enrolled. Teaching methods included lectures, field work, and outreach activities. The course planning and teaching team was made up of faculty from three U.S. universities and one Costa Rican University. At the conclusion of the course the team was asked a series of open ended questions about their perception of the impacts the project had on them. Eighteen responses were received and content analyzed for common themes. Participants reported participating in the course opened their eyes to becoming involved in international agricultural sustainability and felt the networking with a diverse team of professionals will prove to be extremely valuable in their future teaching. The primary implication of this study is the proven impact working on international teams can have on globalizing faculty perspectives.

**#283**

### **Pathways to Public Health**

B.A. Montelone, L.C. Freeman, M. McElroy, D. Retzlaff, K. Choma, and S. Hai-Jew  
Kansas State University

D. Taylor, T. Gordon, and H. Naima  
Kansas City Kansas Community College

L. Wolfram and E. Mulcahy  
Johnson County Community College

D. Gillum  
Dodge City Community College

Pathways to Public Health features an innovative, integrated approach to recruitment and retention of students underrepresented in the public health

workforce. The program aims to: 1) inform pre-baccalaureate students at Kansas State University (K-State) and community colleges about public health-related careers; 2) provide such students with field experience in public health emphasis areas relevant to agriculture; 3) help students to transfer from community colleges to K-State to pursue BS and MPH degrees. These goals are supported by 1) an introductory public health survey course developed collaboratively by K-State and three community colleges; 2) a summer undergraduate residency in public health (SURPH) that provides immersive learning experiences in food safety, infectious disease, human nutrition, and physical activity; 3) an accelerated BS/MPH program at K-State; 4) a Director of Undergraduate Public Health Programs. The Director's role has been to facilitate development and delivery of the on-line public health survey course, coordinate SURPH, and recruit students from diverse backgrounds to K-State. The course was developed during project year one, then offered by two community colleges and K-State in project year two (29 students completed it in F09; 58 are enrolled for S10). SURPH was piloted in year one with six students. Approval of the BS/MPH program has been supported by 13 undergraduate majors and the faculty of K-State's interdisciplinary MPH program. Assessment of all project activities is ongoing and will be presented. Student response to SURPH and the F09 offering of the survey course was very positive.

**#285**

### **Incorporating Service Learning Projects to Improve the Student Experience**

Thomas Martin, Pavli Mykerezi, and Sam Doak  
Virginia Polytechnic Institute and State University

Virginia Tech's motto "That I May Serve" illustrates one of the primary missions of our university. We would like to present a poster that describes one way that we have changed our curriculum to include service learning to the benefit of our local community, our students, and Virginia Tech. The Landscape Design and Landscape Contracting classes in Agricultural Technology (AT) provide the perfect opportunity for utilizing service learning as a teaching and learning tool. Past Landscape Design classes produced plans for on campus buildings; plans that could never be implemented. To improve the learning experience for our students, we sought potential clients in need from our local community. The Fine Arts Center of The New River Valley

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(FACNRV), a local non-profit in Pulaski, Virginia, proved to be the perfect marriage for AT at this time. Our students have interviewed members of the FACNRV board, assessed their site, designed landscape plans for their building, and presented their designs to the clients. We were then able to incorporate the implementation of these plans into the Landscape Contracting class, using the FACNRV site as an evolving outdoor classroom. The surveyed responses to these course changes were overwhelmingly positive. There were numerous unique challenges for the students in performing a service learning project of this scope, challenges that were not present before these projects used at-need clients. Meeting these challenges provides a long term tangible benefit to our students as well as our surrounding community.

### #289

#### **Assessment Method for Quantifying Knowledge Level of Students at the Beginning and End of a Course**

K.W. Lovercamp  
University of Central Missouri

The purpose of this study was to quantify the knowledge level of students using a quiz administered on the first day and last day of the course. On the first day of the course, students in three different animal science courses were administered a multiple choice quiz consisting of twenty questions. Each question had four possible choices and only one correct answer. On the last day of the course, the students in the three different animal science courses were administered the exact same multiple choice quiz. The quiz was designed to assess an average knowledge level appropriate for the specific course. Students were not told that they would be given the exact same quiz on the last day of the course. Students were told the quizzes did not affect their overall course grade. The three animal science courses were as follows: 1) Animal Husbandry (introductory animal science course; n=29 students); 2) Animal Nutrition (n=18 students) and 3) Animal Breeding (genetics and selection strategies course; n=6 students). For all three courses, there was a significant increase ( $P < 0.01$ ) of approximately 23% in the quiz score given on the first day of the course compared to the last day of the course (Animal Husbandry: 52 vs. 79%; Animal Nutrition: 50 vs. 74%; Animal Breeding: 58 vs. 78%). These results suggest that an assessment given on the first day and last day of the course may be used to quantify the

knowledge level of students at the beginning and end of a course.

### #291

#### **More Than Just Cows, Sows, and Plows: Altering Perceptions of Agriculture**

Ashley Renck  
University of Central Missouri

Global Agriculture is a general education course taught in the Department of Agriculture at the University of Central Missouri. The purpose of the course is to examine how culture and government influences the production and consumption of food and how American agriculture fits into the world economy. The primary objective of this research is to determine what preconceived ideas the students have about agriculture. Secondly, the survey is used to determine if students' perceptions about agriculture are altered by the course. Topics covered in this course include the importance of agriculture, values and cultural variations in agriculture, population growth, and the design and implementation of agricultural and rural development in developing nations. The survey was administered in January of 2010 to ninety students. Ninety-eight percent believe farmers contribute a great deal to society. Eighty-one percent believe the family farm should be preserved as a vital part of our heritage. Forty-five percent agreed that U.S. farm products should only be sold to countries that support the U.S. in world affairs. Only 52% believe the United States should help poor countries become self sufficient in food production. Because this course is a general education course, only eleven percent are agriculture majors. However, the students have an overall positive view of American agriculture. The students' perception of global agricultural policy is more pragmatic. Survey results at the end of the semester will be compared to these results to detect differences resulting from the topics and material covered in the course.

### #297

#### **Land and Life: An Undergraduate General Education Soils Course**

John Havlin  
North Carolina State University

Increasing public awareness of and appreciation for the importance of soil in everyday life requires numerous approaches in public education. One important educational approach is to develop and

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include a basic soil and related sciences course available in the curriculum to any college student as part of their required general education science credits. Land and Life, an undergraduate general education course, was developed for this purpose. The course provides practical information on soils and their importance to world food security, sustainable agricultural production, water and air quality, and waste disposal. Throughout the course students learn practical applications of important soil biological, chemical, and physical properties and processes in everyday life. Students also discover how human activities impact soils and their function in natural and disturbed (constructed) environments. Student and peer evaluation of the course have been excellent. Over the last five years annual enrollment has grown from 20 to nearly 500 students. Positive student response is primarily related to the course emphasis on practical connections between soils and human life on global, regional, and local scales. Students also appreciate the mastery learning approach utilized to evaluate student learning. Opportunities for students in higher education to learn and reinforce scientific principles through the study of soil will substantially enhance public understanding of the importance of soil to life and encourage conservation of an essential natural resource.

### #299

#### **Do Your Best Prepared Students Receive the Highest Grades? Assessing the Practice of Assigning Grades Based on Position within a Normal Curve**

Gary L. Bailey and Ronald C. Steed  
North Carolina Agricultural and Technical State University

Based on theoretical models, Kulick and Wright (2008) conclude that normally distributed exam scores do not guarantee that the best prepared student receives the highest grade. Random differences between what and how a student prepares, and the specific material covered by exam questions, can cause students with identical preparation to receive grades that range from A to F. Their models predict that academically heterogeneous groups will fair best; homogenous groups worst. Kulick and Wright suggest evaluation of their conclusion based on actual course data. Since there is no independent measure of student preparedness, they suggest assessing the correlation among actual exam scores across a semester. If actual students perform at similar levels

for all exams, the effect of randomness on individuals' grades is thought to be minimal.

Data for this study consist of scores for 448 students from fall 2009 on six common assessments. We found moderately strong positive correlations among the six scores for each student and a relatively small average standard deviation among individual students' six exam scores relative to the standard deviation for all scores for a given exam. Students do tend to perform similarly across the different assessments. We found no difference between the relatively heterogeneous non-honors students and relatively homogeneous, higher performing, honors students. The presentation will explain the problem, explain our data analyses, and interpret the results. Overall, our data lends no support for the Kulick and Wright hypothesis. Actual student evaluation conditions are not reproduced by the theoretical models.

### #300

#### **Roll Out the Rain Barrel Service-Learning Project**

J.A. Gleichsner  
Fort Hays State University

Service-learning is a method of teaching and learning that integrates community service activities into academic curricula and expands the learning of students from the classroom to the community. The goal of service learning is to benefit both the community and the student. Service learning gives hands-on experience to students and encourages students toward lifelong civic involvement. Thus, students learn to become active members and leaders of their community while changing society's view of education and service. "Roll Out the Rain Barrel," a service-learning project was incorporated into Home Horticulture, a survey course covering a range of topics from houseplants to landscaping, and soils, an introductory course. The project focused on helping community members construct rain barrels to capture rainwater and provided them with information on how to use the water in the home landscape. Funding for the workshops came from a Kansas Clean Neighbor Grant with donations of 55-gal plastic barrels from Coca-Cola Enterprises. Workshops were covered both by the local newspaper and the local television station. Videos with student interviews were posted on YouTube. The participants responded to a survey indicating that 97% felt the workshop was effective and 84% learned new conservation methods. Over 50% of the participants had installed

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the rain barrel within two weeks of the event. Students wrote about their service-learning experience and then shared their impressions with others in the class. Overall, students expressed their increased understanding of the course material and their feeling of contributing to the community.

### #301

#### **Advising Students with a Passion without Faculty Burnout**

Ron Hanson  
University of Nebraska- Lincoln

Advising undergraduate students (especially large numbers) can result in a lot of stress on the time demands for faculty. Dealing with continuous problems and/or accommodating last minute requests (i.e. I need a letter of recommendation tomorrow) further adds to this pressure. Faculty can become burned out and lose interest in student advising after a period of time. Effectively advising large student numbers can be a challenge. (I have been advising 70 to 90 students for 36 years.) This presentation will address how to remain motivated and committed when advising students. Advising “with enthusiasm” is important in creating positive and lasting student relationships. A questionnaire survey was conducted with University faculty award winners who have been recognized for outstanding advising and student service. Survey results shared insights to the following questions. What personal satisfactions do faculty gain from student advising? What motivates faculty to be a good student adviser with a strong passion for helping students? What is their philosophy for student advising? This presentation will share ideas to help faculty better manage the demands of student advising in their work load and teaching assignment. How do you avoid the feeling of being burned out by students? How do faculty view the importance of student advising in their teaching appointment? This presentation will report the impact of faculty advising on student learning assessment outcomes based on results from graduating seniors surveys and alumni surveys.

### #302

#### **Broadening STEM Curricula and Student Experiences through Multi-Instructor Team Taught Course**

Abhijit Nagchaudhuri, Madhumi Mitra, Lurline Marsh, Tracie Bishop, Craig Daughtry, and Geoffrey Bland  
University of Maryland Eastern Shore

A course titled “Advanced Technologies in Agriculture and Environmental Sciences” has been developed by a team of faculty and staff at University of Maryland Eastern Shore (UMES). The course was conceived to develop a broader student base for the “Precision Agriculture” related activities that have been ongoing at UMES for the past few years with support from USDA and NASA. The course has been opened to all Science, Technology, Engineering and Mathematics (STEM) seniors and graduate students on campus. In an effort to diffuse the compartmentalization of knowledge and rigid disciplinary boundaries within academia, the course has been designed to be a multi-instructor team taught course. Faculty and staff from Agriculture, Natural Sciences, Engineering, Aviation Sciences and collaborators from USDA, NASA, and representatives from a local industry involved in “Precision Farming” have worked together to plan and deliver the course. The course content spans over fundamentals of global positioning systems (GPS), yield monitoring, soil testing, variable rate applicators, fundamentals of plant physiology and agronomy, Geographical Information Systems (GIS), statistics and data analysis, aerial imaging and remote sensing, nutrient and watershed management. Significant field work using various field sensors in conjunction with hand held GPS units is integrated with the course. USDA funding for project titled “Environmentally Conscious Precision Agriculture: A Platform for Active Learning and Community Engagement” have supported the course development efforts, as well as internship for selected students during summer and fall to continue experiential learning and research activities initiated during the course offering in spring.

**#304**

**Undergraduate Experience with Multi-campus Collaborative Research**

Bonnie S. Walters, Todd Bauer, Joseph Dart, and Pamela Wipperfurth  
University of Wisconsin-River Falls

Undergraduate research is increasing as an important part of the undergraduate experience. Colleges of agriculture at non-research non-land grant universities may have difficulty offering a wide range of research experiences due to limited resources. The projects used as examples for this presentation were created through collaborations with two different land grant universities. The first example began as part of a USDA Multi-state Regional Research Project for Poultry Processing at North Carolina State University. This project allowed students attending a non-land grant university access to samples that had been part of a larger project that was not possible on the smaller campus. These students focused on evaluating poultry meat quality of laying hens raised in different environments. The second project involved collaboration with UW-Madison to determine the impact of different bacterial strains on the small intestines of swine. This project included an opportunity for the undergraduate to spend an entire summer in the research lab at UW-Madison and then continue the project upon returning to the non-land grant campus the next fall. The initial part of the project identified the bacterial strains to be used in the feeding trial. The second portion of the project included the feeding trial and sample collection from the swine. Both of these collaborative research projects gave undergraduate students realistic research experiences they would otherwise not have had. The undergraduates involved in these projects were positively impacted and are in or are considering graduate school.

**#305**

**Attracting Underrepresented Minorities through Contextualized Learning Experiences**

Levon T. Esters and Neil A. Knobloch  
Purdue University

One obstacle to increasing workforce diversity in science, technology, engineering, agriculture, and math (STEAM) majors and careers is the lack of contextualized learning experiences afforded to underrepresented minorities (URMs). For urban minority youth, not only do authentic learning

experiences help sustain their interest in sciences (Basu and Narton, 2007); engagement in context-based learning experiences at the K-12 level could significantly increase the diversity of students who participate in STEM classes and ultimately pursue careers in these areas (Custer and Daughtery, 2000). One useful strategy in addressing the lack of URMs pursuing STEAM education and careers has been the development of pre-college summer programs. However, despite the success of pre-college agricultural summer programs, these programs have not engaged URMs high school students in solving real-world problems using contextualized inquiry experiences. By and large, these programs focus primarily on the use of demonstrations, laboratory exercises, field trips/tours, group discussions, and participation in leadership activities. Although this represents a variety of instructional activities, these types of experiences are not ideal in terms of fostering high levels of critical thinking, problem-solving, knowledge synthesis, and skill application which are necessary to help promote and sustain interest in STEAM disciplines. As such, the purpose of this poster will be to share an innovative idea whereby providing underrepresented high school students with contextualized inquiry experiences can effectively serve as a method of increasing their interest in and pursuit of postsecondary education and careers in STEAM disciplines thus resulting in a more diverse workforce.

**#306**

**Life Science Education Signature Area (LSESA): An Interdisciplinary Approach to the Contextual Application of STEM Learning**

Neil A. Knobloch and Levon T. Esters  
Purdue University

The purpose of this poster is to highlight an innovative effort which involves the formation of the Life Science Education Signature Area (LSESA) in the Department of Youth Development and Agricultural Education at Purdue University. LSESA is comprised of faculty with specializations in several different areas of who study the impact experiential and outreach programs in the life sciences have on human capital. A driving force of the research interests of LSESA faculty involves taking an interdisciplinary approach to the contextual application of STEM learning. Collectively, our goal is to increase science understanding and interest while motivating students to pursue careers in the life sciences through engaging educational contexts.

LSESA faculty have expertise on the: 1) pedagogy of Life Science Education which consists of the theories and concepts by which Life Science is taught, and 2) the academic content taught in Life Science classes. Through our collective efforts we bring together the theories, concepts, and content of Life Science Education and place it in context thus giving Life Science a place in careers and real-world applications in technology, engineering, and agriculture. LSESA faculty, graduate, and undergraduate students are involved in a number of research, professional development, and curriculum development projects most of which focus on P-14 students and teachers in both formal and informal settings. Future goals of the LSESA team include continued expansion of our research capacity; grant proposal development, and recruiting graduate students who are interested in formal and informal life science education research.

**#307**

**A Descriptive Analysis of Social Cognitive Career Theory Variables Related to Agricultural Careers**

Levon T. Esters and Ryan Wynkoop  
Purdue University

A number of events and experiences influence the career choice process of urban agricultural education students; however, what is lacking is research exploring the influence of social cognitive variables on their career choices. The purpose of this study was to describe the level of self-efficacy, outcome expectations, interests, and intentions regarding agricultural careers of students enrolled in an urban agricultural education program. Participants in this study were students enrolled in an urban agricultural education program (n= 790). Data for the study were collected using the Agriscience Education Self Efficacy Scale (AESES; Authors, 2004). The AESES is comprised of four sections measuring variables of the Social Cognitive Career Theory (SCCT) framework: agriculture self-efficacy, agriculture outcome expectations, agriculture choice intentions, and agriculture interests. Significant relationships were identified among all of the social cognitive variables. There also were significant differences between males and females on agriculture self-efficacy, outcome expectations, and interests. Students in this study held high self-efficacy beliefs, outcome expectations, and interests regarding agricultural careers. We contend that the variables of interest in this study could be used by agriculture teachers and guidance counselors as a starting point in career education and guidance activities when

helping students explore postsecondary education and career options in the agricultural sciences.

**#308**

**Student Perceptions of the Effectiveness of Different Learning Modes**

Mark Headings and Bob Rupp  
The Ohio State University- ATI

People differ in ways by which they receive and process information. Educators are more likely to measure student attributes such as behavior, aptitude and performance and then draw conclusions about their different learning modes. Another insightful approach would be to also ask students how they think they best acquire and process information. The objective of this investigation was to collect and analyze student input regarding their perceptions of the effectiveness of five different learning modes. Students were asked to respond to a survey form on which these five learning modes were applied to an example of learning floral parts. They were asked to evaluate and respond to each of these five modes by writing a number 1 to 5 by each mode (where 1 is least and 5 is most effective), indicating levels of learning effectiveness for them. Based upon responses from 127 students in four different science-based courses, results show that the two most effective ways for these students to learn and retain information about floral parts is by “seeing pictures of the parts of a flower” and by “dissecting the parts of a real flower.” The two least effective learning modes were “reading about the parts of a flower” and “hearing about parts of a flower.” These results emphasize the importance of visualizing and experiencing what is being taught. The survey instrument used has broad application across disciplines by merely changing the example used.

**#309**

**Global Resource Systems: an Interdisciplinary Major for the Development of Future Food and Agriculture Global Leaders**

Gail R. Nonnecke and David G. Acker  
Iowa State University

Technical, cultural, and leadership competencies and an understanding of global resource systems are major criteria for career successes of future food and agriculture professionals. To strengthen students' success, Global Resource Systems (GRS) was created as a new, innovative, interdisciplinary, and college-

wide major in global food and agriculture. GRS commenced in fall semester 2009 in the College of Agriculture and Life Sciences (CALs) at Iowa State University (ISU). The curriculum emphasizes global and cross-cultural engagement while equipping students with strong technical competencies. It aims to produce systemic thinkers and problem solvers with a global perspective who are trained in resource issues and able to lead culturally diverse teams. The learner-centered major allows students to develop core technical competencies in their chosen area of food and agriculture. GRS exceeds other CALs curricula by requiring world language and culture skills, an international internship, and senior research project. Students choose a world region in which to specialize, develop relevant language competencies, participate in a significant cross-cultural immersion internship in their chosen world region, and complete a senior research project related to their resource specialization and world region. GRS courses include multidisciplinary approaches to problem solving with the integration of physical, biological, and socio-economic factors affecting global resource systems. The GRS program includes a GLOBE Learning Community, peer mentors, service-learning projects, a curricular club, and scholarships. Forty students declared GRS as their major in the first academic year of offering the program. The presentation will outline the development and structure of this new major/program.

**#310**  
**Sparsely Populated Agricultural Education: Delivery System for High School Students Using Technology with a Live Component One Day per Week**

L.E. Westrom and A.M. Fickes  
University of Minnesota -- Crookston

The Sparsely Populated Agricultural Education Program was started during the 2009-2010 academic year to deliver Agricultural Education to three sparsely populated school districts that had abandoned their school program eight to 20 years ago. It is expanding in the 2010-2011 academic year. This program utilizes on-line education with two unique features: a live instructor at each school one day per week and a net book computer for each student. Four schools will comprise a pod in the coming academic year. One licensed agricultural educator oversees a pod; attending each school one day per week. Each pod has an FFA Chapter and requires a Supervised Agricultural Experience (SAE)

program of each participant. The instructor spends one day per week uploading daily lessons. Lessons require students to go on-line every day. This study does not compare on-line versus traditional since all participating schools no longer had a traditional option. Rather, this study surveys students to determine successes and challenges of the program, student satisfaction and dissatisfaction with program components, technology requirements, and how to serve an un-served population. Measures of program development and program component success are addressed. Administrative reasons for program growth within schools and continued participation of schools in year two of the program are examined.

**#314**  
**Online Transformation of Campus-Based Introductory Turf Course Labs**

Rob Golembiewski and Jonathan Velez  
Oregon State University

With web-based course offerings growing rapidly at institutions across the country, there is an emerging need for laboratory courses to have learner outcomes and experiential learning activities that mirror those of campus-based courses. As a result of the hands-on learning approach taken in site-based horticulture labs, many faculty have struggled with the concept of an online course lab. Recently, the Oregon State University Horticulture Department was awarded a grant to develop an online horticulture degree program. Recognizing a need for further study, the instructors concurrently conducted research to determine whether experiential learning activities enhance or develop student confidence. In four turfgrass field-based experiential learning lab activities conducted at Oregon State University, students on a scale of 1 to 4, indicated a mean increase in confidence of 1.77 for the seeding rate trial, 1.83 for the retail mix trial, 1.75 for the nitrogen source trial and 1.44 for the essential macronutrients for germination trial. Students participating in field-based coursework appear to appreciate experiential learning opportunities. Therefore, the objective was to explore the ease of converting field-based trials to individual learning units which can be used to support online learning. The instructors transformed the four campus-based labs into individualized in-home exercises based on experiences gained teaching similar labs in northern climates where laboratory exercises were confined to a classroom or greenhouse setting as a result of inclement weather. The

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individualized home exercises will be implemented and pilot tested in a solely online format fall 2010.

### #316

#### **Establishment of a New BS Biotechnology Program and Faculty Capacity Building Workshops**

Alma Santiago-Cortés  
Pontifical Catholic University of Puerto Rico

This project consists of two main phases: new curriculum development and faculty capacity building workshops (FCBW). Agrobiotechnology is a fast-growing discipline in Puerto Rico (PR). Eight U.S. and foreign agrobiotechnology companies are expanding their operations locally. The presence of these companies has contributed to increase the demand for high-skilled professionals in this area. We have reviewed our goals and plans for updating curriculum and research programs. BS-Biotechnology seeks to provide students with training in several aspects, which lack our science courses. Some of these include: scientific principles with special focus in agrobiotechnology, management, new laboratory techniques in biotechnology and bioethical issues. This special focus is of great interest to pharmaceutical-biotechnology and agrobiotechnology industry. Acquired expertise will better-prepare students for high-skilled jobs and for continuing graduate studies in related fields. The academic proposal for the new BS program has been submitted to our regulatory agency for approval. The FCBW on Responsible Conduct in Research and Bioinformatics are scheduled. The remaining FCBW (Molecular Techniques in Biotechnology I and II, Bioinformatics II) will be offered during the following year of this grant. FCBW will provide support for faculty to learn state-of-the-art methodologies in Biotechnology, promoting their integration into science courses and future research projects. This project will train at least 80% of the faculty from the Biology and Chemistry Departments.

The proposed activities will: increase 5.0% our science students, provide skilled personnel for agro-biotechnology fields, increase the number of Hispanic students continuing a science career and better-prepare faculty to enrich our science curriculum.

### #317

#### **ThinkSpace: An Online Platform to Help Students Solve Complicated Multi-Disciplinary Problems in Agriculture**

Ann Marie VanDerZanden  
Iowa State University

The National Research Council (2009) documented in its "Transforming Agricultural Education for a Changing World" report it is essential that agricultural education be transformed to meet the challenge of providing a safe, plentiful, and sustainable food supply for earth's population. Graduates who are prepared to meet such challenges must be capable of solving complex problems whose solutions draw from a number of content areas. At Iowa State University a team of educators have developed the open-source ThinkSpace tool. This tool is based on a well-established problem solving teaching method and software program for teaching complex problem solving. Research in a spring 2010 Geological Sciences course at Iowa State showed a significant increase ( $t$  value = 2.71;  $p$  = .007) in final exam scores for students who used ThinkSpace for solving complex problems throughout the semester compared to students who did not use the learning tool. This improvement remained significant when scores adjusted for pretest difference, parents' education, gender, environmental concern, interest in science, and year in school. The ThinkSpace tool can be used to improve agriculture students' ability to solve complex, multi-disciplinary problems by having them work on cases that integrate ideas and information from multiple areas in a collaborative asynchronous environment online. In addition to helping students improve their problem solving skills the ThinkSpace project plans to build and support a community of educators by providing effective technical support, case study content and/or case development support, and faculty development.

### #318

#### **Plant Biosecurity Short Courses to Enhance Urban Forestry Education and Training at Southern University and A & M College**

Daniel James Collins, Kamran Abdollahi, Zhu Ning, Andra Johnson, Fulbert Namwamba, and Yadong Qi  
Southern University and A & M College

There is a need to provide more post baccalaureate training and experiential learning in plant health management at U.S. land grant universities to counter



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the potential threat of high consequence plant pathogens whether introduced intentionally or unintentionally that pose a threat to our nation's agriculture. The objective of the Plant Biosecurity short courses are to enhance urban forestry education and training in plant biosecurity by providing students with firsthand experience in a multidisciplinary, setting with various universities, state and federal agencies involved in plant disease surveillance, rapid identification and detection, and mitigation of high consequence plant pathogens. Some training activities have included field trips to New Orleans, Louisiana, and Houston, Texas, to visit the USDA APHIS PPQ Plant Inspection Stations, U.S. Customs and Border Protection agricultural inspection at the Port of New Orleans, Louisiana, and Houston, Texas. Students visited collaborators in Pennsylvania to learn more about the Plum Pox outbreak and how this disease impacted industry, also; students visited the BSL-3 containment facilities at the USDA ARS Lab Ft. Detrick, Maryland, to see and discuss research projects on sudden oak death, and other pests and pathogens of national concern. The short course resulted in graduate research project have been initiated in plant biosecurity and increased knowledge and awareness of high consequence plant pathogens and how to respond appropriately.

### #319

#### **Influencing Critical Thinking Disposition in Undergraduate Agriculture and Natural Resource Students**

Mark E. Burbach, Gina S. Matkin, Travis Searle, and Courtney E. Quinn  
University of Nebraska

Developing students' critical thinking skills is a stated goal of most institutions of higher education. However, a student's inclination to use critical thinking processes when examining a problem is also important to evaluate. Researchers have noted that an individual's critical thinking disposition is as important as an individual's critical thinking skills. The objectives of this study were to 1) measure the change in student critical thinking disposition over the course of a semester when they were explicitly taught critical thinking skills related to course content and 2) examine age, grade point average, level of course, and year in school as antecedents of a critical thinking disposition. Nine undergraduate courses were used in this study. Students completed the University of Florida–Engagement, Maturity, and

Innovativeness assessment (UF-EMI) at the beginning and the end of the semester. Pair-wise comparisons showed significant increases in five of the courses on all three critical thinking dispositions (i.e., engagement, cognitive maturity, and innovativeness). Three additional courses showed significant improvement on two of the three critical thinking dispositions. One course showed no change over the semester. In addition, a step-wise regression on the data gathered at the end of the semester (N=388) showed that grade point average was positively related to all three critical thinking dispositions and being in one's first year of college was negatively related to each dimension. Age was positively related to engagement. This study supports the notion that instructors can influence students' critical thinking disposition within the limited time of a college semester.

### #320

#### **Experiential Learning Approach to Promote Agricultural Bioinformatics Training at Virginia State University**

Glenn C. Harris  
Virginia State University

The enormous amount of genomic information generated in recent years has led to an increasing demand in the agricultural biotechnology workforce for applicants with advanced bioinformatics skills. Here we describe our continuing efforts to develop and innovate bioinformatics training at Virginia State University. An annual bioinformatics training workshop was developed to ensure that educators from VSU, other HBCUs and local high schools have the bioinformatics resources and training they need to prepare students for careers in modern agricultural sciences. A technology-enhanced experiential learning approach was applied to bioinformatics-themed workshop sessions for students and educators. Brief before-and-after assessments indicated the effectiveness of the workshops in increasing awareness of and stimulating interest in the bioinformatics field. The work outlined here will allow Virginia State University to be better prepared to recruit and train students to meet the changing demands of the agriculture workforce.

#321

**Collaborative Learning Strategies in Graduate College Courses**

Kiumars Zarafshani  
Razi University

Not surprisingly, there is a paradigm shift occurring in the structure of graduate level courses to include community engagement components. Research suggests courses that provide an opportunity for students to engage in real world environment address this need by bridging the gap between knowledge gained in a classroom and application in “real world” work environment. Grounded in experiential learning theory, the purpose of this study was to discuss the pedagogical value of an innovative teaching approach in a graduate level course with an embedded community-based learning component. During the fall 2009, graduate students, in the course “Rural Project Evaluation,” collaborated with Office of Rural Development in Agricultural Organization in Kermanshah province to conduct qualitative evaluation of one of their provincial Rural Community Development Project (RCDP). Through the use of participatory rural appraisal techniques such as resource mapping, matrix scoring, transect walking, and Venn diagramming, students were able to collect data from rural community residents in order to find out if program objectives have been reached. As a result of these efforts, students showed significant improvements in their learning and application of evaluation concepts and techniques. Moreover, this collaborative learning strategy benefited agricultural organization in that one of their key Rural Community Development Project was evaluated without any cost and at the same time shed some light on weaknesses and strength of the project.

#322

**Reporting the Results of an Experiment using a Biogas Example**

Marsella González  
University of the Incarnate Word

Climate change is attributed to increases in greenhouse gases like methane, of which one source is livestock waste. An innovative method in controlling methane generation and its impact on the environment is through the anaerobic digestion of livestock waste. This presentation will detail the learning outcomes of an experiment involving the conversion of such biomass into biogas by using the

design of experiments approach. The first important learning outcome from this project was learning to set specific quantitative objectives directed at improving the conversion of a biomass into biogas by measuring the effects of batch digestion versus continuous digestion and varying the carbon:nitrogen ratio. Having set specific objectives guided and facilitated the review of the literature, from which it was found that the best method for conducting the experiment was through the use of a statistically designed experiment. The literature review also provided insights for establishing an experimental protocol that ensured accurate and precise measurement of the biomass conversion. The use of a statistically designed experiments and its replication facilitated the fitting of a regression model, the identification of optimal settings for biogas conversion and the construction of confidence intervals. In summary, the biogas conversion experiment served in learning to determine experimental and control factors; setting the treatment and design structure; measuring the response variable and creating a quantitative model to analyze the results of the experiment.

#323

**Building Connections that Expand Bioscience Education in Arizona**

Marshall Paul Logvin  
South Mountain Community College

An excerpt from the 87th Arizona Town Hall Meeting executive summary states, “Bioscience education in Arizona has been neither specific nor adequate . . .” The SERD funded eUBET Grant creates and disseminates bioscience curricula, expands student access to bioscience education, coordinates bioscience resources, and connects community bioscience research, secondary education, and post-secondary partners.

As proof of expanded access, 530 Arizona high school students (52.5% under-represented minority) enrolled in college bioscience courses through South Mountain Community College’ dual enrollment program for spring 2010. The eUBET student success rate for fall 2009 was 90%. As well, student participation in science fairs and internships has risen dramatically. Nearly 400 eUBET high schools students entered local science fairs, and 40 others competed in the Arizona Science and Engineering Fair in 2010.

eUBET shared resources with Mesa Community College’s (MCC) NSF grant to provide

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bioscience high school teachers with over 200 hours of professional growth. MCC also loaned customized packages of bioscience lab equipment and supplies to many of the 22 teachers in 12 public high schools eUBET serves.

A collaboration of high school, college, and university instructors developed inquiry-based bioscience curriculum for eUBET bioscience courses. Instructors mapped high school and college bioscience courses (including bioscience research) in five Arizona school districts. High school students now benefit from a seamless transfer of college bioscience course credits from high school to college to university. The poster will illustrate the systems approach utilized in eUBET and the human capital that resulted.

### #324

#### **Career Opportunities and Explorations in Natural and Agricultural Sciences**

Kurt Leuschner  
College of the Desert

Community colleges offer a gateway into higher education and as such, the College of the Desert (COD) provides an opportune location to offer a comprehensive program known as Career Opportunities and Explorations in Natural and Agricultural Sciences (COENAS) to underrepresented students within the Coachella Valley. The purpose of this program is to engage students in their local surroundings, to enhance their knowledge of the agricultural, environmental, and biological sciences, and create awareness of career opportunities in these subjects. Our audience is a large population of Hispanic high school seniors and COD freshman students in our rural agricultural and urban areas. The College of the Desert and the University of California Riverside's Center for Conservation Biology have created a course offered each semester that includes exploratory field experiences in extant research activities and a survey of career opportunities in agricultural, environmental, natural science, and turfgrass research. COENAS has also developed a multimedia presentation for high schools highlighting local graduates; offers internship opportunities to students in local research activities, businesses, and public agencies; and will provide one exemplary student with a scholarship of \$50,000 to assist in completing their Bachelor's degree at a four year institution as well as encourage them to pursue a graduate degree. The intended impacts of this program are to increase underrepresented student

enrollment and retention in Natural and Agricultural Science majors by at least 15%, and simultaneously provide students with a background of possible careers and an introductory course in skills needed for these careers.

### #325

#### **Partnership for Transfer Success in USDA Careers**

Cecilia Arriaza, Martha Vargas, and Maribel Pineda  
Santa Ana College

The Partnership for Transfer Success in USDA Career Majors Program at Santa Ana College is designed to raise awareness about career options available in USDA-related fields among diverse student populations and to prepare them to transfer to a university and major in these fields. The project builds on collaborations with CSU Pomona, UC Irvine, and USDA agencies. Activities include guest speakers, intensive academic and counseling support, financial support, and experiential learning opportunities in the form of an internship. The initial program results have been very positive. Through activities such as career panels, field trips and presentations, it has already impacted over nine hundred students by introducing them to USDA related educational opportunities and careers, surpassing the grant's initial target. Additionally, two groups of students were recruited to participate in the cohort program to receive individualized support and stipends. Personal interviews with twenty-five students from cohorts 1, and 2 indicated that all PTSP students are motivated to pursue a four year degree and are interested in USDA related careers. By fall 2010, the PTSP transfer rate is expected to exceed 90% percent. The long-term impacts of the program are yet to be seen. However, it is clear that students in the program have received individualized support and an experiential learning opportunity that have contributed to their successful transfer and prepared them to succeed at the university, helping them get one step closer to completing their degrees in fields of interest to USDA. These talented students of underrepresented backgrounds will one day enter the workforce with the skills and knowledge that are in demand.

# 2010 - 2011 NACTA Officers

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### **Kirby Barrick**

Dept of Ag Ed & Comm, PO Box 110540,  
Gainesville, FL 32611  
Ph: 352.392.0502, Fax: 352.392.9585  
Email: kbarrick@ufl.edu

## Immediate Past President

### **Mike Mullen**

University of Kentucky, Associate Provost for  
Undergraduate Education, 217 Funkhouser Bldg  
Lexington, KY 40506-0054, Ph: 859.257.3027  
Fax: 859.257.5212, mike.mullen@uky.edu

## President Elect

### **Jeannette Moore**

North Carolina State University, Dept of  
Animal Science, Box 7621, Raleigh, NC 27695-  
7621, Ph: 919.515.4010, Fax: 919.515.8753  
Email: jeannette\_moore@ncsu.edu

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### **Marilyn B. Parker**

151 West 100 South, Rupert, ID 83350, Ph: 208-  
436-0692, Fax: 208-436-1384,  
Email: NACTAsec@pmt.org

## Journal Editor

### **Rick Parker**

151 West 100 South, Rupert, ID 83350,  
Ph: 208-436-0692, Fax: 208-436-1384  
Email: ricpar@pmt.org

## Historian

### **James McKenna**

Virginia Tech, 235 Smyth Hall, Blacksburg, VA  
24061, Ph: 540-231-6305, Fax: 540-231-3431,  
Email: jamckenn@vt.edu

## Membership Director

### **Ron Hanson**

University of Nebraska, 204A Filley Hall, PO  
Box 830922, Lincoln, NE 68583-0922, Ph: 402-  
472-2055, Fax: 402-472-3460,  
Email: Rhanson1@unl.edu

## NACTA Foundation Director

### **Thomas J Lindahl**

295 Flower Court, Platteville, WI 53818, Ph:  
607.348.6628, Cell: 608.778.1074,  
Email: lindahl@uwplatt.edu

## Regional Directors

### Canadian Director

#### **Kent Mullinix**

Kwantlen Polytechnic University, 12666 72nd  
Ave, Surrey, BC, Canada, Ph: 604.612.1252  
Fax: 604.599.3201,  
Email: Kent.mullinix@kwantlen.ca

### Canadian Director-elect

#### **Martin Zuidhof**

University of Alberta, Dept of Ag, Food  
Nutritional Science, # 4-10 Ag Forestry  
Center, Edmonton, AB Canada T6G 2P5,  
Ph: 780.248.1655, Fax: 780.492.4265,  
Email: Martin.zuidhof@ualberta.ca

### Central Director

#### **Bonnie Walters**

University of Wisconsin-River Falls, 410 S 3rd  
St, River Falls, WI 54022, Ph: 715.425.3704  
Fax: 715.425.3785, Email:  
Bonnie.s.walters@uwrf.edu

### Central Director-elect

#### **Kevin Bacon**

Western Illinois University, Dept of Ag, 1  
University Circle, Macomb, IL 61455,  
Ph: 309.298.1084, Email: kj-bacon@wiu.edu

### Eastern Director

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Penn State University, Dept Ag & Ext Ed,  
114A Ferguson Blvd, University Park, PA  
16802, Ph: 814.865.1688, Fax: 814.863.4753  
Email: Tsh102@psu.edu

### Southern Director

#### **Jeff Hattey**

Oklahoma State University, Dept of Plant &  
Soil Sci., 368 Ag Hall, Stillwater, OK 74078  
Ph: 405.744.9586, Fax: 405.744.5269  
Email: Jeff.hattey@okstate.edu

## Western Director

### **Tracy Dougher**

Montana State University, Dept Plant Sci &  
Plant Path, PO Box 173140, Bozeman, MT  
59717, Ph: 406.994.6772, Fax: 406-994.1848  
Email: tracyaod@montana.edu

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Berea College, Kentucky  
Neil\_Douglas@berea.edu

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Ron Hanson, Chair,  
University of Nebraska - Lincoln  
rhanson1@unl.edu

### **Educational Issues & Teaching Improvement**

Ann Marie VanDerZanden, Chair  
Iowa State University  
vanderza@iastate.edu

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Phil Hamilton, Chair  
Mount Olive College, NC  
phamilton@moc.edu

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Greg Pillar,  
Queens University of Charlotte, NC  
pillarg@queens.edu

### **Nominating**

Mike Mullen,  
University of Kentucky  
Mike.mullen@uky.edu

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Mike Mullen,  
University of Kentucky  
Mike.mullen@uky.edu

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