

# NACTA Journal

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# NACTA

north american colleges and teachers of agriculture  
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## 2013 NACTA Abstracts

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# 2013 NACTA Abstracts

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### Oral Presentations

001

#### **An Analysis of Technologically Enhanced Learning Environments in the Agricultural Sciences**

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The purpose of this study was to analyze the perceptions of students and instructors in relation to the utilization of tablet personal computers (tablet PCs) in the learning environment of a Geographical Informational Systems/Geographical Positioning System (GIS/GPS) undergraduate course, offered within a university biological/agricultural engineering program. Students agreed that the incorporation of the tablet PCs into the learning environment heightened their overall learning experience, provided a more interactive learning environment and that the mobility of the tablet PCs allowed them to use GIS applications in a way that stationary units would not have facilitated. In this study, instructors felt that the utilization of tablet PCs enabled the class to do more and do so faster. The instructors felt that the students were motivated as well were more interested in using the tablet PCs and its external device than traditional computers. In relation to gender, there were two statistically significant differences related to tablet PC utilization. Males agreed that tablet PCs provided a more interactive learning environment in contrast to the females who only somewhat agreed. Additionally, males agreed that after utilizing the tablet PC equipment with Arc GIS, they were more knowledgeable of GIS. Overall, the utilization of tablet PCs within the learning environment was perceived to have a positive impact for students enrolled in the GPS/GIS course as well as the instructors.

003

#### **Campus-Wide Participatory Planning: Moving Quickly from Thought to Action**

Blake Thomas and Roslynn Brain  
Utah State University

Extension outreach has received criticism regarding a slow embrace of sustainable living education and disruptive innovation. Pressure stems in part from increasing student demand and interest in universities' commitment to sustainability. According to The Princeton Review's 2012 nationwide study with over 10,000 college applicants, 65% of respondents said they would value information about a college's commitment to the environment. Of that, 24% said such information would either "strongly" or "very much" impact their application decision. Sustainability has become a focal area and marketing opportunity for thousands of businesses, colleges and universities across the United States. However, universities have been slow to respond efficiently to change and shifting demand. This presentation will discuss results from two online campus-wide surveys, developed collaboratively by students and faculty, with responses from 5,689 students representing over 200 different disciplines. When given a choice between several options to learn about sustainability, over half of respondents indicated that they would "most likely" attend a campus-wide event, such as a proposed university Earth Week. The same semester, Utah State University Extension Sustainability, a Sustainable Living service-learning class of 33 students and the Student Sustainability Office responded with the university's first Earth Week; focusing on survey response themes to plan events. Over 5,000 students participated in Earth Week, with over 1,000 environmental pledges signed and 14 newspaper articles written about the event. Participants will discover specific tools for using participatory action research, service-learning, community-based social marketing and social media in guiding students efficiently from thought to action.

004

#### **Mitigating the Misery: Using an Application and Reflection Sequence to Reduce Student Anxiety in a Graduate-Level Applied Statistics Course**

Alyx M. Shultz  
Murray State University

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The theory of cognitive downshifting suggests that as anxiety levels increase levels of cognition decrease. Professionals in post-secondary education have experienced and witnessed the havoc that anxiety can have on self-efficacy and ultimately, student success. The objective of this project was to examine the efficacy of one way to mitigate student anxiety and increase student learning in an applied graduate statistics course at a regional university. Each week of a 16-week applied statistics course, students were charged with the task of spending 30 minutes applying statistics from the most recent lesson in a real-world setting. The following week class started with students recording their activities in writing and sharing their experiences with classmates. At the conclusion of the course, students completed a brief instrument concerning their anxiety toward the course, knowledge gain and perception of the activity. Student feedback on the perception of efficacy of this hybrid application/reflection indicated this activity to be effective in reducing anxiety and helping students learn course content. Students indicated that this activity should be used in other courses. Pearson Product Moment correlations revealed a strong, positive, statistically significant relationship between perceived effort invested in the activity and amount learned in the course ( $N = 17$ ). Based on these findings, this activity will be expanded in future iterations of the course and a modified version will be included in the online course.

**005**

### **Creating Digital Learning Objects Using iPads to Enhance Traditional Courses**

Jeremy M. D'Antoni, Joseph E. Mehlhorn, Scott Parrott and Sandy Mehlhorn  
University of Tennessee at Martin

Today's college students are accustomed to and expect access to course materials in a digital format. Today's classroom has evolved from chalkboards to smart boards that allow interactive points of contact between the course material and digital access to the Internet. Still, a common complaint among faculty is the difficulty in reinforcing conceptual concepts to students outside the traditional in-class setting. The use of digital media allows more points of contact between students and the content material. Using an iPad with well-designed Apps can be a simple, inexpensive solution to developing and posting interactive digital learning objects for students. In the fall 2012, faculty developed digital learning objects with the Penultimate App during a traditional in-class lecture. Students ( $n= 90$ ) from multiple sections of a traditional agribusiness course were surveyed to determine

the effectiveness of digital learning objects on student outcomes. Faculty evaluated the iPad for ease of use, time requirements and technical efficiency. Student results were positive with respect to enhancing the learning experience. Students were inclined to review digital learning objects outside of class to prepare for exams and complete assignments. Faculty reviews were mixed, but overall very positive with respect to ease of use and time requirements. Specific results will be presented on all aspects of student responses and faculty use. Overall, the use of the iPad as a teaching tool in class provided an effective media to convey conceptual and problem solving techniques to students inside and outside of class.

**006**

### **Promoting Career Pathways within the New York State Food and Agricultural Sector**

Robert N. King  
Monroe Community College

Using a census of 202 employers within the New York State food and agricultural sector, this study describes the prerequisite knowledge and skills required of incumbent, underemployed and displaced workers for vertical advancement within these companies. Forty-seven (23%) employers responded to a voluntary online survey of employer-desired skill sets. Approximately 49% represented food related companies and a majority (85%) had extensive experience in operations management and/or human resources. Follow-up phone calls and a comparison of early and late respondents revealed no differences in responses to questions about hard and soft skills. A majority (80%) of respondents indicated a need for hard skills including technical knowledge of food and agriculture, food safety and sanitation and quality assurance. Soft skills included writing, management, problem solving skills and applied computer skills. A little over two-thirds (68%) indicated they use online/internet based training programs and one-on-one training but lacked funds for education and training. Consequently, a twenty-four (24) college credit certificate program using group and self-paced instruction will be offered to promote two career pathways: agriculture and food processing. Offered as both a two and four semester sequence, the certificate program relies on existing curriculum along with two new courses to account for employers' additional needs.

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007

### **Progression of Undergraduate Student Advising Needs**

Caryn M. Filson and M. Susie Whittington  
The Ohio State University

Enhancing the quality of academic advising is essential to meeting the challenges presented by the changing demographics and expectations of today's students. As undergraduate students progress through an academic program, their advising needs, wants and expectations evolve. Students begin to grow and develop academically and personally, which reflects why they may be partial to different styles of advising during different stages of their academic career. Identifying general groups of students and their preferred advising styles can assist advisors in recognizing and meeting the needs of their students. Acknowledging that students come into the advisor/advisee relationship with different needs and expectations, advisors can distinguish between advising styles that are most appropriate for each student based upon characteristics such as academic rank, gender and personality types. Students differ academically, developmentally and personally. As a result, all undergraduate students do not benefit from the same types of advising styles, but rather are in need of different approaches. A cookie-cutter approach to advising all students is not a sufficient method for implementing a quality academic advising program. Advisor awareness of the progression of students' needs as they move through their academic programs is necessary to provide students with the most effective and efficient advising that will assist them in achieving their goals. In summary, participants would be introduced to the stages of student development across the span of a college career and be introduced to advising models that meet those stages of development.

008

### **GoFarm Hawaii: Multi-campus, Interdisciplinary Farmer Training with Public/Private Support**

Steven Chiang  
University of Hawaii

To meet the demand for practical farming education, the University of Hawaii's Agribusiness Incubator Program, College of Tropical Agriculture and Human Resources and Windward Community College collaborated to develop GoFarm Hawaii. This new program consists of five phases of increasing time commitment by the students, helping to ensure that the participants that reach the lat-

er phases are those that are committed to farming commercially. The program has been a great success in not only attracting students, but also institutional and faculty participation and private funding. Described will be methods of collaboration and outreach that enabled the birth of this multidisciplinary program that crosses departments, campuses and organizations. Also described are the five phases of the program that involve interdisciplinary instruction and assistance, the rationale behind each with regard to student self-selection and program resource commitments and the story of the growth of the program from conception to rapid implementation. An overview will be provided of the development of the GoFarm Hawaii network of University campuses, the multiple sources of funding, the pursuit of private funding and leveraging University faculty at two-year institutions to facilitate the reach of the program. In its first year, GoFarm Hawaii attracted over 90 interested members of the community and is currently training 13 students. The program has also attracted \$1.3M in financial and in-kind support and has received interest from three additional campuses. The agribusiness instructors for GoFarm Hawaii have a record of almost tripling participants' annual profits.

010

### **Building Capacity in Virginia 4-H State Cabinet Leaders**

Tonya T. Price and Billie Jean Elmer  
Virginia Tech

Four-H has long been known for developing leadership and life skills in youth ages 5-19. Numerous studies have focused on development of these skills and the benefits to 4-H youth who actively participate in the program. However, research related to the leadership development of Virginia 4-H teens is limited and all previous studies measuring these skills have originated outside the Commonwealth. Thus, this study focused on the leadership skills developed by high school 4-H members who served on the 2009-2010 State 4-H Cabinet. The Cabinet consists of officers, ambassadors, mentors, liaisons and advisors from across the state. This elite group of teen leaders represents the voice and needs of over 198,000 Virginia 4-Hers and influences the direction and leadership of the 4-H program. Consequently, the objectives of this presentation are to highlight the findings of our study which indicated that serving on a statewide 4-H team increased leadership skills in teens. Specifically, this experience increased responsibility, improved decision making and public speaking skills and developed an appreciation



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and respect for working with diverse audiences. Research methods included focus groups, surveys, observations and telephone interviews. While the focus groups with the teens indicated leadership skill development in the previously mentioned areas, parent interviews confirmed the overall growth of their teens. The major finding of this study indicated that these highly motivated 4-H members embraced the opportunities provided to them to become leaders in their communities and statewide.

013

### Science & Religion: Friends or Foes?

Michael J. Ellerbrock  
Virginia Tech

Beneath the superficial debate between creation versus evolution, the current dialogue among scientists and theologians addresses core aspects of epistemology and pedagogy. Far beyond biblical literalism, collaborative scholars are exploring different types of truth, scientific literacy, teleology and eschatology, cosmic consciousness, chaos and complexity theory. Agricultural educators can help students understand the insights of leading scientists who have integrated their technical research into deep philosophical questions regarding creation science, intelligent design, quantum mechanics and relativity physics. These multidisciplinary ideas offer educators insights into the nature of evil, ethos of institutions and dualistic role of the observer in the scientific enterprise. Objectives of the presentation are to help agricultural educators assimilate the scope of the current dialogue, incorporate key ideas into their classes and empower students to fearlessly reconcile their values and beliefs within the framework of life-long learning and empirical experience. Educators will consider the philosophical implications of entropy and limitations of scientific reductionism. Students will be invited to consider the implications of Heisenberg's Uncertainty Principle that there are no uninterpreted facts. The discussion will focus on four popular paradigms: Conflict – reason vs faith, fact vs feeling, knowledge vs superstition; Contrast – the disciplines ask different questions (how vs why?); Contact – areas of agreement where reason and passion are complementary according to Darwin, Einstein and Hawking; and Confirmation – whenever they disagree, one or both must be wrong regarding ultimate truth.

014

### Integrating Web-based Student Response Systems in the Classroom: A Case Study of Top Hat Monocle in a Commodity Futures Course

Krystal Drysdale and Orlen Grunewald  
Kansas State University

Top Hat Monocle (THM) is quickly emerging as an industry leader for in-class student response systems (SRS) and is being used by 250 universities around the world. THM is a web-based interactive learning platform that allows students to use technology they already own to engage in the classroom learning experience. Prior SRS technologies required the purchase of external devices, i.e. clickers. These can, at times, be limited in flexibility of content structure and applications. This study evaluates the performance of students in a Commodity Futures course at Kansas State University who utilized THM during lectures compared with students who chose not to opt into the system. Out of 109 students in the course, 76 students (70%) opted into the learning component, whereas, 33 students (30%) did not. Performance was compared to see if the addition of THM to the learning environment increased students' retention of the material, motivation for attendance and overall engagement with the lectures. Exam performance for enrolled students was, in general, higher than non-enrolled students. Students also largely reported that the system was effective at increasing their level of involvement. Students were also asked to comment about their experience, perceived benefits and/or dislikes. With technology rapidly expanding for students, many universities seek to create a more dynamic learning environment in higher education, however, not a lot of emphasis has been given to the new realm of web-based SRS platform integration. This paper seeks to analyze the efficacy of THM as an in-class tool and provide student opinions.

015

### Exploring Educational Attainment of Undergraduate Minority Students in Land-Grant Institutions across the United States

Lisa S. Hightower  
University of Florida

Hao Lu, Mary A. Marchant, Eric Vance, William Richardson and Eric Smith  
Virginia Tech

This research investigates the educational attainment of minority and non-minority undergraduate students en-

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rolled in colleges of agriculture and life sciences at 49 U.S. Land-grant institutions from 2007 to 2011. Educational attainment was measured as the level of Baccalaureate enrollment of minority students (e.g., African American, Hispanic and Asian students) and non-minority students (e.g., Caucasian students). Data were compiled from the USDA's Food and Agricultural Education Information System (FAEIS, <http://faeis.usda.gov>) database. Analyses found that over time, growth in minority student enrollment was more than three times greater than growth in non-minority student enrollment. Growth in Baccalaureate enrollment was largest among Hispanic students (42%), followed by African American students (17%) and Asian students (7%). Recommendations are provided for agricultural educators interested in developing or enhancing current minority recruitment programs.

017

### **Toward Cultural Proficiency; How Much Confidence Can Be Gained and What Benchmarks and Standards Can Be Met in a College Course?**

Nicole Steinmetz, Suzie McMullen and M. Susie Whittington  
The Ohio State University

Educators, who first seek to understand their learners, are able to recognize their own cultural uniqueness and the consequent biases that might, unknowingly, lead to potential exclusion rather than inclusion of learners in their learning environments. To achieve the goal of creating inclusive living, learning and working environments, a course was developed to assist students in moving along their Cultural Journey. How much confidence can be gained and what benchmarks and standards can be met in a college course? The purpose of the study was to describe change in confidence and frequency of benchmarks and standards achieved in a ten-week course. Using a pretest-posttest research design, participants completed a Cultural Proficiency Confidence questionnaire. Treatment included ten weeks of writing 1) weekly critical thinking journal entries, 2) daily class reflections, 3) *I am From* poems and 4) their racial autobiography. Treatment also included hearing Behind the Music research, watching a cultural conflict movie, presenting book club reports, participating in three dialogues/discussions at the university's Multicultural Center, interacting with an Indian student while eating at an Indian restaurant, assuming the role of a population in which students on campus might identify and proposing and implementing a service learning project. Conclusions: students gained confidence and acquired evi-

dence of reaching numerous benchmarks and standards. In addition, their sphere of influence reached approximately 160 others. Recommendations: continue to teach the course to more students from other parts of campus and to seek ways to have students reach the less frequently achieved benchmarks and standards.

020

### **Post-Graduation Community Engagement Habits of Service-learning Course Participants**

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University of Georgia

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Southwestern University

S. Wilder and D. Berle  
University of Georgia

Ten years ago a service-learning course was created in a college of agriculture that partnered students with elementary school teachers. Students in the course spent 3 hours each week throughout the semester in the schools, teaching inquiry-based science lessons to children in grades K-5. Little research has been done to examine the effects of service-learning course participation on habits of community engagement once students graduate. The Higher Education Research Institute's Life After College Survey was sent to 475 students who had taken the course between 2004 and 2011 and had graduated from college. The same survey was sent to 2,000 students who had similar majors and had graduated in the same time frame, but had not taken the course. Participants in the service-learning course were found to be more likely to do volunteer work, participate in and lead community organizations, make financial donations to education institutions, attend alumni events, contribute to their alma mater and recruit students to their alma mater when compared to students who had not taken the course. These findings were all statistically significant at  $P < 0.05$ . Because all students with service-learning experience participated in the same course, the study was able to control for different teaching styles and different types of service-learning experiences. The results support claims of longer-term community engagement benefits from service-learning course participation.

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021

### **The Science Behind Traditional Knowledge: An In-Field Medicinal Plants Bioassay Method Boosts Science Engagement Of American Indian And Alaskan Native High School Students**

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North Carolina State University

Brittany Graf and Ilya Raskin  
Rutgers University

Nathalie Plundrich and Mary Ann Lila  
North Carolina State University

Research in agricultural sciences reveals that students are frequently disengaged during classroom instruction. This problem can be exacerbated by cultural barriers for American Indian and Alaskan Native (AI/AN) students, who represent only one percent of college students in the United States. This project tested the potential of the Screens to Nature (STN) instructional method to promote engagement in science and technology. STN enlisted students to conduct field-deployable bioassays which comprehensively assess the medicinally-important properties of indigenous plants. Students mastered science concepts before validating bioactive plant properties, thereby linking science to culturally-important subjects. We used the STROBE technique, a process developed by researchers to reliably measure student engagement in medical school lectures, to determine the level of engagement among high school science students during STN activities. Trainers taught STN methods to 40 AI/AN high school students and ten adult Lakota Indians in North Dakota. These students identified culturally-relevant native plants used as traditional medicines through bio-exploration and conducted bioassays to elucidate the bioactive properties in these plants. Researchers recorded learning behaviors in 108 classroom observations. For 88% of observations, half of the students were engaged in reading, listening and performing lab activities. In 79% of observations, two-thirds of students were engaged in learning activities. Research on student engagement in the agricultural sciences indicates that engaged students are likely to practice critical thinking. This study supports previous research in that American Indian and Alaskan Native students can become engaged in food and agricultural sciences when culture is an essential component of learning.

023

### **Understanding Disciplinary Boundaries within Colleges of Agriculture: Implications for Graduate Student Development**

Caitlin Foley, Rama Radhakrishna and Mark Brennan  
Penn State University

Providing opportunities for students to meet with and learn from professionals can enrich their overall educational experience, encourage the development of career goals and facilitate the crossing of disciplinary boundaries in their programs of study and future endeavors. With an ultimate objective of showcasing the diversity and richness of projects occurring within a land-grant university, ten guest speakers presented their work and experiences to a weekly colloquium of graduate students. A purposive sample of guest speakers ( $n = 6$ ) was selected who presented various topics ranging from Extension Business Model, Agricultural Entrepreneurs, Funding of Collaborative Multidisciplinary Research, International Programs, Academic Integrity & Ethics and Diversity in Higher Education. A basic qualitative analysis of the six presentations was conducted and four themes emerged from the presentation data: Dynamics of the CAS and land-grant system, change, diversity and collaboration. Themes were compared to student perceptions of graduate education, career preparations, scholarship and professional development. Presented material highlighted the dynamics of research, Extension and teaching. Funding was described as a major challenge across departments, the College of Agricultural Sciences and the university as a whole. A general positive outlook for the future of the university and internal endeavors was provided by all six of the speakers, which was encouraging to graduate students in pursuit of higher education, career preparation, scholarship and professional development. A framework for understanding disciplinary boundaries within the colleges of agriculture for student development is proposed.

024

### **Is there a Relationship Between Test Review, Sample Test and Test Performance?**

Rama Radhakrishna, Brad Olson and John Ewing  
Penn State University

Davis (2010) recommends that teachers use test reviews and share a sample test prior to giving an exam. She contends that such efforts will alleviate exam fears, reduce test anxiety, increase confidence and improve

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performance. To test Davis's observations, a study was conducted using 20 students enrolled in a senior level class at a major land grant university. Prior to Test one (midterm), students were given an in-class review sheet and a sample test. For Test two, no review sheet or sample test was given. In addition, enrollees were asked to complete a short survey to elicit their opinions relative to the test review and sample test. Paired t-test analysis revealed significant differences ( $t=2.70$ ;  $df=19$ , mean difference 7.90,  $p<.05$ ) between the two test scores ( $M=139.9$  for Test One and  $M=132.0$  for Test Two). Enrollees said that both review for the test and giving a sample test increased their confidence level (90%) and were very helpful (89%) in preparing for tests and suggested that they be continued. These findings confirm Davis's recommendations. Enrollees were also asked to categorize exam questions into 1) facts that require recall or memory, 2) questions that made them think and 3) questions that were more applied in nature. Enrollees indicated that there were more factual and critical thinking questions in Test One compared with Test Two, which had more application and critical thinking questions. The author(s) suggest that teachers consider conducting test reviews and provide sample test or test questions.

028

### **A Framework for Leadership Development Curricula for Ag Advocates in the College of Agricultural Sciences at Penn State University**

Rebecca Heilman, John Ewing, Rama Radhakrishna and Mark Threeton  
Penn State University

The Ag Advocates are a select group of undergraduate students spanning all of the majors within the College of Agricultural Sciences. The Ag Advocates are a vital constituent in assisting the college in recruitment and retention of highly qualified students. They work closely with the Office for Undergraduate Education, establish working relationships with college and university faculty and have opportunities to work with staff and administrators across the Pennsylvania State university system. Ag Advocates assist with prospective student visits to campus, open houses, orientation programs and Alumni functions. The purpose of the study was to develop leadership development curricula that is helpful to Ag Advocates to carry out their responsibilities. The Tyler model was used as a guide to develop the curricula. Two groups of Ag Advocates—current ( $N=35$ ) and former ( $N=10$ )—were recruited to provide input and feedback for the leadership development curricula. Phone interviews,

e-mail, or in-person interviews were conducted to collect data. A total of five topics, three (communication, conflict management and how to be an effective leader) from current Ag advocates and two (conflict management and dealing with change) from former Ag Advocates emerged. A six-unit leadership curriculum was developed based on the data gathered and current literature. The topics covered were team building, leadership, conflict management, communication, dealing with change and how to lead a group. Each of the six units contained objectives, preparation, activities, materials needed, time, summary and evaluation. Initial evaluation of the curriculum has been good and helped in further refining the curriculum.

031

### **Scientists in the Schools: Engaging Alaska Students in Marine Science through an Innovative Teacher-Scientist Partnership**

Janice M. Straley  
University of Alaska Southeast Sitka Campus

Scientists in the Schools (SIS) is an innovative teacher-scientist partnership incorporating scientists into rural Alaskan classrooms. The goal of SIS is to promote ocean literacy and increase the rural workforce in marine related careers. These goals are supported by a growing body of literature demonstrating when students meet a scientist in their K-12 education the result is increased 1) knowledge of science, 2) awareness of careers in science and 3) numbers of students post-graduation enrolling in technical programs or pursuing a science degrees. Teachers are overwhelmingly supportive because SIS provides lesson delivery and resources for unfamiliar science content. A SIS facilitator dovetails the expertise of the scientists and the needs of the teachers to make the classroom experience beneficial for the teacher and fun for students. A baseline of knowledge is provided prior to the scientist's arrival and then students taught experientially through activities integrating science standards. Built regionally on a successful STEM strategy, SIS provides scientists to a state-run boarding school with students from nearly 100 villages across Alaska and the Sitka Schools District, with nearly 1/3 underserved minority students. Locally, over 1000 students, experience SIS, annually. Broader impacts provide students an understanding of the importance of changes in the Arctic, knowledge necessary for an informed electorate on policy decisions and an investment in the future stewardship of Alaska's vast marine food supply. Future goals are to promote the SIS program throughout Alaska

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to increase the number of students pursuing educational and career pathways in the marine sciences.

**032**

### **Teaching Information Literacy to Undergraduate Agribusiness Students: Project-based vs. Task-based Pedagogies**

Christiane Schroeter and Lindsey Higgins  
California Polytechnic State University

Given the shift toward an increasingly knowledge-based economy, educators and employers have expressed the need to emphasize information literacy among students. An information-literate student recognizes the need for information and is able to locate, evaluate and effectively use the needed information. Given that the formal incorporation of information literacy in undergraduate programs is growing, there is a need to assess teaching methodologies that foster these abilities. If skills related to information literacy are important, what pedagogy is most effective? The objective of the research is to determine if there is a difference between students that are taught information literacy skills during a task-based assignment versus those that are taught these abilities through a project-based learning (PBL) approach. We designed a survey to assess the students' information literacy abilities, their familiarity with a number of agribusiness research databases and their confidence at finding key pieces of information. In addition, a series of objective questions tested the students' ability to locate specific types of information using key databases (e.g. Hoovers, MRI Mediamark). We collected data from two different sections of the same course; one section employed a task-based teaching approach and the other used PBL. Our results indicate that increased usage of the research databases through task-based learning will enhance information literacy. The paper will present the grounds for discussion among NACTA members about the role and future trend of information literacy in agribusiness education and the teaching methods that enhance information literacy.

**034**

### **Addressing Learning Outcomes in Co-Curricular Programs with Student Ambassadors**

Charles Kinoshita, Sylvia Trinh and Lisa Kitagawa-Akagi  
University of Hawai'i at Mānoa

Two decades ago, faculty in the College of Tropical Agriculture and Human Resources (CTAHR) of the University of Hawai'i at Mānoa, demonstrated great insight in identifying a set of 10 Critical Skills and Competencies expected of its graduating students, including communication, analytical thinking, human relations and leadership. Student Ambassadors in CTAHR are student volunteers who play a central role in recruiting prospective students, increasing interest and participation by current students in CTAHR and promoting CTAHR to the University and the larger community. Ambassadors need strong communication skills to reach their broad audiences, spanning middle school to college transfer students and small to large groups. As the face of CTAHR, interpersonal skills are equally important for Student Ambassadors to be effective in engaging broad audiences. These skills, along with teamwork, are honed in strategic exercises that take place in the Ambassadors' annual training and retreat, where the students build strong bonds as a close-knit, family unit. Motivation and positive attitudes are enhanced through the support network built by the Ambassadors, which, in turn, engages other students in the College. Sharpened problem-solving skills help these student leaders improve CTAHR's co-curricular programs through active engagement in the planning and execution of College activities. Through their experience as Student Ambassadors, the students develop a sense of responsibility that extends beyond the realization of their personal goals to the betterment of the College and the community.

**037**

### **Chinese Students, American Classrooms: Lessons Learned from a Teaching and Learning Circle at Iowa State University**

Ann Marie VanDerZanden, Jay Newell and Aili Mu  
Iowa State University

As the Iowa State University undergraduate enrollment has increased, so too have the number of undergraduate international students. These students bring a unique perspective and set of needs to their college experience. The 2011 report *What International Students Think about U.S. Higher Education* provides a useful starting point to learn about international student trends and student perspectives. China is the top place of origin for all international students studying in the US. The number of undergraduate students from China has surged in recent years, increasing 300 percent from just under 10,000 in 2006/07 to almost 40,000 in 2009/10. At Iowa State University, Chinese-speaking students comprise the largest single group of international undergraduates. To help

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faculty better understand how to address the unique needs of these students the ISU Center for Excellence in Learning and Teaching facilitated a five week teaching and learning circle on Chinese students in American classrooms. The teaching and learning circle explored the preparation of Chinese undergraduates for American higher education, the current experience of Chinese undergraduates at Iowa State, insights of Chinese faculty teaching at ISU, as well as teaching approaches and best practices to help these students succeed. This session will summarize the rich discussion of the teaching and learning circle, describe the cultural differences between American and Chinese students and share pedagogies to engage Chinese students in your classrooms and help them achieve the most from their undergraduate experience in the United States.

040

### **Rethinking Course Structure: Student Perceptions of Flipping a Classroom**

Nathan W. Conner and Christopher T. Stripling  
University of Tennessee

Jessica Blythe, T. Grady Roberts and Nicole L. P. Stedman  
University of Florida

Traditionally, lectures have been used at universities and colleges to deliver information to students during scheduled blocks of time. However, the flipped classroom approach has recently emerged as a way to structure courses by taking what would traditionally be taught in class through lecture and converting the information to an online format in which students are responsible for learning prior to attending class. The scheduled class time is used for knowledge application. This study examined student perceptions of using the flipped classroom approach for an agricultural education teaching methods course. The participants were enrolled in the course during the fall of their senior year and consisted of 19 participants including 16 females and 3 males. A qualitative approach was used to interpret the phenomenon. Upon completion of the course, a focus group was conducted. The constant comparative method was used to analyze the data and trustworthiness was achieved through audit trails, triangulation, member checking and thick description. Analysis resulted in the emergence of three categories and seven sub-categories. The categories include: (a) the quality and effectiveness of online video modules, (b) in-class lecture time and (c) overall learning that took place due to the use of the flipped classroom approach. Learning was reinforced through application activities

and confidence toward teaching was increased due to the flipped classroom structure, but many suggestions were made on how to improve the flipped classroom design. Faculty and participant observations can be used to enhance future attempts to flip a classroom.

041

### **Crossing Disciplines, Crossing Borders: Assessing Teacher Clarity in an International Setting**

R. Kirby Barrick  
University of Florida

Seung Il Na  
Seoul National University

Significant research over the past 30 years has addressed specific teacher behaviors that have a positive relationship with student achievement. One of those behaviors is clarity—what teachers do that is perceived to be clear by the students. As teachers improve clarity, students learn more and retain it longer. Therefore, assessing teacher clarity (as perceived by students) becomes an initial step in improving teaching. Based on research that was originally conducted by Cruickshank and others, researchers have continued to attempt to address those specific traits and actions that constitute clarity. A 28-item instrument was developed and has been tested in many settings, primarily in the U.S. This study adapted the teacher clarity for use in Korea. Students (N=701 students) enrolled in undergraduate courses in majors within the College of Agriculture and Life Sciences at Seoul National University completed the instrument (translated into Korean) in October 2012 (N=38 courses in 10 disciplines). Students identified clear teacher behaviors that occurred almost always such as working and explaining examples and teaching step-by-step; students also identified clear teacher behaviors that were never utilized, such as giving time to practice and showing how to remember things. Results from the Korean population were similar to results in the U.S., indicating that similar teacher development activities could be utilized in both countries. However, teacher behaviors that students identified as occurring always were indicated less frequently than in similar studies in the U.S. and behaviors rated never were indicated more frequently than in U.S. studies.

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049

### Professional Development Needs of Swine Science Distance Education Instructors

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Iowa State University

M. Sprecher  
U.S. Pork Center of Excellence

G. Miller  
Iowa State University

The purpose of this mixed-methods study was to identify specific professional development needs of instructors relative to teaching, advising and recruiting students in two online programs: Swine Science Online and Professional Swine Manager. The study began with qualitative interviews of Swine Science Online and Professional Swine Manager instructors (n=8). The instructors were asked questions related to distance education experience, views on distance education and desired professional development activities. The answers gained from these interviews were then used to set up a quantitative survey that was sent to all (n=25) instructors in the programs. The response rate was 84%. Instructors were asked what professional development activities were desired. The top answers were for techniques and strategies that increase student interaction, having a hands-on training session with specific tools, brainstorming with other instructors on strategies and techniques that work best in online courses and being presented with research-based data on what online teaching techniques have worked best. The survey also found a need to increase instructors' proficiencies with tools and content management systems used as many of the most popular tools had instructors rate their proficiency below the intermediate level on average. The researchers concluded that a professional development activity was desired by the instructors and recommended that this activity emphasize research-based techniques to improving teaching strategies and student-teacher interaction. It was also recommended that promoting interaction and communication be a part of the professional development activity, as well as instructors being taught time saving strategies related to delivering and developing online courses.

050

### Use of Multimedia to Increase Comprehension in an Introductory STEM Course

Ashley Rhodes and Tim Rozell  
Kansas State University

Compared to students from other countries, fewer American students are pursuing and completing degrees within the science, technology, engineering and mathematics (STEM) fields. For the United States to remain competitive, the development of novel instructional techniques designed to reach students who might otherwise be lost from these majors is imperative. This study examined the use of teacher-designed multimedia within an introductory STEM course. Quantitative methods were used in a real classroom setting to examine the relationship between the use of multimedia and the amount of information students comprehended when learning photosynthesis. Also, the relationship between the use of multimedia and the learning gains of female students within introductory STEM courses was examined, because their participation within the STEM fields has historically been low. Using a pre-test/post-test experimental design, the base knowledge of students was assessed before viewing the multimedia and again one week after having free access to media. It was determined that the use of simple animations and corresponding narration increased student learning gains compared to the use of static pictures and text. The value of multimedia for learning gains was greatest for females with lower prior knowledge levels; however, male students with low prior knowledge also benefitted. In agreement with the fundamentals of constructivism, these findings support the idea that the use of multimedia for basic schema construction improves comprehension.

054

### Comprehensive Oral Final Exams Improve Student Learning Through Social Constructivism

Tim Rozell, Ashley Rhodes and Jessica Winkler  
Kansas State University

Students taking a senior-level course in anatomy and physiology have the option of either a comprehensive multiple choice final or a comprehensive oral final taken in groups of 4-6. Questions for each are similar in terms of asking students to understand basic mechanisms and apply those mechanisms to problems in physiology. An important difference is that students taking the oral final must draw and describe basic mechanisms and also

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diagram system interactions. To prepare, the oral final group often studies together, participating in discussion that should allow each student to contribute to group understanding, test and integrate their own ideas against those of the group and ultimately build their own understanding through social constructivism. Thus, students should perform better on the oral final exam than they did on semester exams, or in comparison to those choosing the written final option. Results from six semesters were analyzed by ANOVA. Students choosing the oral final option had higher mean scores than they did on semester exams and oral final exam scores were also higher than for the written final. The semester exam scores of students choosing the written option did not differ significantly from scores of those choosing the oral final option, indicating that the student populations were similar until the time of the final. These results support the idea that construction of meaning as a group improves comprehension for students as well as improving the ability to apply their understanding of basic concepts.

061

### **Student Conceptions of the Nature of Science: Implications for Agricultural Education**

Hannah H. Scherer, Courtney A. Vengrin and Aaron Bond  
Virginia Tech

Understanding of the nature of science, which includes such ideas as the meaning and role of scientific theories and the role of imagination and creativity in generating scientific knowledge, is a critical learning outcome in science education. It is common for the general public, including science teachers, to have misconceptions about the nature of science. These misconceptions can influence how science is portrayed in the classroom and, as agricultural educators increasingly work to emphasize the science content in their curricula, they must be addressed. The purpose of this study was to evaluate the impacts of participation in the asynchronous online, graduate level course, "STEM Integration in Agricultural Education," on conceptions of the nature of science. Course activities that were designed to address the nature of science include: readings about the nature of science, completion of an individual agriscience research project, participation in a discussion forum and personal reflection. Sources of qualitative data utilized in this study are discussion forum transcripts, student work and pre- and post-tests based on a published open-ended questionnaire (VNOS, Form C). Results indicated that students initially held more naive views and, through the intervention, gained a deeper understanding of the role

of creativity in the work of scientists, the importance of community analysis and feedback in the development of scientific ideas and the diversity of approaches to scientific investigations. This study not only informs the practice but also has broader implications for STEM integration and the concept of the nature of science in agricultural education.

062

### **Crossing International and Disciplinary Borders in Graduate Education**

Melanie Miller Foster, Thomas Gill and Daniel D. Foster  
Penn State University

A centerpiece of the new multi-disciplinary International Agriculture and Development (INTAD) dual-title degree program is the INTAD 820: International Agriculture Development Seminar, a course that helps prepare future faculty to fulfill the land grant mission of teaching, research and extension in global settings. Core learning objectives all viewed through the lens of global food security include developing students' capacity for program evaluation, course instruction, grant acquisitions and effective research methods in global settings. Embedded into the residence course is an international experience in a developing country to develop a shared context among students, so that they may collaborate on other class assignments. Assignments in the INTAD 820 course include the completion of a class issued extramural request for proposal (RFP) for a development project and facilitating course sessions. An additional purpose of the embedded course is to provide future faculty with the skills required to organize student international travel. Students enrolled in the course are involved at a high level with all aspects of the logistics of the trip, beginning with determining the itinerary. Throughout the trip, each student serves as a co-chaperone for a day and facilitates a group reflection activity. Participating students expressed appreciation for being able to "learn by doing" in structured interviews assessing the experience. If future faculty members are to engage in global programming across multiple disciplines, than experiential education opportunities must exist for graduate students to develop the confidence and efficacy to lead their future students in developing their global competency.



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063

### Twitter in the Classroom: A Comparative Case Study

Melanie Miller Foster, Kortney Sherbine and Daniel D. Foster  
Penn State University

What is the impact of social media on learning outcomes? This study compares the use of Twitter in the context of three distinct 400-level classes taught by three different instructors in three different disciplines at the same university. Data were collected via pre and post questionnaires, classroom observation, student tweets and student focus groups. In the case of Classes A and B, the instructors incorporated Twitter into the syllabus, had a grading rubric and encouraged students to tweet on specific topics. In the case of Class C, the instructor did not incorporate Twitter into the syllabus or grading scheme, but encouraged students to utilize the technology to communicate with other students and the instructor. Students in Classes A and B described Twitter as “just another social media site to keep up with.” The instructors observed that students often tweeted in rapid succession and produced single tweets rather than engaging in discussion with peers, suggesting that they were simply fulfilling the course requirement. Students in Class B described the use of Twitter in their class as “fun” and as “an interesting way to connect with classmates.” Instructor C observed that students carried on the classroom discussion between sessions and conversed about other topics. These divergent outcomes are associated with differences in three specific processes related to the implementation of Twitter by the instructors: initiation, instructor participation and grading scheme. Taken together, these findings suggest that varying methods of implementation of Twitter can lead to vastly differing outcomes.

068

### A Pipeline Model for Careers in Agriculture, Environment and Life Sciences

Linda L. Okiror, Usman Adamu and Rita Conley  
University of Arkansas at Pine Bluff

Greg Madden  
Southeast Arkansas College

For the agricultural industry to survive, colleges and universities with agricultural disciplines must increase the interest and enrollment of students in agricultural sci-

ences. Too few minority and community college students aspire to careers in the agriculture and related sciences. To alleviate this problem, the School of Agriculture, Fisheries and Human Sciences (SAFHS) at the University of Arkansas at Pine Bluff developed recruitment and retention strategies known as the “Pipeline Model.” The authors will illustrate how this Model exposed middle and high school students to careers in agriculture, environmental and life sciences using experiential learning opportunities and student academic support with the expectation that more students would graduate from SAFHS degree programs. The Model includes four independent but interrelated enrichment programs: Agricultural Careers Research and Exploration Summer Institute students in grades 7-10; the Summer Internship in Plant, Soil, Environmental and Biotechnology Sciences for 11th and 12th graders; the Career Awareness and Opportunities in Agriculture, Environmental and Life Sciences targeting high school and community college students; and a Bridge academic summer program for high school graduates. Recently a focus group study and collaboration with Arkansas Works, Career Coaches program at Southeast Arkansas College revealed and addressed several of the issues affecting students’ decisions to attend college. The Kuder Career Assessment Survey and SAFHS Companion Career Guide were used to inform students of SAFHS degrees and careers in selected Kuder Pathways. Model activities contribute to a retention rate 10 percentage points above the University cohort and an enrollment increase of 44% since 1998.

069

### Application of Service-Learning in two Courses for a Hands-on, Minds-in and Hearts-felt Educational Experience

Julie Grossman, Michelle Schroeder-Moreno, K.S.U. Jayaratne and Sarah Smith  
North Carolina State University

Interest in achieving food security through urban agriculture is steadily increasing, making it critical that educators prepare today’s agriculture students to be effective sustainable food system and community leaders. Two paired agriculture courses at NCSU, 1) Introduction to Agroecology and 2) Service-Learning in Urban Agriculture Systems, have for 3 years been taught in partnership with the Inter-Faith Food Shuttle (IFFS) NGO using community gardens in low-income neighborhoods as classrooms. Learning objectives of these courses include increasing awareness of local food insecurity; articulating challenges of outreach with culturally diverse

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audiences; and application of professional skills. Data are collected in both courses via surveys and interviews. In the introductory course students participate in a short immersive experience. In the advanced course, students develop and teach 8-weeks of agriculture lessons to youth. In the introductory course Likert-scale responses increased following the short experience and provided evidence of enhanced student awareness of local food insecurity issues from working directly with IFFS. Across both courses, impacts on students' personal growth and civic engagement (the feeling of "I can make a difference") have been observed. In the advanced course, when compared to a non-service-learning control group, service-learning students rate themselves as significantly more confident in professional skills following community engagement, describing greater knowledge of agriculture, comfort working with diversity, leadership and increased ability to teach soil science to the public. We conclude that service-learning can be an effective mechanism through which students can apply their academic content knowledge and improve their ability to work with urban-agriculture stakeholders.

071

### Outcomes/Reflections of Student Poster Presentations at National and International Scientific Conferences

Ingelia White  
Windward Community College

The Board of Regents approved the Agripharmatech program at the University of Hawai'i-Windward Community College in 2012. The program offers a Certificate of Achievement (CA) in Agripharmatech with two specializations (30 credits): the Ethnopharmacognosy and the Plant Biotechnology. Both tracks share the same required courses (18 credits), but differ in capstone (4 credits) and elective courses (8 credits). One of the electives is BOT 199/299 (Independent Study/Research). Five students presented posters of their research or studies at national and international scientific conferences. Three research topics include the Pharmacognostical studies of dendrobiums (presented at the 20th World Orchid Conference in Singapore, October 2011), the Clinical study of *Bidens pilosa* tooth powder (presented at the Hawaii INBRE II – HSREP Summer 2012 Undergraduate Research Student Presentations, John A. Burns School of Medicine, Honolulu, April 2012) and the Transgenic CyMV Brassolaeliocattleya orchid (presented at the 4th Scientific Conference on Andean Orchids, Ecuador, November 2012). Two studies (Enhancing learning through extra-curricular

and student ambassador's activities) were presented at the NACTA/DOCE Conference at the University of Alberta, Canada in June 2011 and the University of Wisconsin, River Falls in June 2012 respectively. All students received Agripharmatech certificates in both tracks in spring 2013 and have transferred to 4-year degree institutions majoring in Natural Resources and Environmental Management, Plant Biotechnology, General Biotechnology, Ethnobotany/linguistics and Neuroscience. The experience gained through scientific conferences has deepened their academic/research interests in agriculture and other related sciences; and built networks with their research counterparts or mentors around the globe.

074

### Growing a Civically Engaged Curriculum: The Evolving Story of the Civic Agriculture and Food Systems Minor

Susan Clark and Kim Niewolny  
Virginia Tech

Since fall 2010 the interdisciplinary, experiential-based minor in Civic Agriculture and Food Systems (CAFS) has attracted students (n=52) from diverse disciplines and programs across campus. The minor provides students with knowledge and skills to identify, examine, apply and integrate agriculture and food system sustainability philosophies and activities into personal and professional practice. It is specifically designed to promote academic enhancement, personal growth and civic engagement while strengthening students' capacity to learn about CAFS through the practice of reflection and experiential learning to solve real-world problems. The 18 credit minor includes 4 courses (2204-Introduction to Civic Agriculture, 3404-Ecological Agriculture, 4204-Concepts in Community Food Systems and 4214-CAFS Capstone) that integrate 6 core values: food security/sovereignty, civic engagement/democratic participation, strong local economies, ecological stewardship, healthy people/communities and collaborative teaching/ experiential learning. The common pedagogical thread that connects each course includes: collaborative teaching, community partnerships for service and experiential learning activities and reflective practice that allow students to build understanding and application of CAFS concepts within the community. Students are introduced to community partners (e.g., farmers, community gardens, farm-to-institution) in 2204 via semester long fieldwork "or service-learning" assignments. In this class, a project proposal assignment scaffolds the implementation of a community action project (CAP) in 4214. In 4204 students move beyond fieldwork and towards a more in-

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depth understanding about community development work which redefines their 4214 CAP. The minor civically engages student to focus on key needs of their community partner and find mutually beneficial goals to undertake the collaborative CAPs.

**076**

### **ILFI-Wheel: An Innovative Leadership Assessment**

Aaron J. McKim and Jonathan J. Velez  
Oregon State University

Jon C. Simonsen  
University of Missouri

Robert J. Birkenholz  
Ohio State University

The Individual Leadership Factors Inventory Wheel (ILFI-Wheel) is an innovative assessment of the following leadership skills: decision-making, impact, empowerment efficacy, communication, empathy, integrity, determination and confidence. After 4 pilot tests and 2 factor analyses, authors are seeking to share findings captured by the ILFI-Wheel as well as introduce the ILFI-Wheel as a viable leadership assessment. The process of completing an ILFI-Wheel starts with participants filling out a 40 item questionnaire broken into the eight leadership constructs mentioned above. Participants then summate each construct into a mean score and chart their findings creating a visual representation of their leadership. Participants analyze their wheel for "bumps" and "flats" that indicate their leadership strengths and weaknesses. The ILFI-Wheel can be used across disciplinary boundaries as a method of assessing leadership skills and developing goals for leadership growth. The ILFI-Wheel has also been used to assess program effectiveness in leadership development settings. The findings presented in this study are that of a leadership development class at Oregon State University. The class summated leadership scores are: integrity (5.42), empathy (5.15), determination (5.04), communication (4.84), decision making (4.65), confidence (4.52), empowerment efficacy (4.46) and impact (4.40). The information gained from the ILFI-Wheel can serve two major purposes: it allows for individuals to set goals for "rounding out" their leadership skills and it allows faculty to make programmatic changes based on the identified needs of the students.

**077**

### **Identifying the Needs in a Leadership Development Program**

Aaron J. McKim and Jonathan J. Velez  
Oregon State University

Jon C. Simonsen  
University of Missouri

The Leadership Academy is a year-long leadership development program focused on the development of leadership skills of Oregon State University, College of Agricultural Science students. The goal of this study was to complete an assessment of students' leadership needs utilizing the Borich needs assessment model. The assessment was completed with the 2012-2013 cohort of 12 students enrolled in the Leadership Academy. Respondents identified their competence and perceived importance in 13 leadership constructs, clustered into four key domains: Personal Leadership, Interpersonal Leadership, Group and Organizational Leadership and Community Leadership. According to the Borich model, results are based on the discrepancy between competence and perceived importance, a larger discrepancy indicates students see value in that leadership trait but do not feel competent in that area. The results of this study indicate that students evidenced the greatest need for leadership development in the areas of conflict management (6.20), project management (6.16), communication (6.01) and citizenship (5.91). The results also indicate the least amount of need in awareness of self (4.23), understanding community (4.84), valuing diversity (4.87) and understanding leadership (4.99). The identified needs are scattered throughout the four key domain areas indicating the need for a balanced curriculum in this leadership development program. The leadership needs assessment has helped directors of the Leadership Academy identify areas for growth among students. This study has led to focused program improvements including: specialized guest speakers, project based community service activities and increased focus on the role citizenship plays in successful leaders.

**084**

### **Leadership Academy: A Model for Meeting the Leadership Needs of College of Agriculture Students**

Tyson Sorensen, Kellie Strawn, Aaron McKim and Jonathan Velez  
Oregon State University

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Developing the agricultural leaders of tomorrow is vital to the future of our nation. In response to this challenge, the college of agriculture designed and implemented an innovative undergraduate leadership education and development program called a leadership academy. Implemented in 2011, this program aimed to meet the leadership needs of both students and industry. This college-wide program is yearlong, includes both academic credits and non-credit experiences and provides the student with a faculty mentor. Students work with mentors to create a Personal Development Plan (PDP), which includes leadership development goals and specific action plans to accomplish those goals. Students select courses and leadership growth texts, on- and off-campus group experiences and leadership development workshops to attend. As a cohort, the students participate in a yearlong seminar class, trait and skill development exercises and read several leadership growth texts. Near the end of the program, students capture their learning and personal growth in a poster session. Results from student interviews indicated the students valued the PDP in selecting goal-oriented activities and intentionally applying the principles discussed in meetings, seminars and leadership texts. Students indicated that mentors provided invaluable feedback for reflection and developing and accomplishing leadership goals. From interviews, mentors indicated a positive experience from working with students. Numbers of students in the leadership academy were ten and thirteen respectively with a goal to grow to 60 students per year. Estimated costs per year of the program were approximately \$50,000 dollars. Costs were offset by college supporters and industry partners.

087

### Comparing Multiple Intelligences of College Instructors and Their Students

Crystal A. Allen and Walter L. Hurley  
University of Illinois at Urbana-Champaign

Intelligence is not always a single ability but can be separated into multiple cognitive capabilities. Gardner professes that each individual is born with their own capabilities for learning called multiple intelligences (MI). Most students possess MI involving linguistic or mathematical at lower levels. College instructors possess their own MI and are inclined to teach their courses accordingly. Instructors do not always teach in a manner which enhances students gaining genuine knowledge. Many college courses still depend upon traditional teaching methods, including lectures and note taking, which address the linguistic intelligences. The purpose was to

determine if instructors were aware of their own MI, attentive to students' MI and in response purposefully altered their teaching methodology and pedagogy to accommodate the range (MI) of their students. This research compared the results of "Multiple Intelligences Developmental Assessment Scales" of college instructors (n=22) and their students (n=360), as well as how the instructors perceived the MI of their students. Personal interviews were conducted, soliciting information from faculty members about perceptions of the MI of their students and data concerning the manner in which their courses were taught. Only 10% of participating instructors possessed previous knowledge of MI and made any attempt to address them in their courses. Overall, instructors stated that it was important to address students' MI but most felt that time hindered them from altering courses to address students' MI. College instructors should receive information on MI as well as training about implementation of appropriate teaching methods to address them.

089

### Crossing Disciplinary Boundaries –Getting Small Groups to Actually Work in the Classroom

Gary Moore  
North Carolina State University

The teaching literature (Bain, 2004; Nilson, 2010) advocates small group work in the classroom; but I have not been pleased with the results. I recently decided to make one last effort to get small groups to work. I structured my sophomore computer applications/information technology class as a "problem-centered groups-based" class. The results exceeded my expectations. After 35+ years in higher education, I finally succeeded in getting small groups to work. So what was done differently?

- Instead of letting students form their own groups, I designed the groups. By design, some groups had all the same majors and some groups had mixed-majors. There is research (Miller & Polito, 1999) that looks at forming groups according to learning styles but not by majors. While all the groups worked well, the mixed-major groups "clicked." Crossing disciplinary boundaries works!
- Six major group projects were required instead of just one or two. Example of projects included designing and constructing a web site and implementing a social media campaign for an organization. These six assignments counted for a major part of the grade.
- A seating chart was used. The groups sat together and students with weak GPAs were situated in between students with stronger GPAs.

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- The group autorating system designed by Felder and Brent (2001) was utilized for each group assignment. Each student's contribution to the overall project was evaluated and factored into the grade received by that student.

This presentation will examine the research on small group work and include lessons learned from actual experience.

**090**

### **Nuts and Bolts of Freshman Orientation: Preparation for Life for Generation iY**

Dana J. Minihan and Kevin J. Donnelly  
Kansas State University

Responsibility for teaching freshman orientation was transferred from the college to the departmental level at Kansas State University in fall 2012. The Department of Agronomy took a practical, procedural approach in designing the course with freshman retention and qualified graduates as the intended outcomes. Our approach to student success of Generation iY was to provide the nuts and bolts of student survival on a "need to know" basis. Because they are often so accustomed to adult interventions they have not learned lessons in self-reliance. Undergraduate students have to work for what they earn but enter with limited understanding of expectations at the collegiate level. To address these concerns, reading, writing, individual and group assignments were given to include resume building, time management, study skills, goal setting and others. A variety of attendance questions were asked of the 24 students enrolled. Eighty-seven percent of the students were sure they wanted to attend K-State with 62% absolutely positive they wanted to major in Agronomy. Fifty percent of the students reported studying less than 15 hours a week throughout their first semester, which did not increase after their first round of exams. Nearly half of the students stated they felt stressed and procrastinated in completing assignments, yet they reported being highly motivated. A retention rate of 92% of the freshman class to second semester and 79% remaining in agronomy are above historical trends. Student evaluations were positive on the nuts and bolts approach and timeliness of the information provided.

**091**

### **Precision Agriculture Technology Troubleshooting Curriculum Development: Cooperation and Collaboration with the Agricultural Equipment Industry**

Royce Hatch, Michael L. Pate, Bruce Miller and Richard Beard  
Utah State University

For more than 20 years, the Agricultural Systems Technology and Education (ASTE) department has engaged in collaborative activities with agricultural equipment dealer/factory training programs to encourage faculty professional development and the development of curriculum innovations for student laboratory experiences to promote troubleshooting skill development. Part of the collaboration has been generated through the development of an advisory board consisting of local dealerships. This advisory board provides recommendations for program curriculum and student development activities to keep the learning activities current with industry technology. Since 2006, the primary focus of this collaborative initiative has been precision agricultural technology troubleshooting. Tractor guidance systems, variable rate controllers and controller area network (CAN) bus systems laboratory aids were developed to enhance students' problem solving skills needed for industry employment. The ASTE department has provided professional support for industry technical seminars in the form of laboratory and classroom facility space and diagnostic tools for technician professional development. ASTE faculty attends these seminars to integrate industry technologies into laboratories. For facility usage, company donations to the ASTE department have ranged from complete functioning tractors to precision agriculture technology components. Results of these efforts have yielded increased interest from agricultural equipment companies for ASTE students to serve as interns as well as full time employment opportunities upon graduation. Student evaluations of course laboratories have shown positive gains on technical content improvements and troubleshooting practicums. Continued efforts are being made to work with local and regional dealerships to revise curriculum, improve laboratory experiences and preparation for industry employment.

**Look into the archives of the  
NACTA Journal:  
[www.NACTAteachers.org](http://www.NACTAteachers.org)**

093

### Assessment of the Multicultural Scholars Program at Oregon State University

Aaron J. McKim, Kate Field, Wanda Crannell, Larry Curtis, Dave Stone and Jonathan J. Velez  
Oregon State University

The Multicultural Scholars Program (MSP), funded by the National Institute of Food and Agriculture (award #2010-04919), is intended to encourage first generation, minority students to pursue careers in Science, Technology, Engineering and Mathematics (STEM). Participants in the MSP are required to pursue a degree in Bioresource Research (BRR) at Oregon State University. Enrollment in this program includes scholarship funding, research projects and summer internships. The goal of this research is to assess the effectiveness of the MSP program. Longitudinal data are reported for a total of six MSP students who entered the program in 2011. Data were collected at the mid-point of their freshman career and again at the mid-point of their sophomore year. Seven areas of student success were measured: social and cultural identity, family encouragement, academic self-efficacy, self-efficacy, personal goal orientation, university support and knowledge of research. This study found a decrease in student's scores in the following areas: social and cultural identity, family encouragement, academic self-efficacy, self-efficacy, personal goal orientation and knowledge of research. The largest decrease was found in social and cultural identity, -0.58 on a 6 point scale. This decrease identified a need for intervention strategies for the 2011 MSP cohort to strengthen their social and cultural identities. The one area of increase was in students' perception of university support which increased 0.12 on a 6 point scale. These findings indicate a heightened perception of a variety of factors among MSP students during their freshman year which diminishes as they go through their college career.

095

### Impacts of the EARTH Program on Student Perceptions of Sustainability

Kevin Duerfeldt and Cynthia Haynes  
Iowa State University

The EARTH (Education and Resiliency Through Horticulture) program is a service-learning, school gardening initiative at Giffit Hill School, St. John, U.S. VI. Twenty-three undergraduate students were surveyed to determine the impact of the EARTH program on their experi-

ences in St. John on their perceptions and awareness of sustainability and conservation practices. Twenty-one students responded (91% response rate) to the 27-question survey administered in March 2013. Ninety-five percent of students agreed or strongly agreed that they learned a lot about conserving resources. Almost 81% agreed or strongly agreed that they practice sustainability more often at home and 85% agreed or strongly agreed that they look for ways to limit wasteful uses of resources like water. Yet, when prompted with "I reduce, reuse and recycle the same now as I did before my visit to St. John." 47.6% of respondents disagreed, 38.1% agreed and 14.3% strongly agreed. Some student comments include: "I have a better idea of conservation and how important resources are...", "It has emphasized the meaning of 'place-based'...That is something that I can apply to my personal life and profession...", "...it was educational to see how the people there have to adapt to the landscape water shortage and pests in order to have a successful crop."

100

### Cultivating Opportunity: Community Action Projects in the Civic Agriculture and Food Systems Minor CAPstone Course

Susan F. Clark and Jenny Schwanke  
Virginia Tech

Authentic community partnerships with university academic programs foster student engagement and learning that translates into positive community impacts. The Civic Agriculture and Food Systems (CAFS) minor provides knowledge that reflects six core values: food security/sovereignty, civic engagement/democratic participation, strong local economies, ecological stewardship, healthy people/communities and collaborative teaching and experiential learning. The culminating CAPstone course is an experiential community-based course that focuses on implementation of a community action project (CAP) related to civic agriculture-food systems. Students work in partnership with community stakeholders to design, implement and evaluate a project in partnership with a community organization that enhances community capacity. Upon completion of the course students are able to 1) understand how to build community capacity, 2) identify, develop, maintain community partnerships and promote principles of good practice, 3) refine, implement and evaluate a community action project and 4) apply participatory research methodologies to develop CAP design, evaluation and dissemination. Students specifically align CAPs with the community capitals framework and the minor's core-values. A total of 13

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students have completed CAPs with diverse community stakeholders including the Hale-Y Community Gardens (landscaping, cook stove, edible and demonstration gardens), Rolling Fork Farm (grape and tea production) and the Smithfield Student Garden (garden foodshed). Other CAPs included educational agriculture around children's gardens or civic agriculture. Students participated in a community engagement conference that showcased their completed CAPs accomplishments to the larger community via interactive poster sessions. The capstone experience continues to be recognized for strengthening real-world civic engagement between student and community partnerships.

102

### **Companion Planting: The Reciprocity of Community-University Partnerships in Civic Agriculture and Food Systems Minor**

Jenny Schwanke  
Hale-Y Community Garden

Rial Tombes  
Virginia Tech

Sally Walker  
Glade Road Growing Farm

Susan Clark  
Virginia Tech

Multi-year community partnerships with students concurrently enrolled in the Civic Agriculture and Food Systems (CAFS) minor generate genuine community development and beneficial reciprocity between the university, community partners and students. The partnerships expand the capacity of all entities. Community partners (CP) work with the university courses' teaching teams bringing community perspectives to classroom concepts. A range of partnerships gives students options to develop their particular interests. The principle CPs for CAFS include: 1) The Hale YMCA Community Garden - an NGO run community growing space; 2) Kentland Dining Services Garden - a university teaching/production garden and; 3) Glade Road Growing - a for profit market garden operation. As students advance through the minor, they take growing responsibility for connecting the university and their selected community partner. On-farm, the CP creates a framework for real world civic engagement, creating a process whereby students move from basic skills and an introduction to garden operations, to needs assessments, understanding CP strengths and roles within the community and ultimately

engaging in true community development. The CP encourages and supports returning students in training incoming students, building the student base of information and passing on knowledge and skills to new students. The CP's environment serves as a living laboratory for the university. The student experience culminates in designing and implementing a community action project (CAP) for the partner. Mindfulness in conceptualizing and implementing the CAPs creates valued projects that can be built upon by future students and feasibly sustained by the community partner.

118

### **An Examination of Student Learning: Test Preparation and Test Anxiety**

Martie Gillen  
University of Florida

The purpose of this pilot study was to examine student learning in undergraduate social science research methods course. Specifically, relationships between student's test preparation behaviors, test anxiety and grades were examined. An adaptation of the Test Anxiety Inventory (Taylor and Deane, 2002) was administered to students during the fall 2012 semester (control group) and spring 2013 semester (experimental group). Three exams were given during the fall semester. The same exams are being used in the spring semester. To date, one exam has been given during the spring semester. In general, each exam consist of approximately thirty multiple choice questions and three application questions. The experimental group was allowed to use one page of handwritten notes during each exam. Students completed the survey in class immediately following the exam to increase the likelihood of accurate recollections. Preliminary findings indicate no significant difference between semesters in mean scores for exam one.

119

### **Pre-Health Collection: Resources to Enhance Your Instruction**

Martie Gillen  
University of Florida

The Association of American Medical Colleges (AAMC) has recently redefined its understanding of the expectations of students pursuing medical degrees. This has resulted in a revision of the MCAT and a vision of a recommended undergraduate curriculum based on pre-

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health competencies. Pre-Health iCollaborative is a new project established by the AAMC to provide a free online, searchable collection of instructional resources to support undergraduate faculty of all science disciplines who work with students preparing for careers in health professions. Teaching resources, effective practices and strategies for including pre-health competencies into existing courses will be made available to faculty at all institutions. Sample materials can be found at [www.mededportal.org/icollaborative/pre-health](http://www.mededportal.org/icollaborative/pre-health). In this presentation, we will describe the status of the project, with a focus on how educators can contribute to the success of this project and benefit from the shared instructional resources. After attending this session participants will be able to utilize the shared instructional resources to enhance their undergraduate teaching.

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### **Center for Education and Training in Agriculture and Related Sciences (CETARS): An interdisciplinary Approach from K-12 to PhD to Work in Problems Facing Agriculture**

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CETARS is a \$1M/year project funded by USDA-NIFA-HSI program with matching support from UPRM that provides meaningful research training and outreach activities to 55 undergraduate and graduate students from agriculture, engineering and related disciplines. This Center is the result of an interdisciplinary and collaborative effort between five Hispanic serving institutions aimed to provide innovative-high impact research training in agriculture and related sciences and to consolidate a pipeline by attracting, retaining and graduating talented individuals from K-12 to the PhD level, while supporting their actual placement in Agriculture-related positions. The first year CETARS outcomes included the following: preparation of school gardens at 10 participating K-6

public schools and weekly follow-up visits to offer educative lectures; Globe Program activities, where 12 UPRM students and 20 K-12 teachers from 12 participating schools were hands-on trained on soil and water quality; Science on Wheels demonstrations, which impacted over 500 K-12 students; active participation of 40 undergraduate and graduate students in research projects leading to 12 publications in peer review journals including four cover pages; involvement of fifteen CETARS students in paid internships at USDA and related agencies. In turn, three CETARS students graduated with B.S. in Chemistry and one with BS in Agriculture. Dissemination activities included 60 oral or poster presentations at the symposia organized by the Center and six outreach activities about agricultural nanotechnology involving 600 K-12 students in El Paso, Texas. These activities reached the media by radio and TV interviews and highlighted reports in the UPRM campus webpage.

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### **Fed Beef Industry Employers' Expectations of Employees with Graduate Degrees**

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In the rapidly changing business world of the 21st century, partnerships between industry and the educational institutions that produce their future employees are vitally important. The purpose of this study was to determine skills, knowledge and abilities needed by graduate students entering the profession of the fed beef industry as identified by industry employers. The target population of this study consisted of Plains Nutrition Council (PNC) members who make hiring decisions within the fed beef industry (N=129). This group consisted of both private industry employers and post-secondary education faculty. The survey instrument was a self-administered questionnaire adapted from Graham (2001). The instrument was designed to measure employer perceptions of graduate student preparation level upon entering the industry and to describe perceived importance of certain skill sets applicable to the profession. Other items assessed were relevant course work, valued life skills and future trends foreseen within the profession. Means and standard deviations were used for description of the data. Additionally mean weighted discrepancy scores (MWDS) were



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calculated by taking the importance rating minus the preparation rating and multiplying it by the importance rating. Of 41 individual skills employers assessed for student preparation, the ability to speak a second language was the only item where students were believed to be unprepared. Fed beef industry employers who participated in this study valued the importance of integrity, honesty and dependability over all other skills. Other skills employers valued highly included: students understanding and following directions, listening, initiative and problem solving.

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### **Innovative Classroom Strategies that Prepare Graduates for Success in the Workplace**

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In our increasingly competitive and rapidly changing world, it is critical that college graduates enter the workforce with the requisite skills for lasting success. However, studies suggest that employers are increasingly searching for graduates possessing core applied skills: creative and critical thinking, interpersonal, teamwork, communication, leadership and self-management skills. Employers have identified a workforce readiness gap that must be bridged by company investment, leading researchers to ask, "What are the best classroom strategies for preparing graduates for workforce success?" This presentation explores innovative instructors' classroom strategies for best developing students' employability skills. This qualitative study used interpretive and constructivist approaches to examine instructors from multiple departments within Virginia Tech's College of Agriculture and Life Science who were noted for teaching excellence. The results have implications for instructors in varied disciplines. When characterizing innovative instructors' teaching strategies, several themes emerged: demonstration of enthusiasm for student learning; willingness to experiment actively with new ideas for practice; approaching teaching with a guiding mentality rather than directing; fostering student ownership of learning; keeping abreast of new developments and practices; and possessing the time and resources to overcome barriers to change. Based on the findings, instructors are encouraged to focus on helping students become life-long learners by teaching how to prioritize and assess information, work in groups, solve problems and understand divergent perspectives. Instructors are encouraged to shift from a "know what" model of learning to a "know how to find what" model.

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### **Interactive Learning Assessment: Simulating Professional Practices**

Elizabeth Yakes, Andrea Cantarero, Tabitha McKay, Vanessa Svihla, Tim Castillo, Isaac Valdez and Justin Hertel

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Professional practices are challenging to teach and assess. Interactive Learning Assessment (ILA) is an online assessment that allows students to take on expert roles—e.g., dietitian—and learn content as they counsel virtual clients. We designed a case for students to practice using the Nutrition Care Process (ADIME: Assessment, Diagnosis, Intervention, Monitoring, Evaluation) to counsel a child with Down Syndrome. Participants -- undergraduate students in a 400-level nutrition course (n=15) -- completed the ILA case and a survey out-of-class in 2-3 hours. Embedded assessments and course exams provide data. We report descriptive statistics of learning and perceptions and qualitative analysis of pilot-testing. Students enjoyed learning about counseling this way and thought that ILA allowed them to learn about ADIME. They reported that they would use what they learned in other classes (57% strongly agree; 43% Agree) and in their future careers (79% strongly agree; 21% Agree). Students agreed the case resembled a real life situation (50% strongly agree; 50% Agree) and felt that they mastered the case content (50% strongly agree; 43% Agree). They made use of feedback: "*This helped me to really think about the questions instead of focusing on whether or not I would get full credit for being right.*" Students who chose incorrect answers on the ILA still performed well on the delayed post-test. The average exam grade for ILA-related questions vs. other case-related items covered in-class was 98% vs. 89%. Our ongoing work includes developing and testing open-source adaptable cases that may be used in various disciplines.

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### **Developing Reflective Practitioners through VoiceThread Technology**

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Agricultural teacher education works towards the development of knowledge, skills, professional behaviors and dispositions that will ensure that teacher candidates are well prepared and meet all university, state and national

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expectations of teacher candidates. An integral part of the development process is capturing, assessing and reflecting on the teaching performance of teacher candidates. While traditional approaches have teacher candidates capture thoughts through written reflection, new technology tools have afforded new experiences for promoting and sustaining reflection that is not place bound. VoiceThread is a Web-based application that allows users to create a shared presentation as a media album that visitors can asynchronously comment on either by text, voice, or video. Teacher candidates participated in seven contextual teaching laboratory exercises in application of concepts learned in the methods course. Teacher Candidates were responsible for uploading individual and peer feedback via VoiceThread to uploaded videos weekly. For purposeful and constructive reflection to occur, the teacher candidate was responsible for watching their recorded teaching session, reviewing their performance and engaging in reflective conversation via VoiceThread. The VoiceThread allowed flexibility to work around teacher candidate schedules. Students expressed their appreciation of the ability to make specific comments at specific time points while watching their video. There was a sense of community and collaboration that was fostered among the teacher candidates in providing constructive feedback to one another and providing suggestions on alternative teaching approaches and points of improvement. Future plans are to continue the use of VoiceThread as a reflection tool for teacher candidates.

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### **Developing a Distance Education Lab Course in Plant Biology**

Chad V. Jordan, James E. Mickle and Donna S. Wright  
North Carolina State University

A distance education (DE) section of PB 200, Plant Life, an introductory plant biology course for mixed-majors was developed to reach nontraditional students. Students enrolled in this asynchronous offering complete two online lecture modules per week, have weekly quizzes and take exams using Moodle as the course delivery platform. Students are also required to complete a series of eight hands-on distance labs using a combination of materials supplied in a lab kit and a short list of low-cost items that can be found at home or a grocery. Lab activities have been modified from the on-campus course to be safely carried out in the home environment. Protocols are provided for each lab and students submit hard copy write-ups with photographs of lab activities for grading. The labs are Plant Macromolecules, Growth & Develop-

ment, Anatomy & Morphology, Biotechnology, Photosynthesis, Transport, Ecology and Plant Diversity. NC State DELTA (Distance Education and Learning Technology Applications) multimedia specialists worked with course instructors to generate more than three-dozen learning objects to supplement the lectures and labs, including online pictorial flashcards, an animation of plant secondary growth patterns, a virtual slide viewer and numerous descriptive videos of plant species. These new materials are also used in other on-campus courses and many are available for use by other institutions. Students from six states have been enrolled in the course over the four semesters it has been offered, including teachers, government employees and students at other institutions without plant biology courses.

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### **Challenges and Opportunities in Developing the Student Farm as an Educational Resource: A Nationwide Delphi Study on Student Farms**

Stephen Ratasky, Michelle Schroeder-Moreno and K.S.U. Jayaratne  
North Carolina State University

With the increasing number of sustainable agriculture programs nationwide, much of the inquiry based educational activities occur on the university "student farm." North Carolina State University (NCSU) is developing a new "student farm" facility, the Agroecology Education Farm, which aims to serve a broad audience beyond the campus students. The major community audiences include K-12 students, Extension agents and local business partners. Therefore, in effort to strategically develop a new student farm at NCSU, we surveyed 24 prominent college and university student farm programs nationwide through a three-round Delphi survey method process. The purpose of this study was to determine the factors significant in developing a student farm as an effective educational resource for campus students and the greater community. The collective experiences of the survey participants used in this study helped identify a variety of student farm components including: defining a "successful" student farm, innovative student and community education and outreach strategies, funding strategies and current challenges commonly faced on student farms. Results from this study indicate the overwhelming importance of both a competent and knowledgeable student farm manager and support staff; educational strategies that emphasize interdisciplinary and experiential learning; and the need for increased community engagement and institutional support. The findings from this study are useful for both establishing new

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student farms and using them as more effective educational resources for teaching sustainable agriculture broadly to both students and community.

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### **Separating the Wheat from the Chaff: Negotiating Contested Terms in Agriculture Education**

Jacob N. Barney, Peter E. Ziegler, Steven C. Hodges, Cynthia M. Wood, Thomas P. Kuhar and Johanna Criscenti  
Virginia Tech

“Ecological Agriculture: Theory and Practice” is a team-taught, science-based junior-level course that is one of four required courses for the Civic Agriculture and Food Systems (CAFS) minor at Virginia Tech. In alignment with CAFS’s commitment to developing and strengthening economically, environmentally and socially sustainable agricultural systems, the goal of this course is to provide students a systems-based approach to production agriculture within the context of a complex working ecosystem. The course has been offered three times and has evolved to meet a variety of challenges, including students with little to no background in agriculture; content breadth versus depth; an appropriate mix of theory and practice; and unpacking loaded terms like “sustainable,” “organic,” “natural,” “herbicide” and “GMO” in an ecological context without disregarding the sociological and ethical factors. Often students enter the course with entrenched notions of whether these terms are good or bad without an underlying scientific justification. Thus, course pedagogy has evolved with each iteration to challenge students to think critically about important agricultural concepts and to provide skills and information needed to make informed decisions about ecological agriculture. To facilitate this critical thinking, students are challenged with a semester-long project to develop a virtual working farm for which they must outline their ethos and management philosophy (e.g., certified organic, conventional, hybrid). Students manage soil resources, pest loads, crop rotations, livestock and profits. Thus, students are asked to question their previous notions of agriculture by balancing their ecological ethos with the reality of maintaining a viable, working farm.

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### **Cultural Adaptation: Study Abroad in Swaziland**

Nathan W. Conner and T. Grady Roberts  
University of Florida

Short-term study abroad programs are often used as a method of internationalizing the undergraduate curriculum and provide students with an academic learning experience that could not be obtained on the students’ home campus. However, short-term study abroad programs in the agricultural and life sciences often do not place emphasis on the cultural learning that can take place during the program. The purpose of this study was to explore how College of Agricultural and Life Sciences students at the University of Florida reacted to the culture during a short-term study abroad program. Fifteen wildlife ecology students participated in a 19 day program located in Swaziland, Africa. The focus was on Africa’s wildlife. Data was collected through the use of the following methods: pre-travel questions, post-experience questions, reflective journaling and photographs with captions. The data in this qualitative study was analyzed using the grounded theory analysis method and utilized open coding, axial coding and selective coding. Trustworthiness was addressed through triangulation, referential adequacy materials, thick description and the use of a methodological journal. The following stages of cultural adaptation emerged: initial feelings, cultural uncertainty, cultural barriers, cultural negativity, group dynamics, academic and career development, feelings throughout the program and cultural growth. Participants uniquely experienced the stages of cultural adaptation in a non-linear fashion throughout the program. Study abroad facilitators should develop programs that educate students about the possible stages of cultural adaptation that might be experienced, as well as provide time for the students to reflect over their cultural experiences.

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### **Innovative Program Development in Agriculture through Distance Education in the Insular Areas**

Christy L. Vineyard  
University of the Virgin Islands

The CariPac Consortium is a group of six institutions of higher education in the United States insular areas in the Caribbean and Pacific. The insular institutions face challenges that mainland institutions do not, such as limited access to faculty, brain drain, remoteness, high transportation costs and a limited technology infrastructure. However, these insular institutions have overcome some of these challenges through innovative teaching techniques and the sharing of resources. This presentation will document how the six insular institutions have progressed in overcoming their challenges while focusing on program development, student retention and faculty

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development in the agriculture field. Data will show some programs have flourished through increases in course offerings and student enrollment while other programs have developed a technology infrastructure that will result in a more efficient use of physical and human resources. Furthermore, strategies developed by the CarriPac Consortium to support each other include the sharing of curriculum and faculty development resources through a combination of high tech and low tech approaches to meet the needs and technical capabilities of the consortium members. Through the concerted efforts of this consortium and innovative teaching strategies the agriculture industry in the insular areas has begun to be rejuvenated and continues to have a positive impact on local communities as well as student retention. It is believed the synergistic benefits achieved by the consortium are valuable and additional benefits can be attained through an open dialogue in a forum of other scholars.

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### Smart Pens for Group Discussions and Assignments

Tracy A.O. Dougher  
Montana State University

Group assignments and discussion have become more prevalent in the classroom as peer instruction and active learning takes root. Instructor oversight can be challenging as each group has their own discussion. Smart pens record both audio and writing into a format that can be shared digitally. For the individual, smart pens are an excellent tool for note-taking in lecture and conference settings. For groups, these recordings not only capture the student's final thoughts as they write down their consensus, but also the discussion behind their answers. The instructor can then listen to and view the students' answers as well as record (both oral and written) more information and correct answers on the digital page. These recordings can then be posted for student review and further discussion. A horticulture class utilized these pens in group discussions in several ways: each group simultaneously solving the same problem, each group solving different problems, each group in series solving a piece of the problem and each group producing a problem for the other groups to solve. A few issues with the smart pens needed to be addressed, such as background noise from other groups and taking time to learn the smart pen system. Student feedback was both positive and negative. While student discussions tended to be halting as they more carefully chose their words for the audio recording, students appreciated being able to return to the group notes for further assignments and review in their own time.

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### Trials and Triumphs of Delivering an Interdisciplinary Program: Spanish for the Agricultural Sciences

Melanie Miller Foster and Alex Skucek  
Penn State University

Spanish for the Agricultural Sciences is an interdisciplinary program with collaboration from the Department of Spanish, Italian and Portuguese and the College of Agricultural Sciences at a land-grant university. The purpose of the program is to provide students the opportunity to develop Spanish language skills within their relevant disciplinary context. The Spanish for the Agricultural Sciences three-course series culminates with a month-long immersion experience in Costa Rica. As with any interdisciplinary effort, there are both trials and triumphs associated with offering such a unique program. Interdisciplinary collaborations require time and energy and obligate both parties to accept the culture of another discipline. As with any team-teaching effort, a relationship of trust must be developed and each instructor must be willing to relinquish a little control in the classroom. Additionally, the instructors must cope with the fact that they are not an expert in both subjects that are taught in the course. However, with such trials also come many benefits to students. An interdisciplinary language program is amenable to connecting student interests to what students do in the language classroom and allows students to fully understand the interconnectedness of language and culture. Both of these objectives are difficult to achieve in the traditional language classroom or within the context of a specific major in the agricultural sciences. Despite the challenges of crossing disciplinary boundaries, an interdisciplinary program such as Spanish for the Agricultural Sciences is a worthwhile effort because of the unique student learning opportunities.

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### Crossing Discipline Boundaries – The Role of Gamma Sigma Delta Honor Society of Agriculture: Past, Present and Future?

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Charlene Wolf-Hall  
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Texas A&M University

This presentation describes the past and present of Gamma Sigma Delta - Honor Society of Agriculture (GSD) and explores questions on the future of an agricultural honorary to promote crossing discipline boundaries. Gamma Sigma Delta is an international honor society dedicated to recognizing individual accomplishments as a student, faculty, alumnus or industry leader in agriculture and related sciences. Currently, 52 chapters have been installed at universities throughout the United States, Puerto Rico, the Philippines and Honduras. Activities of GSD cross discipline boundaries as local chapters are generally led by an interdisciplinary executive committee and conduct activities across all disciplines within agriculture and related sciences. Traditional Gamma Sigma Delta activities - chapter business meetings, new member initiation ceremonies and awards banquets - promote crossing discipline lines to work together to recognize students and peers. In addition, active local GSD chapters conduct a variety of across discipline activities including: undergraduate careers fairs, undergraduate research competitions and interdisciplinary seminars and lecture series. International GSD fosters collaborations across disciplines by recognizing new chapter activities and providing funding through chapter enrichment grants. However, there are an increasing number of inactive chapters leading the executive leadership to ask questions about the future of the structure and communication systems. To explore the future the following questions will be presented for discussion: 1.) Is there a continued value of Gamma Sigma Delta recognition, 2.) What are the limitations to maintaining an interdisciplinary society focused on recognition of achievement and 3.) Are there new models for interdisciplinary recognition societies?

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### **The Development of Best Practices in Mentoring Undergraduate Research**

Christopher M. Estep, Byron C. Housewright and Mary R. Bennett  
Sul Ross State University

The need for and benefits of undergraduate research experiences in higher education have been highly touted. The National Research Council specifically addressed colleges of agriculture and recommended that research opportunities be provided to undergraduate students. While much literature describes the benefits of undergraduate research, there is a dearth of literature to direct faculty members in mentoring undergraduate researchers. Therefore, the purpose of this study was to determine best practices in mentoring undergraduate research. To accomplish the purpose, a Delphi method was utilized to collect information and develop a consensus from a group of experts. The experts that comprised the sample (N=28) were faculty members who had previously, successfully mentored undergraduate research projects. In the first round of the Delphi method, participants were asked to provide answers to two open-ended questions regarding practices that help students accomplish tasks and practices that have helped faculty members develop as mentors. In the second and third rounds of the Delphi, participants were asked their level of agreement with the statements generated from the first round. The top-rated practices indicated by participants that helped students accomplish research tasks were: 1) being a good listener, 2) giving students' responsibility for their own success, 3), having regularly scheduled face-to-face meetings and 4) having good support from the undergraduate research coordinator. The practices that faculty rated highest in helping them become better mentors were: 1) support from the undergraduate research coordinator, 2) regular interactions with students, 3) reading, editing and making suggestions on several drafts of the paper and 4) being available for assistance and counseling.

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### **The Relationship of Professor/Student Rapport with Undergraduate Students' Change in Motivation and Engagement**

Christopher M. Estep  
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T. Grady Roberts  
University of Florida

Undergraduate student motivation and engagement have been pervasive problems in higher education. To improve motivation and engagement in the classroom, researchers have suggested that college of agriculture faculty members provide more active, engaging instructional interventions. However, one component overlooked in these recommendations has been the interper-

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sonal relationships that students develop with their instructors. Motivational research has suggested that interpersonal relationships between instructors and students can help improve motivation and subsequently classroom engagement. The purpose of this study was to examine the relationships between professor/student rapport and change in motivation and engagement among college of agriculture students at the University of Florida. Rapport was measured using the Professor/Student Rapport scale, while change in motivation and engagement was measured using the Motivated Strategies for Learning Questionnaire. To establish change in motivation and engagement a post then pre design was employed. The constructs associated with motivation were student expectancy for success and values/goals, while the engagement constructs were cognitive/metacognitive strategy use and resource management strategy use. Results showed slight positive changes in each of the motivational and engagement constructs from the beginning of the semester to the end. Additionally, rapport had low positive correlations with change in each of constructs, indicating that when students perceive better rapport with their instructors they have greater positive change in motivation and engagement. One interesting finding of the study was the relationship between the motivational constructs and the engagement constructs. Congruent with previous literature, change in motivational constructs had low to moderate, positive correlations with change in the engagement constructs.

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### **Understanding Alumni at Texas Tech University for Increased Alumni Association Membership and Involvement**

Faith Jurek, Chancy Price, Robert Jones, Brent Aiken and Erica Irlbeck

Texas Tech University

When recruiting young alumni to the agricultural education and communication department's alumni association at Texas Tech University, it is important to understand the current membership so that targeted recruitment efforts for future members can be made. Researchers set out to gain descriptive data of the current membership, understand what they would like to gain from their membership and explore other factors that influence alumni involvement. A researcher-developed, online survey instrument was emailed via the department's alumni listserv; 83 alumni completed the questionnaire. More than 68% of respondents were 45 years or older and approximately 64% were male. Only 20% of participants graduated after 2007. Participant job titles varied from

agricultural science teachers to CEOs and more than half earned an annual salary of \$60,000. Of the participants, 60% said their current career reflects their undergraduate or graduate degree with 66% of participants' degrees in agricultural education. By understanding who the alumni of the department are, the alumni association can provide targeted benefits for all audiences. As added membership benefits, participants said they would like to see a monthly newsletter, news from the department and college, more networking opportunities and additional scholarships for students. Although enhanced benefits and communication will not ensure increased association membership, they can lead to increased participation resulting in a strengthened image for the association. Further research should focus on understanding which added membership benefits would satisfy current alumni wants and draw new membership interest.

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### **Predicting the Quality of an Undergraduate Course Using the IDEA Survey**

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The Individual Development and Educational Assessment (IDEA) survey is a mechanism that uses student feedback to assess and improve teaching, learning and the higher education process. The IDEA survey contains questions pertaining to course objectives, teaching methods and styles and a description of the course with the goal of determining the quality of the instructor and overall course. The objective of this study was to determine which of the survey questions were most important when predicting the quality of the course in undergraduate courses. A step-wise regression analysis was performed on data from 27,423 courses spanning a six-year period. Eight of the 43 questions on the survey were not included in the analysis because they involved students' preconceptions that could not be affected by the instructor during the course. This analysis indicated that 29 of the 35 questions entered into the model were significant. These 29 questions had an  $r^2$  of 0.8042. The top three questions with positive relationships towards predicting the quality of the course were: 1) students made progress on developing specific skills, competencies and points of view needed by professionals in their field, 2) the instructor introduced stimulating ideas about the subject and 3) the instructor explained course material clearly and concisely. In conclusion, an instructor can improve the quality of a course by clearly presenting material while introducing stimulating ideas about the subject

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and by ensuring that students gain the skills and knowledge needed by professionals in their field.

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### **Google Hangouts: Keeping Connected through Technology**

Caroline Sheffield, Wendy J. Warner and D. Barry Croom  
North Carolina State University

During the student teaching experience, many student teachers feel disconnected from the university (Bain, 1990) and consider their cooperating teacher to be their sole source of support, guidance and information (Schlagal, Trathen and Blanton, 1996). Fortunately with the ease and accessibility of technology, different software programs can be utilized to assist with efforts to increase communication and collaboration between a student teacher, members of their student teaching cohort and university faculty members. Within a distance education course taught for student teachers at North Carolina State University, the use of Google Hangouts has been implemented for student teachers to remain connected with instructors. This particular study used a survey instrument to gather data from current agriculture student teachers (n=19). Participants noted several benefits of the use of Google Hangouts including seeing other classmates, more in-depth conversations, ideas for teaching classes, how to address problems and being able to speak freely. Sixty-four percent (n=12) of respondents reported Google Hangouts was very easy or easy to use. Eighty-nine percent (n=17) of respondents felt the use of Google Hangouts helped address concerns or issues experienced during student teaching. Other findings to be presented include future class discussion topics using Google Hangouts and students' overall impressions when using Google Hangouts as a method of communication for class. Faculty members from across disciplines may also find the use of Google Hangouts to be an effective method of interaction with students, especially in distance education courses.

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### **Teaching the Unknown through Flipped Classroom Techniques**

Emily Buck and Jeff Hattey  
The Ohio State University

International experiences are a great way to engage our students into curriculum and develop them personally. As we plan these rich experiences we are required to ensure our students have a general knowledge of customs and what they can expect abroad, but the one thing that is the most difficult to prepare them for is the language barrier. As content experts most of us have spent years perfecting our knowledge in areas of science and many of us haven't had the time to become language experts. While preparing students for a study tour of Ecuador we were challenged with the task of making the students comfortable with basic Spanish. After a few years of traditional repeat after me methods we knew there had to be better methods to teach them a subject we ourselves aren't comfortable with. Thus, we utilized the concept of a flipped classroom and put the language learning back on them. Using online video technology students engaged each other outside class with weekly Spanish conversations. Being paired up with a new peer each week, students were asked to create videos practicing terms we suggested through conversation. As the semester went on students started to own this assignment and videos became creative and engaging. Feedback showed the students enjoyed the technique and felt they came away comfortable enough to engage in simple conversations in country. A side benefit that we didn't anticipate was the positive group dynamics this activity started which enhanced the in country experience as well.

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### **Bringing Disciplines Together: Using the PERT Model to Reinforce Transdisciplinary Concepts during an Intensive Student Camp Experience**

Matthew J. Shultz and W. Wade Miller  
Iowa State University

Sitting at the crossroads of social and applied sciences, agricultural education faculty are uniquely situated to facilitate transdisciplinary collaboration. This unique position provided the ideal university setting for a nine day intensive camp for 11th and 12th graders to learn about global warming as part of a USDA Coordinated Agricultural Project (CAP). Specifically, the purpose of the camp was to acquaint students with (1) modern agricultural practices, (2) strategies for mitigating agriculture's impact on the environment and (3) strategies for adapting agricultural production to climate shifts. The purpose of this presentation is to describe the pre-reflection, reflection, experience and transfer model (PERT) and its use within this transdisciplinary, secondary/post-secondary camp and describe its potential application to other simi-

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lar settings within the post-secondary realm. The camp brought together 17 faculty and staff presenters from 12 programs, housed in six university departments. Activities included classroom presentations, field and laboratory demonstrations and hands-on experiences. With the help of a workshop on effectively developing interactive presentations, student participants created and delivered capstone presentations with the aim of transferring their newfound knowledge to their fellow classmates in their home high schools. Although confounding variables exist, evaluation results revealed a statistically significant ( $p < .05$ ) difference in student preference for workshop and presentation activities which included a pre-reflective component as compared to those that did not. Faculty presenters in the program provided positive feedback on the use of the PERT model and advocated for its use in future iterations of the camp.

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### **Assessing Civically Engaged Curriculum: Civic Agriculture and Food Systems Minor at Virginia Tech**

Jennifer Helms and Susan Clark  
Virginia Tech

The Civic Agriculture and Food Systems Minor (CAFS) at Virginia Tech (VT) is an experiential-based curriculum implementing interdisciplinary teaching and learning through collaborative teaching teams. Faculty ( $n=12$ ) represent 6 departments in the College of Agriculture and Life Sciences (CALS) collaboratively working with students ( $n=52$ ) that represent VT's 8 colleges. The VT community-university partnerships are enhanced through CAFS through engagement of a diversity of partners representing areas of civic agriculture in the new river valley. Currently the CAFS minor is in the process of program evaluation and assessment, framed through a participatory and holistic lens. Curriculum mapping as an assessment tool is integrated into the program's on-going evaluation process. It specifically includes alignment of: 1) CAFS programmatic goals, 2) student learning outcomes and 3) CAFS core values in relation to course content and learning objectives. This presentation will introduce: 1) assessment methodology used in the program evaluation process, 2) assessment outcomes of the four core courses in the minor (Introduction to Civic Agriculture, Concepts in Community Food Systems, Ecological Agriculture and Capstone Course) and 3) overarching findings that lead to action items for overall program enhancement. Innovative curriculum that crosses disciplinary boundaries creates unique challenges to a holistic programmatic assessment plan in-

clusive of evaluation and measurement of learning outcomes. The overarching objective of this presentation is to share the process, outcomes and action of the CAFS program evaluation to enhance the scholarship of assessment in interdisciplinary curricula.

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### **Crossing Disciplinary Boundaries: Exploring Current and Future Roles of Graduate Students as Knowledge Producers and Educators in Higher Education**

Jennifer Helms, Sarah Misyak and Johanna Cricenti  
Virginia Tech

The National Academies of Science report (2009), *Transforming Agricultural Education for a Changing World*, addresses the role of land grant universities in producing graduates adaptable to the dynamic nature of agriculture and life sciences. Graduate students, through graduate teaching and scholarship opportunities, need to be prepared to fill the role of faculty members in progressing the values, purpose and professional practices of academic programs in the fields of agriculture and the life sciences through a range of disciplinary and interdisciplinary programs of study. Through dialogue three graduate students will explore the role and learning outcomes of graduate students participating in the Civic Agriculture and Food Systems minor at Virginia Tech. Using this case as a backdrop, the students will explore the current and future roles of graduate students in academic programs across the country and how graduate student involvement can also make valuable contributions to pedagogy during their academic tenures. Issues that will be explored include: collaborative, interdisciplinary work by graduate students; the role of graduate students in serving as liaisons to the greater community; the role graduate students play in curriculum development and teaching; and the ways in which graduate students can be successful in locating professional employment opportunities following their graduate education.

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### **Preparing to Teach Agricultural Education: An Examination of Student Teachers' Instructional Plans and Planning**

Wendy J. Warner and Joy M. Marshall  
North Carolina State University



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Across our disciplines, it is interesting to consider how students plan for and complete assignments and presentations. One of the key assignments in teacher preparation coursework is the development of instructional plans to guide teaching practice. The purpose of this research study was to examine the planning practices by North Carolina State University student teachers. This descriptive census study used a survey instrument to gather data from agricultural education student teachers (N=27) at the mid-semester seminar. Thirty-seven percent of the participants (N=10) estimated spending 6 - 10 hours a week on instructional planning while 30% (N=8) spent 1 - 5 hours and 22% (N=6) spent 16 - 20 hours. When asked about the type of instructional plans prepared on a regular basis, 41% (N=11) indicated they prepared both daily plans and weekly plans. Thirty-three percent (N=9) prepared daily lesson plans and 15% (N=4) prepared weekly lesson plans. Participants were asked to identify the components they used in instructional plans and materials/resources used while planning. The components most frequently included in instructional plans were Content Material/Subject Matter (N=24), Summary/Closure (N=22), Estimated Time Required (N=22) and Interest Approach/Anticipatory Set (N=21). The components least frequently included were Modifications for English Language Learners (N=3), Standards (N=3), Situation (N=3) and Purpose or Broad Goal (N=4). Forty-four percent (N=12) indicated they frequently and 26% (N=7) indicated they sometimes use curriculum materials when planning. Other findings to be presented include influential factors in instructional planning and suggested topics to be included in a unit on instructional planning.

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### **Developing a Pipeline of Agriculture Students: Starting and Nurturing a Two-Year Agribusiness Program**

Dixie Watts Dalton  
Southside Virginia Community College and Virginia Tech

Few two-year colleges in Virginia offer agricultural degrees that will transfer to four-year colleges of agriculture. Southside Virginia Community College (SVCC) developed an agribusiness associate's degree with the goal of creating a pipeline of agriculture students to enter four-year agriculture programs. The degree is interdisciplinary in nature, including coursework in animal science, plant science, agribusiness and agricultural policy. The objective of the presentation is to provide key steps, as well as potential barriers, to developing a successful agribusiness (AGR) associate's degree. An assessment of activities to increase recognition of the program and to

increase student enrollment was conducted. Visits to high school classes, interaction with teachers and guidance personnel, participation in FFA events, presentations at public forums, utilization of media outlets and participation in festivals and career fairs were assessed for contributions to program growth. The SVCC program has grown from two courses (with two and five students) in the fall of 2010 to seven courses with as many as twenty students in the spring of 2013. Thirty-two students have enrolled as agribusiness majors. Five students who took AGR courses successfully transferred to Virginia Tech, with three more pending and one pending to Virginia State University. The first agribusiness associates degrees were awarded in the spring semester. Visits to high school classes and personal interaction with teachers and guidance counselors proved to be among the most effective mechanisms for increasing student enrollment. Lessons learned at SVCC can be applied to two-year and four-year schools elsewhere.

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### **Sharing What Works: Best Practices of Collegiate Agricultural Student Organizations**

Kristopher M. Elliott and Misty D. Lambert  
Oregon State University

Collegiate student organizations play a vital role in the college experience of undergraduate students. Ranging from very broad and diverse clubs to discipline specific organizations, these groups help foster a sense of community for many students. Many of these organizations develop a program of activities in the hopes of recruiting and retaining members, along with successfully realizing their respective missions. What are the strategies and best practices these clubs implement in order to remain successful? Through a focus group workshop, leaders of several Collegiate FFA chapters assembled to share the best practices taking place at the chapter level. The focus group was audio and video recorded, field notes were taken and artifacts were photographed in order to triangulate the data. The emerging best practices developed into three categories – operations, recruitment and retention. The best practices included clothing and apparel ideas, service events, assisting at FFA career development events, socials, scholarships, booths and marketing. Under each of these themes, several unique practices were shared. Under the marketing theme for example, one organization described a foldable business card, that when opened, included the club's purpose and description, event dates and contact information. Additionally, one club shared unique fundraising ideas including working athletic concessions, selling spices, Christ-

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mas wreaths and apparel. Club leaders' quotes summarize results of the focus group in a table with descriptions of the activities. The ideas gathered can be adapted for implementation by NACTA members who work with collegiate student organizations and clubs.

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### **An Evaluation of the Needs of a Nationally Affiliated Collegiate Agricultural Student Organization: Development of a Google Form**

Kristopher M. Elliott and Misty D. Lambert  
Oregon State University

Collegiate student organizations situated within agricultural colleges and universities are a vital component of the overall student experience. These organizations, ranging from honor societies and fraternities and sororities to discipline specific clubs (soils club for example) provide myriad opportunities for students and provide a service to the universities and colleges with which they are affiliated. Many of the agricultural student clubs at the collegiate level are connected to a national umbrella organization and, as such, are provided with resources and a sense of commonality from university to university. How well are these national organizations meeting the needs of the local chapters? Through a focus group workshop, leaders of a national agriculture student organization (Collegiate FFA) came together to discuss the needs that exist at the local level in hopes of guiding decisions at the national level. The focus group was audio and video recorded, field notes were taken and artifacts were photographed in order to triangulate the data. The data were analyzed and organized according to emerging themes. Through this qualitative examination, a questionnaire has been developed in Google Forms that is designed to help leaders at post secondary institutions determine the needs of their respective agricultural student organizations. Implementing this instrument and using the data collected would inform the national leadership of affiliated clubs and assist college leaders and student leadership councils in providing resources to their student organizations.

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### **Students Speak Out: How Should Universities Prepare Students for Study Abroad Experiences?**

Sarah G. DeLoach, Nicholas E. Fuhrman and Dennis W. Duncan  
University of Georgia

Marta Hartmann  
University of Florida

Universities are increasingly being charged with influencing the global competency of students. The predominant way universities encourage undergraduate students to gain global competencies is through study abroad experiences. However, teaching and learning in other cultures can be quite different from what U.S. students are accustomed to. The purpose of this qualitative study was to describe what undergraduate students believed could be done to help them succeed in a classroom outside of the U.S. In this presentation, participants will: (1) recognize the importance of interdisciplinary study abroad programs, (2) acquire qualitative data directly from students regarding their perceptions of current faculty study abroad preparations and (3) gain advice for formulating new strategies to better prepare students to succeed in a classroom outside of the U.S. Two focus groups were conducted with 10 undergraduate students with majors in a College of Agriculture and who completed an immersive study abroad experience lasting at least six weeks. Focus group data was transcribed verbatim and domain analysis was used to examine common themes. Results revealed that students believed the university did not adequately prepare them for their study abroad experience, specifically with problem solving and critical thinking skills. Students recommended that faculty incorporate an interactive international component in their classrooms. Universities should consider offering an interdisciplinary seminar-like course that is required for all students considering studying abroad. Given these findings, such a course should implement mock-international classrooms where students experience.



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### **Student Motivation and Learning Preferences in an Interdisciplinary Online Master's Degree**

Bradley Burbaugh, Tiffany Drape and Donna Westfall-Rudd  
Virginia Tech

With over 14 million students enrolled in universities, colleges of agriculture have developed courses and full degree programs offered synchronously and asynchronously to meet the rising demand. The purpose of this qualitative study was to explore what motivated students to enroll in an online master's degree program and their experiences in the program as a summative recount of their education. Multiple departments in the college collaborate to offer five areas of concentration: biosecurity, bioregulations and public health; agricultural education; plant science and pest management; environmental science; and food safety. Graduates of the program provided in-depth interviews, which were utilized to understand: how participants became aware of the degree program; extrinsic and intrinsic motivational factors that influenced their selection of an online degree; and preferences for content delivery. The results indicate career advancement and skill development are two main factors that contribute to students' desire to enroll in the program. Communication with faculty was the most influential factor that informed the students' experience and perception of the online degree program. Additionally, the interdisciplinary nature of the program was reported as an advantage. A majority of participants reported that they were not familiar with the course management system and at times felt intimidated by the technology. This study provided an opportunity to assess the teaching and learning process and will provide strategies related to student motivation, recruitment, technology, delivery methods and student engagement for faculty involved in online degree programs.

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### **Collaborative Online International Learning**

Matt Spindler  
State University of New York at Oswego

Florence Obiageli Ifeanieze  
University of Nigeria at Nsukka

Agricultural professionals must have a global perspective and an ability to appreciate human differences. Many postsecondary institutions are focusing on interna-

tional learning opportunities for students which help to prepare them to work in the global market of ideas and innovation. However, the costs associated with international experiences can be prohibitive and students are often unsure if they want to invest the extensive amount of time required for study abroad. A Collaborative Online International Learning (COIL) component was developed and integrated into an agricultural course of study by an instructor at State University of New York at Oswego and an instructor at the University of Nigeria Nsukka. The purpose of the COIL component was to provide U.S. and international agricultural students an introduction to international experiences and to create opportunities to access the perspective of students from different cultures. The COIL course component is supported by lore.com a free social networking platform that is designed specifically for education. Within the Lore platform, static posts and links were the most common form of communication between students from different countries. Cross cultural paper editing partners utilized the chat feature most frequently (80%) and most students (88%) transitioned into using Skype when working with editing partners. Data reveal that the U.S. students developed a deeper understanding of hidden assumptions and how they affect interpersonal interactions. Student feedback indicates participating students are more interested in completing an international experience either as a student or as a professional as a result of the COIL experience.

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### **Mapping the Campus Food System: Assessing Consumer Awareness of VT Dining Services Garden at Kentland Farm**

Johanna Z. Cricenti, Susan Clark, Holly Scoggins and J. Roger Harris  
Virginia Tech

Student farms and gardens are part of a movement concerning local food systems and direct connections between producers and consumers. Although student farms began decades ago, recently their numbers and impacts have increased. Campuses have integrated student farm and garden projects, offering authentic experiential learning opportunities for students, as successful measures of sustainability. This study explores student perceptions of the campus food systems related to the Virginia Tech (VT) Dining Garden and the Farms & Fields project venue in a main campus dining hall. A twenty question survey was created to assess student awareness and interest in the VT Dining Garden using mixed quantitative and qualitative methods and analysis.

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The survey was conducted in two dining halls, over two time periods, lunch and dinner, to ensure a broad range of consumers. Surveys (n=600) were distributed with a total response rate of 50.3%. Results overall showed 55% consumer awareness of the project. Close to this same response level, 51% reported they are more likely to utilize Farms & Fields knowing its connection to the VT Dining Garden. The survey tracked student motivations for volunteering in the garden identifying opportunity to work outdoors, gain horticultural skills and participate in local food systems as highly rated factors. Qualitative data showed positive responses toward the community aspect of the project and perceptions of higher quality and healthier options available. Based on these results, continued outreach for student engagement in the project could focus on community and relationship development aspects of the VT Dining Garden.

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### Managing Individualized Capstone Experiences in a Large Department

C.M. Wood, D.M. Denbow, D.E. Eversole, M.A. McCann, A.P. McElroy, R.S. Splan and N.M. Tamim  
Virginia Tech

Beginning with the 2011 graduating class, Animal and Poultry Sciences majors at Virginia Tech must complete a 2-credit capstone experience that includes a project and explicitly meets at least five of the following learning objectives: analysis and synthesis of information; improved communication skills; teamwork; problem-solving; critical thinking; preparation for post-graduation success; and a sense of the bigger picture. Students practice autonomous learning skills by proposing individualized experiences such as internships, undergraduate research or independent studies, which must then be approved by a faculty committee. An umbrella course, Capstone Experience in Animal and Poultry Sciences, was developed to facilitate the learning experience for students and award academic credit. To manage the wide variety of locations, projects and deadlines inherent to individualized experiences, the Virginia Tech online learning environment, Scholar, is used in the course to engage students before, during and after their capstone experiences. Other key features of the program are a poster symposium each semester, which showcases student projects to faculty and undergrads and formal assessment of gains in knowledge and transferable skills by on-site supervisors. Careful management of complex data related to individual student progress and outcomes have streamlined the process and improved student evaluations of the course (Overall rating 3.1/4.0

in fall 2010 and 3.5/4.0 in fall 2012). Analysis of student perceptions (n=108 students) indicate that 98% of those completing an internship for their capstone experience achieved at least five of the seven learning objectives, 44% achieved all but one and 43% achieved all seven.

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### A Picture is Worth a Thousand Words: Low Stakes Assessments

David W.W. Jones  
North Carolina State University

It is the goal of educational professionals to engage students and for them to become active learners. Instructors should provide guidance, support and feedback on course assignments. Best practices include student involvement in their own academic achievement which engages students intellectually for life-long meaning and understanding. Traditional higher education methods of assessing student understanding have included lengthy formal papers, quizzes and tests. These "high stakes" assessments have been used to measure student's understanding of particular information. These assessments measure a "common core of knowledge" and allows little variance for creativity or intellectual freedom of application. These methods are solely used by the teacher to assess students understanding of the information. Low Stakes Assessments (LSA's) allow students to use their creativity and cognitive skills to explore alternative methods of articulating their understanding of curriculum; used primarily for student and teacher reflection. LSA's are assessments used by students and teachers for purposeful reflective understanding and formative learning. Benefits of LSA's include students' willingness to participate in their own learning because LSA's primarily focus on the process. With LSA's, students show their understanding in safe and creative ways. Examples of LSA's include; brainstorming writes, outlines and annotated bibliographies. Project LSA's include scaffolded teaching activities. An LSA project would be a PowerPoint collage of ideas, concepts or culminating themes. The construction of a Wordle and a written reflection of the Wordle construction process is a form of an LSA. LSA's are an authentic form of student assessment for 21st Century learning.

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### **Examining College Transfer Student Integration: A Case Study Approach**

Adam A. Marx and Jon C. Simonsen  
University of Missouri

Many large universities have seen the population of transfer students increase in recent years. Although similar to traditional first-time college students in ways, transfer students face an integration process different from their peers. Using Tinto's (1993) model of student departure as a framework, the researchers examined the academic and social integration of college of agriculture transfer students. Two research questions guided this study: What do admissions and faculty advisors identify doing for transfer students? and How do transfer students describe their academic and social integration? Through interviews, this case study explored perspectives on student integration of one admissions person, four faculty and eight transfer students across four departments. Field notes, university documents and admissions data were also analyzed. The themes indicate transfer students fall beneath the radar in the focus of resources and retention efforts. Advisors observed transfer students often struggle academically and differently compared to first time college students. Further, earning an associate's degree does not appear to improve students' university degree progress. Students described the importance and influence of advising relationships to their integration. Students desire attention from advisors to ensure smooth transition and retention to degree completion. As the transfer student population increases, better preparation for the academic expectations of the degree granting institution will be needed. Agriculture colleges are positioned to facilitate a successful transfer student model because faculty often serve in crucial advising roles. The researchers recommend implementation of outreach efforts to feeder institutions to communicate requirements in addition to departmental-level programming to enhance transition.

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### **Flip It or Flop It: Semi-flipping Classes to Promote Student Engagement**

Courtney Gibson and Erica Irlbeck  
Texas Tech University

Research on today's college students suggests they have different needs and expectations than previous generations and traditional lectures may not be as effective

due to the students' diverse learning demands (Roehling et al., 2011). Implementing learner-centered teaching methods may help address this issue and can lead to greater success for students (Wright, 2011). To promote engagement and student-centered learning within the limited class times available, the first module (four weeks) of a senior-level, service learning agricultural communications campaigns course were flipped. Students watched pre-recorded lectures prior to class meetings. This allowed the students to learn the new materials from the lectures and then the instructor could use class time for student-centered activities that promoted engagement. Since students had been exposed to the material prior to meeting for class, they had necessary background knowledge to implement their learning in innovative ways during class time. Semi-flipping this course was seen to have a positive impact on the students. The average quiz grade during the flipped portion of this course was 84.7% compared to 76.7% for the non-flipped modules. Students were observed to be more engaged in class activities, were more willing to speak up during class discussions and spent less time on their personal computers during the active class sessions. They were also observed interacting and communicating with their group members on a regular basis. Flipping and semi-flipping courses requires considerable time commitments from the instructor, but the benefits seen from the increased student engagement make it a worthwhile method to consider.

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### **College Student Disengagement based on Motivation and Values toward an Education**

Adam A. Marx and Jon C. Simonsen  
University of Missouri

Identifying motivational factors of students toward earning their college education could help educators understand student disengagement from classroom activities. Thus, the purpose of this study was to describe classroom disengagement through students' motivation for acquiring a degree and values toward their college education. Schunk's (2012) model of motivated learning provided the framework and practical conceptualization of learning in an environment by outlining the inputs of all parties before, during and after learning tasks initiate. Objectives for this study were: Describe personal motivation toward schooling; and Describe personal values toward education. This study involved a convenient sample of undergraduate students (n=129) in a 2000-level leadership course. Descriptive statistics outlined perceptions measured by a Likert-type scale within a

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researcher-developed instrument. Motivation was measured by perceived importance of educational activities and engagement in college courses. Value toward education was measured in relation to: attendance, participation, attentiveness and personal assessment. Students were instructed to provide data on major and general education courses (GECs). Both construct means indicated students perceived they were motivated and valued their college education. However, overall motivation and value toward education decreased from the freshmen level upward. Decreased motivation in lower level courses could arise from students simply needing to check the course off their degree requirement list therefore resulting in student disengagement. Academic advisors should encourage scheduling GECs early on to facilitate construction of foundational knowledge and continued motivation toward learning. Continuing to explore students' motivational background will be important for understanding the post-secondary classroom environment and to degree planning.

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### **The Benefits of Structured Reflection as Part of Adult Leadership Programming**

Avery Culbertson and Hannah S. Carter  
University of Florida

Adult agricultural leadership programs encourage participants to gain understanding of issues and develop leadership skills to be effective opinion leaders within the industry. Leadership skills are improved through the experiential learning process which includes reflection. Programs can facilitate learning within experiential learning as learners construct meaning from the experience, reflection and generalization. In the cycle, reflection allows participants to develop an understanding of the experience and research indicates it's an important component of the program. Reflection allows participants to learn from their experiences and programs encourage lifelong learning through the practice of ongoing reflection. The purpose of this study was to assess the benefits of structured reflection in adult education and leadership programming. Participants (N = 30) of an adult leadership program in Florida were asked how they would reflect as a result of the two-year leadership program. In the qualitative study, Glaser's constant comparative method was used to identify six themes on the use of reflection; reflection is used to improve relationships, challenges what is known, aids in decision making, increases understanding of other perspectives and experiences and aids in personal growth. For the sixth theme, participants recognized the importance of in

depth reflection. The study indicated that reflection was a beneficial to a participants leadership skill development and it also confirmed that within the context of adult learning, lessons gained from reflection on experiences can aid in developing new skills and ways of thinking and that it provides insights into examining different situations and understanding followers.

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### **Real-World Agricultural Commodities Investing for Undergraduate Students**

Hyrum L. Smith and Jason Grant  
Virginia Tech

In October 2012, a cross-disciplinary team of undergraduate students from the Department of Agricultural and Applied Economics and Department of Finance at Virginia Tech received approval from the Virginia Tech Foundation to manage \$500,000 of Virginia Tech money within agricultural commodities under the supervision of Dr. Smith and Dr. Grant. This newly created Commodities Investing by Students (COINs) group represents the first student-run fund in the nation focused exclusively on agricultural commodities. The objectives of this presentation are to (1) introduce how the COINs fund was formed, (2) describe how the students are empowered and engaged in operating the fund throughout the year, (3) present a summary of first year performance results relative to a pre-defined benchmark of commodities and (4) discuss the benefits and challenges of creating and administering a similar fund at another university. Key documents, such as investment policy statement, presentations to the university foundation and letters of invitation to external stakeholders will illustrate how the fund was inaugurated. Details will be presented on how the COINs group is structured and students are engaged, whether it be daily in their analysis, weekly in group meetings, or in annual recruiting or performance reporting. Specific performance measures, such as portfolio return and risk metrics will be presented. The presentation will conclude with benefits and challenges to stakeholders--including students, faculty, university, external advisory board and university foundation--from forming and maintaining a commodities fund.

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### **Service Learning: An Avenue for Outreach, Recruitment and Training**

Stacey Darling Novak and Jay Jones  
University of La Verne, California

Our project integrates service learning with our USDA-HSI grant objectives: recruitment, retention and training of students for success in graduate school. Through a community service course, where our La Verne biology majors go into high school classrooms to present engaging biology activities/lessons, we disseminate information regarding our USDA Summer Science Camp. This community service activity provides our students with the opportunity to practice their leadership skills while sharing their passion and excitement for the biological sciences. Moreover, we conduct outreach to predominately Hispanic schools which resulted in 40% Hispanic student enrollment in our 2012 summer camp. In the spring of 2012 our 11 community service students reached 1800 high school students and currently the course has 16 students, so we anticipate even higher contact numbers for spring 2013. The 2012 USDA camp was attended by 32 high school and community college students, where they experienced five distinct activities: USDA seminars (APHIS and the US Forest Service), tours of two ARS's, UCR Salinity Lab and Citrus Station, a field and molecular biology lab experience and a college admissions workshop. Many of the community service students and camp participants are involved in our newly introduced Agricultural Biology option within the major. New course offerings for this option, including Range Ecology and Plant Productivity, has drawn about 8 students into this area of study. The scholarships and summer stipends provided by the grant has helped these students continue their coursework and ag-related research.

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### **Models for Teaching Interdisciplinary Biofuels Science: A Multi-pronged Approach**

Kateel G. Shetty, Nina De La Rosa, Krishnaswamy Jayachandran and Mahadev G. Bhat  
Florida International University

There is a growing interest in curricula addressing bioenergy among students and teachers. Energy concerns are interconnected with agriculture because of energy-intensive agricultural inputs, increasing biofuel feedstock production and fossil fuel environmental impacts. The

Florida International University (FIU) implemented a comprehensive biofuel science program at the graduate and undergraduate levels. The objective of this study is to assess how this program has generated interest and heightened knowledge and critical thinking among university and high school students. We conducted formal and informal interviews with the program participants. Our assessment focused on multiple components of the program. The program blended several teaching models to implement a comprehensive biofuel science education: 1) a new sustainable bioenergy course, 2) experimental and experiential learning, 3) on-campus feedstock production teaching plots, 4) lab-based biodiesel conversion experiments, 5) visit to commercial biofuel plants and 6) professional conferences. The study results indicated that students were receptive to energy issues and were able to critically evaluate various energy alternatives. The majority of high school teachers (n = 25) and students (n=9) found that the biofuel experiential learning was highly empowering. The biofuel demonstration plots provided not only hands-on training for students of Sustainable Bioenergy course, but also a field-based STEM education. Among the challenges with certain groups were time constraints and minimal opportunity for educational tools. Finally, the FIU biofuel education approach was able to foster critical thinking skills necessary to address complex energy related transition problems in future, especially among graduate and undergraduate students.

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### **Usability of a Virtual World for Education: Implications for Teaching in Colleges of Agriculture**

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

David L. Doerfert  
Texas Tech University

Leslie D. Edgar and Don W. Edgar  
University of Arkansas

The potential for the use of technology to enhance learning continues to expand as a result of technology innovation and increased interest from both faculty and students. One of these technologies is the evolution of virtual environments that not only allows but facilitates real-time interaction and can encourage engagement in learning and transfer of knowledge. However, the usability of this type of technology has been questioned and it has been noted that an increase in understanding of

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technology usability is critical to use the technology effectively for instruction. Usability refers to the quality of interaction between a technology and the individual using that technology. The purpose of this study was to assess the usability of “AgriCulture Island” in the virtual world, Second Life™. This assessment identified usability issues agricultural students could encounter. The conceptual framework of the study allowed for the identification of constructs that further defined and clarified usability related to assessing a virtual environment. Pre/post questionnaires, observations and a focus group were utilized to document and describe usability in the virtual environment. Twelve participants were engaged during summer 2012 from a College of Agriculture. Exposure to the virtual environment caused participants to be more accepting of the technology and all participants indicated that the experience felt “real” and that they could sense other people in the environment. A robust picture of the interaction of participants with the virtual environment was obtained and elements of assistance needs, satisfaction, confusion and deviation from task were documented.

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### **Experiential Learning in Quantitative Genetics Online: CyberSheep**

R.M. Lewis, O. Hestnes, E. Gilmore, J.A. Meese, T. Ogle and B.B. Locke  
Virginia Tech

Experiential learning is increasingly used as an instructional approach. Technology-mediated simulations are examples that provide an authentic context for learners to apply discipline-specific concepts to solve real-world problems. Simulation programs have been used for decades to facilitate instruction in quantitative genetics. Software has been updated to incorporate new technologies such as multivariate animal models and marker- and gene-assisted selection. In a few cases, web interfaces have been built. Integration with economic aspects of farming enterprises is rarer. CyberSheep is a web-based, genetic simulation game designed to allow students experience applying principles in quantitative genetics to a virtual sheep breeding cooperative. The game considers both genetic and economic principles. Two polygenic traits and a disease locus are modeled. CyberSheep is run centrally at Virginia Tech and played by teams on a purpose-built and recently redesigned, web interface. Undergraduate and graduate students from 25 universities have used CyberSheep, with students from as many as 10 universities playing simultaneously. Students work collaboratively to engage in activities and

decisions farmers face in practice. Reflection is an inherent part of the game, since the outcomes of breeding decisions drive the teams’ genetic progress and that of the overall cooperative. Students experience the effects of different behaviors and strategies in an authentic, practical context. Based on formative evaluations, students’ perceptions of this instructional approach are overwhelmingly positive. Cybersheep has evolved into a unique, technology-enriched learning tool with sufficient flexibility to be incorporated into graduate and undergraduate courses alike and to reach students that are geographically dispersed.

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### **Co-learning in a Graduate-Level Food Systems Course: Interdisciplinary Perspectives on Course-Based Action Research**

Rachael E. Kennedy, Kim Niewolny, Sarah Ciamillo, Philip D’Adamo-Damery, Sarah Jonson, Lorien MacAuley, Havva Savran Al-Haik and Alexander Trutko  
Virginia Tech

The sustainable agriculture movement continues to gain momentum and universities are responding by offering new programs. While encouraging, many are aimed at undergraduate students. Drawing upon the foundation of the Civic Agriculture and Food Systems (CAFS) minor at Virginia Tech, a group of graduate students were able to explore the emerging field of community food systems through an innovative, interdisciplinary course. This graduate course was also tied to the Appalachian Foodshed Project (AFP), a 5 year USDA AFRI funded project that comprises university and community partners from West Virginia and the Appalachian regions of Virginia and North Carolina. Using an action research framework that guides the AFP, the Advanced Concepts in Community Food Systems course was developed. Objectives for this presentation are three fold. First, we will share how this course was designed using an action research approach to post-secondary pedagogy in agriculture and life sciences. Next, we will explore the students’ experiences of learning in a course with semi-permeable boundaries. Finally, this learning community will offer collective insights for engendering similar co-learning experiences by referring to specific class strategies. This session will therefore illustrate three outcomes: how this innovative teaching approach brought personal and professional growth to both the students and professor; how the students were empowered to dig deeply into advanced community food system topics and thus gained scholarly perspicacity; and how the action research approach built knowledge that moved the learning beyond



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the classroom, extending cross-fertilization to the AFP community.

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### **Interdisciplinary Soft Skills: A Model for Integrating Public Speaking into Science-based Courses to Reduce Public Speaking Anxiety**

Chris Morgan, Nick Fuhrman, Milton Newberry and Sarah DeLoach  
University of Georgia

Death! Spiders! Public speaking! Many people are more afraid of public speaking than they are of dying. Industry tells us that soft skills, such as public speaking, leadership and teamwork, are lacking in college graduates, even though many are required to take courses to help develop these skills. Can soft skill development be effectively integrated into courses that do not have that as their focus? The purpose of this study was to determine if student public speaking anxiety (PSA) could be reduced in a science-based course the same amount as it is reduced in a public speaking course. In this quasi-experimental study, (PSA) was compared among students (N = 61) from a variety of majors who were enrolled in public speaking courses (n = 44) and non-public speaking, science-based courses (n = 17) which included assignments that required public speaking. Student PSA was measured using the PRPSA instrument. Both groups showed significant decreases in public speaking anxiety during the course of the semester. No significant differences of PSA scores were found between these two groups, yet one course focused predominantly on public speaking, while the other focused on science, with public speaking assignments embedded in the course. Based on these results, a model for incorporating public speaking and other soft skill development, into existing curriculum will be presented. These teaching methods can be effectively used to reduce PSA in science-based courses, thereby providing additional opportunities for students to develop this much need soft skill within their major.

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### **College Students' Perceptions of Foodborne Illness Related Tweet Credibility Based on Features and Sources**

Caroline Black, Tracy Rutherford and Lori Moore  
Texas A&M University

As Twitter continues to become a site where breaking news is published, accessing the credibility of Twitter features and which source they are attributed to is necessary. This study examines College of Agriculture and Life Sciences students' use of Twitter and their perceptions of how features and sources impact the credibility of tweets related to a foodborne illness. Students at Texas A&M University's College of Agriculture and Life Sciences enrolled in social-science based majors classified as U3 juniors (N = 200) completed an online survey. Three Twitter identities a professor, student and student organization, were created to measure tweet credibility. Tweets from the professor and student were perceived more credible than tweets attributed to the student organization. The results indicated statistical differences between features attributed to each source. Student organizations were perceived to be retweeted by other users, have many followers and use short URLs. Students would follow many other users, retweet, reply to other users, tweet with hashtags and spelling and grammar mistakes. A professor is perceived to have a biography that suggests topic expertise and use long URLs. These findings can help sources determine what features can make tweets the most credible. This study has important implications for organizations that engage consumers on Twitter when breaking news such as a foodborne illness outbreak occurs. Understanding user perceptions of credible Twitter features and the sources they believe use each feature can benefit other users concerned with the credibility of their tweets.

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### **Project Imuris: An International Microteaching Experience**

Edward Franklin  
University of Arizona

Student-teachers in Arizona are often faced with the challenge of relating to and communicating with high school students for whom English is not their primary language. During the preparation-phase of the pre-service student teaching program, agricultural education seniors at University of Arizona are provided with a microteaching experience of making a presentation of a lesson they prepared to a class of high school students at local agriculture education program. The purpose of the exercise is for the student teacher to "try-out" their lessons before a classroom of students. In fall 2012, we added a different dimension. We took our pre-service student teacher cohort across the border to present lessons on classroom hydroponic systems to agriculture students in a school in an agriculture community in Mex-

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ico. Our group was sorted into four classrooms where four half-hour presentations were made concurrently. Each classroom audience range from 30 to 40 students, teachers and invited guests. Handouts were prepared by the student teachers and translated into Spanish by students in our department. Presentations were videotaped for review and discussion. Student teachers provided a written reflection of their experience. They believed the experience changed their perceptions of Mexico. Feedback from local teachers was positive and our group was invited to return in the future to continue this experience. The trip included a stop and visit with the mayor and cultural minister of the community, a tour of the school greenhouse, a folklore dance performance by high school students and a tour of the local community.

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### Using Guided Discovery to Teach Students Feedstuff Identification in a Swine Production Course

B.D. Whitaker  
The University of Findlay, Ohio

Animal science students often have little knowledge or understanding of basic feedstuff identification despite continued exposure to animal nutrition and feeding courses. Learning through guided discovery was implemented in a swine production and management course in an effort to improve student success of feedstuff identification and understanding the basics of swine nutrition. This innovative teaching approach incorporated four self-guided assignments into an otherwise traditional lecture. Students ( $n = 50$ ) were evaluated through pre- and post-activity assessments to determine if the guided discovery structure increased their understanding and application of knowledge, based on a scale where 1 = not at all and 10 = expert level. Criteria for increasing knowledge was a positive change in individual assessment score, successfully applying knowledge was defined as 90% of the students receiving a grade of  $> 80\%$  on graded assignments and a successful educational experience was defined as the students rating the experience  $> 7$ . All students significantly increased ( $P < 0.05$ ) their knowledge of feedstuffs based on post-assessment compared to pre-assessment scores and self-reported understanding. Students enjoyed the method of learning (8.38) and believed it increased their comprehension of the material (7.33). Students believe that the course objectives were met (8.09) and that the guided discovery method was an appropriate learning strategy to use for various principles in swine production (8.96) because it provided opportunities for practical experiences (8.89),

which are continuously requested by students (9.25). Based on these results, guided discovery will continue to be implemented to improve students' learning.

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### Climate for Teaching in Participating APLU Institutions

Jeremy Falk, Kattlyn Wolf and Shannon Blickenstaff  
University of Idaho

Daniel Foster and Laura Lea Sankey  
The Pennsylvania State University

John Foltz  
University of Idaho

Teaching at the university level has been widely criticized. Previous work has provoked a sense that research is seen as superior to teaching, raising the question of whether teaching and research are competing. It is essential to ascertain the climate toward teaching and research of college faculty to minimize the separation of the two. Therefore, the purpose of this study was to describe the climate for teaching in Colleges of Agriculture in APLU institutions. The understanding of teaching is at the core of integrating and leveling disciplinary boundaries. A researcher-designed questionnaire surveyed 47 participating institutions; yielding 2,169 responses. In general, faculty reported that teaching was undervalued. A discrepancy existed between faculty appointments and the perceived value that promotion and tenure committees placed on appointments. Although faculty reported moderate to high preparation levels for teaching and a commitment to quality teaching, the climate for teaching is under-recognized compared to research. When asked if faculty had an interest in research or teaching, 46% reported equal levels, or slight leanings either way. Faculty also reported discussing teaching with their colleagues an average of four times per week, however, over 85% of these conversations were informal. In addition to teaching being undervalued, faculty responded about how teaching is rewarded. Several faculty members reported none, or unknown rewards. One faculty member stated: "If I wasn't crying, I might have laughed at this question." Overall, the general climate for teaching was positive, yet many questions exist about how teaching is evaluated and valued.

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### **Graduates of Agricultural Programs Attitudes Regarding Basic Employability Skills: A Pilot Study**

Ronald Heimler and Peter Kilduff  
California State Polytechnic University

**Purpose:** This study described the attitudes of graduates of the Apparel Merchandising and Management and Plant Sciences departments from the Cal Poly Pomona College of Agriculture regarding basic employability skills received in college, the importance of these skills in their first job upon graduation and their competency level in these skills. **Methodology:** A survey was designed using three 5-point Likert scales. Ten dimensions of basic employability skills were the focus of this study: communication, math, problem solving, management, interpersonal, customer service, leadership, life-long learning, technology and work ethic. The survey included two parts. Part I of the survey included 59 items that measured basic employability skills. Part II included nine items regarding demographic characteristics. **Findings:** Contrary to the research literature that found communication and math skills as most important, graduates ranked management skills and work ethic higher than communication and math skills in all three scales. **Research limitations:** The research study was limited to graduates in two programs at the College. It is suggested that further studies be conducted to examine the attitudes of graduates in all programs in the College and faculty and employer attitudes in the same dimensions. **Social implications:** A social contract exists between students, educational institutions and employers that the outcome of the educational experience will provide graduates with the skills they need to enter and succeed in the workforce and the skills (basic and technical) that employers' desire. **Practical Implications:** Better understanding of graduate attitudes allows college leadership to evaluate courses to improve student success.

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### **Partnerships in Fisheries Technology: Building our Leaders of Tomorrow in Fisheries and Ocean Sciences through Collaboration between Industry, Management and Academia**

Jeffrey M. Johnston  
University of Alaska Southeast--Sitka Campus

Kate Sullivan and Jim Seeland  
University of Alaska Ketchikan

The UAS Fisheries Technology (FT) Program offers a Certificate and an Associate of Applied Science (AAS) degree, delivered online with regional laboratories; from Ketchikan to Kodiak to Western Alaska. Graduates from the program work in the fisheries and seafood sectors across the state, in fish hatcheries, agriculture and in field technician positions for state and federal resource agencies. The program focuses on fisheries science, students study courses such as Fundamentals of Fisheries, Oceanography, Fin Fish Culture and Fisheries Management Law and Economics. The objective of this presentation is to describe the unique partnerships that have been developed through recently approved articulation agreements with other UA campuses throughout coastal Alaska. Through these articulation agreements, partner campuses are cooperating with UAS in offering locally designed Fish Biology and Field Methods courses tailored to their particular regions. The regional partnerships are designed to utilize the talents of a fulltime FT faculty member to supervise part-time, regional Outreach Coordinators in places such as Prince William Sound, Bristol Bay and Kodiak. The Coordinators provide information about fisheries both locally and around the state, engage with industry partners and with management agencies and mentor students enrolled in this distance delivered program. With the community college articulations, students across Alaska can enter into fisheries education without leaving home and be prepared for entry level fisheries positions and/or to continue on for a four-year BA or BS in fisheries through a formal articulation agreement already in place. In 2013, FT will transfer administrative oversight to UAS-Sitka.

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### **The Necessary Social Dynamic Needed in Student Recruitment**

Marcus Pollard and Nicholas E. Fuhrman  
University of Georgia

Colleges offer an array of recruitment programs to showcase their facilities to prospective high school students. The Young Scholars Program at the University of Georgia is a summer program that recruits students to work with college faculty in their laboratories while conducting their own research. The goal of the program is to recruit students into agriculturally-related majors through positive relationships with faculty at the university's three campuses. This presentation will showcase what today's high school students are looking for in a college recruitment program. High school students that participated in the Young Scholars Program from 2009-2012 (N = 266) completed surveys describing their experiences. Quanti-

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tative and qualitative data was collected on “General Experience,” “Growth During Program” and “Workshops.” Descriptive statistics were used to analyze the quantitative findings and domain analysis was used to identify emerging themes from the qualitative data. Quantitative findings indicated that students matured intellectually and emotionally since the program’s start in 2009, but found training workshops to lack relevance. Qualitative findings stressed the importance of relationships among peers and paired faculty as important factors of the recruitment program. Student responses identified the relationships they had or did not have with their peers and mentors as main contributing factors to their overall experience. Given these findings, student recruitment programs should consider implementing activities specifically targeted at fostering positive relationships among peers and between students and faculty both in and outside of the laboratory.

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### **The Relationship between Socialization, Persistence to Complete and Campus or Online Program Type of College of Agriculture Master’s Students**

Danielle E. Hammond and Candice A. Shoemaker  
Kansas State University

To investigate factors of academic and social integration as predictors of intention to persist for graduate students and differences in student’s academic and social integration between campus based and online programs College of Agriculture Masters students in U.S. campus and online degree programs were surveyed. Data was gathered using an online questionnaire. In addition to demographics, the questionnaire included three scales, academic integration, social integration and intention to persist. Academic integration was measured with the subscales of advisor relationship and academic interaction. Social integration was measured with the subscales of peer group support, faculty interactions and involvement in social interactions. The subscales for each scale were combined to create academic integration, social integration and socialization scores. Mean scores were formulated from descriptive statistics. Correlation and regression analysis were used to identify scale relationships. ANOVA and Tukey’s HSD were conducted to identify demographic and program (campus/online) differences on any of the measures. A significant positive relationship between academic integration and social integration was identified as well as a significant positive relationship between academic and social integration and intention to persist. Significant differences were

found between online and campus students on academic and social integration scales, but not on the intention to persist scale. This study indicates that socialization as explained through academic and social integration is an important factor of persistence in Masters Students and that there are differences in integration of campus and online students. Strategies to improve socialization and completion include faculty/graduate student interactions and active graduate student clubs.

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### **Integrating Experiential Learning and its Assessment to enhance Student Learning**

Kulbhushan Grover and Shelly Stovall  
New Mexico State University

Experiential learning is the process whereby knowledge is created through the transformation of experience. Research shows that students are better able to effectively apply principles when instruction is combined with experiential learning. A comprehensive, experiential learning project was introduced in a crop production course and was accompanied by several learning assessment strategies to evaluate its effectiveness. The project incorporated all four components of the experiential learning model: 1) concrete experience, 2) reflective observation, 3) abstract conceptualization and 4) active experimentation. Students worked in pairs and managed 13 different cover crops and six vegetable crops. Throughout the semester students recorded crop growth and soil quality parameters, reflected on their observations of their own crop plots as well as those of others and synthesized concepts. Students also documented issues they faced, how they addressed those issues, what decisions they made in their efforts to grow the best possible crop and what they would do differently if they grew the same crop again. The culmination of the project was a comprehensive project report. Multiple assessment tools were introduced to evaluate the effectiveness of the project in facilitating student learning. Majority of the students showed an increased level of conceptual and applied knowledge after completing the project. More than 90% of the students earned 95-100% grade in their final report evaluated based on critical thinking, analytical ability and problem-solving. Results indicate that the experiential learning project improved both the conceptual knowledge of the students and their ability to synthesize and apply the concepts learned.

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### **A Strategic Planning Process to Increase Student Engagement**

Michelle Mullins Santiago, Foy D. Mills Jr. and L. A. Wolfskill  
Sam Houston State University

A simple and powerful strategic tool, SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis is an academic concept often covered in management and marketing classes. While the concept is easy to teach, the application often becomes a mundane academic exercise. One method of increasing classroom engagement and improving concept retention is to capitalize on students' unique perspectives by having them analyze an industry they have intimate familiarity with: higher education. Students in an advanced agricultural marketing course were asked to develop a composite picture of their university's agribusiness program using the SWOT approach. Students were informed that their collective perspectives would assist faculty with program planning. Students were placed in teams and the concept reviewed. After instruction, students individually formulated their own factors and then built a team response via an iterative process listing and voting on the most important factors. All teams' iterative processes were visible to other teams although discussion among teams occurred only after factor generation and voting was completed. Through the open visual process a multi-generation development of ideas occurred. Overwhelmingly students in both semesters could agree on factors significant to the strengths and threats categories although much discussion occurred. Top factors in these categories received between 15-32% of the student votes. Factors relevant to the weaknesses and opportunities categories were much more divergent and provided fodder for discussion. The top factor in these categories only received 6-14% of votes, depending on the semester. Students expressed appreciation for the ability to engage in the program's planning process.

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### **Transdisciplinary Knowledge Transformation by Graduate Students Engaged in an Outreach Experience**

Melissa L. Welsh and Neil A. Knobloch  
Purdue University

Sixteen graduate students in plant science programs developed and facilitated three learning stations at a

university-wide informal engagement weekend for community patrons. Transdisciplinary knowledge transformation of graduate students was encouraged through the instructional design process, which occurred over two months of planning, developing and facilitating the experiential learning stations. The learning stations introduced casual public visitors of various ages to identify prominent production grains, explore plant genetic geographic origins, examine common utilization of plant-by-products and differentiate domesticated plants from their ancestors. Graduate students were encouraged to develop learning activities using active and inquiry learning methods derived from their previous Learner Centered Teaching instruction. Reflection papers from doctoral graduate students elicited several challenges graduate students encountered throughout the process as well as the benefits of collaborating with peers across agricultural disciplines and research topics. While all graduate students reported a greater recognition to adapt scientific terminology into common English terms, international graduate students remarked their lack of proficiency in translating with a limited English vocabulary. Graduate students with limited previous experiences with youth and agricultural outreach programs expressed the greatest growth in career (soft) skills. Graduate students noted they developed professional skills to engage with a dynamic and spontaneous audience as being very different from their peer presentations. The benefit of collaborating with peers across agricultural disciplines and research topics was emphasized in their summary reflections coupled with the transition from initial uncomfortable feelings to satisfaction statements in the remainder of their summaries, thus illustrating personal growth through this outreach experience.

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### **Extending the Teaching Mission of a Land Grant University: Incorporating an Interdisciplinary Capstone Experience with an Extension Program**

S. Dee Jepsen and Andrew J. Mann  
The Ohio State University

The overarching goal of this interdisciplinary project was to provide a student-centered learning experience through design of a novel demonstration unit useful for professional training and outreach awareness programs. Prior to the existing Agricultural Systems Management (ASM) capstone course, five students expressed interest in completing a capstone-type program; ultimately students from two diverse areas of study participated in an Independent Study course simulating a capstone experi-

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ence. Simultaneously, their advisors were developing an outreach program for farm communities, where a “grain entrapment simulator” would serve as a dynamic teaching aid. The advisor-student team set out to design and build a demonstration unit when no building plans existed. The training unit would enhance safety education in farm communities and train fire/rescue personnel who respond to agricultural emergencies. With a joint vision that inspired many private agribusinesses, the team successfully solicited materials and resources to fabricate the training unit through gift-in-kind and monetary donations deposited into a college development fund. The conference presentation objectives will be to describe the interdisciplinary team approach, the engagement with the stakeholders and the process of designing, funding and building the simulator. While the advisors realize a seven-month timeframe and \$90,000 demonstration unit may not be feasible to replicate, this project united the interests of undergraduate students, industry partners and Extension educators to produce an educational aid that now serves the state of Ohio. Not only did these students enhance their collegiate experience, the project continues to impact the rural communities who participate in the training programs.

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### **The Paradox of Structure: What is the Appropriate Amount of Structure for Course Assignments with Regard to Students’ Problem-Solving Styles?**

Curtis R. Friedel and Megan M. Seibel  
Virginia Tech

Many factors have been considered when college instructors develop an assignment for a course, such as specific learning objectives, resources available and time needed for an assignment to be completed. However, with insight provided by Kirton’s Adaption-Innovation (AI) theory, students’ problem-solving styles should also be considered in designing the structure of course assignments. According to AI theory, individuals may be placed on a continuum of being more adaptive or more innovative in their style of solving problems. Whereas more adaptive individuals tend to prefer more structure and work within paradigms with keen attention to details, more innovative individuals tend to overlook structures and have ideas outside the paradigm with focus on broader notions related to the assignment. AI theory may be particularly useful in helping college instructors develop the parameters of a course assignment while enabling student engagement. The objectives of this philosophical presentation were to 1) Explicate AI theory as it

relates to a college instructor’s preference for adaption or innovation when designing a course assignment, 2) Describe how the structure of a course assignment limits and enables student engagement and 3) Present examples of course assignments that have been determined as preferred by more adaptive or more innovative students. Researchers examining problem-solving style have provided sound evidence of independence from intelligence. This distinction may be critical to the college instructor during the assessment of learning as assignment grades should be attributed to learning and not the student’s preference towards structure as determined by their problem-solving style.

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### **Joys and Discomforts of Multi-Institutional Collaborative Global Education**

Daniel D. Foster  
Penn State University

R. Kirby Barrick  
University of Florida

Melanie M. Foster  
Penn State University

Developing global competency in college of agriculture graduates is a multidisciplinary effort. Discussion of crossing disciplinary boundaries should also include discussion of crossing institutional boundaries. Two domestic universities in two disparate states planned and collaborated on a course to develop global competency. A challenging aspect of developing an embedded course is to adequately prepare students to maximize learning in country during the travel experience. The course addressed this challenge by utilizing resources to enrich the class sessions from multiple institutions. Faculty members purposefully surveyed and assessed expertise on the college and university level of Korea, utilizing a “snowball” technique of soliciting individuals to nominate those with Korea experience lead to a quick identification of expertise in the area. In the ten residence class sessions, over 27 guest speakers were utilized representing three universities, multiple academic units and public sector/non-profit entities. Example partners: Penn State, US Army, Ohio University, University of Florida and Pennsylvania Certified Organic Organization. Drawbacks of the approach of utilizing multiple external guest speakers including loss of instructor autonomy in some class sessions. Relationships developed will allow for improvement as the course is replicated in the future. Engaging a multi-institutional university wide approach to

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enrich the residence portion this embedded course allowed for a distinct feeling of synergy to be developed. Research was conducted with course participants to gauge growth in global competency from pre-course, pre-trip and post-trip that showed gains in global competency at each measurement point. A longitudinal study on total experience impact is underway.

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### **Behaviorism and Constructivism in Animal Science Laboratory Classes; Evaluated by Skill Performance, Student Confidence and Heart Rate**

A.E. Lowrey, J.A. West, K.K. Turner, D.W. Duncan, N.E. Fuhrman and C.R. Dove  
The University of Georgia

In the field of animal science, behaviorism and constructivism are two popular learning styles used in laboratory portions of classes. This study combines the use of heart rate and survey response as a measurement of student stress and confidence changes. Student improvement in two skills related to equine handling (pillow wrapping and haltering) were compared to identify if learning by constructivism or behaviorism produces a greater increase in knowledge, skill performance and confidence. The practiced skill was illustrative of learning by constructivism; the observed skill was illustrative of behaviorism. All students (N = 56) received the same educational material and demonstrations before the initial testing. Overall, average max heart rate (HR) increased when students performed the advanced skill as compared to the basic skill. Seventy-five percent of students in the constructivism group (n = 24,  $\mu = 3.79$ ) felt they increased in ability from skills test one to two for the basic skill; only 33.3% for the behaviorism group (n = 30,  $\mu = 2.77$ ). Similarly, 73.3% of students in the constructivism group (n = 30,  $\mu = 4.03$ ) felt they increased in ability for the advance skill compared to only 12.5% of students in the behaviorism group (N = 24,  $\mu = 2.63$ ). What this means for educators is that while students are gaining confidence in their abilities as indicated from survey data, the HR data suggests that the second skills test situation created greater stress and may be indicative of a need to better manage the testing situation so that students can fully utilize the confidence and skills gained through the constructivism process.

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### **Using Visuals to Facilitate Interdisciplinary Learning**

Maria Navarro  
The University of Georgia

One goal of higher education is to prepare students who are able to contribute to the design, implementation and evaluation of responses to global challenges such as hunger, malnutrition, environmental degradation and climate change. To be part of the solution, graduates from colleges of agriculture will need to demonstrate depth and breadth of knowledge in their field as well as the ability to analyze, synthesize and integrate knowledge and methods from several disciplines. To help students become ready for this challenge, proponents of one education model suggest that universities should restructure their curriculum and concentrate on a small number of university-wide problem-based interdisciplinary programs. Advocates for a more conservative model envision the continuation of college and department discipline-based majors and shift to the instructors the responsibility for student interdisciplinary learning. Thus, they recommend that all instructors include interdisciplinary learning objectives in their curriculum and modify course structure, content and pedagogy accordingly. The presenters will explain and evaluate several strategies that have been used to design interdisciplinary learning experiences for students and will discuss how visuals may be used for that purpose. Specifically, they will provide examples of how graphs, infographics, drawings, mind maps, problem trees, paintings and posters have been used successfully to promote intentional interdisciplinary learning in student literature reviews, service learning, problem-based projects, research assignments, reports, discussions, team and individual projects, reflection and instruction. In sum, by the end of the presentation, attendees will be able to demonstrate how visuals may be used to support student interdisciplinary learning.

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### **Factors Impacting Female Students' Decision to Enroll in an Agricultural College**

E.J. Carter, D.W. Duncan, N.E. Fuhrman and K.J. Rucker  
University of Georgia

For university administration to be truly successful in recruiting female students to their colleges of agriculture,

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they must first understand what motivates female students to attend college. Research has shown that gender plays a distinctive role in how students analyze the decision to attend a college of agriculture. The objective of this study was to determine which factors were most influential in a female's decision to enroll in a college of agriculture. Four constructs were evaluated including: individuals, FFA involvement, 4-H involvement and college recruitment efforts. Freshmen enrolled at the University of Georgia were the target population. An on-line survey instrument was adapted from the research of Ester and Bowen (2005) and used a Likert scale of zero to four (0=no influence; 4=very high influence) to evaluate the four constructs. Results indicate that within the 4-H construct, the top three items that had the greatest influence in the female students' enrollment decisions were family members, 4-H camp experience and 4-H alumni. For the individuals construct, females were most influenced by male and/or female parent/guardian, followed by friends and teachers. Within the FFA construct, the agriculture teacher had the greatest influence, followed by state FFA convention and family. Finally, for the college recruitment construct, college websites were the prominent influence, family and professor contact were also important factors. These results support the overwhelming importance of interaction between female students and family, friends, teachers and university faculty when they are making the decision to enroll in a college of agriculture.

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### **Assessment of Students' Crisis Communications Skill Increase Based on Classroom Instruction and Second Life™ Training**

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David L. Doerfert  
Texas Tech University

Theresa Pesi Murphrey  
Texas A&M University

Crisis communication training and skill development is critical to ensure the sustainability of the agriculture industry. The purpose of this study was to assess students' perceptions of changes in their crisis communications-related skills after training activities that included Second Life™ (SL), a 3D virtual world. Pre- and post-

test data were collected to determine the potential changes in skill in the seven crisis communication constructs of (a) related knowledge, (b) mass, group and intrapersonal communications, (c) contingency planning, (d) use of related supplies and tools, (e) identifying learning and training needs, (f) related areas of expertise and (g) personality traits. Participants also identified their SL Performance Expectancy as it pertained to crisis communications training. Of the population of study (N = 15), 12 usable pairs (n = 12) were analyzed and described in the findings. Participants identified their current competency level in each of the crisis communication skill areas using a 6-point Likert-type scale that ranged from "No Knowledge/Experience" to "Mastery." A grand mean was calculated for each construct with differences between pre-test and post-test scores being examined. The resulting difference in each of the seven crisis communication constructs represented a large effect when comparing pre-test/post-test scores. Based on data, participants increased in knowledge, ability and skill on associated items used to improve communicators ability to effectively manage a crisis. Virtual worlds appear to be an effective training mechanism and additional research should be focused in this area.

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### **Increasing Retention of Underrepresented Students through Peer Mentoring**

Brielle S. Wright, Jacquelyn R. Thomas, Ray Lewis and Curtis R. Friedel  
Virginia Tech

Underrepresented students who attend predominantly white universities face challenges of social and cultural identity development. These challenges may create barriers that hinder underrepresented students from transitioning and succeeding in academic, social and professional environments. The [Mentoring] program at [Southern Land Grant University (SLGU)] was developed to successfully guide underrepresented first year students in their transition from high school to college through a student affairs based program that focus on the holistic development of the individual. The objectives of this presentation were to 1) Describe the benefits of a student affairs based peer mentoring on underrepresented students in the predominantly white university setting, 2) Explain how [Mentoring] program was restructured through identification of participants' needs and incorporation of a set of theoretical models, 3) Identify components of the restructured [Mentoring] program as they related to the mission and vision of [SLGU], the aspirations of student affairs and the cultural tenants of



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Kwanza. Findings prior to the restructuring of [Mentoring] program indicated it was not successful in accomplishing the intended goals. This was because the program lacked incorporation of student development theory into practice, proper mentor training, matching of mentors to mentees, and communication methods between mentors and mentees. The newly restructured [Mentoring] program, which utilizes correlating student development theories to guide practice, utilize graduate students who also represent the underrepresented population, intends to create opportunities for students to gain knowledge of campus resources, engage in a variety of leadership opportunities, and set personal goals and means of assessment.

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### **Effect of Background Experience on Student Perceptions of Ethical Issues in Animal Science**

Shannon M. Wyatt, Mark J. Anderson, Stanley F. Kelley, Marcy M. Beverly, Kyle J. Stutts and Jessica L. Lucia  
Sam Houston State University

The perceptions and previous experiences that students bring into the classroom have an impact on their willingness to explore different perspectives. This study examined whether perceptions of students enrolled in an ethical issues course changed as students acquired factual knowledge of animal production. Students participated in a 40-question pre-course (Pre, n = 53) and post-course (Post, n = 57) survey. Chi-square analyses were used to determine if differences existed between Pre and Post responses. Forty-four percent of participants identified themselves as sophomores, 62% were female, 42% were Animal Science majors and 25% were non-agriculture majors. Most participants (53%) had a rural background and 64% had participated in an FFA program. Students believed throughout the course that horses (85%) and cattle (75%) have emotional feelings, but changed ( $P < 0.01$ ) their opinion on chickens (Pre = 51%, Post = 25%). Regarding veal, egg and pork production, students were asked if each caused distress to the animals and if production methods of each industry should be modified. Student perceptions significantly changed when asked if veal production ( $P < 0.01$ ) and egg production ( $P < 0.03$ ) caused distress to the animals, while students maintained their perception that pork production methods caused distress (54%,  $P = 0.256$ ). Responses also significantly changed ( $P < 0.01$ ) when asked if production methods of veal, eggs and pork should be modified. These results indicate that in a discussion-based animal science course, previous experiences and backgrounds did not inhibit the students' ability to utilize

animal production information to shape their perspectives on ethical issues within the industry.

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### **Developing a New College Mission Statement**

Kelsey Hall, Camille Kalkman and Rebecca Lawver  
Utah State University

The mission statement for the College of Agriculture at Utah State University no longer represented the diverse academic programs it offered. This study was included in a larger qualitative research project to assist with the development of a new mission statement for the college. Student researchers under the supervision of faculty mentors conducted a content analysis to discover what services and stakeholders nine peer institutions included in their mission statements. Researchers used a coding sheet to individually code for keywords, stakeholders and services mentioned in each mission statement. The researchers analyzed the coding sheets using Glaser's constant comparative method, which placed similar responses into preliminary categories then refined them to create themes. Every mission statement emphasized the land-grant mission of teaching, research and service. Other common themes found within the mission statements included the following: college name, leadership, knowledge and science. Several of the mission statements mentioned the benefits that the environment, economy and communities receive as a result of a college's services. Only two of the mission statements mentioned the academic programs that they offer. Two colleges indicated opportunities for students to develop professionally, personally and intellectually. The stakeholders mentioned in the mission statements, including students, communities, the state in which each school is located, faculty, staff, agricultural industry, society, the nation and the world. The new mission statement should consider using keywords that describe the college's strengths and role while demonstrating that the college provides opportunities for traditional agricultural and non-agricultural programs benefiting all stakeholders.

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### **A Pinteresting Possibility: Using Social Bookmarking To Promote Student Learning**

Courtney Gibson, Chelsey Ahrens and Erica Irlbeck  
Texas Tech University

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As more digital natives enter college classrooms, instructors are challenged to find new ways to meet these students' unique learning styles by "integrating virtual pedagogies to support the venerable face-to-face classroom" (Prosperio and Gioia, 2007, p. 75). Baird (2005) suggested that effective and engaging content for today's students will take multiple sources of Web-based media, including social media. Three agricultural communications courses at Texas Tech University are using Pinterest, a social bookmarking site, to enhance course content. Utilizing Pinterest in the classroom provides a new avenue for students to learn, improves classroom learning and fosters collaboration between students (Holt, 2012). For extra credit, students joined the class pin board and were instructed to pin a minimum of one time per week for the duration of the class. Topics for pinning varied by course. Most of the students in each of the classes pinned regularly and some students, especially the females, went well beyond the minimum requirement. Comments from students at the end of the classes were mostly positive. Students stated that Pinterest gave them ideas that helped them be more creative and think outside the box. Students also commented that they liked using Pinterest because they felt they were learning and utilizing a social media tool they may use in their future careers. The positive responses from students indicate that Pinterest had some value and should be considered as an instructional tool in agricultural communications classrooms.

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### High School Students Learn about GMOs Using an Inquiry-driven Case Study

Anne V. Brown, Elisabeth Svedin, Melissa L. Welsh and Neil A. Knobloch  
Purdue University

Genetically modified organisms (GMOs) are prevalent in today's society and are a source of international debates; however, many people fail to recognize the benefits of GMO production and the research process to develop GMOs. Furthermore, the mass media portrays GMOs as poisonous foods, thus consumers are at a disadvantage to make sound opinions and judgments about GMOs. Knowing the agricultural value of GMOs and how GMOs are created allows consumers to make educated opinions. A problem-based learning activity was designed to enable high school students to think through the inquiry process for developing a GMO as a solution to a food security problem. As teams of scientists, students studied several genes, selected one and transformed it into the crop of their choice to alleviate an envi-

ronmental and societal problem. By giving the students the chance to choose their crop, they investigated and negotiated which crops are valuable given a set of factual circumstances. Reconstructing a transformation allowed the students to learn about the process as a problem to solve versus through a lecture. The students utilized peer discussions and referenced the teacher as necessary. The students took ownership by asking questions and inquiring about concepts progressively. Upon completion of the lesson, students shared their experience and their new GMO to their fellow teams of scientists. Future scientists can help high school students engage in the scientific inquiry process to learn about GMOs by actually simulating the process to develop new plants that might help solve the food security problem.

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### Crossing Disciplinary Boundaries: The Case of the Honors Interdisciplinary Studies Major

Maria Navarro  
The University of Georgia

To empower students to learn to analyze, evaluate, synthesize and integrate knowledge and methods across disciplines, the Honors Program at the University of Georgia created the Honors Interdisciplinary Studies (HISD) Major. The presenters will summarize the process by which students can develop their original interdisciplinary major and will discuss the case of four students who pursued the HISD in agriculture-related fields: International Agricultural Development, Global Nutrition, Agroecology and Sustainable Development and Human Rights. The proposals, developed by the students in collaboration with their major and secondary professors, need to include the following: 1) a program of study; 2) the learning objectives, purpose and central focus of the program; 3) an explanation of the academic rationale, intellectual cohesiveness and rigor of the program of study and 4) a justification why the student needs to create a new major rather than use a combination of existing majors, minors and certificates. The program of study should include all the requirements of the degree chosen by the student (AB, BS, BSA, or BSFCS), at least eighteen semester credit hours of "major" core curriculum, thirty semester credit hours of upper-level "major" electives from three different departments and a capstone thesis or project to integrate all of the course work. In sum, the presenters will present and discuss the value of the University of Georgia Honors Interdisciplinary Studies Major and will suggest ideas for institutions interested in adopting a similar model.

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### **Impact of a STEM Program on Retention and Success of High Potential, High Performing Underrepresented Students.**

Pamala V. Morris and John Patterson  
Purdue University

This paper contributes to existing scholarship regarding the retention and development of high-needs/ high potential underrepresented minority (URMs) students and provides data on factors contributing to their success. High potential URMs have lower retention rates, GPAs and post-academic success than their cohorts. The Food, Engineering, Environment and Life Sciences (FEELS) program in the College of Agriculture at Purdue is a NSF S-STEM grant program that funded three cohorts for four years each. The first cohort graduated last year. In addition to providing bridging scholarships, the program provides active faculty and programmatic mentoring support of students in a variety of developmental areas throughout their academic career. Developmental programs focus on academic success their first year, becoming involved in research projects as sophomores, preparation and networking to obtaining internships as juniors and development and conducting service learning projects as seniors. Students also earn a Certificate in Leadership prior to graduation. In addition, semester group meetings and social activities helped build a strong FEELS identity. Although the first year activities are critical for student academic success the continued interaction with faculty and programmatic staff is critical for the further development of the students into leaders. Forty percent of the first cohorts of students are in graduate school and over 50% of the second cohorts are indicating that they plan on going to graduate or professional school. Thus, continual mentoring and intervention with high-needs/ high potential URM students enhances their success as undergraduates and increases the number entering graduate or professional school.

255

### **Undergraduate Students' Critical Thinking Dispositions and Trust in Sources of Information about Food Risks**

Darnell Towns, John C. Ricketts and Enefiok Ekanem  
Tennessee State University

Risk information related to food and agricultural sciences ought to always be credible. However, not all sources are created equal, especially those that address food

risks and not all students evaluate the credibility of those sources as they should. This study (1) established students' access awareness to databases, (2) described their degree of trust, familiarity and reporting bias of sources of information about food risk and (3) created a critical thinking disposition profile of undergraduate students using the University of Florida Engagement, Cognitive Maturity, Innovativeness (UF-EMI) assessment. Variables were examined to determine if a relationship existed between gender, ethnicity, age, major, level of education, trust in sources of information and critical thinking dispositions. Students generally did not perceive they had access to credible databases (even though they did) and a positive relationship between age and access awareness was identified. Tennessee State University students had moderate critical thinking dispositions (CTD) at  $M=103.70$ ,  $SD=15.05$ , representing a lower overall CTD score than similar studies of collegiate students at other universities. TSU students scored highest on the Engagement critical thinking disposition and lowest on the Innovativeness scale. There was also a positive relationship between source credibility perspectives and trust in sources of information. There were no other significant differences between variables. Authors present a Conceptual model of Critical Thinking Dispositions and Consumer Trust Associations with Decision-making and Risks Associated with Food and they suggest further CTD research, especially among minority serving institutions to better understand these relationships which may guide pedagogical design and practice.

256

### **Student Preferences for M-learning**

Casey T. Meadows, Billy McKim and Tracy Rutherford  
Texas A&M University

The various smart device platforms available on the global market and the widespread availability and use of mobile applications (apps) may provide a practical mode of mobile learning (M-learning) delivery. M-Learning combines several aspects of distance learning and electronic learning, including electronic submissions and distance-based digital lessons. This non-experimental, sequential mixed-method study sought to describe agricultural communications and journalism students' perceptions of M-learning in classrooms and integration of M-learning through smart devices. Focus groups were used to qualitatively describe students' initial concerns with mobile device applications and their usefulness in learning. Focus group results provided guidance for the development of a web-based survey to quantitatively describe which devices, apps, designs and features stu-

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dents preferred. Students were not required to own a smart device to participate in the study. However, the majority of participants owned an Apple iPhone, iPad, or iPod Touch. Students who participated in the focus groups indicated they were open-minded to using smart device apps to aid them in their coursework. However, students further indicated the university-developed apps they had tried were difficult to navigate, “incorporated too much information into small spaces,” and were not visually appealing. Further, students indicated that they liked the design and usability of Twitter, Facebook, ESPN and instant messaging apps. Survey results indicated students most frequently use apps for instant messaging, social media, music and time management. Twenty-five percent of survey participants believed course-specific apps were helpful and increased their course performance, but also expressed frustration with the apps of-fline accessibility.

257

### Opportunities in Grain Science – Tools Used in Freshman Orientation Class

Hulya Dogan, Jon Faubion and Dave Krishock  
Kansas State University

The Grain Science and Industry (GSI) program at Kansas State University is the only place in North America that offers Bachelor of Science degrees in Bakery Science, Feed Science and Milling Science. Each of these programs offers separate, unique opportunities in diverse career fields. A new Freshman Orientation Class (GRSC 100) was developed in fall 2012 to introduce departmental programs, activities, resources and careers. The course included a series of GSI programs specific lectures involving range of guest speakers including several of our Junior and Senior students and industry representatives. We identified and implemented range of surveys to gauge the (i) advising needs, (ii) preferred learning styles, (iii) studying skills and (iv) diversity perception. We also developed an “end of semester survey” which doubled as “retention survey” to measure the effectiveness of the orientation class in increasing freshman retention and also soliciting student feedback regarding their sense of community. Advising needs survey indicated that 59% of the students strongly agreed on internal assets such as commitment to learning (75%), positive values (61%), social competencies (49%), positive identity (50%); and 60% of the students strongly agreed on external assets such as support/connectedness (76%), empowerment (64%), boundaries and expectations (50%) and constructive use of time (50%). The results were shared with the academ-

ic advisors so that they can help their advisees on areas that they need support. According to the study skills survey results 32.4% of the students adopt deep approach (i.e. idealist-understand how it works and relate ideas), 40.7% adopt strategic approach (i.e. minimalist-achieve highest possible grades per learning time), while 26.9% adopt surface apathetic approach (i.e. parrot-memorize and reproduce). At the end of the semester 80% reported that participating in GRSC 100 has given them the tools they need to plan for a career in GSI programs. 79% indicated that compared to beginning of the semester they had a better understanding of the kind of work that GSI professionals do. 73% expressed that after participating in GRSC 100, they feel more surely than before about their currently selected major.

258

### Speed Selling as an Oral Exercise in Evaluation Classes

J.S. McCann  
Virginia Tech

Conformation evaluation of production animals has been a subject taught in the livestock curriculums for many years because of the impact it can have on production. Judging contests serve as a means for students to evaluate livestock in a competitive arena and potentially be rewarded for their knowledge on placing classes and oral critics of the animals. Oral reasons have been a competitive requirement in contests that can negatively impact participation for some youth. A class exercise was designed to initiate the oral communication skills, evaluation skills and vocabulary needed in competition but without the reasons structure and complexity. Students were required to select an outstanding horse of their choosing (internet or other sources) and construct a maximum 90 second presentation on why the horse was ideal in conformation. A class exercise involving 43 students and 9 evaluators (new to the students) was set up based on a “speed selling” format for students to present their chosen horse three different times to evaluators sitting in a row. Students used iPads to show photos and sometimes video of their horse as evaluators subsequently checked off a score card for 1) eye contact; 2) voice strength; 3) confidence; 4) terminology; and 5) analysis depth on a scale from 1 to 5 with 5 being ideal. A final score up to 50 points were received by the students from the 3 evaluators and the highest score was recorded for a grade. Students and evaluators reflected positively on the “speed selling” experience.

261

### **Cross Disciplinary Boundaries by Hosting the NACTA Conference**

Bonnie Walters and Tim Buttles  
University of Wisconsin

Hosting the 2012 NACTA Conference provided a unique opportunity to enhance teaching and learning across a variety of disciplines. The cross disciplinary nature of NACTA led to a planning process that involved faculty from across departments in a unique way. Efforts to engage faculty from all disciplines in the UW-River Falls College of Agriculture, Food and Environmental Sciences began with creating the planning committee. Faculty from all areas were invited to serve on the planning committee and individuals representing four of the five departments chose to join. The planning committee engaged all faculty in the college in the process of determining the conference theme by asking everyone to submit ideas and then vote on potential themes. The planning committee chose to develop an opening activity that would feature the main program areas in the college through a multi-stop tour. Planning committee members identified potential stops on the tour within their departments as well as in other programs to both feature multiple programs in the college as well as provide stops relevant to attendees from a range of disciplines. Serving as tour leaders and session moderators gave our faculty the chance to interact with individuals teaching in a range of disciplines at other institutions. This type of cross disciplinary interaction rarely occurs in other settings. While hosting the 2012 NACTA Conference did require significant time and effort, it led to multiple opportunities to work across disciplines and promote high quality teaching and learning.

273

### **Can I "Friend" You? Social Media Uses by Students in an Agricultural Student Orientation Course**

Cody Cramer and Shelly Peper Sitton  
Oklahoma State University

If faculty and student services professionals want to reach today's college students, should they "friend," "tweet," "link" or "pin?" With discussion in popular press and research literature about social media's value and its uses, the researchers sought to examine the perceptions of students enrolled in an agricultural orientation course concerning their use of communications channels

for information from their college. The college provides an assortment of academic, professional and personal services information through multiple communications channels. Guided by the Uses and Gratifications theory, the researchers collected students' perceptions of the usefulness of these communications channels, including social media platforms Facebook, Twitter, YouTube, Pinterest, LinkedIn and Foursquare. Various entities within the university use these social media platforms to share information with students. Data was collected via an online Qualtrics instrument in August 2012. Respondents ranged from 18 to 43 years old and before college lived in a town with a population of 10,000 or more people. The data illustrates what channels students use and how they use them, specifically as they look for information about college and university programs or services. The respondents indicated they use email for college information most often, but they use Facebook as their primary social media platform, mainly to interact with friends and family. They indicated the college's Facebook page useful. The researchers recommend agricultural colleges use email and Facebook as their primary methods to reach undergraduate students about scholarships, available jobs and internships but continue to monitor changes in students' media preferences.

274

### **Crossing Disciplinary Boundaries with Industry and University Students**

Chelsea M.M. Geiger, Dana C. Penrice, Craig W. Wilkinson and Martin J. Zuidhof  
University of Alberta

The Entrepreneur Exchange was a program offered by a not-for-profit organization (Green Hectares) with a mandate to promote agricultural innovation and entrepreneurship to young people. The program is a short-term mentorship where participants are connected with industry professionals and business experts to discuss their ideas, leaving with actionable items to make progress in the development of those ideas. This program was offered in two successive terms to senior level Animal Science and Animal Health students at the University of Alberta as part of a capstone course. This program successfully challenged groups of students to dig deeper into social and business issues related to their practical problem-solving group project. The direct access of students to industry professionals provided a unique opportunity for students to be challenged about the feasibility and relevance of their projects for industry. This innovative exercise inspired students to move beyond the technicalities of their project. Many students responded fa-

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vorably to the challenge. In fact, one group of students subsequently travelled internationally to promote a value-added animal by-product at an industry trade show; another group is now serving as a consulting group in the pet food industry. Students and industry representatives provided positive feedback about the program and expressed interest in participating in future events. Overall, the program encouraged student engagement in the agriculture industry and provided students and mentors with interdisciplinary learning due to the breadth of ideas discussed. It was successful in crossing the border between industry and universities and will remain a model for shared learning and responsibility for many semesters to come.

275

### Community: In and Outside the Classroom

A.G.C. DesLauriers, M.J. Zuidhof and F.E. Robinson  
University of Alberta

University first-year experiences can shape the rest of a student's academic involvement. Recent alumni of the Heifer In Your Tank (HIYT) program (an enquiry-based first-year course) have formed the University of Alberta

Poultry club. About 87.9% ( $P = 0.0455$ ) of the students in the poultry club had little to no poultry experience and 54.5% had an urban background. This brings about the question "why poultry?" A study was conducted to determine the motivation of students to form and join a poultry club and how their experience with the club impacted future career plans. Using a web-based survey, all club members were voluntarily asked to partake in an assessment to evaluate future career goals, with a response rate of 66%. The majority of members (82.8%  $P = 0.0004$ ) indicated they joined the club to provide a source of fun and enjoyment and 75.9% ( $P = 0.0053$ ) indicated it was to stay connected with friends and participate in an active student community. Although social reasons were primarily associated with joining the club, 58.6% of respondents also participated in bird dissections, an important way of learning about poultry physiology. About 48.3% contributed to chicken catching on commercial farms, another way of getting a glance of poultry management. Involvement in the poultry club also increased students' interest in pursuing a career involving agriculture advocacy in 79.3% ( $P = 0.0016$ ) of respondents. Although poultry club members joined primarily for social reasons, learning opportunities experienced early in a student's education impacted future career ambitions.



### Poster Presentations

002

#### **Advancing Undergraduate Bioscience Engagement Track (A-UBET): High School Grads Interning in ARS Labs and Growing a Diverse Agricultural Workforce**

Marshall P. Logvin  
South Mountain Community College, Arizona

Misconceptions abound in student's minds about the relevance of science, mathematics and statistics courses to their eventual careers. Even more unclear is the nature of scientific research, the rigor required to do it well; the frustration that comes from trying to find solutions when others before you couldn't; and the exhilaration that comes when success finally arrives. A key goal of the A-UBET Grant is to increase and prepare underrepresented minorities for agriculture research careers and we partnered with ARS in Maricopa, Arizona to do a cohort internship program to help achieve it. Nine high school students (three Hispanic, five minority, five female) completed internships at the Arid Lands Agricultural Research Center last summer; each worked over 250 hours in eight weeks. Interns experienced agriculture research in the fields and labs of their scientists and developed personal projects too. Keys to the success of the ARS Summer Intern Program were: prospective interns researched and interviewed with scientists that matched their academic/career interests; Interns were treated like USDA employees (new employee orientation including ARS expectations, rules, work and transportation schedules); and most critical, a faculty mentor embedded with the intern cohort met with students daily; guided their development and projects, interfaced with scientists for communication and follow through. Final results; nine students completed the internship and each earned an "A." One intern was hired by ARS as a fulltime employee until she leaves for university in January. Two others returned in the fall as volunteers and eight are pursuing agriculture careers.

009

#### **Using Student Teams for Experiential Learning Opportunities**

Sandy A. Mehlhorn and Joey Mehlhorn  
University of Tennessee at Martin

Student teams are common in many disciplines in agriculture and have been shown to be popular among undergraduate students. Teams may be used within the classroom to complete group projects or outside the classroom to complete a common task not associated with a specific course. Studies have shown that students working on collaborative projects show improved learning of concepts. Team projects have also been shown to improve student retention. This project evaluates the student outcomes of two different student teams at the University of Tennessee at Martin competing in national competitions and measures the connection between classroom concepts and team exercises and experiences. One of the teams was made of agricultural engineering technology students responsible for the design and construction of a quarter scale pulling tractor. The other team consisted of agribusiness students responsible for the development of a market plan for national competition. Student responses from the experience were analyzed and measured with respect to effective student outcomes and student perceptions of the benefits of experiential team activities. Student outcomes included increased disciplinary problem solving, improved critical thinking, ability to function effectively in a group dynamic and connection between classroom training and team activities. Faculty team advisors were also surveyed with respect to time allocation, departmental resource allocation and implications for tenure and promotion for participating faculty. Students responded positively to the relationship among core concepts and experiential activities but the responses were not uniform across disciplines. Time commitments and resource allocations were the largest concern among faculty.

011

#### **Student Perceptions of Varied Assignments in an Online Greenhouse Production Class**

Kimberly Moore  
University of Florida Fort Lauderdale

One goal in many online courses is to develop authentic assessments that can minimize the potential for cheating that occurs with traditional online exams. In fall 2013, 16 students enrolled in the 100% online Greenhouse and Nursery Crop Culture course were asked to give their opinion (very beneficial, beneficial, somewhat beneficial or not beneficial) using a 5-point Likert scale about the assignments given in lieu of exams. The assignments ranged from a weekly quiz, challenge question, or

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homework calculation (scheduling, coat analysis, crop log) as well as end of module summaries (three of them) and a semester crop project in which the students grew cuttings from start to finish with minimal instructions from the professor (students had to research the crop and figure out how best to grow it). Of the 16 students in the class, 9 responded to the survey (56%). All students ranked the challenge question as very beneficial stating that they enjoyed applying what they learned to solve real world production problems. Eighty nine percent found the homework to be very beneficial and 88% found the crop project to be very beneficial to beneficial. Thirty three percent felt that the quizzes and module summaries were beneficial to somewhat beneficial. Overall, the students enjoyed the varied assignments over traditional online exams at the end of each module.

**012**

### **Enhancing Civic Engagement through International Agriculture Travel Study**

Sandy A. Mehlhorn and Joey E. Mehlhorn  
University of Tennessee at Martin

The importance of civic engagement among college students has gained prominence in recent years. Many companies are seeking employees who are willing to be active in the civic engagement activities. Civic engagement can be developed through connecting classroom instruction with community service that leads to a civic minded graduate. Service learning has been shown to be an effective tool to increase civic engagement among students and faculty. In January 2013, faculty at the University of Tennessee at Martin developed an international travel study course that incorporated service learning as a primary focus. In addition, the travel study project included common components of a traditional agriculture study trip, such as farm and agribusiness visits and directed writing assignments. The objective of this project focuses on development issues, student recruitment, financial concerns and student outcomes. Students participated in pre and post project surveys to determine impact on global competency and changes in perceptions of civic engagement and agricultural issues. Student journals were also evaluated for student outcomes. Overall, the project of incorporating service learning into the experience resulted in shifts in student perceptions and willingness to be involved in service learning activities. Faculty reported that development issues related to service learning trips were comparable to traditional travel study trips. However, faculty responses indicated that the service-learning component increased the visibility of the program to the campus community. As a re-

sult, it is expected that future trips will receive higher demand from students looking to be involved in service learning.

**016**

### **Roadblocks to Undergraduate Success**

Caryn M. Filson and M. Susie Whittington  
The Ohio State University

Academic advising in higher education has evolved from a routine exercise to a comprehensive operation. Due to the layers of responsibilities, advisors provide unique services to students that are distinct from that of anyone else on campus. The process of academic advising is important to institutions of higher education and plays a critical role in student retention. Given the array of issues that students must manage during college, a cookie-cutter approach to advising students will not be sufficient. Academic advising offers multiple opportunities to develop rapport with students that can often lead to the discussion of goals and issues that may be impeding academic success. Before advisors can address the needs of students, those needs must first be identified. In this study, undergraduate students identified obstacles that hinder their academic success. The National Survey of Student Engagement (NSSE) was used as a foundation to collect data for this study. Money, work and finances were the most frequently reported obstacles to undergraduate academic success. Advisors who recognize obstacles that prevent students from succeeding can tailor their advising strategies to meet the students' specific needs. It is recommended that advisors establish a personal relationship with advisees to bridge the gap between their personal, professional and academic worlds. It is also recommended that advisors utilize various advising styles to meet the needs of students in various stages of their degree programs and establish frequent contact with advisees.

**018**

### **Faculty and Undergraduate Education: Teaching Interdisciplinary Research through the Fellows Research Program**

Jeremy M. D'Antoni, Joseph E. Mehlhorn, Timothy N. Burcham and Jason Roberts  
University of Tennessee at Martin

The University of Tennessee at Martin has an honors research program within the Department of Agriculture,



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Geosciences and Natural Resources called the Fellows Research Program. The goal of the program is to teach advanced undergraduates how to conceptualize, execute and disseminate hands-on scholarly research, particularly of an interdisciplinary nature. In fall 2012, two animal science students (one concentrating in veterinary sciences and the other in pathology) worked with one agribusiness student to analyze the performance of a value-added product called the HayGo. This product was designed by a long time supplier of the dry-cleaning industry and intended to reduce bacteria in animal forage through steaming. Together the students sampled Bermuda hay pre and post steaming, analyzed changes in bacteria count using various biological laboratory methods, and prepared a poster and research paper presenting their results. The students performed analysis on a total of 24 samples at different steaming times. Along with valuable technical and writing skills, the students learned to trust each other's disciplinary expertise and effectively collaborate for a successful research project. This project was also unique in that faculty from agricultural engineering, agribusiness, veterinary sciences, and biology collaborated to educate and mentor the students. In addition to faculty, the manager of the experiment farm was instrumental in the students' education by providing technical assistance in the setup and preparation for the experiment.

019

### **Incorporating Multi-Disciplinary Cooperation through Student Research Projects**

Sandy Mehlhorn, Jason Roberts and Chris Karmosky  
University of Tennessee at Martin

It has been suggested that the scale and complexity of today's research questions require multi-disciplinary cooperation in order to provide the appropriate expertise necessary to address all facets of a problem. Coordinating these types of teams can be difficult and certain attitudes may hinder the effectiveness. Within the academic world, certain instances that require a multi-disciplinary team can be student research projects. Recently a student in the University Honors program at the University of Tennessee at Martin required a team of animal scientists, agricultural engineers and meteorologists to complete a research project. The project also involved other students to help gather data and offer their discipline-specific expertise. To help keep the team working together, the students and professors met regularly, making sure the correct data were being collected and used properly to answer the research question. GPS data and weather data were collected for one year. The animal

scientist was responsible for working with the student on animal behaviors. The agricultural engineers handled the data download and mapping from GPS collars, while the meteorologist assisted in collecting weather data from a local weather station as well as from online sources. The student working on the project took courses in the different areas, including a programming course to help compile and compare the data. The outcome was a successful student project that brought together collaboration from different disciplines.

022

### **Development and Implementation of a National Center of Excellence in Dairy Production Medicine Education for Veterinarians**

John Fetrow  
University of Minnesota

This project has created and delivered an eight week, web-supported, in-residence course in veterinary medicine, dairy management and food system issues for senior veterinary students from colleges of veterinary medicine from across the U.S. A series of modules provide the consultation and herd management skills needed by new veterinary graduates who will serve commercial dairy farms or enter elsewhere in the dairy food system profession. Faculty from four colleges of veterinary medicine (MN, IL, GA, KSU) developed the curriculum and participated in its delivery at the University of Minnesota's Dairy Education Center. Over 50 experts from academia, veterinary profession, dairy scientists and industry provided instruction during the course. The curriculum emphasized a mixed instructional methodology including lectures, laboratories, hands-on experiences, herd and other dairy infrastructure visits, web instruction, and computer records and economic evaluations. A particular emphasis has been the development of a series of Moodle web course sites that provide a wealth of support materials for each topic to serve as a long-term information source for the students after they graduate and move into their professional careers. Senior veterinary students in the Class of 2013 from the five veterinary colleges spent two months in residence at the Dairy Education Center of the University of Minnesota. The Center is an academic facility integrated into a large commercial dairy in southern Minnesota with classrooms, dormitory, and training facilities. This serves as a first model as a USDA National Center of Excellence in Dairy Veterinary Education.

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025

### Using Video Modules to Help Students Solve Agronomic Calculations

Samantha Ambrose and Sarah Lancaster  
Oklahoma State University

Technology in the classroom has become a complementary learning component; however, there has been limited evaluation of technology in plant science courses. This study was conducted to evaluate the student response to online video study guides in an introductory plant science course. Students were exposed to seeding rates, fertilizer application and pesticide application calculations. Video modules reinforcing lecture content were developed using the application Educreations and made available on the class website. These videos included the lecture presentations with narrated guidance. Video modules were also made available for quiz questions. Students during the fall 2012 semester were given a voluntary evaluation form after two mid-term exams to gather feedback about video use. Final exams scores during two semesters with video access were compared to two semesters without video access. Forty six percent of the first survey's respondents used the videos to prepare for seeding rate calculations. Seventy percent of the second survey's respondents used the videos for fertilizer and pesticide calculations. Students "agreed" or "strongly agreed" that it was helpful to have a resource outside the classroom and that they would recommend friends to use the videos. Students who did not use the videos felt the in-class lecture prepared them for the exams. Student use of the videos did not have an effect on scores for each type of calculation. Although there was no relationship between video use and exam scores, students found videos to be a valuable tool and would continue utilizing them.

026

### A Day in the Life of a Manager: An Experiential Learning Project

Maud Roucan-Kane  
Ecole d'ingénieurs de Purpan, France

L. A. Wolfskill and Julie Cooper  
Sam Houston State University

Shadowing day projects have been used in management and marketing classes at Sam Houston State University since fall 2010. Students spend a day with a professional in the management or marketing field where they are

able to observe these professionals and ask questions to gain a more insightful understanding. Based on their shadowing day, students write a paper linking the experience to the concepts learned in class. The objective of this presentation is to discuss the shadowing day project and the results of a survey on students' perceptions about this educational tool. Twenty-two students were surveyed anonymously in December 2012 regarding their perceptions about the project. The survey indicates that students gained a lot from the experience through new knowledge, better understanding of the subject matter and critical-thinking skills. Students enjoyed the experience more than testing over the materials. The vast majority of the students had not done a shadowing day experience previously, nor had an internship in college. The majority of the students also believed this project would help them in their future career, find their first job and perform better in remaining coursework. The project increased interest in marketing/management as a career for 18 students. Sixteen students recommended continuing the job shadowing project in future semesters. These results suggest that the shadowing day project is a valuable educational tool. In the instructor's experience, it can also lead to job interviews, internship and job offers, guest speakers and new working relationships within the industry.

027

### The Evolution of Teaching Technology in Graduate Online Programs

Joey E. Mehlhorn, Timothy N. Burcham, Sandy Mehlhorn and Scott Parrott  
University of Tennessee at Martin

Colleges of agriculture are searching for ways to improve and expand education access under increasingly tight budgets. Expanding courses and programs to include online offerings has been an effective method for increasing student access and spreading the cost of technology across on-campus and online programs. Nationally, online programs continue to grow with more than 6.7 million students taking at least one online course in 2011. Online technology has evolved from simple static lectures to interactive digital modules including voice annotation and video modules. The success of technology for teaching is impacted by many factors, including cost, faculty learning curve, flexibility and the type of material being taught. This project evaluates faculty and student responses given through online surveys to the various technologies used in the agriculture graduate program over the past 10 years. The results indicate that faculty are mixed with respect to which

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technology is preferred for online classes. The needs of the individual courses, such as providing step by step mathematical computations or simply standard lectures, is a driving factor of the technology selection process. Limited faculty time for course development was also a significant factor cited by faculty. Student responses were generally positive for digital learning objects (that incorporated voiced annotation), communications with fellow students and interaction with the instructor. The challenge to online course development continues to be acceptance among faculty and their willingness to adopt new technologies and teaching paradigms. Administrative issues associated with faculty pay and FTE calculations proved to be challenging.

029

### Providing Underrepresented Agriculture Students a STEP UP to USDA Career Success

Shad D. Nelson, Randy Stanko, Tanner Machado and Greta Schuster  
Texas A&M University-Kingsville

Texas A&M University-Kingsville is the lead institution collaborating with four other Hispanic Serving Institutions in South Texas on a four year grant project entitled: STEP UP to USDA Career Success. The aim of this project is to increase the number of undergraduate students trained with the skills, experience and academic background sufficient to be qualified for employment with a USDA agency upon graduation. The project creates a bridge between three two-year and two four-year degree granting institutions and provides funding support to assist the students while they obtain their Associates and Baccalaureate degrees. The objective of this program is to improve the scientific knowledge and skills of Hispanic students through undergraduate research and gain experience at various USDA agencies during the summer months while serving as volunteer interns. Over 50 volunteer undergraduate interns are paid each year under the STEP UP program, with students obtaining training at the USDA agency of their choice. The program is in its second year in 2013 with volunteer summer interns employed by this grant and working within and outside of the state of Texas. In summer 2012, there were more than sixty undergraduate student participants funded among the five HSI institutions, with ten students obtaining Associate degrees from the two-year institutions and transferring to the four-year institutions so far. This is evidence that the program goal is working with an end result to have students trained appropriately to increase the workforce diversity within the USDA after graduation with a four-year Bachelor of Science degree.

030

### Relationships of Learning Styles and Educational Preferences

Mary E. Lehman  
Longwood University

It is widely assumed that students with different learning styles should have distinct preferences for different educational activities. However, few studies have provided data for preferences in contemporary college students. My previous study, utilizing Gregorc learning styles, found that self-reported educational preferences were poorly matched to purported preferences for the learning style categories. The present study investigated relationships of educational preferences with the VARK learning style system that is specifically focused on preferences for input and output during learning. Introductory biology students were classified into five learning style categories (Visual, Aural, Read/Write, Kinesthetic and Multimodal) that were compared to self-reported educational preferences on a 19-question survey. Most of the expected correlations were not found, possibly due to the small sample sizes in categories other than multimodal (66% of the students were classified as multimodal). As expected, multimodal and kinesthetic learning styles reported a significantly stronger preference for hands-on activities compared to those with a read/write style. Students with a read/write style did report the expected preference for reading assignments and also had a significantly greater preference for studying alone, rather than with a group, as compared to those with multimodal and aural styles. Correlations of the numerical scores in each learning style category revealed numerous other possible relationships with self-reported educational preferences. For example, the kinesthetic numerical score showed a significant positive relationship with preferences for educational games and simulations. However, the VARK system did not reliably predict most of the educational preferences reported by students in this study.

033

### Engaging Students in Service Learning Through a Landscape Development Project

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

Service learning projects engage students in authentic learning experiences by integrating course instruction

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with community involvement. Junior and senior students enrolled in the Penn State's Landscape Contracting major partnered with The House of Care, a non-profit United Way agency that provides care and support to elderly, terminally ill clients who have little or no family support. Students designed and installed landscape improvements including: a new handicapped access ramp, relocation of raised vegetable bed, installation of new paver patio and walkway, new gazebo, new plants and planting beds, small water feature and privacy fence. The entire process spanned 7 months, culminating with a 3-1/2 week construction period. This service learning project was mutually beneficial for students and clients alike. Students learned by engaging in all aspects of the project including: Designing, Permitting, Soliciting Donations, Scheduling, Project Management and Installation. They also experienced the personal and professional rewards to be gained from sharing their time and talents with those less fortunate. The clients benefited from the student's energy and friendship and ultimately from significant enhancements to the quality of their living environment.

035

### **The Role of General Education on Veterinary Science Career Development**

Jason Roberts, Sandy Mehlhorn, Joey Mehlhorn and Scott Parrott  
University of Tennessee at Martin

It is important for students seeking to go to graduate school to understand the connection between general education courses and discipline specific courses within the major. The faculty role in student career advising is a critical part of the education process. The faculty advisor serves as mentor for future professionals and is tasked with the role of helping students understand how different courses and experiences equip them for success. It is best to start the mentoring process early through freshman discipline specific orientation courses. To better prepare students for a career, it is necessary to determine a baseline of student understanding in order to design orientation courses. A freshman orientation course for veterinary science majors was surveyed (n=81) to determine perceptions of general education courses and concepts necessary to be successful as a veterinarian. The five-point scale survey was broken into discipline specific courses, general education courses and critical concepts. Results were mixed with respect to the importance of coursework and concepts among students. Overall, veterinary students rated general education science courses higher than discipline specific agri-

culture courses. Students rated biology and chemistry with an average 5 and 4.7 rating. This was significantly higher than the rating for general agriculture courses. Results for concepts were diverse among students. Understanding concepts rated less important than the general education courses for the group. This was surprising since concepts were viewed as critical for student success by faculty advisors. Advisors need to increase student awareness of critical concepts for student pursuing agricultural careers.

038

### **ThinkSpace 2.0: An Online Teaching and Learning Platform for Case Based Learning**

Ann Marie VanDerZanden  
Iowa State University

At Iowa State University a team of educators have developed the open-source ThinkSpace online learning platform. This tool is based on a well-established problem solving teaching method and software program for teaching complex problem solving. The ThinkSpace tool helps improve 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 online environment. In 2012 the user interface was modified to improve usability. Additionally, drag and drop functionality was added to enhance the students experience in answering the case study questions and comparing them to the 'expert' answer. In addition to helping students improve their problem solving skills this, ThinkSpace project continues to build and support a community of educators by providing effective technical support, case study content and/or case development support and faculty development.

039

### **Growing a "Canoe Plant" Garden for 4th Grade Learner Centered Instruction in Social Studies and for College Ag Club Connection with Community Keiki**

Aleysia Kaha, Norman Arancon, Russell Shiohita, Marcia Sakai and William S. Sakai  
University of Hawaii at Hilo

Pattie Andrade-Spencer and Debra Cheever-Follett  
Hilo Union School

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It is important to educate K-12 and college students of the linkage between agriculture and culture and “the social, spiritual and cultural importance of plants to historical and contemporary communities of people.” This year, the Univ. of Hawaii at Hilo Ag Club and the 4th graders of Hilo Union School as part of their State 4th grade level uniform social studies indigenous Hawaiian focus, built a “Canoe Plant Garden.” The 4th graders initially planted 2 varieties of kalo (taro) and one variety of ‘uala (sweet potato). Each year’s 4th graders will add additional “canoe plants” (about 21). By growing and then using the “canoe plants” to make food, cloth, cordage, containers, medicine and leis for ceremonies and celebrations, students will learn that when the migrating Polynesians first brought their “canoe plants and animals” to Hawaii they brought their culture with them. Construction of a “Canoe Plant Garden” on the UHH campus and participation by introductory horticulture students with the Ag Club students in the service learning program at Hilo Union School is anticipated to institutionalize the general education component within the horticulture curriculum. This applied learning experience supports a University of Hawaii at Hilo General Education learning outcome that students be able to analyze multiple perspectives and articulate how perspectives based on world views differ from his/her own. It is important that we learn the close linkage between the world’s agriculture and its cultures.

042

### **Retaining Students and Supporting Instruction in Science-Intensive Undergraduate Programs through Innovative Media**

April Ulery, Barbara Chamberlin, Jeanne Gleason  
New Mexico State University

Many agricultural and environmental science undergraduates consistently struggle with key scientific and math concepts. They enter college under-prepared for science and math-intensive majors and this deficiency in science, technology, engineering and math (STEM)-related skills deters them from completing coursework in agricultural and environmental majors, thus decreasing potential graduates in these fields. After conferring with STEM faculty and employers to generate a list of learning objectives and reviewing existing tools, our team created several educational animations and innovative media proven effective with today’s students to enhance their science and math conceptual understanding. Objectives addressed by our team included: unit conversions, graphical interpretation and understanding the interconnectedness of coursework to their major. An interactive module was developed that demonstrates how to read

dose-response graphs and has the student answer questions based on plant responses to salinity, boron and nitrogen. Since many students are confused by dimensional analysis and unit conversions, we created an animation to show how the three dimensions in soils relate to units. One of our biggest challenges was with the development of modules to help students understand and read logarithmic scales. We also designed videos to help students perform better in college by getting advice and hearing the experience of alumni and scientists in the field. Some of the multimedia products will be integrated into coursework, with quantitative test results compared to previous semesters. All modules are posted online for free use at ScienceofSoil.com.

043

### **A Virtual Coffee Shop as a Catalyst for Providing Agricultural Extension Education for Tennessee Landowners**

Solomon Haile and Latif Lighari  
Tennessee State University

The Cooperative Extension education program at Tennessee State University (TSU) is offering a new low-cost and innovative way of outreach educational delivery to keep limited-resource farmers up-to-date with cutting-edge and timely topics in all the extension educational program areas. The program delivery is a monthly public outreach educational webinars – TSU Extension Virtual Coffee Shop. The program uses Wimba classroom to deliver an extension education that covers various topics in the areas of Agriculture and Natural Resources, Family, Community and Nutrition and 4-H Youth Development. Wimba classroom is a live, virtual classroom environment with robust features that include audio, video, application sharing and content display and MP4 capabilities. Through TSU Extension Virtual Coffee Shop, the program helped Extension personnel accomplish their work in creative and diverse ways and to see growth in extension educational program. The cost averted on gas mileage expenses by specialists in 2011-12 presentations via TSU Virtual Coffee Shop was estimated to be a total amount of \$271, 608.30. The technology is advantageous because it can be accessed from most personal computers and it’s easy to use. Future uses of Wimba in this program will include small meetings and trainings, for statewide, multi-state and international collaborations. This undertaking is novel not only for 1890 institutions but the land grant system overall.

044

### **Crossing Disciplines: AG-STEM Education Research Lab**

R. Kirby Barrick, Brian E. Myers and Andrew C. Thoron  
University of Florida

The AG-STEM Education Research Lab was established to *Discover ways to improve student learning of STEM concepts in agricultural and life sciences through collaborative research in teaching and learning in formal and informal settings*. The emphasis on science in agricultural education has been a part of educational reform since the US industrial revolution. With changes in societal needs, education and legislation, the role of school-based agricultural education focused primarily on vocational training. But with later reports such as *A Nation At Risk*, the focus has shifted to emphasizing science principles across all curricula. Stakeholders identified a workforce lacking agricultural technical skills and scientific knowledge that placed national security and the nation's economy at risk and agricultural education began to more fully integrate science principles into the high school agricultural curriculum. High school agriculture programs in rural areas provide the best opportunity to attract students with experience in agriculture, yet programs in suburban and urban schools provide access to a large number of students who enjoy science and could be attracted to an agriscience field. In both scenarios, secondary school agriscience programs exemplify a new approach to science, connecting the sciences to agricultural problems and practices through a formal and informal instructional program. The Lab has connected school-based agriculture with the agriculture science departments in the college, including disciplines such as agronomy, horticulture, food science, agribusiness, soils and animal science, to develop and implement curricula that emphasize the science of agriculture. How the Lab collaborates across disciplines will be presented.

045

### **How Do Graduate Students Perceive their Graduate Advisor at Razi University**

Kiumars Zarafshani and Mahsa Sadvandi  
Razi University, Iran

The relative quality of graduate programs in the agricultural sciences is important for recruitment of students and their retention in the departments. In particular, the relationship between graduate advisor and advisee play a prominent role in student academic achievement. Identifying and addressing student's needs and expectations allow institutions to attract and retain quality students as well as to improve the quality of their programs. Student satisfaction has been found to be one of the factors that affects the quality and overall effectiveness of graduate program. There has been an increasing attention among post secondary agricultural institution in Iran to improve their graduate programs in order to sustain its higher standards across Middle Eastern universities in the region. Therefore, this study sought to investigate the graduate students' perception towards their graduate advisors in the college of agriculture at Razi University in Kermanshah province, Iran. This descriptive survey study interviewed 85 graduate students across six departments in the college of agriculture. Results revealed that graduate students were somewhat satisfied with their graduate advisor. However students were less satisfied with facilities and resources provided by their department. It is recommended that successful advisors develop mentorship programs in order to train nascent advisors in the agricultural disciplines.

047

### **Increasing Students' Attendance at Career Fairs**

Maud Roucan-Kane  
Ecole d'ingénieurs de Purpan, France

L. A. Wolfskill and Julie Cooper  
Sam Houston State University

University career fairs are organized to give students an outlet to meet companies and discover internship and job opportunities. However, students sometimes need an incentive to attend. Using a professor poll, we found that students' participation at career fairs was stimulated through several tools. Many professors provided motivational talks highlighting the importance of attending career fairs or promoted the event through emails or postings on Blackboard. Several offered bonus points to students or required a formal assignment linked to the event. Assignments can focus on concepts learned in class (e.g., recruitment/hiring process, company's competitive advantage, legal structure, organizational structure). A career fair assignment also provides the opportunity to reflect on the experience without linking it to classroom concepts. Researchers polled 40 students in two upper division classes where a career fair assignment was given. 77.5% of the students indicated they attended the career fair. Of those who attended, 55.2% indicated they went because of the assignment. 24% were offered a job interview as a result of their attendance at the career fair. Overall, classroom assignments were the motivator for many students to attend the ca-

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reer fair. Attendance provides the opportunity to interview for both jobs and internships. Motivating students to attend career fairs as early as their freshman year is critical to helping them secure internship opportunities, develop their professional career objectives and master job interview skills. Motivating students to attend career fairs is an important mentoring activity for professors and assignments are a significant method to do so.

048

### The Welcome to Class Speech: The Do's and Don'ts According to University Students

Maud Roucan-Kane  
Ecole d'ingénieurs de Purpan, France

L. A. Wolfskill and Julie Cooper  
Sam Houston State University

The first day of class is critical for most instructors. If the class is not required, it will determine whether students will remain enrolled in the class. It also sets the tone for the rest of the semester. First impressions are important and "thin slices" frequently color outcomes significantly. To understand better students' expectations from this first day of class, students were surveyed in five junior and senior-level classes and asked to anonymously list three do's and three don'ts of professors during the welcome speech by reflecting on the many speeches they have listened to. Students' responses focused on the attendance policy, the professor's background, personality and expectations and the syllabus. Students appreciated learning about the professor's personal background and interests (in some cases relative to the course materials) and the course expectations of the students. They also wanted to know the grading procedures and course objectives. They did not like professors lecturing on the first day, hearing that the class was going to be difficult, nor being given assignments on the first day. Use of ice breakers such as having student introductions was not listed as either a major do or don't. In short students want to know what to expect, be reassured that they can succeed in the class and that the instructor will have a personality that will make for a positive experience. It is therefore critical during the first day to focus on positive comments related to the semester and the class.

052

### Soils, Land Use and Climate Change: a New Baccalaureate Concentration which Crosses Disciplinary Boundaries

M. F. Cotrufo, M. Balgopal, R. Conant, S. Ogle and K. Paustian  
Colorado State University

Soils play a key role in determining the impact of climate change on terrestrial ecosystems and in regulating greenhouse gas (GHG) concentrations in the atmosphere. GHG mitigation, through improved land use and management, is currently a major issue both nationally and internationally, which requires a set of skills from a variety of disciplines. We designed a Baccalaureate concentration that bridges agricultural with climate change science and economics; and two novel capstone courses on "Soils & Global Change: Science and Impacts" and "GHG mitigation, Land Use and Management." We are also developing an on-line platform to provide the first of these courses on line. We will present these products and discuss the impacts of using inquiry-based learning approaches, coupled with hands-on laboratory experiences and field site visits, on course outcomes. We will also discuss the use of pre- and post-course concept map assessments to identify students' back-ground knowledge and evaluate students' progress and acquisition of course concepts.

055

### Management of Plant Parasitic and Beneficial Nematodes with Tropical Cover Crops

Valerie H. Henmi and Sharadchandra P. Marahatta  
Kauai Community College

This experiment can be used to teach the importance of cover crops in nematode management. Students could learn how to conduct an experiment with precise methods, using other cover crops that could help to control nematodes. Two cover crops grown in Hawaii: sunn hemp (*Crotolaria juncea*) (SH) and pigeon pea (*Cajanus cajan*) (PP), are chosen for comparison. A laboratory experiment was conducted to determine the effects of SH and PP on plant-parasitic (*Radopholus similis* and *Meloidogyne spp.*) and beneficial nematodes. The teaching objective of this experiment was to show how certain plants can react positively or negatively on beneficial and plant-parasitic nematode. Soil samples with a history of *R. similis* and *Meloidogyne* infestation were put into 10-cm diameter planter pots. The powdered form of SH

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and PP was incorporated into soil samples at 1.0% (w/w) and left for a week. A separate pot with soil with no incorporation of cover crop powder was maintained as control (CC). At termination of experiment, nematodes were extracted through the baermann funnel technique. Compared to CC, SH and PP suppressed *Meloidogyne* ( $P < 0.05$ ) number, but there was no treatment effect on the *Radopholus similis* ( $P > 0.05$ ). Both, SH and PP, enhanced beneficial nematodes ( $P < 0.05$ ). The implication of this experiment is that farmers could choose SH or PP for *Meloidogyne* and beneficial nematode management. This is where education will benefit agriculture.

### 056

#### Hybrid Learning in the Food Science Curriculum through the Use of an In-Class Assessment Tool

Paul J. Sarnoski and Maurice R. Marshall  
University of Florida

The act of teaching is becoming less focused on lecture based delivery and more focused on engaging students in the classroom. Some instructors have chosen to abandon the lecture entirely and focus on teaching that involves students mostly working on problem solving in the classroom. For small class sizes, this approach works well, but for larger class sizes, managing this environment can be quite daunting. Active learning strategies such as “the flipped classroom” can be thought of as the opposite of lecture, where class becomes the place to work through problems, advance concepts and engage in collaborative learning. We have chosen to incorporate a blended approach of lecture and problem solving in the classroom by using classroom “clicker” technology. Measurement of the effect of the clickers on student learning outcomes will be presented by examining differences between clicker and non-clicker student final grades and student course evaluation data specifically relating to their satisfaction with a Food Chemistry class taught in 2012 (non-clicker) and 2013 (clicker). Student survey data from 2013 relating to the students satisfaction with the clicker system and perceived effect on learning will also be presented. Clickers may have an impact on grades, but also other positive cognitive factors which will be discussed such as student engagement, student-student interaction and possibly motivation since they will get immediate feedback whether they do, or do not adequately understand the concepts being taught using the clicker system.

### 057

#### Can Strawberry Guava, *Psidium cattleianum*, Leaves be Used for Weed Management in Hawai'i?

Jin-Wah Lau and Sharadchandra P. Marahatta  
Kaua'i Community College.

Many times in outdoor classroom settings, allelochemical indicators present in plants are visually present in the landscape and can be demonstrated. For the purpose of teaching students about the steps necessary in developing plant-based herbicides, a greenhouse and a field experiment were conducted. Students are encouraged to further explore methods of using Hawai'i's invasive species for natural weed management. Since its 1845 introduction to Hawai'i as a fruit tree and an ornamental, strawberry guava (SG), *Psidium cattleianum*, have escaped cultivation and become Hawai'i's highest priority weed for control. Students, interns and youth groups are utilized by conservation agencies to control weedy populations of SG in native forest. SG forests are prime examples when teaching about invasive species capabilities; the understory often lacks diversity of plant species other than smaller SG seedlings. SG trees may gain this competitive advantage in native forest through the release of chemicals to inhibit the growth of neighboring plants, a process known as allelopathy. A greenhouse and a field experiment were conducted to determine if chemicals present in SG leaves, that inhibit growth in natural areas, could be implemented to control weeds in cultivated areas. Because allelochemicals provide an advantage in plant-plant competition, trials using suspected plants could allow students to contribute to the development of new plant-based herbicides. Natural, locally-sourced herbicides may have potential to be utilized by Hawai'i's farmers for their inhibitory effects on weeds, an alternative to chemical herbicides in preemptive integrated weed management. In this study, the leaves of SG were tested for ability to inhibit other plants. While it is not practical to completely eliminate synthetic herbicides from conventional agriculture, allelopathic potentiality shows promise to moderate chemical application.



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058

### **Assessing Student Learning Outcomes across Disciplines: Time Series Grade Distributions for Agricultural Core Courses within a Small State University Program of Agriculture**

C. R. Stark, Jr., P. B. Francis, W. A. Whitworth and K. J. Bryant  
University of Arkansas at Monticello

Agriculture students frequently take a core of courses spanning multiple disciplines before advancing to their more focused degree major or option. Student learning outcomes in these core courses have long been regarded as predictors of success or failure for the more advanced courses taken toward specific majors or options and the eventual percentage of degree achievement. A small, state university program of agriculture compiled grade outcomes for students within their program core of five introductory courses over the period of fall 2006 through spring 2012 to study the relationships between the core course student learning outcomes and graduating student grade point averages. Core courses selected were Agricultural Orientation, Principles of Animal Science, Principles of Field Crops, Agricultural Economics and Soils. The core course population examined was 190 students at primarily freshman and sophomore levels. Statistical analysis revealed a positive correlation between most of the introductory core course grades and graduating cumulative grade point average. An extension of the grade outcomes to incorporate standardized test scores commonly used for English, Mathematics and Reading level evaluations indicated a weaker predictive relationship between test scores and core grades. Knowledge of these relationships and their trends over time can better equip schools of agriculture to adjust their curriculum programs, especially basic core courses taken as introductory prerequisites by all students.

059

### **The Impact of Corrected Exams (Regrades) on Final Exam Score**

Jessica Winkler, Andrea Sexton, Ashley Rhodes and Timothy Rozell  
Kansas State University

The opportunity to correct mistakes on a recent examination has the potential to allow students in application-intensive science courses to build a more solid foundation for future exams. In Anatomy and Physiology, stu-

dents are allowed to describe the physiological mechanisms of any concepts behind questions they missed within a week of taking each exam. This “regrade” assignment allows students to earn up to half the points they originally missed and the assignment is graded and returned to students with comments. Our objective was to analyze whether earning a greater percentage of points on the regrade assignment had a positive impact on the final exam score. Regrade percentages of semester exams 1, 2 and 3 from five combined semesters were compared to final exam scores using correlation and regression analysis (n=377). Scores on exam 1 and 3 regrades had a positive correlation with final exam scores ( $P < .05$ ). These results are likely due to the first exam covering many foundational concepts of the course and the third exam covering the most complex and integrated concepts. Thus, it appears that correcting mistakes on exams soon after taking the exam helps students gain a better understanding and ability to apply complex ideas on a comprehensive final exam. This was particularly true if the student earned more points back on exams which cover concepts that are foundational or involve a high degree of complexity and integration with other concepts covered throughout the semester.

060

### **Educational Projects as a Strategy to Innovate Teaching at National Agrarian University La Molina, Peru**

Carlos Gómez, Silvia Morales and Jan Elen  
Universidad Nacional Agraria La Molina

This presentation describes educational projects at National Agrarian University La Molina (Peru), a new strategy to support teachers in order to innovate teaching practices. Since 2010 a call for projects is made including the following areas: (a) Integration of research into teaching; (b) Integration campus - field/practice; and (c) Use of ICT or library resources. Selected projects receive pedagogical and financial support. Up to now, considering three calls, seventeen projects have been completed and eight will finish in July 2013. About 56% of projects (Call 1 and Call 2) showed satisfactory or good results. The support for teachers while elaborating proposals and the pedagogical support and follow-up during the implementation contributed to the success of the projects. Selection procedures have been improved, namely including an interview and new requirements to ensure sustainability of the projects. The calls have encouraged teachers to develop proposals that they already had, but did not feel confident to implement and to work in interdisciplinary ways with colleagues from other

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departments. Increase in teacher's self-satisfaction, knowledge on pedagogical and methodological topics and interaction with students were registered. A strong relationship between teaching, practice and research has been shown to be relevant for innovation. Respecting use of ICT, an improved informatics infrastructure was fundamental. The best ways to implement the follow-up, to address gaps in methodology/pedagogical background of teachers, to improve sustainability and to increment the participation of teachers from different departments are still remaining challenges. Those results and reflections might be useful in other contexts.

065

### Students' Perception of their Decision to Enroll in Agricultural Education

Katrina Ann Swinehart  
The Ohio State University

The purpose of this presentation will be to describe factors that students perceive impact their decisions about enrollment in Agricultural Education. This quantitative study utilized surveys as the method of data collection. Findings to be reported include: (a) the students came from a variety of backgrounds, races/ethnicities and were involved in a large number of school activities such as athletics, career and technical education clubs and language clubs, (b) the students' strongest reason for initially enrolling in Agricultural Education was the opportunity for hands-on learning, (c) the students' strongest reason for continuing to enroll in Agricultural Education was the opportunity to promote agriculture in their school and (d) the students' strongest belief about participation in Agricultural Education was that any student who was interested in participating should be welcome to participate in the program. To summarize it was found that the students at each school had independent thoughts regarding their decisions to enroll in Agricultural Education. The two things that all of the students in the study shared were big hopes and dreams for their future and aspirations to attain post-secondary educations and careers in various areas of agriculture. The factors that impact their decisions to enroll in secondary Agricultural Education program could be similar to post-secondary Colleges of Agricultural Sciences; therefore, the factors and findings shared in this presentation could assist faculty in finding ways to connect to the prospective students of their undergraduate programs.

066

### Bundling of Food, Culinology, Nutrition and Packaging Science Cross-Training to Meet Children's Needs through Emerging Food and Ag Products

M. Condrasky, D. Darby, J. Sharp, J. Cooper and A. Weeks  
Clemson University

The aim of the project is in establishing a cohesive, replicable framework for implementing a cross-disciplinary curriculum that improves the industry-readiness of graduates. Food, Nutrition and Packaging Sciences Department sophomores participate in the two-part cohesive and synergistic curriculum incorporated into the already active and successful student led undergraduate research Creative Inquiry (CI) model demonstrating researched-based, hands-on education benefits students more than classroom lectures and theoretical education. The two semester program focuses on healthy children's food product development and sustainable packaging including discussions by faculty and industry leaders, hands-on culinary demonstrations, recipe substitution exercises and packaging fundamentals and design. A knowledge test designed and tested, in 2012 consists of 30 objective items representing the majors. This knowledge test realized a test retest (.75) Cronbach (KR-20) score. Sophomores were randomized to participate in the test (n=21) or comparison (n=19) groups for the first of two curriculum offerings beginning spring semester 2013. The test group includes 11 nutrition; 4 packaging science and 6 food science/culinology majors. An impromptu of the Knowledge Content Test responses from both groups collected at the beginning and end of the semester indicate a decrease ( $P = 0.0313$ ) in the mean percentage correct scores for comparison in the General Product Development subject area and a difference ( $P = 0.0360$ ) between the percentage correct scores of comparison and test group in this area when analyzing the change in mean percentage correct scores from the pre-test to the post-test. ETS, NSSE, SSI and interviews will contribute to the evaluation of undergraduate collaborative projects.

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067

### Graduate Teaching Assistants' Teaching Efficacy

Christopher T. Stripling, Jessica Poore and Carrie A. Stephens  
University of Tennessee

Christopher M. Estep  
Sul Ross State University

Graduate teaching assistants (GTAs) are being utilized more in undergraduate programs. This has placed GTAs in a position to have considerable influence on the quality of undergraduate education. Furthermore, this influence extends beyond the GTAs' home department and crosses disciplinary boundaries when GTAs teach courses with multiple disciplines represented. Limited research has been conducted to assess the quality of instruction delivered by GTAs. One element of teacher effectiveness is teaching efficacy. This study consisted of a census of GTAs (N = 22) in a college of agriculture at a southern land-grant university. The purpose of this study was to describe the teaching efficacy of GTAs. An adapted version of the Teachers' Sense of Efficacy Scale and a short survey were utilized. The GTAs were moderately efficacious in overall teaching ability, instructional strategies, student engagement and classroom management. Additionally, 76.2% indicated they did not receive training in teaching and learning by the university and only 28.6% had any form of prior teaching experience (e.g., substitute teacher, Sunday School teacher, tutor). Research has shown teacher efficacy is cyclical in nature; higher efficacy leads to high performance and lower efficacy leads to lower performance. This coupled with the fact most of the GTAs lack teaching experience and training, we recommend action should be taken to improve GTAs' teaching efficacy. Formal training and mentoring programs and/or the opportunity to complete a certificate program in teaching and learning may be viable options. Future research should investigate these action items and examine other GTA populations.

070

### Evaluation of Student Exam Performance in Relation to Strengths-based Leadership Domain

Deborah L. VanOverbeke and Amy R. Gazaway  
Oklahoma State University

Researchers investigated exam question performance of students who had completed the Clifton StrengthsFinder

assessment and participated in strengths development activities integrated into the curriculum of an introductory food science course. Objectives were to determine if students with dominant domains of leadership, as defined by two or more of students' top five talent themes within the leadership domain, showed a consistent preference for type of exam question, to determine how students with specific dominant leadership domains compared with students in other dominant domains in exam performance and to determine if exam performance improved throughout the term as student exposure to strengths development activities increased. When comparing students with three or more talents in a single domain of leadership, results indicated that students in the strategic thinking domain performed statistically better on two of the four exams. When comparing students with only two talents in the dominant domain, results indicated the same trends as those identified when three or more traits were in the dominant domain. Overall exam performance did not show consistent improvement throughout the semester within any dominant domain of leadership. Students with three or more talents in the strategic thinking domain show no consistent question preference but outperform all other dominant domains on each exam. Other dominant domains indicated a question preference of true/false and/or matching dependent upon the domain. This research underscores the importance of varied exam construction and has implications for establishing study groups based upon diversity of talents across domains of leadership to improve learning.

072

### SWIPE Out Hunger 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 is to benefit both the community and the student. Service-learning gives hands-on experience to students and encourages students toward lifelong civic involvement. SWIPE Out Hunger, a service learning project was incorporated into the Cereal, Fiber and Oil Crops course. The project focused on the class making a presentation to the public about hunger at the local, state, national and international levels. Students joined community members to package almost 100,000 meals for use in the Horn of Africa. Funding for the project came from the Kansas Farm Bureau Foundation for Agriculture and Kansas Campus Compact. Students wrote about their service-

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learning experience and then shared their impressions with others in the class. Students completed a survey with the following conclusions: 1) 87% believe the community participation aspect of the course helped them to see how course material they learned can be used in everyday life; 2) 87% believe they learned more participating in the service-learning project than writing a term paper on hunger; 3) 87% believe that participating in the community helped them enhance their leadership skills and 4) 100% believe this service-learning experience had positive impacts on communicating to the public about hunger and ways to address the issue. Overall, students expressed their feeling of contributing to the community and building skills such as teamwork, communicating with others (peers and the public) and gaining presentation skills.

**073**

### **Multidimensional Scaling for Agricultural Students' Perception towards Cheating Behavior: A case from Iran**

Lida Sharafi and Amir Hossein Alibaygi  
Razi University, Iran

Academic ethics violation (cheating) among students is a major issue in higher education. This phenomenon, harms to the discipline of the university and corrupts the university students' mind. This issue is more or less common and study of it inevitable. The main purpose of this survey research was to analyze the cheating behaviors using multidimensional scaling (MDS) approach. This MDS study focused on students' perception of 13 dishonest behaviors. The statistical population was post graduate students of faculty of agriculture, Razi University (N= 265). A sample of 107 students was selected using stratified sampling technique. Based on Results, students represent cheating behaviors along two dimensions. The first dimension was interpreted as "type of cheating behavior" as students distinguish between academic dishonesty that is paper-related versus exam-related. On the one hand, they are not classifying all these behaviors into one category. The second dimension was labeled as "seriousness of cheating behavior." This dimension indicates students understand behaviors of cheating into a range from less serious to very serious acts. Results revealed that Competition among students is a main reason for academic cheating behaviors. Students believed that the majority of cheating behaviors are common and serious in university context. Also Faculty members are familiar with the majority of students' cheating behaviors. The results could have implications for higher education administrators to understand stu-

dents' perceptions toward cheating behaviors for deciding about prohibition strategies. In other hands, studying students' perceptions relates to the development and implementation of educational programs and policies that are designed to maintain academic integrity.

**075**

### **Purdue Arboretum: Scan, Link and Learn**

Paul C. Siciliano, Kirby Kalbaugh and Andrea Brennan  
Purdue University

The Purdue Arboretum is establishing a digital connection that works across disciplines to unite different facets of the campus landscape into one educational resource. The campus plant collection is utilized by students, faculty and staff in the Horticulture & Landscape Architecture, Forestry, Botany and Entomology Departments, as well as the general public and is of course one important dimension of this arboretum's online database. However, the campus sustainability initiatives, geological features and outdoor art collection are included as well. Soon, smart phone users will be able to use their hand-held devices to access location-based information through the use of QR codes displayed on signage. This new integrated system will provide access to a broad range of educational content linked to the campus plant collection, including plant identification characteristics, landscape value, cultural requirements and maintenance needs. There will also be access to information regarding rain gardens, bioswales, permeable pavement and the numerous other methods Purdue is employing to promote sustainability on campus, as well as information regarding interesting geological features and artwork also found on the Purdue campus and other Purdue landscape features. Instructors from the Purdue Botany, Entomology and Horticulture & Landscape Architecture departments have already been using the campus tree collection to educate their students with real life examples. Once the Purdue Arboretum's mobile learning platform is launched, instructors will be able to map out plants for their classes and their students will be able to access further information regarding those plants on the website via QR codes. A QR code's ability to link the physical world with the virtual supports the type of experiential learning common to botanical gardens and arboreta. QR codes, short for quick response codes and QR readers can connect users to location-relevant educational content. The codes can be easily de-coded by any mobile camera phone that has a QR reader, which is freely available online for most devices. In the arboretum, QR codes will direct students and visitors to the arboretum website where information about location-specific plants, sustainability initiatives, geological fea-

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tures and outdoor art pieces will be available. In addition, students will be able to create their own location and time-relevant content through access to social networks, where they can post comments on virtual walls associated with locations. They can use such platforms to reflect on their experiences, document their observations and connect with other learners in specific courses to share information as they study a particular campus landscape feature. The idea of linking specific objects to information is not new, but QR codes combine simple and affordable creation with real-time, easy access. As a result, QR codes could inspire extensive thinking and innovation around the development of learning resources connected to locations and objects in informal learning environments like campus landscapes, botanic gardens, and arboreta.

078

### Evaluating Student Learning Using Traditional Testing or Daily Quizzes

Laura M. White  
New Mexico State University

Evaluating student learning is a difficult task for many instructors, a major challenge being creation of appropriate testing materials. Often students feel they are not able to showcase knowledge gained when taking an hour exam. The current study surveyed 167 students enrolled in either an introductory horse science or a horse production course taught by the same instructor over four semesters. Each course was taught once with traditional testing (T) where the students completed four exams and once where daily quizzes (Q) replaced exams. Students were asked to indicate how the T or Q course impacted their learning and final grade outcome. Students enrolled in Q courses indicated their learning was deeper than in courses where learning was evaluated by hour exams and reported their final course grade more readily reflected their learning in the course compared to T students. Q students indicated they were held more accountable for all classroom materials. T students indicated hour exams were not a fair way to evaluate their learning in a course. Final course grade distribution was not different between Q or T courses. Traditional testing and daily quizzes were successful when teaching introductory and advanced horse science, but students overwhelmingly preferred quizzes. Change from traditional methods is not required to become a successful instructor, but students often expect divergence from traditional lecture and testing methods. Understanding how departure from traditional testing to daily quizzes will impact student learning is paramount. Also, recog-

nizing how this will affect instructor time management is warranted.

079

### Crossing Disciplinary Boundaries by Sharing Learning Objects

Carol Speth and Donald Lee  
University of Nebraska-Lincoln

One way of crossing disciplinary boundaries is by identifying concepts essential to several fields and developing effective ways to teach them. A USDA-NIFA grant awarded to the Triticeae Coordinated Agriculture Project (TCAP) included funds to develop education and extension resources to teach key concepts and create an awareness of Plant Breeding as a Career. Students in Plant Science and Genetics courses taught in a College of Agriculture and Natural Resources and Genetics courses in two Colleges of Arts and Sciences (n=340) were invited to participate in a study to assess the resources' effectiveness. Students accessed the resources by links in their course management systems to the Plant and Soil Sciences eLibrary (PASSEL). Video-based resources were used by 95-96% of the students, text-based resources by 54-64%. Individual students could choose which and how many resources to use. But there were no significant differences among classes in the mean number of resources used. There were significant differences between classes on mean self-rated growth in awareness, knowledge, interest in plant breeding as a career for themselves and willingness to invest time and effort in using the resources. There were significant differences among class means on whether the information presented would help them in their careers or in the class they were taking. Pass rates on content items varied as expected. The Arts and Sciences students' open-ended comments about the value of the resources in general and the TCAP videos in particular were positive and often said the information was interesting and useful.

080

### Theory to Practice: Boot Camp – A Unique Capstone Course for Pre Service Agriculture Teachers Prior to Student Teaching

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Clemson University

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Each spring semester, Clemson University's Agricultural Education student teachers prepare for their student teaching assignment by participating in an intensive Boot Camp style course that strengthens and sharpens their agricultural technology skills needed for classroom and laboratory success. Boot Camp is a focused three-week, 8:00-5:00 course taught before the twelve-week student teaching experience. The student teachers gain experiences while reinforcing existing skills of various technologies, curriculum development and delivery methods utilized in secondary agricultural education programs. Throughout the course, the student teachers develop teaching aids, unit plans and refined personal teaching and laboratory techniques, which are essential for a safe and quality agricultural technology classroom or laboratory. Course topics include: Precision Measurements, SMAW and MIG Welding, Metal Fabrication, Concrete and Masonry, Plumbing, Wood Construction, Electrical Wiring, Small Engines and Mechanical Drawings and Plan Reading. Each student completes a project in each topic area, as well as develops teaching tools to aid in classroom instruction. They are also required to develop unit plans covering a selected piece of equipment. Each year the courses students and other professors evaluate Boot Camp to reflect on each activity and provide feedback on the good, the bad and the ugly. In conclusion, the student teachers sharpen their technical skills from previous courses throughout the Clemson University Agricultural Education curriculum, enabling them to deliver course content in a structured delivery method and put theory to practice.

**081**

### **Food Safety and Agroterrorism Training: Educating Our Future Workforce**

Douglas Morrish and P. Ryan Saucier  
Texas State University

Nora Garza  
Laredo Community College

Following the September 11, 2001 terrorist attacks on the World Trade Center and the Pentagon, much attention by the United States Department of Agriculture (USDA) and Texas Department of Agriculture (TDA) has been put on agroterrorism and the safety of our food supply (House Research Organization, 2001). These alerts are still present today. Many jobs are available for students who are trained in this specific area, but the Hispanic population is often underrepresented in the food safety and inspection area. Texas State University Department of Agriculture has developed an innovative

teaching approach made possible through a USDA-NIFA grant funded project. Fifty Hispanic USDA fellows were involved in training to become certified by the Department of Homeland Security in the course entitled Preparedness and Response to Food and Agriculture Incidents: Management and Planning Level. The students participated in a one week "travelling classroom" to the Southwest Border Food Safety and Defense Center where they were introduced to food safety vulnerabilities through field trips to dairies, food processing factories, the United States/Mexico Livestock Border Crossing and others. Students also participate in internships with one of the many USDA agencies. Students participating in this innovative teaching program have gained an immense amount of experience with food safety and agroterrorism, thus helping narrow the gap of underrepresented students in food and agricultural sciences. The objectives of the presentation will include a brief introduction to the innovative teaching approach, activities involved in the approach and lessons learned from the approach.

**082**

### **Is There a Significant Difference? A Comparison of Student Learning Outcomes in Face-to-Face and Online Courses**

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North Carolina State University  
Raleigh, NC

Distance education is becoming more popular in higher education. However, some students and instructors have concerns whether online classes are equally effective as face-to-face classes in terms of learning outcomes. The purpose of this research was to determine whether teaching online is as effective as teaching face-to-face in terms of learning outcomes. This purpose was accomplished by comparing exam results in three graduate course taught to online students as well as to on campus students. Each exam had 50-75 multiple choice questions. The three courses were selected because of differences in testing methods and in instructors. In one class students had two hours to complete the exams and were allowed to use notes. Another class had a stringent timed computer based exam with no notes. The third class had proctors to administer the paper-based exam to distance students while the instructor administered the exam to on-campus students. Independent sample t-tests confirmed there were no significant differences between test score means of the two groups of students. The results were:

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AEE 501-Foundations – 2 Exams – DE Means (84.25, 86.83), Face-to-Face Means (85.3, 86.4)

AEE 578-Research – 1 Exam – DE Mean (87.5), Face-to-Face Mean (85.0)

AEE 577-Evaluation – 2 Exams – DE Means (93.67, 84.34), Face-to-Face (94.45, 84.41)

This finding confirms that if properly planned, managed and delivered, online teaching is as effective as face-to-face teaching. This presentation will discuss how these graduate courses were planned, managed and delivered to achieve comparable learning outcomes. This presentation has implications for instructors who are considering teaching online courses.

### 083

#### **Teaching, Research and Extension in 21st Century Land Grant System: Implication for Graduate Education**

Anil Kumar Chaudhary, Rama Radhakrishna and Mark Brennan  
Penn State University

Last year we celebrated 150 years of the land grant system. Today, we have more than 100 land grant universities which produce 60% of the American graduates. If one traces the historical roots and the changes that have occurred over time, one can conclude that it has brought significant social change, but challenges remain—access, affordability, mission, technological revolution. With an ultimate objective of showcasing the diversity and richness of projects occurring within a land-grant university, ten guest speakers presented their work and experiences to a weekly colloquium of graduate students. A convenience sample (n=7) of speakers was selected who presented diverse topics ranging from the Vision for College of Agricultural Sciences, Extension Business Model, Entrepreneurship, 4-H Youth and Families, Diversity, International Programs and Collaborative Multidisciplinary Research. A basic qualitative analysis of the seven presentations revealed five themes: funding, interdisciplinary collaboration, diversity, linking research with extension and the future of Extension. These themes were compared in the context of graduate education. If we are to prepare graduate students for the challenges of the 21st century, then our land grant colleges and universities should attract students from diverse backgrounds, create opportunities for cutting edge research that involves multiple disciplines to address critical issues facing society, provide opportunities for global exposure and understanding, develop linkages with private foundations to provide a funding stream for graduate education. Overall there is a bright future for

graduate education but it will be more challenging and we must be proactive than reactive.

### 085

#### **Agriculture Faculty Mentoring: Serving the Leadership Needs of Undergraduate Students**

Tyson Sorensen, Kellie Strawn, Aaron McKim and Jonathan Velez  
Oregon State University

Research indicates that meaningful interaction with faculty is vital for student success but the question remains whether faculty will serve as mentors when there is little tangible benefit, such as promotion and tenure. This project sought to engage faculty in a new mentoring process. The goals were to: 1) Determine whether faculty would volunteer as mentors and 2) Identify the potential mentor benefits associated with the mentoring process. Mentors were recruited via an email invitation and after a short interview process, were selected by the students to serve as his/her mentor. The mentor role was to provide students with guidance, offer ideas, and stimulate critical thinking while developing leadership goals and reflecting on leadership experiences. Mentors and students were interviewed at the end of the experience. Faculty willingly volunteered to work with students as mentors. Twenty-six faculty members volunteered during the first year and ten of them were paired with different students. Faculty mentors ranged from deans to instructors with a variety of different professional assignments. During the second year of the program, mentors were not recruited, but through word of mouth, three additional faculty members were added to the list of mentors. Mentors met at least monthly with students and they indicated the mentoring experience was beneficial because it allowed them to get to know the students better and participate in some of the same leadership and growth experiences as the students. Students also expressed positive benefits from having consistently met with their mentor.

### 086

#### **Assisting Students in Need of Academic Action**

Rebecca G. Lawver, Taylor Adams, Lisa Allen and Janet B. Anderson  
Utah State University

Academic and faculty advisors play a key role in a students' academic success. Academic advising is a dynamic process with significant impacts on student reten-

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tion, student involvement and institutional success. Research suggests advisors must be willing to obtain ongoing training. The introduction of the Appreciative Advising model in advising sessions may help with improving student retention and satisfaction. Academic advisors at Utah State University have been trained to use Appreciative Advising during their advising sessions. The purpose of this study was to describe the internal and external characteristics of students in need of academic action at Utah State University. The population for this study were students in need of academic action (i.e. students placed on academic warning or probation) in the 2012-2013 academic year (N = 124) in the College of Agriculture. Data was collected using an electronic version of the Appreciative Advising Inventory. A response rate of 54% (n = 67) was received. Results indicated the majority of the students in need of academic action were freshman (n = 43), female (n = 42) and white (n = 56) and represented all departments in the college. The lowest grade point average reported was a .21 on a 4.0 scale, with a mean GPA of 1.55. Students were rated lowest in “positive identity” and “constructive use of time” indicating that students in need of academic action need assistance in setting goals as well as planning and organization. Additionally students indicated lacking “connections with faculty” and “campus involvement” as areas for needed assistance.

088

### Reaching the Less-Reachable: An Approach to Recruiting Students

Tyson Sorensen  
Oregon State University

Colleges of agriculture must prioritize recruitment efforts if they are to supply the agricultural industry with an appropriately trained workforce. Research suggests campus visits and personal contact with students have profound effects on students' decisions to matriculate. This project's objective was to identify if hosting high school events on campus impacted students' enrollment decisions. In an effort to maximize recruitment efforts in recent years, the College of Agriculture (CAS) at Oregon State University has purposefully coordinated and carried out campus activities while planning and hosting the State FFA Convention and State FFA Career Development Events (CDE days). The college organized tours, workshops, entertainment, a career fair and activities for the visiting students. Data from a survey of incoming CAS freshman indicated the average distance from students' homes to the university was 251 miles. Furthermore, 81% and 40% of respondents indicated the State

FFA Convention and State CDE days respectively were effective or very effective in influencing their decision to enroll in the college. These results suggest hosting high school events have an impact on students' enrollment decisions. Hosting campus events for high school students may give many perspective college students the opportunity for campus visits that they otherwise may not have had due to distance or cost. Since research indicates campus visits have an impact on students' matriculation decisions, colleges of agriculture should explore ways to host events for high school students in an effort to reach the less-reachable and supply the agricultural industry with graduates that meet workforce demands.

092

### Crossing Disciplinary Boundaries Using a BRIDGE: Building Research Interest and Developing Global Engagement

Kimberly D. Gwinn and Joanne Logan  
University of Tennessee

Aggy Vanderpool  
Lincoln Memorial University

Caula A. Beyl  
University of Tennessee

The US Department of Labor predicts that employment in professions related to agriculture and food will increase by 16% in the decade between 2008 and 2018. Although a bachelor's degree is sufficient for some, the majority of opportunities will be available only to those with advanced degrees. The purpose of our program was to increase the number of allied science undergraduate students that are trained in research based among the USDA Priority Areas. To qualify for undergraduate research funding in our program, the primary criterion (after quality) was that student-faculty pairs had to be from different colleges within the University of Tennessee or from Lincoln Memorial University (LMU). In the first round of funding, eight projects were funded at UT and six LMU students participated in summer internships—two at UT and four at LMU. As a result of this program, participating undergraduate students are more prepared for graduate school. Outcomes for the undergraduate projects have included a peer-reviewed journal article in draft stage (1), Fact Sheets (English and Spanish), (3), presentations at scientific meetings (3) and an invention disclosure (1). In addition, the College of Agricultural Sciences and Natural Resources section of the UT Exhibit for Undergraduate Research and Creative



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Achievement typically has about 5% of the participants whose majors are in another college; the percentage has now increased to 32%. Although it is early in the USDA Higher Education grant funding period, we have produced qualified and diverse graduates capable of entering the agricultural sciences workforce with the occupational competencies expected by employers.

**094**

### **Impact of the EARTH Program on Student Development of Personal and Professional Skills**

Cynthia Haynes and Kevin Duerfeldt  
Iowa State University

The EARTH (Education and Resiliency Through Horticulture) program is a service-learning, school gardening initiative at Giffit Hill School, St. John, U.S. VI. Twenty-three undergraduate students were surveyed to determine the impact of the EARTH program on personal and professional skills. Twenty-one students responded (91% response rate) to the 27-question survey administered in March 2013. The majority of students agreed or strongly agreed that they were challenged to: 1) use critical thinking skills to solve problems (99%), 2) work better with others in teams (80%) and 3) learn more about teaching and educating youth (95%). All students agreed or strongly agreed that they developed new or expanded personal and professional capabilities such as communication and research skills. Several students commented that the EARTH program helped in "...solidifying where I could see myself in 5 to 10 years" or "broadened their knowledge of horticulture...or plants." One student responded: "I am now getting a Masters in Education. This program is part of the reason I made that decision." In addition, several students responded that the EARTH program experience helped them become "...more accepting of different values and cultures." Overall, a service-learning experience like the EARTH program provides a valuable opportunity for undergraduate student development and practice of personal and professional skills

**096**

### **Developing Growth Mindsets and Emphasizing Effort: Faculty and Student Development**

Cindy Haynes, Suzanne Hendrich, Jan Thompson, Barb Licklider and Jan Wiersema  
Iowa State University

This HECG grant #2011-38411-30547, "The Power of Thinking Like a Scientist Applied to World Hunger" has engaged a team of 8 faculty members and students in 5 courses to date. A "mindset" survey was adapted to administer to faculty and students. Faculty worked to redesign course syllabi to emphasize specific student efforts that would enhance their success and to develop course activities designed to enhance student "growth mindset." When pre- and post-experience surveys were compared, faculty team members showed increases in growth mindset after 8 months of team meetings. They had an increased belief in their ability to improve ("the harder I work at something, the better I will be at it") and in applying growth mindset to their classes ("I praise effort as well as performance"). But in considering student effort, faculty seemed to increase their belief that "when it comes to coursework, students just want to do what they have to do and get it done." In a sophomore food science and nutrition course, students were introduced to growth mindset concepts woven into course lessons. Analysis of student pre- and post-course mindset surveys indicated fewer students were "just doing what I have to and getting it done" and "liking classwork best when I can do it perfectly without any mistakes." They increased their appreciation for coursework that "makes me think hard." But students' intellectual curiosity ("I like to learn new things") declined somewhat. Overall, early indications support efficacy of educational efforts to engage students and faculty in a growth mindset.

**097**

### **Factors Influencing Student Choice of Major**

C.M. Leard, T.R. Dobbins, K.R. Kirk and K.D. Layfield  
Clemson University

The purpose of this study was to identify the factors that influence students' choice of major when enrolling in the Agricultural Mechanization & Business and Agricultural Education programs within the College of Agriculture, Forestry, & Life Sciences (CAFLS) at Clemson University. Specific research questions were developed to determine: the intended major choice; reason why the student may have changed majors during the process; the characteristics of the anticipated degree program to see if they influenced major choice; the level of influence of individuals; when the student began the college/major choice process; when they finalized their selections; and the principal factor that influenced the student's decision. The population for this study consisted of 52 purposely selected freshman and transfer students in the Agricultural Mechanization & Business and Agricultural Education programs which were enrolled in the freshman introductory classes during fall 2012. This study used a quali-

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tative research method. A panel of experts developed the questionnaire. Survey Monkey was employed to collect responses. The findings indicated the most influential individual when choosing a major was the agriculture teacher followed by CAFLS faculty. The most important factor was the career opportunities available after graduation. Furthermore, students are making their final decisions during the second semester of their senior year. The findings suggest that recruiting efforts need to target and communicate with agriculture teachers as early as possible to increase enrollment of high school students.

098

### Food Safety in Agritourism – From Seed to Table

Janice Branson and Melinda Anderson  
Tennessee Tech University

Safe production of processed and unprocessed fruits/vegetables for consumption by visitors is a primary component in most agritourism enterprises. Perspective employees usually have training in field production from seed to harvest (agriculture majors) or in conversion of raw foods to processed foods (human ecology majors). Three courses were developed with the objective of linking across both disciplines to train students to produce traditional agritourism fruits/vegetables from seed to table in a hygienic environment. Content of each course was based on typical crops for that semester: Spring-cool season crops (cabbage, onions, lettuce); Summer-warm season crops (corn, tomatoes, beans, okra); fall-cool season crops (turnips, Swiss chard, mustard). Students earned certifications in ServSafe and pesticide application. Crops were prepared for distribution as raw materials or processing by freezing, canning, or made into jams/jellies. Honey was harvested from university hives and sold to provide revenue for new hives. A faculty breakfast was prepared using materials produced during the courses. Field trips exposed students to agritourism venues involving production of wine, whiskey and dairy products. Attitudes of student participants have been very enthusiastic. Every student borrowed equipment to process vegetables at home and some have offered assistance in teaching the courses or helping in the production area. The certifications earned have been mentioned by potential employers during interviews. Hands-on experience with a variety of crops, production methods and equipment and processing methods has provided participants with skills useable for both home and agritourism careers.

099

### Bioinformatics Education for Agricultural Science

Ming-Ying Leung and Kyle L. Johnson and Felix Guerrero  
The University of Texas at El Paso

Many agricultural pests are threats to our livestock, as they can act as vectors for fatal pathogens. Recently, there is an explosion of unanalyzed genetic data available to help combat agricultural pests, but a severe lack of well-trained bioinformaticians to analyze this plethora of data. In fall 2012, we launched an initiative to train teams of students from the biological, computational, mathematical and physical sciences, to conduct bioinformatics analysis of USDA research data, focusing on the DNA and protein sequence collections from the tick *Rhipicephalus microplus*, which is known to cause major diseases in cattle. Part of the research in Dr. Felix Guerrero's lab at the USDA-ARS in Kerrville, Texas, aims at elucidating the molecular structure and functional mechanisms of four Bm86 tick proteins for vaccinating cattle in different areas of the world. GAVAC is a version of Bm86 that works well on the cattle in Cuba, but not in Texas and Mexico. It is hypothesized that the Texas tick Bm86 protein, called Bm86Deutsch, differs from GAVAC in structure and epitope regions. We applied various bioinformatics software tools to explore the differences in sequence and structure among GAVAC, Bm86Deutsch and two other Bm86 proteins, Bm86TICKGARD and Bm86CampoGrande used respectively in Australia and Brazil. Despite very high sequence similarities, several major amino acid differences, which may influence the overall structures and epitope locations of these molecules, are found. Based on these data analysis methods and results, we are developing hands-on projects for cross-discipline, problem-based learning in bioinformatics.

101

### Agriculture out of Bounds

Brenda S. Anderson  
Houston Community College

This grant is a collaboration between Houston Community College, Dayton ISD and the University of Houston. Our objectives include: provide science-based knowledge and technologies to generate new or improved high-quality products and processes to expand markets for the agriculture sector, by focusing on the

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targeted career fields in horticulture, aquaponics, water quality, natural resource conservation, food, health, safety and sanitation; and to provide educational support to enable students to complete horticulture (aquaponics) and agricultural classes at Dayton ISD and HCC and enroll in the U of H Conrad N. Hilton College degree program or a comparable university bachelor's degree program. During Year 1, the Agriculture Out of Bounds grant addressed the USDA Educational Need Areas of Student Recruitment and Retention and Student Experiential Learning through multiple hands-on, inquiry based activities conducted at Dayton High School in the Dayton Independent School District (DISD) and Houston Community College (HCC). Four faculty members worked a total of 389 hours on project administration and activities to serve 2218 students, 593 (27%) of whom were of Hispanic heritage. The current horticulture program staff at DISD High School was eager to partner with HCC to develop an Aquaponic curriculum; consequently, the agricultural science teachers at Dayton High School were taught the curriculum through a summer train-the-trainer program taught by the faculty at Houston Community College. In October, 2011, the website for the USDA Agriculture Out of Bounds grant was established and a poster was designed to use as a dissemination tool.

103

### **Master's International Program Facilitating Student Empowerment: Implications for Educators**

Tegan J. Walker, James R. Lindner and Cathryn A. Clement  
Texas A&M University

The Master's International Program at Texas A&M University is a unique opportunity for graduate students by combining a Master's degree with overseas service in the Peace Corps (Peace Corps, 2012). Sedlacek (1984) noted that the next step for many Peace Corps volunteers is the pursuit of graduate degrees. The Master's International Program at Texas A&M University combines an advanced degree with Peace Corps volunteer service to allow students to complete them together. Graduate students can gain valuable international experience during their Peace Corps service. Holmes (1972) wrote the "Peace Corps stands as a gateway of opportunity in international agriculture for the agriculture graduate." (p. 64). A Peace Corps experience opens doors for graduate students to expand their global awareness and is a great way for students to feel empowered in their learning. Students need more than just technical knowledge to solve problems. The Peace Corps provides first-hand experiences in different cultures through

overseas travel. Culture plays a key role in how problems are perceived and addressed (Klem, 2007). The importance of problem-based learning in the field is seen in the Master's International Program at Texas A&M University as many issues during service require the student to solely face the problem. This also places a rather large amount of responsibility on the student which prepares them for future careers. This collaboration allows graduate students to gain global perspective by participating in the Peace Corps while completing their graduate degree.

104

### **Increasing Horticulture Based Outreach and Extension Program Activities by Delaware Cooperative Extension**

Rose Ogutu, Andy Wetherill, Troy Darden, John Clendaniel and Maggie Moor-Orth  
Delaware State University

The project aims at strengthening horticultural extension activities to effectively reach out to Delaware small farms clientele. It will address critical horticulture crops growers' needs amidst the following trends; growing interest in locally produced fresh, healthy and safe foods, greater sensitivity to environmental impacts of agriculture, more direct marketing of produce, season extension through protected horticultural structures and a surge in use of electronic and social media. The objectives are as follows: 1) To strengthen the effectiveness of Smyrna Outreach and Research Centre, our main demonstration unit, by incorporating protective culture horticulture technologies and transitioning 6 acres of land to organic production. 2) To develop more extension-wide connections or networks with community organizations to help promote opportunities for our clientele participation in sustainable production programs. 3) To improve cooperative extension educational programs by developing more effective communication among extension professionals, clientele and consumers through enhanced training on organized electronic and social media channels. 4) To deliver a series of workshops and trainings on targeted topics that will improve sustainable production and utilize emerging horticulture technologies. Our ultimate goal is to increase the quality of extension educational programs that promote ecological horticultural systems, while including well managed social media interaction.

105

### **Student Perceptions of a Plus/Minus Grading System**

Donna L. Graham, Donald M. Johnson, Leslie D. Edgar and Bruce L. Dixon  
University of Arkansas

In the United States, academic letter grades are generally assigned according to either the whole-letter system (A, B, C, D, F) or the plus/minus system (A, A-, B+, B, B-, C+, C, C-, D+, D, D-, F). In fall 2005, the College of Agricultural, Food and Life Sciences (CAFLS) at the University of Arkansas authorized use of a plus/minus grading system. Use of the plus/minus system was voluntary: Faculty members could continue to use the whole-letter grading system if they so desired. Students (n = 322) in 11 purposively selected undergraduate courses were surveyed in spring 2013 to determine their perceptions of the plus/minus grading system. A majority of respondents were female (54.6%), juniors or seniors (53.8%), with self-reported cumulative GPAs of 3.0 or higher (67.3%). The respondents indicated that a mean of 45.0% (median = 50%) of their own CAFLS courses had used the plus/minus grading system. A majority of respondents agreed the plus/minus grading system was unfair (64.6%), preferred the whole-letter grading system (80.7%) and agreed their own GPA (50.2%) and student GPAs overall (58.8%) were lower because of the plus/minus grading system. Fewer than 30% of respondents agreed that the plus/minus grading system helped high-achieving (28.5%), average (26.9%), or low-achieving (26.4%) students. The major conclusions from this study are that students do not support the plus/minus grading system and only about one-half of courses use plus/minus grading. Faculty and administrators should reconsider the benefits and implications of the plus/minus system.

106

### **Cutting Final Cut: Replacing Discontinued Software for a Video Editing Lab**

Amanda Garcia and Erica Irlbeck  
Texas Tech University

In the agricultural communications curriculum at [university], a basic video production course is required, in which students learn to edit video on Apple's Final Cut Express (FCE). The professor and students are content with FCE; however, it is no longer manufactured, so she needs to upgrade to ensure students receive the most

current technology instruction possible. Before upgrading, the researchers wanted to explore which software video professionals used. A brief questionnaire was developed by the researchers to explore editing software used, user satisfaction and best software options for college students. The Association for Communication Excellence in Agriculture, Natural Resources and Life and Human Sciences electronic media special interest group members were the sample for the study. Of the 20 members that regularly participate in the SIG, a little more than half (n=13) completed the questionnaire. Nearly half of the respondents used Adobe Premier or an older version of Final Cut (n=4, n=4). One respondent used Avid and two respondents used Final Cut Pro X (FCPX). When asked what software the participants would choose if they were in charge of purchasing to teach college students, nearly half indicated would chose FCPX and the other half selected Adobe Premier (n = 4, n = 4). Although FCPX would be the next step up, the department will likely move to Adobe Premier, which is now available through the Adobe Cloud and can be installed on students' laptops. Plus, the department is already using numerous programs that are included in the Adobe Creative Suite.

107

### **Animal Science 101: Back to the Basics**

Dan Stein, Trent Hughes, Clint Mefford, Blake Bloomberg, Rachel E. Thornburg and Jon W. Ramsey  
Oklahoma State University

Animal agriculture and the skills needed to facilitate experiential learning opportunities in the context of supervised agricultural experience programs continue to be an important component of the Agricultural Education teacher's responsibilities. In Agricultural Education programs across Oklahoma, the primary career pathway is Animal Science. Training the next generation of teachers to have the requisite skills needed to facilitate these programs is the focus of a collaborative effort between two departments in the College of Agricultural Science and Natural Resources at Oklahoma State University. An Animal Science course with a designated lab for Agricultural Education majors has been developed to introduce pre-service teachers to the basic animal handling skills needed to facilitate animal agricultural experiences in school-based Agricultural Education programs. Emphasis is also placed on techniques related to physiology and other aspects of animal care and well-being. To highlight the teaching of animal husbandry skills, an experiential approach is being implemented. Pre-service teachers are required to use the demonstration or prob-

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lem solving teaching method to create just-in-time (JIT) teaching plans that are taught to their peers in a lab. In the spring of 2012, a preliminary assessment of student learning based on pre- and post-test evaluation of student knowledge was implemented. Results indicated a significant ( $p < 0.01$ ) 17.8 point increase in student knowledge and basic animal handling skills. Additionally, no significant correlation was found between test scores and student involvement in school-based Agricultural Education. Departmental collaboration and further student assessment is ongoing.

108

### Participation of Agricultural Education Students in Dual Enrollment Programs in Tennessee

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University of Tennessee at Martin

Dual enrollment (DE) and dual credit (DC) programs in high schools can help with the transition from secondary to post-secondary education. To examine the prevalence of DE and DC programs within Tennessee high school agricultural education programs, a survey was administered to 120 agricultural education teachers during the 2011 Summer Career and Technical Conference. Chi-square tests were used to examine the relationships among factors that affected student enrollment in DE/DC courses. Sixty-two percent of the teachers surveyed taught at schools that offered DE/DC programs. Agriculture departments that did not offer DE/DC did so primarily because of lack of interest by their students. Teachers also indicated that cost to the students was a limiting factor. Schools with fewer agriculture students (less than 50) and schools with more than 200 agriculture students had significantly ( $P = 0.0358$ ) higher participation rates in DE/DC courses than schools with mid-sized agricultural programs. In addition, participation in DE/DC programs increased with an increase in the number of agricultural education teachers at the school ( $P = 0.0835$ ). Survey respondents indicated that 60% of the students who took DE/DC courses continued their education with the partnering institution after high school graduation. Teachers also indicated that DE/DC programs were beneficial to the students, to the post-secondary institution and to the high school agricultural education program. Therefore, the implementation and continuation of DE and DC programs in agricultural education and career and technical education in Tennessee should be encouraged.

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### Virtual Nursery Field Trips to Improve Instruction in Nursery Production

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Auburn University

Jim Robbins  
University of Arkansas

Mengmeng Gu  
Texas A&M University

Funding, logistics and geography often limit the scope of field trips available to students in nursery production courses. The objective of this project was to create virtual nursery field trips to improve on-campus and distance education in nursery production. From Oct. 2010 to Nov. 2011, digital HD video footage was captured at 42 nursery businesses in 22 states. Total travel included 65 days over 18 trips covering almost 43,000 miles. Almost 25GB or approximately 26 hours of video footage was collected. Upon review by authors, video footage selected for each topic was edited together by a professional videographer. Narration for selected video footage was written and a professional narrator recorded all narration for each topic. In the final product, videos were arranged by topic for a total of 20 "chapters." Video segments within each chapter or topic range from a few seconds to several minutes. The finished product has been transferred to a single USB drive and contains 444 individual topic videos (total time about 10.75 hours) and 28 company profiles for a finished project size of 29GB. USB drives containing videos and company profiles were provided in spring 2013 to instructors of horticulture at land grant institutions (1862, 1890 and 1994) who submitted a request form. Product users will be surveyed to document content, organization, accessibility and ease of use and implementation of the product.

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### Training and Development of Research-Savvy Undergraduate Student through the Multiplex Real-Time PCR Assay

Jung-Lim Lee  
Delaware State University

Vibrio species are opportunistic marine bacterial pathogens that cause Vibriosis resulting in lethality rates among humans and huge economic losses in aquaculture industries. Education and retention of human capital

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in food safety field is major concern in academic institute and private sector to ensure continuous providing of safe and high quality food products to US consumers. Therefore, research faculty should actively commit to inducing food science major students to laboratory and developing next-generation food safety experts through undergraduate research. Objective of this project was to construct a strategic plan to educate an undergraduate student in Food Science major through a practical research project in food safety to develop the Multiplex Real-time PCR assay for detection and quantification of *Vibrio spp.* in seafood samples. The research methods provided a comprehensive approach toward learning Food Microbiology and Molecular Biology techniques, Documentation skills, organizing research schedule and building team work. Project progress evaluation was conducted by the Project Director (PD) daily to determine how well undergraduate research student was being trained. As an advisor, the PD recommended how to improve project activities through weekly meetings with students. From this project, the Multiplex Real-time PCR was developed for detecting *V. anguillarum* as well as educational outcome has resulted in a 1st place student award at professional meeting and a student's research manuscript submission in peer-reviewed journal. This early educational training will strengthen the Food Science Program as an innovative, non-traditional approach toward solving the higher educational needs at Delaware State University and will help students become cadres of the high-tech Food and Agriculture industries in the global economy.

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### **Making Climate Change a Functioning Thread in the Baccalaureate Curriculum: Transforming Fiber, Textiles and Clothing Education**

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Kim K. Y. Hiller Connell  
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Gwendolyn Hustvedt  
Texas State University

Barbara G. Anderson  
Kansas State University

A three year USDA NIFA Higher Education Challenge grant was awarded to accelerate integration of climate

change concepts and other environmental issues into fiber, textile and clothing (FTC) programs. This presentation reports results of phase one of the project: a best practice assessment of sustainability science undergraduate programs in the United States. The objectives of the best practice assessment were to: 1) identify key skill competencies and core content grounding sustainability science undergraduate programs and 2) identify best teaching practices that may be transferred to the FTC discipline and provide a curriculum framework to guide infusion. Methodology included systematic review of Association for the Advancement of Sustainability in Higher Education's (AASHE) Sustainability Tracking, Assessment & Rating System (STARS) that assigns points for sustainability actions within higher education institutions. Analysis of program descriptions, learning outcomes, core course descriptions and co-curricular educational activities led to the identification of eight key skill competency areas and fifteen core content areas essential in formal sustainability education. The analysis also led to the identification of eight top sustainability undergraduate programs. Two of these programs were targeted for further investigation using qualitative methodology to collect interview data from faculty and administrators. Interviews are underway, it is expected that analysis of interviews will reveal effective curriculum and pedagogical approaches relevant to FTC education as well as professional development strategies to better prepare FTC faculty for infusing climate change and sustainability science competencies into social science based programs and prepare future FTC professionals for an industry transitioning toward sustainability.

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### **The Inclusion of an International Agricultural Education Course at the Post- Secondary Level**

Thomas W. Kingery  
Western Kentucky University

The purpose of the study was to determine the inclusion and content of an international agricultural education course at the post-secondary level. A three round Delphi procedure was used to solicit expert opinions regarding each key area. The panel selected, (n=15), consisted of faculty at post-secondary institutions selected from a diverse list of professionals with an expertise in international agricultural curriculums. A six-point Likert-type scale was used after round one and additional rounds. The findings revealed the most significant disciplines as: philosophy, policy, models, program planning, public and private systems, & evaluation; role of agriculture in a developing nation's economy; social, economic, political

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issues; and cross cultural communication M 5.18, SD 0.75, extension education M 5.36, SD 0.80 and agricultural and extension education policies M 4.81, SD 1.07, with the latter three with an 81.81% agreement among panelists. Competencies identified were: skills working with other cultures; roles of change agents; environmental, developmental, conservation, sustainability, natural resources issues; extension models; understanding non-governmental organizations; knowledge of basic agriculture; ability to listen, plan and evaluate. Suggested use of such a class in a multiple degree program should be a requirement for a minor in international agriculture. Further studies should be conducted to determine if the area of expertise of the panelists focused more on extension techniques, their experiences were based more on educational typology than practical and technical systems, or their placement in those professional positions did not allow them to focus on the skills and trades that were already known to flourish in their geographical region.

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### **An Evaluation of Teaching Abroad at Hawassa University, Ethiopia**

Wendy J. Dahl and Amanda L Ford  
University of Florida

Significant research has been carried out examining study abroad learning experiences. In contrast, little is known about the impact of being taught by professors from abroad. Our aim was to examine the learning experiences of current and past students of the Masters in Applied Human Nutrition Program at Hawassa University, Awassa, Ethiopia, who have been taught courses by faculty from North American and European universities. Participants completed an online questionnaire through SurveyMonkey® regarding their learning experiences. Of the respondents (46/67; 34 M, 11 F; 31±6 y), 93% were satisfied with the course content, 91% felt the projects/assignments assigned by the visiting professors were suited to their interests and 87% believed they were required to think critically. In addition, 95% of respondents felt that having visiting professors enhanced their program. However, only 73% of respondents believed that the course material/content that was presented by the visiting professors from abroad was relevant to the nutritional concerns that exist in Ethiopia, although most respondents (82%) believed that the visiting professors were considerate of cultural differences. Most respondents (91%) strongly disagreed or disagreed that the differences in spoken language/accents made it difficult for them to understand the visiting professors when

they lectured/instructed the class and 81% agreed or strongly agreed that being taught by visiting professors improved their English. Although 74% of the respondents had never left Ethiopia, 63% reported being more likely to travel outside of Ethiopia following their interactions with visiting faculty. In general, student perceptions of visiting professors from abroad were positive and their role, in part, may be to enhance the global competence of the students.

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### **An Evaluation of Undergraduate Engagement in Structured Nutrition Research Activities**

Amanda L. Ford, T. Grady Roberts and Wendy J. Dahl  
University of Florida

While research activities may provide engaging learning opportunities for many undergraduate students, research is needed to identify learning outcomes and optimal delivery methods. Our aim was to examine the attitudes, perceptions and perceived learning of a cohort of undergraduate students who participated in research activities during the fall 2012 semester through the Food Science and Human Nutrition Department, University of Florida. Identified undergraduates (n=25) were contacted and 16 (64%) participated in focus groups and 18 (72%) completed a paper questionnaire. Student respondents participated in research 10±0.6 hrs/wk and most had no prior research experience (89%). Respondents agreed or strongly agreed that they played an important role in the research (83%), the procedures and techniques they used are applicable to other fields of research (89%) and that they looked forward to participating in additional research activities (94%). A post-then method was used to assess student/learner changes. Respondents agreed or strongly agreed that they were primarily motivated to participate in research due to a genuine interest in the research before participating in the research experience (67%) compared to 100% of respondents after participating. Factors enhancing the student research experience included providing a research experience that was team-based and facilitated interaction with faculty and graduate students. Student suggestions for future research experiences emphasized a need for defined objectives and clear expectations for student performance. In general, positive learning gains were demonstrated and student satisfaction was high within the cohort.

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### **Creating Agricultural Communication Curriculum in Secondary Agricultural Education Classrooms: An Assessment of Students' Perceptions**

Carley Calico, Leslie D. Edgar and Don W. Edgar  
University of Arkansas

Agricultural communications (ACOM) curriculum is important to prepare students for diverse, agriculturally-related careers. Due to lack of secondary ACOM curriculum, postsecondary initiatives have focused on instructional material development. This descriptive study examined secondary agriculture education students' perceptions of ACOM curriculum. Researchers' sought to determine how students received a writing lesson taught through traditional classroom delivery with an experiential activity. Additionally, researchers' studied students preferred method of knowledge acquisition as well as their current knowledge of ACOM and assessed knowledge of opportunities within the field. Students (N = 630) from nine agricultural science programs in Arkansas completed a four-part survey at the conclusion of the writing lesson. Based on the findings of this sample, the majority (52.7%) of students enrolled in agricultural science courses were unfamiliar with ACOM. The majority (67%) of students enjoyed the writing lesson and would not change anything about the delivery or activity. For future instructional delivery, participants preferred to learn via hands-on (75.9%), group (64.1%), or project (42.1%) activities. Most students were not aware of the opportunities for careers associated with ACOM (52.7%), but were most interested in learning more about design (40.8%), multimedia (31%), writing (21.3%) and careers (18.3%). According to this study, students enrolled in agricultural science courses enjoyed experiential learning activities when used to complement traditional teaching delivery. Although, ACOM curriculum is not in place in Arkansas high schools, 42.1% of students were excited and interested in learning about the various aspects of this growing field.

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### **Using Reflective Journals to Gain Insight into an Agricultural Communication Intensive Study Tour**

Amanda Northfell, Leslie D. Edgar and Jefferson Davis Miller  
University of Arkansas

The globalization of societies continues through information media channels and presents the need to prepare internationally experienced, agriculture students. International study experiences impact students' global perceptions and in turn shape public perceptions regarding the future of agriculture. However, most international experiences are not focused on an employee/employer interaction. Therefore, the purpose of this study was to add insight into a work-related experience for agriculture students studying abroad. Students from four land-grant universities (N = 11) were selected to participate in a three-week intensive, work-related study tour in Ghent, Belgium. Students recorded their perceptions throughout the experience using reflective journals. Instrument credibility, trustworthiness and dependability were achieved through triangulation, member checking, transferability, purposive sampling and reflective journals. The qualitative data analysis revealed the personal value students found in the international, experiential learning opportunity. Yet, students struggled with working with clients, but found successfully completing projects to be rewarding. Students' confidence levels steadily increased as they realized they could contribute to their work teams and successfully serve a client in a professional setting. Host families were the most pressing concern for students, but proved to be an impactful means of exposing students to Belgian culture and participants' favorite part of the international experience. Students often sought normalcy by comparing the European culture to America and built lasting relationships with classmates and host families through meals and outings. Earlier research recommended increasing students' opportunities of global agriculture by placing students in international settings and this study supported this finding and encourages work-related experiences.

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### **Activities for Teaching Undergraduate Social Science Research Methods**

Martie Gillen  
University of Florida

Social science research methods is a complex course and undergraduate students frequently struggle to make connections to the topics. The question of how research methodology should be taught to social science students has been a subject of debate for a number of years. Historically, social science research courses were often taught using a typical lecture format where methods were often presented using abstract principles (Ransford & Butler, 1982). Faculty often dread teaching the research methods course. Students frequently lack interest



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in the topics and overall course. Students often view it as “the dreaded course”, approaching it with lack of interest and questions about why they need to know “this stuff” (Rushing & Winfield, 1999, p. 159). Unsurprisingly, based on my experience, much of this animosity continues to exist for both students and faculty alike. Students often have “difficulty grasping the distinctions and links between theory, concepts and measures” (Rushing & Winfield, p. 159). Rushing and Winfield found that students did not understand the differences and linkages until they had “hands-on” experience. To that avail, I developed a number of hands-on activities that connect the research concepts and methodologies with “real life” examples, often using the student’s real life. This presentation will highlight lessons learned from teaching undergraduate social science research methods courses and strategies for improving the classroom environment and teaching including the incorporation of hands-on, “real life” activities such as using a social network activity and Harry Potter to teach content analysis.

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### **Undergraduate Research Experiences in Sustainable Agriculture: Students and Mentors Perceptions of Interns’ Skills**

L.E. Marsh, F.M. Hashem, C.P. Cotton and A.L. Allen  
University of Maryland Eastern Shore

Agricultural graduates should be able to integrate knowledge, apply critical thinking/problem solving skills gained from different experiences and use them effectively in the workforce. Experiential learning experiences can provide students with an opportunity to achieve this ability. For two years, faculty mentors have provided opportunities for agricultural students to enhance such skills while participating in sustainable agricultural research projects. The primary objective was to develop and employ an assessment instrument to provide a comparison of initial student skills with those attained at later stages of their research engagement. This instrument included twelve skill categories for assessing various attributes, e.g., punctuality, willingness to learn and accept change, dependability, initiative, responsibility, oral and written communication skills, critical thinking/problem solving and project knowledge. Twelve students were paired with research mentors and assigned various research topics such as vermicomposting, poultry waste management, beneficial microorganisms, food safety, agronomic advantages of cover crops and urea nitrogen transport pathways in soils. On a scale from one to four, where 1= poor and 4 = excellent, more than 80% of students perceived their overall performance as

good to excellent in the first and second assessments. Faculty mentors’ assessments were 5-6% lower than the students’ perceptions. Writing skills received one of the lowest scores with fewer than 60% of interns rated good to excellent by both groups. We plan to continue using the assessment tool developed for this project to help our students fine tune the skills required to ensure their success in the workforce.

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### **Preparing for the Transformative Learning Experience: Teacher Candidate Summative Reflection Presentations**

Daniel D. Foster, Laura L. Sankey Rice and John C. Ewing  
The Pennsylvania State University

To prepare teacher candidates to maximize their internship, teacher education faculty implemented a final presentation for the candidates with a goal of having candidates think meta-cognitively on the connections between previous course work, life experience and professional aspirations. Three essential questions framed the student’s final presentation: Who do I aspire to be as a teacher? What experiential education opportunities have I engaged in to become a better agricultural educator? How am I prepared to maximize my student teaching internship opportunity? Each essential question served as a phase of the presentation. Students were asked to address questions providing evidence supporting their answers. Student teachers were video captured during their presentation and provided a recording of their presentation. Video recordings provided opportunity for further reflection on presentation skills and content. Video was utilized by some candidates in their professional portfolio. Thirteen candidates successfully completed final presentations at the culmination of the 2013 fall semester. Teacher candidates expressed their confidence in feeling prepared for student teaching experience. Future plans are to continue the presentation requirement for teacher candidates to complete the teacher preparation program. Revisions to the rubric for clarity of expectations are planned. Recommendations to other agricultural professional programs to implement a similar final presentation format to allow students to provide a comprehensive understanding of their professional development program. The final presentations represent the cumulative effort of teacher candidates to ensure that they are equipped to maximize their student teaching internship as a positive agent of change in communities across the state.

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### **The Role of Student Farm on Interdisciplinary Agroecology and Environmental Studies Curriculum, Research and Outreach**

Miles Medina, Mahadev G. Bhat and Krishnaswamy Jayachandran  
Florida International University

The last two decades have seen a revival of student farms at colleges and universities throughout the United States. The objective of this study was to assess the effect of a student farm on the campus of Florida International University (FIU), on its nascent inter-disciplinary Agroecology Program in the areas of curriculum development, urban farming research and community outreach. A thorough review of the program proposals, evaluation reports, news articles and publicity materials relating to multiple funded grant projects, which supported the student farm, was made. Additionally, a survey of former and current students of the Agroecology Program was conducted. The study results demonstrated that the student farm at FIU played a critical role in shaping the multiple aspects of the agroecology curriculum development. The majority of the respondents (n = 30) were in agreement that the student farm did influence curriculum evolution, student research, community engagement, campus farmers' market and on-campus environmental stewardship. The student farm promoted both traditional science-based curriculum activities (e.g., field research and workshops) and social science-based activities (e.g., farmers' markets, community gardens and urban food system studies). Also, the several urban gardening research projects that students started at the Student Farm for testing and demonstration have been implemented in the community. The student farm has become a popular educational living lab for K-12 students and teachers in South Florida. Further, the farm has become the newest and powerful symbol for the ongoing environmental conservation and sustainability initiatives on the university campus.

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### **Will Work for Food: Utilizing Graduate Students in Advising Undergraduate Student Organizations**

Caryn M. Filson and Julie Robinson  
The Ohio State University

Graduate students often devote their time completing course and research requirements that will promote

them to graduation. Graduate students who are planning a career in higher education may find themselves preparing to become faculty members by becoming experts in their respective fields. New faculty are often hired with the assumption that they will teach in the classroom, engage in research, publish in their field and secure grants; they can be caught by surprise when their new responsibilities include advising undergraduate students. An opportunity to provide experiential learning for future faculty members is to engage graduate students in advising roles for undergraduate student organizations. Working alongside a faculty advisor, graduate students learn how to interact with and advise undergraduate students in non-formal learning environments. Faculty advisors serve as role models for graduate students, demonstrating how to successfully advise students and manage a student organization. In addition, utilizing graduate student advisors can alleviate considerable time commitments for faculty members. Student organizations that are active on campus require a large amount of time and dedication from students and advisors. Utilizing graduate students provides more flexibility for undergraduate student organizations to participate in activities and allows graduate students the opportunity to learn by doing. Preparing graduate students for roles as future faculty members can benefit graduate students, faculty members and undergraduate students. Training future faculty members for the role of advising would help expedite the trial and error process experienced by many new faculty members entering the profession.

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### **Enhancing Student Learning with Hands-on Laboratory Exercises and Research Projects in Animal Biotechnology**

M. Singh, X. Ma, C. Okonkwo and N. Degala  
Fort Valley State University

P. Yadav  
Georgia State College

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United Nations predicts that world population will exceed 9 billion by 2050 and, therefore, called for 100% increase in food production using the same land area as today. The United Nations Food and Agriculture Organization estimated that 70% of this additional food should come from new and innovative technologies. Therefore, it is essential to train future agricultural producers and scientists, in new technologies by using methods that

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enhance student learning. The goal of this project is to strengthen the animal biotechnology program at FVSU by enhancing student understanding of fundamental biological concepts using hands-on laboratory exercises and mini-research projects. To achieve this goal we have: a) taught an undergraduate animal biotechnology course by supplementing the lectures with hands-on laboratory exercises, b) conducted a day long workshop for 17 high school students using a combination of lectures and hands-on labs and, c) undertaken semester-long research projects by two graduates and one undergraduate student. Student learning was assessed by pre- and post- test methodology, acceptance and presentation of research results at a national meeting and enhanced communication between students and faculty. Results showed an average difference of 33.1% between pre- and post-test scores for undergraduate class and 35.6% difference for high school workshop participants. Abstracts of research results of all three undergraduate and graduate students were accepted and presented in a national meeting. In conclusion, hands-on labs and research projects enhance student learning in animal biotechnology.

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### Test Question Order Effects on Test Taking Time and Score

C.R. Dove and K.K. Turner  
The University of Georgia

The objective of this study was to determine the effect of test question order on test scores (TS) and test taking time (TTT). Two Animal Science courses, a three-credit required course (PRAC) and a two-credit elective course (COMP) were used. The PRAC course had two tests comprised of short answer questions and COMP had three tests comprised of multiple-choice questions. Data were collected over three semesters for a total of 592 exams. Four versions of each test were used during each testing in each course. In versions 1-3, questions were asked within lecture blocks. Lectures blocks appeared on the test in the order they were presented (V1), reverse order of the presentation order (V2) and with lecture blocks randomized (V3). Version 4 had questions randomized over all lecture blocks. Versions were randomly distributed to students. Test taking time and TS were analyzed using PROC MIXED in SAS. There were no differences in TS ( $P < 0.10$ ) within each course. There was a trend for V2 to have a higher TS than V1 when data from both courses was combined (87.1 vs 84.4,  $P = 0.07$ ). There was no difference in TTT within COMP but there were differences within PRAC with V2 tending

to take longer than V1 (48.3 min vs 45.6 min;  $P = 0.08$ ). These differences are probably not enough to have an impact on class performance on a test and the order of test questions has no impact on TTT and TS.

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### Interdisciplinary Intramural Practice: Instrumental in the Development Of Entrepreneurship And Transferable Skills For Students Of Agricultural Sciences

Gladys M. González and Ángel L. González  
University of Puerto Rico- Mayaguez Campus.

Based on students and employers feedback, there is a lack of practical and entrepreneurship skills in graduates from our agriculture sciences academic programs. We developed a pilot program with the main objective of developing those skills in our students so that they will have the ability to be self-employed or administer an agricultural related business after completing the degree requirements. For this, three interdisciplinary teams of five students each from specific majors are selected on a competitive basis to undertake the task of developing an agricultural business during a ten month period. Students are exposed to learn by experience under the guidance of faculty mentors through an intramural practice at the institution's on campus farm with the establishment of quasi commercial agribusiness projects to facilitating the acquisition of skills and knowledge about production, management and marketing. Students are responsible for applying best management and agricultural practices learned in traditional courses. This Intramural Practicum has also enhanced skills such as team working, problem solving, critical thinking and communication in a real world scenario. Participants get academic credit for this experience. This project has served as a model for community based groups that want to develop agricultural related production projects. A total of 40 students have been directly impacted and 5 businesses have been developed in ornamentals, herbs-spices, vegetables, hydroponics, laying hens and broilers during academic years 2011-12 and 2012-13. Plans are to continue during 2013-14. Assessment of results and student satisfaction with the experience and developed skills is in process.

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### **Promoting Language Acquisition in a Contextually Relevant Undergraduate Course via Microblogging**

Melanie M. Foster  
Penn State University

Social media continues to evolve as a conduit of engagement for the agricultural industry with teaching and learning outcomes of enhancing digital citizenship and helping students develop professional learning networks. Twitter was utilized in an interdisciplinary Spanish for Agricultural Sciences course with a goal of providing a setting in which students can connect their agricultural academic interests to Spanish language acquisition. Students tweeted in Spanish about their real-time activities. The goal of the assignment was to avoid hypothetical Spanish class conversations and create real-time contextually relevant interactions in the target language. Data were collected via pre and post questionnaires, classroom observation, student tweets and student focus groups. The pre-test indicated that many students were not involved in Twitter, or posted infrequently. One finding was that students were unenthusiastic about the activity, categorizing it as "just another social media site to keep up with." During the the semester, students posted the required number of times about their daily activities, including pictures and other media for illustration. Students "followed" major news networks and individuals tweeting in Spanish, further exposing them to real-time use of the language. Analysis of student tweets found that students produced single tweets rather than engaging in discussion with peers, unless otherwise directed to do so. The use of Twitter in the classroom in this case did not lead to the formation of a strong online professional learning network for students. However, using Twitter did promote digital literacy and exposed students to new ways of developing Spanish language skills.

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### **Critical Thinking and Cognitive Skills in Large Lecture Classes Effects of Body Weight and Exercise Level**

Angela Anderson, Deborah J. Good, Matthew Komelsky and Craig Brians  
Virginia Tech

Abstract: There is growing concern about the lack of critical thinking skills (CTS) in college graduates. Researchers have found that obesity can impair spatial

learning, while intense exercise can improve cognitive ability. In humans, adults with high body mass indexes (BMIs) show impaired performance in decision-making activities and adolescents with childhood metabolic syndrome show significantly lower math and spelling scores. Conversely, female college students undergoing short-term, intense exercise exhibit increased working memory. Using a large lecture class, Metabolic Nutrition 3026 with an enrollment of 234 students (49.1% participation rate) and the iClicker in-class response system, we tested the hypothesis that BMI (negatively) and exercise (positively) influences CTS in college-aged students. Interestingly, neither BMI nor exercise showed a significant effect on whether students answered CTS-type questions correctly. However, there were several confounding factors. First, 73% of students self-reported exercise levels of at least 2-3 times per week, which is higher compared to U.S. levels of less than 48%. In addition, only 2 of the 115 (1.7%) students gave a self-reported BMI as obese, compared with nearly 35% expected for the general population. The study is being repeated in spring 2013 to add additional participants. In addition validated online tests will be included to capture cognitive and executive function skills that could be missed using just iClicker questions. Finally, students from at least two other courses will be included to increase the number of sedentary and obese individuals in the study.

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### **Experiential-Based Learning for Beef Production: Internships to Build Case Studies**

Dennis Brink, Dennis Burson, Tom Field, Dann Husmann, Bryan Reiling, Walter Schacht and Matt Spangler  
University of Nebraska-Lincoln

Holistic educational models that link up-to-date campus course work with exposure to latest issues in beef production are needed to attract and prepare future beef industry professionals. A proposed model developed from discussions amongst faculty, representing six universities and beef industry professionals attending a strategic planning conference made possible by USDA-HEC grant (NIFA Award #: 2011-38411-30534) will be presented. In the model undergraduate students, in partnership with faculty and industry professionals, develop Harvard Business School (HBS)-style case studies as an outcome of their enterprise evaluation based internship experience. A HBS training model for pre-internship and post-internship workshops to prepare interns for case study development is utilized. Furthermore, the model consists of a website to share and

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broaden utilization of the case studies. In the model project evaluators will implement a DaCS (Developing a Case Study) Model. Unique features in DaCS are emphasis on various skills, abilities, duties, tasks, knowledge base, worker behaviors, technical competence and current/future trends and concerns needed for individuals to be employed in the beef industry. DaCS couples the Case Method along with the Developing a Curriculum Method into a holistic approach. The model includes collection of data from two groups of students, 10 student interns selected from nominations by faculty from the six universities attending the planning conference and a second student pool comprised of 5 beef production classes at U.S. institutions utilizing the case studies. In the model instructors of each class will administer an evaluation of knowledge and actions of their students.

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### Teaching Soft Skills to Undergraduate Agricultural Students

Makenna Lange and Erica Irlbeck  
Texas Tech University

In today's competitive job market, it is important for students to have the knowledge learned from their discipline-specific undergraduate courses and to also be prepared with soft skills—skills that many say are imperative to a graduate's employability—communication, self-management, teamwork, professionalism and leadership (Crawford, Lang, Fink, Dalton and Fielitz, 2011). Research indicates that soft skills are more important to employers than discipline-specific knowledge and they are willing to pay for it (Norwood and Henneberry, 2006). To ensure students are learning the importance of these skills and how to demonstrate them, [university] is now offering a course called Professional Development in Agricultural Communications, targeted at freshmen and sophomores. Topics include networking, job applications, interviews, portfolios, business etiquette, internships, professional dress, finances, teamwork and project planning. Pedagogy includes lecture, guest speakers, group presentations, hands-on projects and service learning with several opportunities to interact with members of the agri-business community. Although this is the first semester for the course, researchers have received positive feedback from the students. They have a high attendance rate and the quality of work has improved throughout the course. Support from stakeholders has been extremely positive. Guest speakers and alumni have noted that the professionalism skills would have been beneficial in their own internship and job searches.

The department intends to make this a required course to allow underclassmen more time to implement the skills learned before graduation.

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### Fostering Critical Thinking Skills through Use of Reflections in an Undergraduate Agricultural Issues Course

Christopher M. Estep  
Sul Ross State University

In light of the complex, ever-changing problems in society, research has suggested that to be prepared college graduates must become critical thinkers. However, many critics of higher education have claimed that undergraduate students finish their degrees lacking necessary critical thinking skills. Consequently, the National Research Council recommended colleges of agriculture implement educational interventions to help undergraduate students develop their ability to think critically. As a result, a course was developed in the college of agriculture at Sul Ross State University that focused on using student reflections to assist students in thinking critically about current, hot-button issues in agriculture. Educational research has shown that reflection is an integral part of the learning process that precedes generalization and transfer of knowledge. The reflections in this course were designed for students to consider current issues at higher cognitive levels. The course utilized guest speakers from industry, government and academia who lectured on a variety of agricultural issues. Students were then required to reflect verbally and in writing. Requirements of the written reflections included, evaluation of the issue and its implications for the agricultural industry, assessment of the evidence presented by the speaker and a position and defense thesis. Verbal reflections were conducted through classroom discussions where students debated the evidence presented and the possible implications of the issues. Anecdotally, the students' ability to think critically through verbal and written reflections has improved over the course of the semester. However, empirical studies measuring critical thinking should be conducted to determine increases in critical thinking.

**Look into the archives of the  
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[www.NACTAteachers.org](http://www.NACTAteachers.org)**

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### **In-Class Team Application Exercises and their Impact on Information Retention**

Lisa Orgler  
Iowa State University

Over 30 years ago Larry Michaelsen created a new instructional strategy called Team-Based Learning (TBL). The TBL strategy shifted learning in the classroom from the typical passive instructor lecture to the application of course content by student teams. Teams are purposefully created to include students with diverse experiences and stay the same for an entire academic term. This consistency builds trust and encourages students to learn about the challenges and opportunities of team dynamics. The TBL instructional strategy was incorporated into two courses within the Iowa State University horticulture department starting in fall 2011 with Horticulture 444: Landscape Construction and Management, then in spring 2012 with Horticulture 380: Principles of Garden Composition. As the semester progressed students informally shared how the in-class team applications were helping them remember key concepts for exams. A study on information retention from in-class team application exercises followed one year later in fall 2012 and spring 2013 using these same classes. The format was a comparison of class sessions incorporating a team application exercise versus those that did not and how each impacted information retention. Results show just a slight increase in scores when students participate in a team in-class application exercise. Though these early findings don't see a significant change between using team applications and not, they do show that fun, collaborative exercises don't hinder retention and offer alternatives to teaching in the classroom.

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### **Assessment of Student Attitudes for Hybrid (Traditional and Online) Taught Courses**

M.M. Beverly, S.F. Kelley and J.E. Muller  
Sam Houston State University

The combination of teaching pedagogy and technology has given students and faculty various choices in how they obtain and deliver course objectives. Technology has changed course delivery from the traditional (face-to-face) to online delivery. The Agricultural Engineering Technology (AET) program at Sam Houston State University has combined both the traditional and online course instruction into a hybrid (online lecture with a tra-

ditional face-to-face laboratory) offering. Students, who had completed two different hybrid AET courses, were surveyed to determine attitudes of the delivery style. All respondents were male, junior/senior classification with 70% being AET majors. A majority (70%) of the students enrolled in the courses because of interest in course content while 30% on delivery style. Students noted more independent learning and problem solving was required, 80% confirmed more responsibility for learning was placed on the student and 50% felt the course structure affected their learning outcome. Yet, 90% would enroll in another hybrid course and acknowledged the laboratory complimented lecture and facilitated comprehension of online material. The hybrid structure was preferred by most (60%) yet those preferring a traditional delivery indicated they would take another hybrid course. Non-AET majors felt self-learning was a higher requirement for the hybrid course than that in traditional; however, the laboratory strengthened online content and was beneficial. Overall, 75% of the students had a positive experience and 60% requested more hybrid courses be offered across the agriculture discipline. A student comment "...advantage of hands-on plus convenience of online work" best described the course style.

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### **Investigating Student Learning and Leadership Development Outcomes in an Undergraduate Leadership Theory Course**

Lisa Burgoon, David Rosch and Kari Keating  
University of Illinois at Urbana-Champaign

This project focused on teaching strategies and learning outcomes in AGED 260: Introduction to Leadership Studies. This course is the first in the sequence of required courses for a new interdisciplinary Minor in Leadership Studies. Fast growth in the Minor from students in all academic departments prompted this study comparing a 70/30 blended learning format with traditional lecture/discussion. Additional information about student leadership development outcomes was gathered to determine if students in AGED 260 changed in their level of leadership-oriented competence, self-efficacy and motivation to lead. Data collection in spring 2012 and fall 2012 consisted of 26 students from the blended classroom, while 61 and 77 non-blended students, respectively, participated in spring 2012 and fall 2012 semesters. Pre-and post-tests were administered on the first and last day of instruction. Leadership Theory Analysis (LTA) papers evaluated the students' ability to articulate their understanding of the core leadership theories. The section instructors conducted an inter-rater reliability analy-

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sis of their paper scoring prior to final grading, with acceptable results. Study results indicate that across sections, scores from pre-tests to post-tests on gains in leadership-oriented competence, self-efficacy and motivation increased in every section both semesters ( $p > .05$ ). Across all sections, no consistent difference in performance was observed on exam or LTA scores. Initial results suggest that teaching a leadership theory course to undergraduate students may be an effective way to help students understand and articulate multiple leadership theories, and increase students' leadership skills, confidence and motivation to engage in the leadership process.

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### **Enhancing Cross-cultural Awareness and Critical Thinking through Reflection of Weekly Agribusiness Travel Seminars in a Semester-long Study Abroad**

Ashley N. Sutton and K. Dale Layfield  
Clemson University

Curtis R. Friedel  
Virginia Tech

Thomas R. Dobbins  
Clemson University

A growing trend among colleges and universities is to enhance global citizenship and cross-cultural awareness as well as to foster critical thinking through student reflection and civic engagement. The objective of this poster presentation is to illustrate techniques to enhance students' critical thinking skills while teaching in a multicultural environment. A diverse group of students in an Eastern Europe study abroad program participated in a travel seminar series. During the seminars, students from various countries shared and discussed unique differences in the observed practices at the agribusinesses they had visited. To provide structure and reinforce student learning, a rubric was created to serve as a guide for the students' weekly reflections. Timely feedback was provided to the students with the emphasis on how reflections could be improved. An interesting phenomenon observed during evaluation of the student writings was that the American student reflections approached the industry visits with a critical analysis contextualized by their previous knowledge of practices in the home environment. Eastern European student reflections were less critical and their observations included cultural references, which were often strengthened by a personal connection to the industry visited. In addition, a

lack of expected cross-cultural acknowledgement was observed. Having observed the differences in the American and Eastern European students' reflections, a course adjustment was implemented via the instructor-facilitated discussion during the return trips from each travel seminar. As a result, student understanding of reflective writing as a tool in the learning process as well as cross-cultural awareness have increased.

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### **In the Spotlight: Experiential Learning through a Graduate Student Association Research Conference**

Julie Robinson and Caryn M. Filson  
The Ohio State University

Through a review of literature researchers found that when graduate students participate in departmental graduate student organizations, participation leads to increased social interaction with peers and faculty members, peer mentoring from more experienced graduate students and professional development opportunities such as seminars and workshops on relevant topics. Furthermore, participating in professional development programs that offer experiential learning opportunities provides an enriching and relevant professional experience. At a Midwestern land grant institution, a graduate student association plans and hosts an annual graduate student research conference. Following the annual conference feedback is collected from graduate students concerning the perceived benefits of the experience received during the event. Soliciting feedback directly from graduate students is a viable method for monitoring and improving the quality of students' educational experiences in these professional development opportunities. Participants completed a survey questionnaire that addressed the attitudes and perceptions of the benefits received from their participation in the conference. The second half of the survey addressed graduate students perceived preparedness to present at a professional conference as a result of their experience at the research conference. Graduate students who participated in the research conference reported that the experience speaking, presenting and answering questions in a professional setting was the most beneficial aspect in preparing for future professional research conferences. Feedback received from fellow graduate students was the found to be the second most beneficial aspect of the conference. In general, graduate students agreed that participating in the research conference was beneficial to their overall professional development.

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### **Predicting Instructor Quality in Undergraduate Courses using the IDEA Survey**

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

The Individual Development and Educational Assessment (IDEA) survey is a mechanism that uses student feedback to assess and improve teaching, learning and the higher education process. The IDEA survey contains questions pertaining to course objectives, teaching methods and styles and a description of the course with the goal of determining the quality of the instructor and overall course. The objective of this study was to determine which of the survey questions were most important when predicting the quality of the instructor in undergraduate courses. A step-wise regression analysis was performed on data from 27,423 courses spanning a six-year period. Thirty-five of the 43 questions on the survey were included in the analysis. Eight questions were not included in the analysis because they involved students' preconceptions that could not be affected by the instructor during the course. This analysis indicated that 29 of the 35 questions entered into the model were significant and these questions had an  $r^2$  of 0.8840. The top three questions with positive relationships towards predicting the quality of the course instructor were: 1) the instructor explained course material clearly and concisely, 2) the instructor displayed a personal interest in students and their learning and 3) students progressed in gaining factual knowledge. In conclusion, an instructor can improve the quality of their teaching as perceived by students by providing clear explanations of course material, showing an interest in their students and by assisting students in gaining factual knowledge pertaining to course material.

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### **Using a Modified Nominal Group Technique as a Model for Formative Course Evaluation**

Matthew J. Shultz  
Iowa State University

Standard end of course evaluations serve as an accepted form of summative evaluation and can provide a base measure of instructor effectiveness. However, end of course evaluations often lack context and fail to capture students' true thoughts and as a result rarely yield insight into real pathways for course improvement. The purpose of this presentation is to describe the use of a

Nominal Group Technique as an alternative model for mid-term university course evaluation. The technique was used to provide contextualized feedback in a presentation development course for four consecutive semesters with 107 students. The process involves the following sequential phases: (1) define parameters and boundaries, (2) individual silent idea generation, (3) small-group discussion and prioritization, (4) large-group discussion and prioritization and (5) presentation of prioritized thoughts and rationale to the course instructor. The instructor is present for phases one and five, but does not facilitate any phases. Evaluation results can be categorized into four themes: (1) delivery mechanisms, (2) general instructor practices, (3) curricular content and (4) resources. Student debriefing has also highlighted a timing benefit. By timing evaluations soon after the course mid-point, students have enough information to make sound judgments and suggestions; yet also have enough time remaining in the course to glean benefit from their own input, thereby maximizing motivation to provide thoughtful feedback. Although evaluation results were specific to this agricultural communications course, the model can be employed to provide meaningful contextualized feedback in other courses, particularly those focusing on skill development.

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### **Preparing Hispanics for Leadership in the Applied Statistics Field**

Jesús Cuéllar Fuentes  
University of the Incarnate Word, Texas

The Master of Science in Applied Statistics (MSAS) program at the University of the Incarnate Word (UIW) has been transformed into a program that focuses on recruiting strong Hispanic, as well as non-Hispanic, candidates and training them as statistical scientists with a strong theoretical foundation and proven practical experience. At the heart of this transformation is the implementation of a Statistics Consulting Laboratory, supported by a grant from the National Institute of Food and Agriculture. This presentation gives an overview of the new MSAS program and its consulting laboratory, the current status of its implementation and its achievements. In this presentation I discuss the reasons for the radical transformation of the MSAS program, the strengths and weaknesses of our student recruitment efforts, the modifications to the program prerequisites and the preparation of new students to ensure their academic success. The revamped program also provides extra-curricular training on tutoring, teaching, project management, leadership, team work, communication skills and ethics.



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The incorporation of a two-part practicum into the curriculum requires students to serve in the consulting laboratory, where they engage in providing tutoring services and managing consulting projects for industrial clients. I also discuss the creation of an Industry Advisory Board comprised of businesses, non-profits, government agencies representatives and a Faculty Oversight Team (composed of an interdisciplinary group of experienced UIW faculty) and how these two groups operate to ensure the continuous improvement of the program, secure consulting projects and identify employment opportunities for our graduates.

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### Teacher Perceptions of Quality of University-level Pre-service Agricultural Mechanics Instruction

Matthew J. Shultz, Ryan G. Anderson and Thomas H. Paulsen  
Iowa State University

The National Academy of Sciences has challenged colleges of agriculture to transform their role in higher education over the next 10 years. Students must be well prepared for discovery, teaching and learning, science, technology, engineering and mathematics (STEM) integration and application of innovation. However, the higher education climate is changing, highlighted by universities that have dropped/consolidated agriculture programs due to low enrollment and dwindling funds. Skills-based classes in agricultural mechanics, which have been identified as STEM-intensive courses, have been affected by this downsizing. This study's purpose was to determine the quality of agricultural mechanics instruction that in-service agricultural education teachers (n=101) received in 54 skill areas at the undergraduate level. Questionnaire responses indicated that none of the skills received a majority response of strong or very strong in quality of instruction. Welding safety had the highest mean score with 49.4% of the respondents indicating having received strong to very strong instruction. Conversely, 40% of respondents indicated receiving low-quality to no instruction in welding safety. In sum, over 50% of respondents indicated receiving low-quality or no instruction in 47 of the 54 skills. A lack of safety instruction emerged as the most alarming theme. If allowed to continue, this lack of quality instruction at the university level will continue to yield unprepared teachers who are supervising and training students in potentially hazardous laboratory environments. Instructional themes identified as being low quality should receive the focus need-

ed to reinvigorate skills-based STEM-intensive courses in agricultural mechanics.

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### Financial Impact of the VRTEX 360: Is Virtual Reality a Cost-effective Solution in the Agricultural Mechanics Laboratory?

Alex P. Byrd, Ryan G. Anderson and Matthew J. Shultz  
Iowa State University

The VRTEX 360 virtual reality welding simulator has been shown to cut the learning time of beginning welders. Unfortunately, initial cost is a significant barrier to implementing the simulator in most learning laboratories. It is possible however, that the amount of consumables saved in a typical laboratory could offset the cost of the welding simulator, while simultaneously reducing the carbon footprint left by a traditional welding process. The purpose of this study was to determine the financial impact of consumables saved by the VRTEX 360 in a university agricultural mechanics laboratory. Researchers collected data stored in the Weldometer™ over the course of two years and used a return-on-investment calculator to determine the value of consumables saved. Actual run-time data indicated students practiced GMAW welding for 5.90 hours and SMAW welding for 2.18 hours on the simulator. Welding for this amount of time would have consumed 222 pounds of welding rods; 48.5 pounds of wire; 1,273 welding coupons and 175 cubic feet of shielding gas for a total retail cost of just under \$2,000. This estimated savings clearly does not offset the cost of the VRTEX 360 (\$54,900). At this usage rate, the primary benefits are psychomotor skill development, injury prevention and a potential reduction in student anxiety. Cost savings and a reduced carbon footprint are secondary benefits. However, at 2013 retail prices and the ratio of SMAW/GMAW usage found in this small laboratory, a larger learning laboratory could eclipse the VRTEX 360's purchase price after 235 hours of virtual welding.

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### Using Mobile Media Pilot Projects to Enhance Student Learning

Tammy M. Bennett and Lauren Rishe  
The Pennsylvania State University

Since spring 2011, 29 Penn State classes have taken advantage of using mobile media in their courses to em-

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power their students' learning. Our presentation shows that the integration of mobile media into an academic curriculum promotes innovative learning; as proven in ERM 499. Students were each provided with an iPod Touch loaded with photo, video and editing software. Their assignments consisted of a technology-based video presentation project along with a written technical report on the topics they studied in Costa Rica. The video assignment was designed to support the technical report while also enabling them to learn to communicate a message in a new way. Students became active in their own learning by using the innovative technology to support their research done for the paper. Students used iMovie, editing computers, sound booths and video studios to incorporate voice over and green screen technology into their projects. The result of using the Mobile Media Pilot project in the classroom was a collaborative effort that allowed the group participants to problem solve and process information in a way that put them in creative control of their own learning. The use of the mobile media resulted in the students gaining experience in creative thinking, video production skills and the ability to communicate a scholarly message through video.

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### **Student Satisfaction with Dairy Quiz Bowl Review Strategy**

Jeremy Falk, Douglas Masser and Amin Ahmadzadeh  
University of Idaho

Active learning takes place when students are "doing" rather than passively listening to class content. Research suggests that great student learning can occur if active learning techniques are incorporated. The quiz bowl review strategy is one example of an active review strategy that students find enjoyable and beneficial. The objectives of this study were to describe the student perceptions and satisfaction of using a quiz bowl review as part of a college freshman/sophomore dairy science course. For this strategy, each student developed five challenging questions, with the answers, from the course materials. Teams of 4 to 5 students were formed and competed against one another in a dairy quiz bowl to review for the final exam. Students who had completed the course within the past four years were also asked to complete a questionnaire to assess their satisfaction with the quiz bowl as a review for the final exam. Responses were collected, compiled and summarized. The top three items with the highest level of student agreement were as follows: students wish more instructors would incorporate interactive reviews (M=94.1); quiz

bowl was a fun way to review (M=93.6); and students felt better prepared for the exam (M=91.4). Respondents were also very satisfied with the preparation of the instructor (M=95.4), the outlined expectations of the quiz bowl (M=93.3), and with the amount of time spend on the review (M=90.6). It is recommended that more instructors incorporate active review strategies into their classes to help students learn course content.

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### **Who Let the Dogs out? The Influence of Guide Dogs on the Teaching and Learning Experience of Students and Faculty**

Jason Ro, John Lee and Nicholas E. Fuhrman  
University of Georgia

Numerous studies exist on a dogs' psychological and therapeutic capabilities for their human counterparts, but few studies have investigated the impacts of a dog's presence on a university campus. At the University of [State], guide dogs often accompany volunteer students to classes spanning various disciplines and to numerous social settings. Little is known about their influence on the learning environment. The objectives of this presentation are to: (1) describe the influence of guide dogs on student dog handlers and (2) describe the influence of a dogs' presence in a classroom on other students and faculty in such classrooms. Subjects were recruited from a list of volunteers in charge of training guide dogs and were contacted via email. Faculty teaching in classes with guide dogs and students within those classes were recruited via a presentation given in classes with guide dogs present. Twelve interviews were conducted (four interviews with dog handlers, four with students in such classes and four with faculty). Each interview was transcribed and analyzed separately using domain analysis. Findings indicated that the magnitude of the dogs' impacts in the classroom was inversely related to the size of the class and the student's discipline strongly influenced the way they perceived the dog. One guide dog handler attributed her increase in GPA and motivation to the presence of her dog, despite the time and attention the dog required. Based on these findings, guide dogs offer a multitude of academic, social and personal benefits to students and faculty.

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### **A Multidisciplinary Approach to Improve Critical Thinking and Scientific Writing in an Introductory Environmental Science Class**

Jessica Braswell and Greg D. Pillar  
Queens University of Charlotte

In recent years there has been a noticeable drop in critical thinking and scientific writing skills of both high school and college graduates. In this climate, it has become incumbent upon college and university instructors to design innovative learning experiences that develop and foster these skills. To reach this goal, several Environmental Science instructors at a small liberal arts university have used a soil respiration laboratory experiment coupled with a writing assignment in a general education science course. This exercise was utilized in 20 sections of an introductory Environmental Science course over a five year period. The lab exercise required students to contribute to an experimental protocol involving the manipulation of several biotic and/or abiotic factors and the measurement their effects on soil respiration. The lab introduced basic concepts in the scientific method, carbon cycling, microbial respiration, environmental contamination and acid-base chemistry. Upon completion of the lab exercise students were required to write a scientific lab report that included qualitative and quantitative analysis of the results. Evaluation of the lab reports coupled with a post-exercise assessment showed that a majority of students could recognize the scientific process, communicate research findings and apply the scientific method as a means of investigating an unfamiliar problem. In a post-exercise survey, student reported feeling higher levels of confidence with comprehending scientific information encountered in popular media.

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### **Comparison of Student Blogs at the Beginning and End of an International Experience**

S.L. Schaake, T.L. Douthit, J.M. Bormann and M.H. McCammant  
Kansas State University

As part of a faculty-led 10-day study abroad trip to Australia, students (n = 20) were required to complete daily blogs. Students received no feedback on their blogs until after the trip was complete. Day 1 and day 10 blogs were rated (1-10) by the faculty leader and two independent faculty for amount of reflection and thought

(REFLECT); student's level of enthusiasm (ENTHUSE); and proper use of grammar, punctuation and spelling (GRAM). The objective of this study was to determine if the students' demonstration of these criteria changed over the course of the trip. A t-test was used to test if the difference between day 1 and day 10 for all three variables was different than 0. Student improvement was 0.65 (P = 0.04) for REFLECT, 0.53 (P < 0.01) for GRAM and 1.37 (P < 0.01) for ENTHUSE. Pearson correlation coefficients were calculated between the improvement variables and final percent earned in the class and there were no significant correlations found (P > 0.05). Faculty evaluators were able to use blogs to detect significant increases in all categories measured. Even without feedback, students' written communication skills improved, as measured by grammar, punctuation and spelling. Faculty perceptions of the students' amount of reflection about the experiences and enthusiasm for the trip also increased. Student blogs can be a valuable tool in evaluating changes in student attitudes and abilities over the course of a study abroad trip.

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### **Bloggng as a Tool for Assessment during an International Experience**

T.L. Douthit, S.L. Schaake, J.M. Bormann and M.H. McCammant  
Kansas State University

Students (n = 20) participating in a faculty-led 10-day trip to Australia were required to write a daily blog reflecting on their experiences. The objective of this analysis was to determine if student blogs reflect student learning. Student learning outcomes (SLO) for the trip were 1) gain to exposure to livestock industry, 2) gain awareness of international opportunities, 3) develop appreciation for similarities and differences in livestock production, 4) become familiar with cultural diversity, 5) increase written communication skills. The faculty leader of the trip rated how effectively each student met each SLO independent of their blog entries (NONBLOG). After the trip, 2 faculty rated whether the SLO was addressed in each daily blog (DAILY) and whether the student met the SLO over all blogs (OVERALL). Pearson correlation coefficients were calculated between NONBLOG, final percentage in the course (PERC), DAILY and OVERALL. For all SLO, the correlations between NONBLOG and PERC ranged from 0.38-0.55 (P < 0.10). For SLO's 1-3, all other correlations were small and non-significant. For SLO 4, the correlation between DAILY and NONBLOG was -0.40 (P = 0.08). In contrast, for SLO 5, the correlation between DAILY and NONBLOG was 0.43 (P = 0.06)

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and between NONBLOG and OVERALL was 0.51 ( $P = 0.02$ ). These data would suggest that independent evaluation of blogs alone does not accurately reflect whether SLOs are met as determined by the faculty leader. However, blogs can be used as a tool in conjunction with the faculty leader's assessment to determine student learning.

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### **It's for the Birds: Building "Classroom Community" one Tweet at a Time.**

David WW Jones

North Carolina State University

Building a sense of "community" in a college course is challenging. Best practices include creating a secure, supported environment which allows students to bring their individualism as well as cultural differences, abilities backgrounds into the classroom. Research has shown that building community includes allowing students to have individual identity, building familiarity between students as well as teachers and ultimately the building of trust between the students of the course as well as the students and the instructor. In an effort to engage students to not only use the concepts and ideas of a leadership course but to involve students and engage students in a sense of a "classroom community" the Agricultural and Extension Education leadership courses at North Carolina State University have created a Twitter hashtag for students to Tweet to. The hashtag: "#EVERYDAYLEADERSHIP" is used to Tweet leadership experiences of AEE leadership students and instructors. Students are encouraged to use Twitter throughout the semester any time they see leadership ideas and concepts happening in their everyday lives. The instructor encourages students to Tweet when they are at the grocery store, restaurants or the mall. Tweeting offers students an opportunity to share their experiences with their fellow students while at the same time exemplifying the leadership concepts they are learning about in class. Twitter creates a safe environment where students can respond to each other's Tweets as well as share similar experiences 24 hours a day. Twitter promotes learning to continue long after the brick and mortar class session concludes.

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### **The USDA-HSI Program Fosters Professional Development and Research Skills in Undergraduates at the University of La Verne: A Student Perspective**

Roshan N. Gamage, Lila J. Luna and Stacey Darling Novak

University of La Verne, California

As participants in the USDA-HSI funded program, University of La Verne undergraduate biology students gained skills and confidence to prepare them for challenging graduate programs. The community service course encouraged La Verne students to be independent in creating laboratory activities/lessons to share with high school students, especially those of underrepresented groups. Moreover it gave the La Verne students an opportunity to practice leadership skills and share their passion for the biological sciences. La Verne biology majors were also an integral part in carrying out the goals of the of the 2012 USDA camp, which exposed them to field and molecular biology. Camp-organized field trips gave students the opportunity to witness USDA researchers working firsthand at the UCR Salinity Lab and Citrus Station. These experiences coupled with student research grants funded by the USDA, allowed for undergraduates to confidently conduct research projects. One example of this research is work done by ULV undergraduates on *Zea mays*. During development of *Zea mays* kernels, endosperm tissue undergoes programmed cell death (PCD) which results in lower starch yield for the corn. Delaying this event may produce more efficient crops; however, achieving this would require that the genetic pathways which initiate PCD be elucidated. For this study, test groups were either cultured on hyper- or iso-osmotic medium to induce PCD and control kernels were kept on the ear for an equivalent time period. Differential expression was studied by analyzing cDNA AFLP populations from these kernels.

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### **Strengthening the Pipeline of Undergraduate Students into the Food Science and Technology Master's Program: A Successful Intervention in a Hispanic Serving Institution**

Edna Negrón, Mildred Chaparro and Luisa Guillemard  
University of Puerto Rico- Mayaguez Campus

The only Food Science and Technology (FST) Master's program in Puerto Rico is offered by the College of Agri-

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culture from the University of Puerto Rico, Mayagüez Campus (UPRM). Even though it is a unique program, students' awareness of this area of study seemed small given the average number of applications received per year. Through a HSI/NIFA grant (Award No. Project Number: PRE-2010-02988), several interventions were implemented to increase students' interest in the field of FST and available careers, promote enrollment into a newly created undergraduate curricular sequence in FST and eventually raise the number of applications into the Masters program. Interventions included the development of a curricular sequence in FST, offering intensive summer workshops in core areas of food science to upper level undergraduate students and exposing students to research experiences in FST. First-year students from feeder programs were also targeted exposing them to careers in FST and available opportunities on campus. After the first year of the curricular sequence, 15 students completed their minor in Food Science and after the second year, a total of 67 students had enrolled in the sequence. Applications to the MS program in FST have doubled after two years of having established the curricular sequence. Dissemination activities have impacted more than 700 students from the feeder programs and 86 upper undergraduate students have participated in summer workshops. Students' testimonies point out that participation in the workshops has been instrumental in developing their interest in FST as a research area and as a future career path.

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### **Understanding Agricultural Scientists' Information Delivery Behavior and Farmers' Information Receiving Preferences for Educating Farmers**

K. S. U. Jayaratne  
North Carolina State University

The purpose of this research was to determine agricultural scientists' information delivery behavior and the sources that farmers prefer to receive information for learning about new agricultural technology. The alignment of scientists' information delivery behavior with farmers' information receiving preferences is important to ensure that farmers will get needed information to learn about agricultural technology. This study was conducted with a random sample of 5,123 farmers selected from 18 states and a group of 100 Scientists in Agricultural Research Service (ARS). Findings indicate that there was a discrepancy between the information delivery behavior of scientists and information receiving preferences of farmers. The scientists' most often used two

information delivery preferences were research journals (39.2% of the scientists very often used) and field days (31.1%). The scientists' least often used information delivery preferences were newsletters (6.9% of the scientists very often used.), the Internet (4.1%) and extension fact sheets (1.4%). However, farmers indicated newsletters as the most preferred (45.1% of the farmers preferred) sources of receiving information followed by trade magazines (41.4%), the Internet (39.6%), extension fact sheets (35.2%) and demonstrations (35.1%) respectively. This gap in alignment of information delivery behavior of scientists and information receiving preferences of farmers can have negative consequences. This was verified when 60% of the farmers reported they were not aware of ARS developed technologies despite their 35 years of average farming experience. This study stresses the importance of revising information delivery approaches of scientists to match with information receiving preferences of farmers for desired outcomes.

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### **Student Response to Clicker Use in Medium-Size Horticulture Class**

Mara Grossman, Courtney Vengrin, J. Roger Harris and Donna Westfall-Rudd  
Virginia Tech

Clickers have been used in large lecture classes for many educational reasons, including increasing student engagement, participation and learning. But can these educational gains be seen in smaller size classes? A pilot study of clicker use in a medium-size horticulture class (approximately 45 students) was undertaken to determine student response to the integration of the technology into the classroom instruction. Students used clickers during lecture to answer questions reviewing course material. Their responses were used as part of a participation grade, although responses themselves were ungraded. Data are being collected to examine the influence of clickers on student participation in class and student perception of the benefit of clicker use in reviewing curriculum material. A mid-term assessment is planned to determine overall student reaction to the clickers, with the goal of fine-tuning the integration of clickers in the horticulture course. An end of semester assessment will be used to evaluate student attitudes towards using clickers in this medium size class.

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### **Effective Communication Strategies outside the Classroom: A Case Study**

Tobin Redwine, Christine Arnold, Landry Lockett and Tracy Rutherford  
Texas A&M University

Educators compete with constant delivery of information to students in a digital age. In an environment of perpetual sending and receiving of messages, teachers and advisors in all disciplines must evaluate communication methods and models to ensure that the right information gets to the right student at the right time. This research explored communication strategies among students in a large department in a college of agriculture. Objectives sought to describe: student's perceived level of knowledge about deadlines and events, consumption of information, desired communication practices and selected demographics of population. The descriptive survey was distributed to more than 1,000 students in four different majors. Most students indicated that they were well informed about essential knowledge for their major, department, college and university. Students felt more informed about information pertaining to their major than the university as a whole. The most common student consumption habits were email, in-class announcements and social media outlets. Students recommend new electronic methods of information delivery, including changes to email delivery strategy and additional information innovations. Implications for practitioners include: (1) Access is not an issue, student consumptions matches current practices, however, getting students to actively engage the information is more problematic. (2) Current practices yield positive feedback, as indicated by student's perceived level of knowledge. However, consolidating information into weekly emails should be explored, rather than individual messages, as well as exploring new strategies for revised information practices, including modeling information delivery to reflect enthusiasm, creativity, engagement and other valuable teaching and advising practices.

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### **College Students' use of Twitter and Perceptions of Credibility Features**

Caroline Black, Tracy Rutherford and Lori Moore  
Texas A&M University

Anyone can upload news instantaneously to Twitter in 140-characters or less, therefore it is important to assess

the credibility of tweets. According to one study there are 30 Twitter features that impact the credibility of tweets. This study examines College of Agriculture and Life Sciences students' use of Twitter and their perceptions of how features impact the credibility of tweets. An online survey was completed by Texas A&M University students classified as U3 juniors (N = 200) in social science-based majors in the College of Agriculture and Life Sciences. If perceptions of college students, as the number one users of Twitter, are understood, then the benefits can be maximized for industries and media to implement in everyday use. The study revealed students to be moderate users of Twitter. Eight features were indicated to impact credibility: verified author topic expertise, account has verification seal, tweet contains grammar/punctuation mistakes, author is someone you've heard of, author is often mentioned/retweeted, author often tweets on topic and author has many followers. These findings can help communicators determine what features should be used to increase tweet credibility. This study has important educational implications for communication programs that are implementing Twitter into their curriculum, or for organizations that engage consumers via Twitter when breaking news occurs. As Twitter continues to grow in the number of users and tweets published, the credibility of such a stream of news is important to the livelihood of the platform.

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### **Examining Reflection among Preservice Agriculture Teachers**

Wendy J. Warner  
North Carolina State University

Most preservice teachers begin teacher preparation coursework with strongly held beliefs about teaching and learning, shaped by their experiences as a student (Feiman–Nemser, 2001). Consequently, it is important to provide ample opportunities for reflection to encourage the examination of prior beliefs about teaching and accommodation of new experiences and learning (De Lay, Washburn, & Ball, 2008). In this research project, 26 sophomore-level preservice agriculture teachers were required to prepare and teach a 30-minute lesson in a middle school or high school agriculture classroom. In an effort to promote reflection, the students provided a written response to three prompts describing the strengths and challenges of their lesson and recommendations for future teaching practice. The responses were analyzed using a reflection rubric developed by Ward and McCotter (2004), containing four levels of reflection – routine, technical, dialogic and transformative. Routine

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reflection demonstrates minimal consideration of the teaching and learning process. Technical reflection commonly focuses on teaching tasks. Dialogic reflection often leads to the generation of additional questions about teaching through the consideration of other perspectives. Finally, transformative reflection deeply examines preservice teachers' beliefs about teaching. A majority of the students' written responses were found to be at the routine or technical level. Faculty members across disciplines also have the opportunity to incorporate writings and activities in their undergraduate courses to promote reflection. Utilizing the findings of this study can inform others' efforts to examine and improve the levels of reflection demonstrated by students.

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### **Application of Hispanic Culture to Food and Nutrition Curriculum Projects Promotes Self-Identity While Disseminating Diversity To Wider Audience**

Judith Beto, Katherine Montalbano, Nancy Rivera and Krista Silverman  
Dominican University

PUENTES: Pathway to Undergraduate Education for Nutrition, Experience and Success: Creating the Missing Bridges to the Registered Dietitian Credential for Hispanics is a USDA-Hispanic Serving Institution Grant awarded to Dominican University in 2011-2013. The application of Hispanic culture was integrated within the food and nutrition curriculum to promote wider awareness. In the quantity food production and service course, our PUENTES students created and served authentic meals to the weekly audience of campus and community patrons attending the 70-seat, white-tablecloth "Recipe Box Café" fine dining setting. One student 1) recruited her family to help plan the regional Mexican meal; 2) supervised students during actual production using traditional ingredients and methods they may not have experienced before, 3) presented a fact sheet to the patrons. In the experimental food research course, our PUENTES students used original cultural food recipes as a basis for nutrient improvement. A traditional family recipe of fried empanadas, for example, was transformed to a baked version with reduced fat and higher protein content. The project was presented to a food industry forum with appropriate packaging, nutrient labeling and marketing plan. The student also prepared samples of the product to be tasted by the industry. The application of Hispanic culture to our curriculum has expanded our exposure beyond our department into the wider campus and greater community environment. Students have found

greater self-identity and cultural pride in adapting their traditional culture to a wider audience while integrating the role of nutrition both from a health and cultural viewpoint.

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### **Using a Pumpkin Patch to Engage Native Hawaiian K-5 Students in Agricultural Sciences**

Ann Emmsley, Gwen Moringa-Kama, William Jacintho, Mach Fukada and Cynthia Nazario-Leary  
University of Hawaii Maui College

The goal of the pumpkin patch project was to provide fun science-related activities that would broaden awareness of agriculture in younger school children and bring them into the community college environment. The Agriculture department created a series of activities centered around a pumpkin patch planted on campus. Native Hawaiians, historically under-represented in higher education, were selected as a target group. We invited 250 students, grades K-5, from the Kula Kaiapuni o Paia Hawaiian language immersion program to the Agriculture facility. The activities were led by faculty, staff and students from both the Agriculture and Hawaiian studies programs. Grades K-2 cycled through six activities: growing pumpkins; melon fly impact on pumpkin production; bees and pollination; sink and float buoyancy test; seeds and planting; and soil texture. Grades 3-5 cycled through four activities: pumpkin measuring; GPS treasure hunt; vermicomposting; and insect identification using microscopes. A survey was sent back to school with the teachers. Four classes returned surveys. 77.8% of the students indicated they learned more about farming than they had in any previous experience. Students in Grades K&2 enjoyed the pumpkin and seed activity the most. Composting and insects were the most popular activities for the fourth and fifth graders. Clearer learning objectives and assessments for each activity should be developed to assist in improving outcomes. Instruction in Hawaiian rather than English could increase engagement for this particular target group while providing greater opportunities for collaboration between Agriculture and Hawaiian studies.



connect | develop | achieve

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### **Comparison of Final Course Grades and Absenteeism in Short and Long Semester Undergraduate Animal Science Courses**

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

Many students believe that they will perform better in short semester courses compared to long semester courses since they have the opportunity to focus on a single course over a relatively short period of time. However, the same amount of material is presented during short semester courses as in long semester courses and students have less time to learn and comprehend the material. The objective of this study was to evaluate student performance and absenteeism between short semester (4-week) courses and long semester (16-week) courses. Data were collected on 240 students enrolled in three different courses that were taught in both the summer and the preceding spring or following fall semesters. An analysis of variance was performed using SPSS. Final course grade and absenteeism were analyzed as dependent variables in a model that included instructor as a covariate. Least squares means were generated for each variable and were separated based on predicted differences. This analysis revealed that the absentee rate was much lower ( $P < 0.01$ ) in the short semester courses (5.62%) compared to long semester courses (10.3%). Previous research indicates that a higher rate of absenteeism is usually associated with lower course grades, however, mean final course grade for short semester courses (82.4) was not different ( $P = 0.81$ ) from that of long semester courses (82.8). These results indicate that, even though students are more dedicated to short semester courses in terms of attending class, final course grades are similar to those attained in long semester courses.

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### **Interdisciplinary Service Learning: Strategies for success**

Sarah K. Hanks and Nicholas A. Clegorne  
Virginia Tech

Interdisciplinary service learning provides students the opportunity to observe theories, phenomena and skills in a hands-on learning environment. Applying best practices for effective service learning experiences, the Residential Leadership Community at Virginia Tech engaged 200+ freshmen in service learning in Ivanhoe, VA, with a

focus on Appalachian culture, leadership studies and community development. Students were encouraged to make relevant connections between their academic disciplines and the constructs addressed during this service learning experience; the results included deep reflections and evidence of personal development captured through assigned writings and small group discussions. Stated briefly, some students recognized the impact that the service experience had on their own world view (i.e. "How did the experience change me?"). Others connected the validity of the experience to whether they felt they had personally made a lasting impact on the community (i.e. "How did I impact the situation?"). Connections in evaluation data suggested students who perceived the goal of the experience to be associated with expanding their own world views found the project more meaningful. In contrast, students who placed overwhelming value in changing the community itself found the experience less significant. We seek to challenge a paradigm wherein young leaders feel they must be agents of change in order to value civic engagement. Participants will explore theoretical and practical approaches to implementing interdisciplinary service learning experiences within academic courses, to include resources, potential challenges and suggestions based on the experience of the Residential Leadership Community.

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### **Art Appreciation vs. Craft: A New Approach to Floral Design as a Creative Arts Course**

Dwayne Pavelock, Sharon Frey, Stanley Kelley and Marsha Harman  
Sam Houston State University

The Texas Higher Education Coordinating Board (THECB) approved a revised core curriculum in October 2011, to be implemented in fall 2014. One component, Creative Arts, requires courses to "focus on the appreciation and analysis of creative artifacts and works of the human imagination"; furthermore, courses are to "involve the synthesis and interpretation of artistic expression and enable critical, creative and innovative communication about works of art." AGRI 2399 (Floral Design) has been part of the Humanities & Visual & Performing Arts component of the core curriculum at Sam Houston State University for nine years; however, all courses had to be resubmitted and approved for inclusion in the new core curriculum. AGRI 2399 previously focused on floral design as a craft; the new requirements created a need to focus on art appreciation, meaning-making and adding aesthetic value to life-celebrating events. Studying the history of floral design as an art was expanded to foster



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an understanding of the progression of floral design in accordance with societal norms and cultural changes. Elements affiliated with aesthetics, innovation and meaning-making will assist students in developing an appreciation for various styles of expression. Even interdependence with other creative arts, including painting, musical theater and dance, will be explored. Floral design as a craft will still be included, but more attention will be given to interpreting floral sculptures, understanding symbolism, expressing creativity and assigning aesthetic value independently. Course activities will also integrate critical thinking, communication, teamwork and social responsibility as required by the THECB for Creative Arts courses.

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### **Engaging Community Stakeholders in Multidisciplinary Agricultural Education Program Delivery**

Jeremy Falk and Douglas Masser  
University of Idaho

Daniel Foster  
The Pennsylvania State University

Advisory councils serve as a viable way to bridge the gap between the community and the education system, yet research has yielded varying levels of advisory council implementation. The purpose of this study was to compare the composition, utilization and teacher perceptions of agricultural education advisory councils. Survey research methods were used to gather data on two different populations of agriculture teachers for the sake of comparison. It was found that approximately 89.5% (n=85) of the Idaho agriculture programs and 90.6% (n=155) of the Pennsylvania secondary agricultural education programs had an advisory council at the time of this study. Councils helped identify equipment and supply needs for the programs as well as acted as a communication link between the community and the program. Both states of agriculture instructors felt that their advisory council should have more influence than it currently had on the program. Results indicated that advisory councils were mandatory, but respondents felt that their advisory council was a good thing. Advisory councils should be composed of community and industry stakeholders that represent that location's workforce needs. The evidence of this research supports the benefits of advisory councils at the secondary level. If we follow the practice of including well-defined purposes for advisory councils, our colleges of agriculture will benefit by gaining a current industry perspective, building com-

munity buy-in and ownership of our programs; and developing partnerships across disciplines.

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### **Comparing Academic Achievement of Agriculture Majors With and Without Teaching Certification**

Dwayne Pavelock and Doug Ullrich  
Sam Houston State University

Currently, a shortage of certified secondary teachers of agriculture exists across the nation. Opinions vary as to the reason and the outlook for the near future is not promising even as enrollment is growing in secondary agriculture programs, especially in Texas. This is creating a greater demand for such teachers. Researchers sought to understand why more agriculture majors are not seeking teacher certification, pondering whether higher academic requirements contribute to the problem. The academic achievement of graduates in agriculture over a five-year period (2007-2012) was examined, with all students from the same department and university. ACT (19.66) and SAT (964.81) averages for non-teacher certification graduates were slightly higher than those who obtained teacher certification (19.43 and 941.94, respectively). Students who initially pursued teacher certification, but changed before graduating, had even higher ACT (20.15) and SAT (990.83) averages. The overall GPA for teacher certification students (3.13) was higher than non-certification students (2.79), while those who initially sought certification but later changed had an overall GPA of 3.00. Within teacher certification graduates and agricultural disciplines, Interdisciplinary Agriculture majors (958.91) had the highest average SAT scores, while Agricultural Engineering Technology majors (21.25) had the highest ACT average. Animal Science majors (3.21) were found to have the highest overall GPA. Non-teacher certification graduates typically had higher SAT scores within disciplines than teacher certification graduates, but overall GPAs for all five disciplines were higher for those obtaining teacher certification. No evidence was found that academic achievement influences the decision to pursue teacher certification.

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### **New Mexico Highlands University, Geospatial Applications in Natural Science (GAINS) Lab**

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New Mexico Highlands University

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Through funding from the USDA Hispanic Serving Institutions Education Grants Program, we developed the GAINS Lab – New Mexico Highlands University’s geospatial technology resource center. It provides geospatial education, research and service support to NMHU and external stakeholders. It is managed by the Director of Geospatial Technology, under the supervision of the Natural Resource Management Department Chair. The GAINS Lab has a full suite of geographic information systems (GIS) hardware and software. It maintains a broad variety of geospatial applications including cartography, geospatial analysis, remote sensing and Global Position System data acquisition and processing. It has emerging capabilities in photogrammetric feature extraction and terrain modeling, stereo/3-D visualization and LIDAR processing and analysis. In addition, the GAINS Lab provides support to a 20 seat GIS and Remote Sensing classroom outfitted with ESRI ArcGIS Advanced, Erdas Imagine Professional and Pathfinder Office software. The GAINS Lab supports geospatial instruction and integration of geospatial concepts and techniques into faculty and student research and provides technical assistance to regional organizations seeking to incorporate geospatial information into their functions. All lab efforts are designed to develop student knowledge of geospatial capabilities, endow them with practical, hands-on learning opportunities and provide them with a highly marketable skill-base when seeking employment. Through GAINS, we are developing a rigorous natural resources management curriculum inclusive of new GIS technologies which will translate to an increase in a diverse and geotechnically capable workforce.

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### **Professional Development Needs Assessment of Texas’ Agriculture, Food and Natural Resources Teachers**

Casey Page, Haley Vrazel, Zachary Nowak, Doug Ullrich and Dwayne Pavelock  
Sam Houston State University

Professional development enables teachers to develop new skill sets, remain abreast of changing technologies, enhance their current abilities and improve student performance; however, providers of such opportunities should ascertain teachers’ needs. Attendees at the annual state professional development conference were asked to indicate their needs through a survey instrument and demographic information was also collected. Seven hundred twelve (712) instruments were distributed with 588 returned, an 82.6% response rate. The av-

erage experience was 10.77 years, while 70.22% were male. Nearly 70 percent (69.35%) indicated their highest degree was a bachelor’s degree, while 28.09% had obtained a master’s degree. The primary deciding factor for attending a workshop was the topic, with location finishing a distant second. Respondents were asked to list five topics they most prefer for future professional development. Topics that were most frequently identified were: SAEs (n=423); career development events (n=258); and leadership development events (n=240). Agricultural mechanics (n=181) and plant science/horticulture (n=152) were the disciplines cited most often and classroom/student issues was identified 156 times. Within all responses, specific areas that were most frequently mentioned were: greenhouse management (n=70); training chapter conducting teams (n=66); teaching welding (n=52); teaching floral design (n=50); and selection of goats (n=42). Finally, while multiple delivery methods could be chosen, a very large majority (92.18%) preferred the annual state professional development conference as the means for obtaining professional development.

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### **College of Agriculture and Life Sciences Graduate Teaching Scholars Program Opens New Doors for Future Faculty Candidates**

Courtney Vengrin, Gabrielle Fundaro, Mara Grossman, Matt Schroeder, Jason Smith, Dan Tekiela, Liyun Ye and Donna Westfall-Rudd  
Virginia Tech

Virginia Tech’s College of Agriculture and Life Sciences has developed an innovative three-year program for doctoral students interested in careers as university faculty members. The program is in its first year and includes seven students from different doctoral programs within the college. Teaching at the university level is a challenge for all who embark upon it and the goal of this program is to help these students become better prepared for a career in academia. The program focuses on individual teaching experiences with a weekly seminar discussion of teaching strategies and approaches that enable students to learn from each other as well as the program coordinator. Program Participants observe university teaching faculty, practice teaching skills, and gain knowledge of faculty experiences and expectations while developing a philosophy, methodology, and individual teaching goals. Upon completion of the program, students will receive a university-based Future Professoriate Certificate. Students remain in the program for the duration of their PhD work at the university. This pro-

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vides students with extensive time investigating teaching techniques, learning from each other, and developing their own teaching methods. Over the next year the program is expected to expand to annually include twelve students who will emerge prepared with skills as high quality teachers as well as researchers. Helping students further their teaching goals as well as their research agenda is an exciting opportunity for the College of Agriculture and Life Sciences.

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### Experiential Learning Activities to Enhance Plant Materials Courses

C. T. Miller  
Kansas State University

Plant materials courses are a major component of any horticulture curriculum. Large amounts of information are disseminated in these courses and are challenging for many students. Rote learning often becomes a common learning technique used by students, resulting in reduced comprehensive understanding of the plant materials. In the Landscape Plants I and II courses at Kansas State University, one of our objectives was to implement unique experiential learning activities to encourage student engagement and diversify typical plant identification courses. For example, in the fall course, several different maple (*Acer*) species are covered, including the sugar maple (*Acer saccharum*). One activity conducted to provide a more meaningful and satisfying learning experience has been the maple syrup production lecture and the accompanying maple syrup taste test. Students are provided with several grades of authentic maple syrup and a store-brand syrup to taste and compare. Students are given a sheet of paper to record and describe the different syrup grades and provide comments of the experience. In the fall 2012 course, 31% (n=35) of the students provided positive feedback about the activity.

A similar activity has been implemented in the spring plant materials course; a lecture on herb species with an accompanying lab which provides an opportunity for students to experience and reflect on a taste test activity. For example, cookies including dried rosemary flowers (*Rosmarinus officinalis*) were provided for students to experience. Similar to the syrup activity, students have provided positive feedback.

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### Incorporating Digital Plant Walks Using Google Maps™ in Plant Materials Courses

M.S. Wilson and C.T. Miller  
Kansas State University

Horticulture plant materials courses are typically comprised of laboratory and lecture components. During the lab sections, students are introduced and exposed to different plant species through in situ walks around campus grounds, gardens, arboreta, etc. Frequently, the amount of time to take-up or observe the plant species for a given weekly plant list is limited. This limited time is due to allocating time to quiz over the previous weeks' plant materials; along with lengthy walks needed to introduce new plant species in situ. Brevity during these lab sessions can lead to decreased student participation and reduce active learning opportunities. Instruction techniques in plant materials courses have changed as increased teaching and learning resources have become available to instructors and students. One example is the increasing availability of mobile technologies such as smartphones and tablets. Digital plant walks created in the Google Maps™ application have been implemented and have received positive feedback for use in the Landscape Plants I and II courses at Kansas State University. With this application, students are provided with, or asked to create a plant map plotted with the various plant species scheduled for the weekly plant list. Identification and descriptive information in addition to photos and videos can be attached to the maps. The generation of these maps, allows students to re-trace laboratory plant walks on their own time to further study the plant material. Implementation of applications like Google Maps™ provides instructors and students with additional resources for increased active participation and learning.

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### Integrating Forestry, Agriculture and Hawaiian Culture on the Big Island

Orlo C. Steele  
Hawaii Community College

The Big Island of Hawaii is blessed with large expanses of native forest, an economy that is largely based on diversified agriculture and a strong native Hawaiian Community. The USDA ANNH grant at Hawaii Community College is aimed at strengthening and expanding three workforce development programs: Forest Ecosystem Management, Agriculture and Hawaiian Lifestyles.

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This is primarily done by training forest technicians, farmers and “konokiki” or land stewards using both traditional and modern methods of education. The Grant allows for these programs to gain access to technology used in land management practices such as GPS receivers, GIS and Landscaping software along with other surveying equipment. It also supports the maintenance of greenhouse and field crop production that uses appropriate tilling and harvesting tools. Concomitantly, all three programs stress the importance of integrating traditional values into their curriculum such as protecting watersheds and native wildlife, using local resources and emphasizing heirloom crops and varieties. In addition, all three programs participate in a “hands on” internship program where students work with a potential employer which gives them a realistic view of the skills they need to be successful. There is much collaboration among the programs and often students join forces to work on common projects such as greenhouse construction, community gardens and native forest restoration. It is hoped these efforts will help the Island have healthier ecosystems, become agriculturally self-sufficient and manage lands with an integrated Hawaiian cultural approach.

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### Student Response to Equine Laboratory Activities Utilizing Constructivism

A.E. Lowrey, J.A. West, K.K. Turner, D.W. Duncan, N.E. Fuhrman and C.R. Dove  
The University of Georgia

Equine laboratories are an ideal environment for experiential learning. However, due to time constraints, it is often difficult to gain feedback from students on the value of the learning experience. Using an interdisciplinary approach to evaluating the effects of constructivism, researchers gathered information on both student performance changes and responses to activities in equine laboratories. Students were given two skills to perform on an initial and post-practice skills test: basic (haltering) and advanced (pillow wrapping). During a two-week period between tests, students were required to practice one of the skills under the supervision of the researchers. The skill that was practiced was illustrative of constructivism, the other behaviorism. During the two weeks of practice, students were asked to complete journal entries regarding their thoughts and concerns during this process. When students were participating in the skills test portion of the study, their performance in each skill was scored based on an eight-point rubric. Overall, students that rated their knowledge as average or below

average produced more positive journal responses (88.2% in both groups) than the above average group (38.9%). Additionally, when comparing students' scores for the skill that they practiced, a greater occurrence of skill improvement was observed in the below average group and as skill level increased, the occurrence of improvement decreased. This data suggests that more hands on learning is beneficial in lower level classes but may not be as appreciated in the upper level classes with students who have previous experience related to the lab activities.

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### The Impact of 4-H and FFA Member Involvement on College Recruitment Strategies at a Land Grant University

E.J. Carter, D.W. Duncan, N.E. Fuhrman and K.J. Rucker  
University of Georgia

For university recruiters to be successful in recruiting students to their colleges of agriculture, they must understand the factors involved in the student's decision making process. Chapman (1981) produced a model of student college choice illustrating the process students enter into when deciding on a college—one of the elements of his model included college efforts to communicate with students. For the purpose of this research, prior agricultural experiences were considered when examining student college choice. Prior agricultural experiences are defined as experiences that exposed individuals to agriculture prior to enrollment in a college of agriculture. The objective of this study was to determine how involvement in 4-H or FFA prior to college impacted recruitment efforts in the College of Agricultural and Environmental Sciences (CAES) at the University of Georgia. An on-line survey adapted from the research of Esters and Bowen (2005) was distributed to college freshmen to evaluate the relationships. Of these students, 105 participated in this study with 15.5% indicating involvement in 4-H and 16.7% participated in FFA. Fifty-seven percent of respondents who were former FFA members were highly motivated by college alumni to enroll in CAES, followed by a campus tour (41%) and family (35%). Fifty-six percent of former 4-H members indicated that a college professor had a high to very high influence on their enrollment decision, followed by family (47%) and a campus tour (25%). Colleges of agriculture should consider tailoring their recruitment efforts by utilizing alumni and university faculty when reaching out to prospective students.

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### **Developing a New College Name through Faculty and Stakeholder Input**

Rebecca G. Lawver and Kelsey L. Hall  
Utah State University

Due to the growth of the college and the breadth of disciplines and emphases across departments, schools and programs in the College of Agriculture at Utah State University, the need for a new name is timely. The goal of this study was to determine a name that embraces the diversity of the college and continues to recognize the legacy of excellence in agriculture through group consensus decision making. This study is the quantitative part of a larger qualitative project. A census of the faculty from the College of Agriculture (N = 185) was conducted in early January with a total of 165 respondents completing the survey. The faculty rated the name College of Agricultural and Applied Sciences the highest at 75%, followed by the College of Agricultural, Environmental and Life Sciences at 53%. Half of the faculty respondents represented two departments, Applied Sciences, Technology and Education and Animal Dairy and Veterinary Science. A total of 106 stakeholders responded to departmental requests to complete the survey. Stakeholders preferred the name College of Agriculture and Applied Sciences. The majority of stakeholders were associated with the Landscape Architecture and Environmental Planning department (39%). This study represented faculty and stakeholders from each department across the college which indicates a vested interest in the name change decision making process. This data was presented to the Department Heads, Dean and President of the University for review. The data suggests that College of Agriculture and Applied Sciences is the most preferred name by both faculty and stakeholders.

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### **Mentoring Student Interns in Farm-to-Fork Opportunities**

Kelsey Hall, Jennifer Reeve and Tamara Steinitz  
Utah State University

A student-run certified organic farm at a university in the western region has had students volunteer to plant, weed, harvest and market the produce through community supported agriculture (CSA) program and a campus stand. In 2012, faculty members with experience in organic and sustainable agriculture, dietetics, nutrition and agricultural communications crossed disciplinary bound-

aries by supervising student interns from AmeriCorps [state] Campus Compact from May 2012- May 2013. The internships were structured into three core areas: food literacy, gardening outreach and electronic communications. Gardening outreach interns delivered workshops for elementary aged children to learn about and help with the planting, weeding, watering and harvesting of plants at the student-run farm. The children learned the importance of pollinating plants by bees and eating vegetables and fruits. Interns created a CSA weekly newsletter for shareholders and updated a blog and website for the student-run farm. Most Americans do not consume the recommended amount of vegetables and fruits. In particular, low-income families in [state] lack the knowledge, skills, resources and access to plan and prepare a variety of vegetables and fruits. Food literacy interns operated a nutrition education booth at a local farmers' market, providing food samples, recipes and produce growing cards to attendees every week from May to October. The faculty members continue to create a cross-disciplinary curriculum that will link the practical experience of growing and harvesting food with food preparation, nutrition, health, community outreach and marketing, thereby providing farm-to-fork training opportunities for future market gardeners and agricultural educators.

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### **Integrating Outputs of the Poultry and Egg Education Project (PEEP) into a Program Development and Evaluation Course**

John C. Ricketts and Sandria Godwin  
Tennessee State University

Edgar Chambers IV  
Kansas State University

Sheryl C. Cates  
Research Triangle International

Public land-grant universities were created with a tripartite mission to educate, to research and to disseminate knowledge to consumers through Extension. Some have argued the contemporary relevance of land grants, citing problems such as research faculty introversion (Schuh, 1986) or public reliance on the ultimate extraversion – the Internet. The objective of this presentation is to model a scholarly approach to integrating research, extension and coursework. The PEEP project, funded by USDA-NIFA-AFRI, seeks to reduce illnesses by improving consumer storage, handling and preparation of raw poultry and poultry products. The project has significant

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curriculum development, instructional design and evaluation outputs related to course objectives in the Program Development and Evaluation course at Tennessee State University. Project outputs are integrated into the course as examples of innovative tools for development, delivery and evaluation of programs in Extension. As examples, gaming for education is a contemporary method of engaging learners; social media communication of science provides data-rich feedback for program providers; and conjoint analysis is an innovative evaluation tool that identifies the best achievable combination of factors to promote a particular positive behavior, concept, scheme, or product (Amoroso, 1983). Application of contextual output integration will be documented by sharing student interviews and results of course conjoint analysis (introduced as an innovative evaluation tool and used as a modeled course improvement mechanism). In summary, the presentation will demonstrate a model for effectively integrating grant project outputs and objectives for a course focusing on program development and evaluation.

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### **Diversifying Student Enrollment in Colleges of Agriculture through the Recruitment of Latino Students**

Joy M. Marshall and Wendy J. Warner  
North Carolina State University

To meet the needs of our increasingly global society, there is a need for more Latinos to pursue higher education degrees across agricultural disciplines. A qualitative approach was used to provide an in-depth understanding regarding motivations and influences of Latino students, specifically those whose parents are migrant farm workers, to pursue an agricultural related career. Purposive sampling was used to identify two individuals who participated in semi-structured interviews. Additional forms of data included classroom observations of the participants and document analysis of open-ended questions to allow for validation of the data through triangulation. Data analysis was completed using horizontalization. Three main themes emerged at the end: role of family, role of mentors and the desire to help others. Both of the Latino students interviewed had positive experiences associated with agriculture and were from families that relied on agriculture as a primary source for income. As a result, prospective students and parents need to be educated and provided with information to allow for increased understanding of the multitude of available agricultural opportunities. Also, students need to be mentored by supportive professors. In addition

scholarships greatly assisted the participants financially, universities need to continue to seek out scholarship donors to support diverse students. With an increased awareness of these factors and influences motivating Latino students, universities can focus efforts on the recruitment of a diverse student population and promote positive opportunities in agriculture to meet the demands of a globally competitive workforce and to fulfill the students' desire to help others.

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### **Student Experiences with Online Cooperative Learning**

Matt Spindler  
State University of New York at Oswego

Cooperation consists of actions that support working or acting together for common purpose or benefit. Cooperative learning is an instructional strategy that employs small groups or teams to create collaborative student interactions that support and optimize the learning of each individual. Research has demonstrated that the cooperative learning approach, when correctly enacted, has a positive impact on a number of student outcomes, such as, achievement and self-esteem. The five essential elements of successful cooperative learning are as follows: 1) clearly perceived positive interdependence; 2) considerable promotive interaction; 3) clearly perceived individual accountability and responsibility to achieve group goals; 4) frequent use of relevant small group and interpersonal skills; and 5) frequent and regular group processing of current functioning to improve the group's future effectiveness. The purpose of this descriptive study was to explore and describe the online cooperative learning experiences and preferences of seventeen students in a graduate level course of study. A researcher constructed online survey instrument was utilized to collect data at the beginning and ending of the course of study. Initially, most students (92%) confused cooperative learning with group projects and had a negative view of cooperative learning. Aligning course expectations with the tenets of cooperative learning and providing explicit instruction regarding cooperative learning were viewed as extremely helpful by students. Students preferred to have the freedom to interact and complete work in multiple online platforms outside of the online course space.

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### **Addressing Opportunities in Forestry and Natural Resources at an 1890 Land Grant Institution**

Christopher Catanzaro and Gregory Frey  
Virginia State University

Virginia State University, an 1890 Land Grant Institution, is enhancing its teaching, outreach and research efforts in forestry and natural resources. Despite recently acquired grants and formula funding, as well as cooperation from Virginia Tech, the Virginia Department of Forestry and the USDA Forest Service, the initiative faces barriers such as a limited personnel and negative perceptions about forestry and natural resources among some minority communities. Recent efforts to break down barriers include hosting a workshop on software tools to conduct urban tree inventories and assessments, attended by a variety of urban forestry related personnel. Further, faculty at VSU developed an undergraduate minor in Natural Resource and Ecosystem Management, which required restructuring and augmenting course offerings. Coursework in the minor is designed to expose students to the vast array of career opportunities available in both the public and private sectors. This includes guest speakers from various agencies and aspects of natural resource and ecosystem management and development of problem solving skills through project-based learning. Research efforts include establishment of shortleaf pine from various regions of the U.S. Ongoing goals of integrated teaching, research and outreach with a multi-institutional and multidisciplinary approach are more profitable land management for small and limited resource landowners, improved management of the urban tree canopy and training of a diverse pool of undergraduates for rewarding careers in the natural resource realm.

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### **What Reflective Papers Reveal about Experiential Learning on University Athletic Fields**

Samuel Doak, Rick Rudd and Curtis R. Friedel  
Virginia Tech

Experiential learning has been shown to greatly enhance overall educational experience of students because of the opportunity to gain mechanical skills along with cognitive skills to actively build upon subsequent experiences. The literature strongly supports experiential learning as an instructional model to provide experiences as a foundation and the stimulus for learning, in a situation

where students actively construct their own learning in a holistic experience. This holistic experience requires intentional reflection to complete the experiential learning process, which enables the meaningful construction of learning. Twenty six reflective papers were analyzed from associate's degree students, over four semesters, enrolled in experiential learning courses that involved working with athletic department personnel. The students helped maintain the game and practice fields of a division I university. Students were asked to write a reflective paper with guidelines to include ideas about their expectations, experiences, highlights and the most important items learned. Objectives of this presentation were to: 1) Describe the learning experiences associated with students' participation in this course and 2) Identify common threads among students' reflections on previously mentioned items. Common themes identified include: the desire to gain knowledge/experience of game day and routine maintenance practices, to gain experiences with new equipment, to see the wider scope and details of the entire maintenance process and apply classroom knowledge to field practice. The depth of reflections varied considerably from student to student. The researchers concluded that this evaluative tool was useful in describing the essential nature of experiential courses in academic curricula.

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### **Seeking Out Perceptions of College Stakeholders to Help Write a Mission Statement**

Kelsey Hall, Rebecca Lawver and Camille Kalkman  
Utah State University

A College of Agriculture has expanded its academic programs since the existing mission statement was written. The purpose of this study was to discover the perceptions of stakeholder groups affiliated with the college to assist in developing a new mission statement. A total of 3 faculty members, 18 students, 10 alumni and 10 staff members participated in the focus group sessions. A moderator's guide was followed to ask how participants perceived the college, what stakeholder groups the college serves, what the college does and what the college's purpose is. Sessions lasted roughly 90 minutes and were held in April 2012. Researchers analyzed the transcripts to identify patterns within and among the responses of participants. Most participants believed the college embodied the land-grant mission through research, extension outreach and teaching of science, genetics, social sciences and traditional productions. Many participants recognized the hands-on learning experiences offered to students, the support received from

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faculty and the leadership and networking opportunities available for students. Participants identified stakeholders the college serves, including students, donors, researchers, anyone who eats, the world, alumni, agriculture production groups and agri-business firms. Emphasis should remain on a land-grant institution's purpose in the new mission statement. Some suggested that agriculture be described as a life science or applied science. Many participants wanted past ties to agriculture to remain but convey the diversity of programs now offered within the college, considering the changing demographics of the state. Participants did not suggest naming departments or academic programs in the mission statement.

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### **My Journey of Teaching Engineering to Non-Engineers**

Hulya Dogan  
Kansas State University

This presentation addresses some of the challenges of teaching engineering to non-engineers, a journey of exploring new instructional practices and rewarding outcomes. Teaching an engineering course to a class with no prerequisite engineering knowledge except introductory calculus and physics poses a considerable challenge for the instructor. Where can one begin? How can the material be condensed into a three credit course? How can the material be made interesting and comprehensible to each student of such diverse background? How can the students be convinced why a non-engineer should want to acquire this knowledge? Effective communication and making the course objectives clear were critical. This involved helping students to see how acquiring engineering concepts and basic Math skills can help them in their careers. Rather than assigning engineering problems that simply require students to plug numbers into equations, problems were formulated in such a way that students understand the industrial importance of engineering principles. To improve problem solving skills and bring up to speed students with no prior experience, several strategies were devised: (i) Math pre-test, (ii) In-class activities promoting peer-teaching, (iii) Trash-on-me (peer-re-grading of homework). Although the outcomes of these activities will be presented in detail, here a synopsis of the last activity is provided: Through peer-re-grading students were observed to benefit from one or more of the followings: (i) Most of the students do not review their graded homework. While grading a peer's homework they get a chance to work through it one more time. (ii) They notice that there is

usually more than one way to solve a problem. (iii) They also notice that there are some common mistakes. (iv) They understand the importance of proper communication, even in Math! Making a correct solution is not enough; it should be laid out clearly so that anybody can follow the solution steps and understand them. (v) Because each homework is graded twice (original by the instructor; copy by a student) that was a great way to prove "how fair" the instructor's grading is.

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### **Agricultural Literacy in the U.S.**

Althea Whitter-Cummings and Rick Rudd  
Virginia Tech

United States agriculture is a diverse and major industry, producing food for the United States and the entire world. Farmers and ranchers in the United States produce over \$200 billion per year in food commodities. As the world's population continues to grow, approaching nine-billion people by year 2050, our use of technology throughout the world is critical in meeting the food and nutrition needs of our growing global community. If we are to meet the needs of our growing world, people will need to become more literate in the food and fiber system. Just as the recent increase in the number of farmers markets and direct marketing networks have grown in recent years, so will the need for our global population to understand food production systems. This paper examines the knowledge and awareness of students at a major land grant university, concerning the food and fiber systems and presents substantiation of the need for additional education of the American citizenry regarding agriculture. Generally, agriculture is seen as only farming or ranching and this perception has become noticeable in children and adults. However, these perceptions can be corrected when information about food and fiber systems is taught. This phenomenon is not a new one and continues to have potential for food and agriculture policy makers, curriculum developers and researchers. If we are to meet the needs of food and fiber production in the next 50 years, agricultural literacy programs must be developed to inform rural and urban community members.



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### **Student Use of Electronic Data and Communication Venues in College Courses**

John M. Galbraith and Jennifer Sparrow  
Virginia Tech

Many college teachers assume that students are savvy in the use of electronic data and communications, such as Facebook, blogs, tweeting. In fact, many students appear to be addicted to cell phone use and posting their status and daily activities for the “friends.” A survey was prepared and given before and after a college course that gave extra credit for using a blog. Questions included the use and effectiveness of web-based social networking media, web-available data, and electronic communication for improving the quality of course assignments and the effectiveness of learning. The answers revealed that students did use the resources for social interaction, but did not use the web resources for coursework as much as teachers might assume. An experiment to offer extra credit for using a blog in a wetlands course failed to recruit much student involvement. The subject area may have a high influence of whether students are willing to use electronic interaction in a course.

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### **Extending Information to Small and Niche Market Flock Owners through the Development of the Center for Small Flock Research and Innovation**

B.A. McCrea  
Delaware State University

As part of the 2010 Capacity Building Grants for 1890 Institutions, the grant, for the first time, included Extension proposals. The Center for Small Flock Research and Innovation (CFSRI) was developed with the goal of extending information to small flock and niche market poultry owners. The high risk management practices of pastured poultry owners, with regard to biosecurity measures and best management practices, was addressed through the development of a three-fold approach. First, a web presence in the form of the Center for Small Flock Research and Innovation was created. Second, nine biosecurity fact sheets were proposed to specifically address the biosecurity challenges faced by pastured poultry owners. And lastly, an indoor, biosecure pastured poultry unit is underway. This unit will be used to study the effects of pasture on poultry production characteristics without the confounding factors of dis-

ease vectors such as wild birds. To date, the CSFRI web presence is in place and currently disseminating information about current events as well as fact sheets. The goal of the web presence was to provide a web resource specifically for small flock owners who prefer information tailored specifically to their non-commercial flock management practices. Six of the nine biosecurity fact sheets have been developed on the topics of traffic patterns; cleaning and disinfection, using the diagnostic lab; creating a footbath; signage & locks; and wild bird control. The indoor, pastured poultry unit was erected, but suffered damage in Hurricane Sandy; therefore it will be re-erected in spring of 2013.

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### **Selecting Assessment Modalities for a Short-term Study Abroad Course on Indian Wildlife**

Shweta Trivedi  
North Carolina State University

A specialized study abroad course in the area of wildlife science was developed to provide diversity in the training and opportunities of pre-veterinary track students at NC State. The overall objective of the course was to provide an experiential learning on a short-term wildlife management and conservation program in India. It was offered as a 2-credit hour course in 2010, 2011 and 2012 to 16 students in each year. The course offerings were divided into 3 modules that included on-site lectures, observation modules and hands-on wildlife techniques which were supplemented by reading material posted on the online learning environment called Moodle. To assess the student understanding and familiarity with the exotic wildlife, effective wildlife management practices and current conservation challenges, several different assessment modalities were utilized. Student assessments included a pre-departure book-report, on-site quizzes, journal reflections and post-program final essay. Rubrics were established to grade the book report, quizzes and the final essay for evaluating academic growth. Journal reflections were coded to assess student growth in the realms of personal and cultural growth. Based on the student performance it is clear that quizzes and final essay provide the most concrete assessment of student understanding of the concepts and course content.

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### **Connecting the Dots: Food + Culture = Agriculture**

Ozzie Abaye, Gregory Welbaum and Kang Xia  
Virginia Tech

In 2010, a food lab was added to the traditionally lecture-based World Crops and Cropping Systems course at Virginia Tech. This is upper-division undergraduate class intended for both major and non-majors. The overall objective of the food lab, which is taught in conjunction with the lecture, is to expose students to the unprocessed crop commodity, how it is produced, consumed and the culture surrounding its usage. On a weekly basis, students make dishes from the crops discussed in the classroom lecture. A total of 60 students, 20 students per 3 lab period, are assigned into all male, mix or female groups of 5 students each. The recipes for the food lab are generated from the students as well as other sources and include cultures ranging from India to the American. The recipes for upcoming labs are posted on the web prior to each cooking lab. The outcome of the food lab exceeded expectations and student evaluations have been favorable. This approach gives students a greater appreciation of world crops processing, usage and preparation as nutritious food from field to fork as well a deeper understanding of other culture.

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### **How to Recruit the Next Generation of Leaders in Food Safety: Understanding Perceptions of High School Students in Rural North Carolina**

Clinton Stevenson and Caitlin Alberts  
North Carolina State University

There is a significant need to recruit students into careers in agriculture (PCAST, 2012). In particular, the food industry is experiencing a shortage of qualified food safety professionals (Scott-Thomas 2012; Freudenheim 2009). Despite the need for FS recruitment, there is little to no research on young people's perceptions of FS careers. This study investigated factors influencing young students' choice of career fields and college major (Malgwi, Howe and Burnaby 2005) among a convenience sample of 111 high school (HS) students and 24 community college (CC) students in rural Sampson County, North Carolina. When asked whether they have considered a career in FS, 19% more CC students said yes than HS students (33% vs. 14%). Only 23% and 17% of CC and HS students, respectively, thought there were

many FS careers available. Both HS and CC students said "salary and benefits" and "having an employer who believes in me and my ability to contribute" were the most important factors in choosing a career, compared to factors such as performing work that is important to society. These findings suggest that students are more likely to consider FS careers once they enter college, though they underestimate the availability of FS careers. Also, recruitment efforts should emphasize the potential for financial success and presence of employers who believe in their workers' abilities to contribute in FS careers. These findings will be helpful to higher education institutions recruiting and cultivating the next generation of agricultural leaders.

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### **Modes of Faculty Engagement and Collaboration in a Senegal Higher Education Agriculture Capacity Building Project**

Ozzie Abaye, Patrick Guilbaud and Fatou Gueye  
Virginia Tech

The presentation discusses a model used to bring organizational/ institutional change in a higher education agriculture capacity building project in Senegal. The model centers on eliciting greater faculty engagement, which was used through a curriculum improvement intervention initiated by the USAID/Education and Research in Agriculture (ERA) project. We will also present the pedagogical gaps found at the institution of focus, which we believe also serve as inhibitors to change. These include: lack of standardized approaches to teaching and learning, unstable corps instructors and very little emphasis on getting learners' feedback. The presentation will also highlight aspects of critical success factors regarding capacity building projects, particularly those that are focused on institutions of higher learning. Based upon the experience in Senegal, we note that it is essential to work with local actors at the individual level and then as a group to break down barriers that serve to prevent sustained engagement. In addition, we stress that a high level of engagement, involving hands-on and minds-on between development actors, is necessary condition for a fruitful capacity building activity. This in turn stands to lead a broader and thus more sustained level of institutional change.

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### **Inspiring 7–12 Graders by Connecting A-STEM Nanotechnology to Virginia SOLs and Society**

G.O. Mbagwu, G.M. Ndip, D. Stoelting, S. Ellis, B. Taylor and H. Shen  
Virginia State University

Nanotechnology is proving to be the dominant emerging multipurpose technology of the 21st century; therefore, it is very important that the younger generation be introduced to the concept. Early exposure to professionals has the potential of generating interest in Agriculture, Science, Technology, Engineering and Math (A-STEM) education and increasing the number of underrepresented groups in the future workforce in these disciplines. Twenty middle and high school students, grades 7–12 and their six teachers from across Southside and Hampton Roads Virginia participated in Nanotechnology-based Summer Academy organized by the VSU Center for Biophotonics and Biodevices. The participants explored the exciting world of nanotechnology. The one week enrichment A-STEM program that included a hands-on science field trip to the Science Museum of Virginia, brought experts from the USA Food and Drug Administration (FDA), the DuPont Chemical Company, United States Army Logistics University and Virginia Tech University to VSU campus. In particular, the program provided the students and their teachers the opportunities to engage in a broad range of hands-on multidisciplinary laboratory and computer modeling and simulation activities. The activities included the preparation and characterization of synthetic polymers, magnetic ferrofluid nanoparticles and the extraction of DNA (a nanomaterial) from strawberry. Based on the pre- and post-test survey of the student participants, most respondents indicated that (1) the program helped them become more interested in A-STEM fields; and (2) they enjoyed the program at VSU. The outcome of the student-teacher team projects indicated a high level understanding of nanotechnology concepts.

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### **The VT/IALR Molecular Plant Science Summer Camp; Hands-on research and residential experiences for rising seniors in Southside Virginia**

Scott Lowman, Jerzy Nowak, Stephanie Hudson and Bingyu Zhao  
Virginia Tech

In 2011, molecular plant science researchers at Virginia Tech (VT) and The Institute for Advanced Learning and Research in Danville Virginia (IALR) teamed to create a yearly, week-long residential summer camp for rising seniors in Southside Virginia with the goal of increasing interest in plant science research. During the week, students worked hands-on with researchers in small groups to express green fluorescent protein (GFP) in different living tissues in tobacco. Additionally, students also toured other labs, buildings such as the Virginia Bioinformatics Institute (VBI), research greenhouses and field trials where they were given presentations highlighting the importance of plant science research in the context of the grand challenges of the 21st Century (food, feed, fuel and water). Qualitative surveys, journal entries and questionnaires were primarily used for data collection regarding student interest in and content knowledge of plant science before and after the camp. Using Wilcoxon Signed Ranks Test, there was a statistically significant increase in both students interest in plant science and in their interest in becoming a plant molecular biologist. After the camp, participants also identified significantly more career opportunities in plant science and qualitative journal entries indicated the students were excited about the future of plant science. This camp highlights a partnership of K-12 science education and university level researchers in an effort to increase interest in plant science, paving the way for creating more plant science researchers in the future to help solve grand challenges facing society in the future.

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### **The U.S. – China Collaborated REU Program to Promote Undergraduate Research Experiences**

Sha Li, Derrick Davis and Yujian Fu  
Alabama A&M University

This REU program (Research Experience for Undergraduates) is to promote the undergraduate students of agriculture and environmental sciences through a U.S. – China higher education collaborative endeavor. To meet the global competition, President Obama encourages American faculty and students to increase the interaction with China in the areas of science, math, engineering and technology. This REU program is designed to merge American students in the China's college research environment to gain research experience and mutual cultural understanding. In the summer of 2012, there were ten students were selected from different colleges across America for this REU program. The ten students and three mentors were sent to the Nanjing Forestry University in China to conduct their summer research projects

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under the supervision of the Chinese faculty and graduate students in a period of eight weeks. In this program, students not only successfully completed their research projects, but also gained a rich experience of learning Chinese culture, communicating with the Chinese scholars for learning activities, sightseeing many environmentally significant scenery spots and learned some language skills with Chinese people in China. The student and faculty's satisfaction level is much higher than the REU programs we had before. We solicited student's feedback about their experiences in this program in the areas of research experience, knowledge and skills gained, faculty-student interaction, life in Nanjing Forestry University, cultural experiences, their overall satisfaction, etc. The students' feedback is highly positive. The overall satisfaction, the Mean of Means, is 3.81, which is much higher than the previous REU programs we conducted on our own campus. This program has made a good start for us to conduct the future international collaborative research programs for our students and trained our faculty in terms of teaching research and collaborating with foreign scholars in other countries as well.

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### Improving Student Success through Professional Development Opportunities

K. McCuiston, D. Kinkel, S. Lukefahr, M. Garcia, S. Henke, T. Machado and R. Stanko  
Texas A&M University-Kingsville

The purpose of this 3-year project at Texas A&M University-Kingsville, a Hispanic Serving Institution, was to focus on recruitment and retention from an underrepresented student population to produce well-rounded leaders in agriculture and the life sciences. Objectives developed to achieve this goal include: 1) encourage high school and junior college students to pursue a 4-year college education; 2) improve undergraduate student retention rates between the freshman and sophomore year by establishing purpose for education; 3) provide opportunity for student career path development into careers requiring a bachelor's degree or an advanced degree. Over 900 high school and junior college students were engaged by grant collaborators. A summer college enculturation camp was developed to provide college knowledge to incoming freshmen. Pre-post psychometric instruments were given to participants to assess learning outcomes. As freshmen, peer mentors were used and improved retention rates for the fall semester. During the spring semester, bi-monthly lunch meetings were held with faculty, graduate students, peer

mentors and peers to improve retention rates between the freshman and sophomore year. Educational field trips were offered to broaden career awareness with USDA and post-graduate opportunities. Finally, students were hired to participate in student research and gained valuable experiential learning opportunities. Expected outcomes of this ongoing project are increased retention and graduation rates of participating undergraduate students because of the multi-faceted approach of financial support (through scholarships and compensation for research efforts), emotional encouragement (through faculty and peer mentoring) and career awareness (interaction with USDA, state agencies and private industry).

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### Diversity in Two Year Post Secondary Agricultural Programs

Melissa Hendrickson  
North Carolina State University

College level agriculture programs are not as diverse as the population as a whole. Though progress has been made in this area, much work still needs to be done at the two year postsecondary level to bridge the diversity gap. This includes changes in recruitment, in teaching and advising and in the culture of inclusiveness. This is a two-pronged problem: inability to recruit a diverse student population and insufficient opportunities for diversity of thought and experience throughout the various programs of instruction. The study objectives are to show current diversity statistics, rationale for the current state of affairs and potential corrective actions. Over the past decade, the College of Agriculture & Life Sciences overall has made significant improvements in moving toward a more diverse population with overall NC population currently at 65% Caucasian and CALS undergraduate population at 75% Caucasian. However two year degree programs within the college are significantly outside of the acceptable range with a 90% Caucasian population. Reasons for a lack of diversity include students not wanting to go into production agriculture, the synonym of slavery with the word agriculture, improvements in historically black colleges and attitudes of students and instructors towards minority students at land grant colleges. The goals of improving multiculturalism in lectures, increasing study abroad opportunities, having instructors model social responsibility and gaining student advocacy on behalf of each other and rebranding agricultural programs with names that resonate with today's students are explored as a means of moving toward a more diverse student population.

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### **Yield and Environmental Effects of Organic and Inorganic Fertilizer Applications on Mixed-Season Perennial Forages**

Laban K. Rutto and Ngowari Jaja,  
Virginia State University

Eton Codling  
Beltsville Agricultural Research Center

Michael Brandt and Adnan Yousuf  
Virginia State University

Although primarily a research project, this study included a training component whereby undergraduate research assistants gained practical knowledge in plant, soil and soil-water sampling and analysis and learned about the environmental impact of nutrient loading in ground and surface waters. The students worked as part of a team studying the fate of nutrients in organic (poultry litter) and inorganic fertilizer applied on plots planted with two warm season grasses: Bermuda grass (*Cynodon dactylon* L.) and switch grass (*Panicum virgatum* L.) and stinging nettle (*Urtica dioica* L.), an alternative cool-season forage. Organic (30 kg) and inorganic (3.4 kg N) fertilizer was broadcast on individual 0.02 acre plots in spring and fall, respectively, of 2012. Students also helped during installation of lysimeters and learned the theory behind their use in monitoring nutrient flow in soils. Data on forage yield and elemental analyses of soil, plant and soil-water samples was recorded. Soil pH averaged 6.4, but was higher in soil-water with an average of 7.9, while electrical conductivity (EC) was 0.05 mS/cm and 0.38 mS/cm in soil and soil-water samples, respectively. Dry matter yield was comparable between Bermuda and switch grasses but significantly lower in stinging nettle. Trace metal concentrations were within the acceptable range for agronomic crops. Soils had elevated levels of phosphorus, but there was significant change in soil-water nutrient loading after manure application. All test species demonstrated potential as candidates for use in remediation of manure impacted soils.

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### **Growing Rural Iowa's Bioenergy Workforce**

C. G. Crabtree  
Indian Hills Community College, Iowa

This project was made possible by a grant through the USDA CREES Program. It focused on improving bioen-

ergy education at Indian Hills Community College (IHCC) through professional development and experiential learning opportunities for students via internships and applied research. It was designed to improve the students' marketable skills and expose them to industry contacts for future employment references and connections. For the industry, this program was designed to help smaller bioenergy companies realize the value of internships and to create a sustainable pool of companies for IHCC student internship opportunities in the future. In addition, smaller bioenergy companies were able to conduct applied research to support specific product development projects that they might otherwise have been unable to afford. To date, this project has funded a total of 21 interns for companies in the bioenergy field. This included students from IHCC (10), Northwest Iowa Community College (1), Iowa Valley Community College (1), Truman State (1) and Iowa State University (8). Of the 21 interns, 11 were involved in applied research and 10 were involved in production, either in plant operations or in a laboratory setting. 7 of the interns gained fulltime employment as a result of their internship and 7 of the remaining would have been hired if the companies had had positions available. Seven of the interns chose to continue their education instead of accepting full time employment. Finally, funding for this project provided over 180 contact hours of professional development training in process control technologies for IHCC instructors.

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### **"Club de Agro-Microbios:" An Interdisciplinary Effort to Promote Agricultural Microbiology at Public Schools of Puerto Rico**

Lydia I. Rivera Vargas, Patricia Ortiz Bermudez, Merari Feliciano and Leyda Ponce de León  
University of Puerto Rico- Mayaguez Campus.

Rethinking the agriculture of the 21st century will depend on updating contemporary knowledge and expose youth on the application of novel tools to study food and plant-microbes. One of the goals of our institution is to radically change student's perceptions of agricultural sciences as a backward field, towards a new paradigm of agriculture constantly led and improved by new technological advancements. This project aims to directly impact outstanding potential middle and high school students in their understanding and use of complex cellular and molecular concepts, in agriculture disciplines such as plant pathology and food sciences. Through an interdisciplinary project, we have organized four sciences clubs ("Club de Agro-Microbios") at public schools, focused in

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agricultural microbiology and the application of DNA-Based, Immuno- and Nano- technologies in these disciplines. Clubs were organized at the Western Region of Puerto Rico. Eight hands-on workshops of topics related to microbes and their importance in food and plant biosecurity were offered by faculty with expertise in Plant Pathology, Food Sciences and Chemical Engineering. Forty students from public schools were impacted through this strategy. A project's web page was created to inform about activities showcasing student's experiences and impressions of the project. At the end of the grant at least 120 students will be impacted by the "Club de Agro-Microbios" in participating schools. This strategy will motivate and support students interested in agricultural sciences. Established links with schools through the "Club of Agro-Microbios" will be strength through the years and will transcend the duration of this project.



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