



## **#7. American Seed Technology Using Distance Education**

**Miller McDonald**

**The Ohio State University**

Today's American seed industry is global in stature. Seeds are increasingly produced in other countries based on advantages in personnel costs, counter-season production locations in the southern hemisphere, geographic location, and ability to produce a diversity of seed crops ranging from recalcitrant to orthodox seeds. Because of these necessary and increasingly complex international approaches to successful global competition, the seed industry requires students with a broader and deeper knowledge of various methods for high quality seed production. The objective of this research is to provide a new approach to global seed technology education that forges a consortium of five leading international agricultural research institutions with strengths in seed biology: The Ohio State University, USA; University of California Davis, USA; Lincoln University, USA; Escola Superior Agricultura "Luiz de Queiroz," Brazil; and Pontificia Universidad Catolica de Chile. This consortium provides higher quality education in seed biology by drawing on the expertise of more faculty with a diverse knowledge of approaches to successful seed production in differing countries. Results of the consortium allow the use of advances in distance education technology that permit the teaching of courses and offering workshops using internet videoconferencing technology at any location in the world. Two courses (International Seed Production, International Seed Physiology) have been offered using this technology. The courses are listed on the web at <http://seedbiology.osu.edu>, click courses and HCS 630 and 631. Students can use the text, PowerPoint presentations, and podcasts as preview and review of online interactive videoconferencing classes. Each institution lists the courses as their own courses with visiting faculty providing lectures. In this way, they are able to obtain local student credit hours. Other results of the consortium include the collaborative development of DVDs for coffee, tropical forage grass, maize, and sunflower seed production. Each institution is viewed as a node in the consortium with an ultimate objective to provide a node in each country in the world thus expanding expertise in seed biology. The provision of students with greater international perspectives of the global seed industry and the continuing development of educational seed production resources will build a more globally competitive American seed industry.

## **#19. The Effect of an Integrated Course Cluster Learning Community on the Communication Skills and Technical Content Knowledge of Upper-Level College of Agriculture Students**

**Cyndi Barnett**

**University of California Cooperative Extension**

**Greg Miller, Tom Polito and Lance Gibson  
Iowa State University**

Learning communities are often viewed as a retention tool that can help students get the most out of higher education. Learning communities can also be used as an innovative teaching approach to enhance specific learning outcomes. The purpose of this quasi-experimental study was to determine if upper-level college students who participated in an interdisciplinary integrated course cluster learning community (AgPAQ) would demonstrate enhanced learning in the areas of oral communication, written communication, and technical content knowledge. AgPAQ integrated two agronomy courses, one English course, and one economics course. The population (N=182) consisted of students who participated in AgPAQ, and four comparison groups: (1) students in a farm management and operation class, (2) students in a soil, fertilizer, and water management class, (3) students in a soil, fertilizer, and water management class linked with a technical writing course, and (4) students in a paid volunteer group who had not previously participated in AgPAQ. In the oral communications comparison, AgPAQ participants scored significantly higher than students in the farm management and operation class. AgPAQ participants scored significantly higher on written communications than all four comparison groups. Finally AgPAQ participants scored significantly higher than two (students in a soil, fertilizer, and water management class and a paid volunteer comparison group) out of three comparison groups on a measure of technical content knowledge. They scored higher, but not significantly higher, than the third group - students in a soil, fertilizer, and water management class linked with a technical writing course. Interdisciplinary course integration strategies offer college teachers of agriculture an effective means to enhance student achievement of targeted learning outcomes.

## **#21. Pre-Term, Term and Post-Term Student Perceptions of Project-Based Courses**

**Frank Robinson, Dana Penrice, Stanley Varnhagen, and Brad Wuetherick**  
**University of Alberta, Edmonton**

While the academic community values group project-based learning, the perceptions of students, at the start, during and at the end of the term are not well documented. During both of the 2006-2007 academic terms students in Animal Science 200 (Principles of Animal Agriculture) participated in web-based surveys to determine if student satisfaction and perceptions of value of course components changed from the first day of class to one semester after the class was completed. This class was largely based on a group project "There's a Heifer in Your Tank – Science answers questions you didn't know you had about animal Agriculture." Groups of 2-4 students selected a science-based question which they answered four weeks later in a public forum of 700 people. Students could use PowerPoint slides, but were encouraged to add drama and music. Students contacted researchers and industry personnel to find answers to questions about animal biology, rural economy, animal welfare or value-added food production. A panel of industry and academic leaders quizzed students following their presentations. The data showed that as time went on students were very positive on the value of working in a small group, of answering an open-ended question and the opportunity to improve their oral and written communication skills. Students indicated that the class format suited them well. After the first description of the project there were more motivated in this course than in their other current courses. Students were just as positive one semester after the course was completed.

## **#28. Faculty Preparation for Teaching**

**T. Grady Roberts and Nancy Simpson**  
**Texas A&M University**

Colleges of agricultural and life sciences value quality teaching and faculty within these colleges are often recognized as outstanding teachers. However, faculty often do not have formal preparation for teaching as a part of their terminal degree. So this incongruence raises the question, how do faculty learn to teach? This study employed a case study method to examine newly hired faculty at Texas A&M University from 2005 to 2007 (N = 22). The results of the study are only applicable to this group, but may prove insightful in similar colleges. Results indicated that the majority of newly hired faculty held doctorate degrees; were hired as tenure-track assistant professors; had twelve month appointments; had no administrative or split appointments; and had four or less years of previous experience. The majority had been graduate teaching assistants (54.5%) and had

"other" informal or formal teaching experience (63.6%). Faculty indicated that the following activities helped in their preparation for teaching: independent reading/research (59.1%); mentoring from senior faculty (50%); consultation with peers (50%); participation in individual workshops (45.5%); coursework on teaching and learning (36.4%); graduate teaching assistantship (36.4%); consultation with "teaching center" staff (9.1%); participation in a workshop series (4.5%); and participation in a formal "preparing new faculty" programs (4.5%). Based on these results, it is recommended that: (a) educational materials on teaching and learning be made available to new faculty and (b) that all faculty be formally prepared to mentor their newly hired peers.

## **#29. Variables Affecting Academic Success**

**Marcy Beverly, Alisha Bullion, Stanley Kelley, and Matt McMillan**  
**Sam Houston State University**

The "conventional wisdom" is that students' college grades are related to class attendance: students who attend classes more frequently obtain better grades. Thus, a study was conducted evaluating 928 students for two 16-week semesters. Number of absences, gender, classification, and major were examined as factors affecting course grade in undergraduate animal science courses at Sam Houston State University. Attendance in the classroom had an impact on a student's final course grade. Gender did not affect the number of absences, even though females had a higher final course grade, along with a two point advantage according to the regression analysis ( $R^2 = .219$ ). Sophomores attained the highest rate of absenteeism but course grade did not differ from their undergraduate peers yet differed from the graduate students who had higher grades. Students with Animal Science as their major field of study attended class more often than those with degrees in other fields but no difference existed for overall grade. Correlation values between absences and course grade indicated a negative and moderate relationship while major and gender were positively correlated though low with absence. Though many variables affected course grade, attendance seemed to be the most prevalent.

## **#33. Interdisciplinary Education in Integrated Resource Management**

**G.D. Niswender and R.K. Peel**  
**Colorado State University**

To provide additional management skills for our graduates and life-long learners, an innovative, interdisciplinary curriculum leading to a Masters of Agriculture degree was developed. Eleven modular courses are taught by 13 faculty members from four departments in three colleges. Each class meets six to

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eight hours daily for two weeks (three credits). The first class is an introduction to integrated resource management which includes communication skills, personality analysis, leadership, and managed decision making. The fundamentals of ecology, forage management, animal management including wildlife, business management and human resource management are covered in the next nine modules. In the final module, students must provide an integrated plan to management of the land, animal, human, and financial resources for a specified land-based enterprise. The modular format allows livestock producers, and state and federal employees to participate. For example, NRCS employees participate in our grazing management module and depending upon the subject, timing and instructor we have had up to 173 outside participants. Ninety eight percent of students preferred the modular format over semester-long classes. After five years with the curriculum we next focused on developing each class in a suitable electronic format. We have completed development of three courses. Extension personnel plan to use the electronic materials for education programs in their areas. Producers have routinely indicated that the outreach programs do an excellent job of meeting their needs.

### **#34. Offering a Biomass and Biorefinery Curriculum to Undergraduate Seniors and Graduate Students**

**Bingjun He, Kerry Huber, Gulhan Unlu, and Armando McDonald**  
*University of Idaho*

**Shulin Chen and Bernard Van Wie**  
*Washington State University*

**Mark Worden**  
*Michigan State University*

A course development project on Biorefinery was sponsored by USDA Higher Education Challenge program and conducted by a multi-institution team. The objective of this presentation is to report the findings from this project in curriculum design, course module development, and trial course delivery to undergraduate seniors and graduate students.

As obtaining energy and chemicals from renewable resources becomes a national strategy, the demand for a quality workforce that possesses the knowledge and training in biomass and biorefinery is high. This project responds to this call and aims at preparing students to be innovative leaders in the emerging biobased industry. Focusing on applications for underutilized agricultural waste and/or byproducts, the course materials were developed using a problem-solving oriented approach. Lecture modules include biomass fundamentals, biomaterial preparation, physical, chemical, biological and enzymatic

conversion processes, and process integration. The course modules were organized to closely link to each other while at the same time to be relatively stand-alone, so that they can be adopted for use to deliver separately.

Results showed that the course was well received among students of different backgrounds. The lectures gave the students a complete picture of biomass and biorefinery. The fundamentals covered fit students' needs but it was found that the topic is too complex to be delivered in a single course. The trade-off, therefore, is the lack of in-depth discussions. It was also found that students' responses to the materials covered largely depended on their basic knowledge preparation and disciplinary orientation, such as engineering vs. non-engineering.

### **#37. Retaining the Best of the Best: Using an Innovative Interdisciplinary Problem Based Course Cluster to Improve Student Learning and Faculty Satisfaction**

**T. Polito, L. Gibson, J. Kliebenstein, and D. Roberts**

*Iowa State University*

One way to Retain the Best is to keep faculty and students physically present in agricultural colleges or related industries. Another is to provide challenges that keep students and faculty motivated to perform at their highest level, thereby Retaining the Best of the Best. This paper addresses the latter by chronicling an innovative, interdisciplinary, problem-based teaching approach where four faculty members integrate their crops, farm management, soils and writing classes into a single-semester course cluster. Its objective is to report the instructors' perceived differences between the integrated courses and stand alone courses with respect to student success, and satisfaction, as well as faculty work load, enthusiasm and satisfaction. Despite perceived greater time demands for such integrated courses, the instructors attribute their enthusiasm for continuing the course cluster to improved student learning. Also, they report changes in student perspective. As students progressed through the experience they changed from concern for their course grades to the realization that their client would actually implement their recommendations. By graduation, students who had complained about their work load during the semester were commenting that the course cluster was their best experience at the university and that they received preferential treatment from employers because of the experience. Attendees will learn how the courses were integrated and about the difficulties and rewards of course integration. Teachers looking for ways to improve student learning will receive tips on integrating courses with related but significantly different subject matter from instructors with four or more years experience doing so.

### **#38. Quantitative and Student Self-reported Evaluation of the Problem-solving Process in a Web-based Case Study**

**Tigon Woline and Ann Marie VanDerZanden**  
Iowa State University

Problem-based learning has become a popular means of teaching content and problem-solving skills. Upper-class students enrolled in a landscape installation and maintenance course were assigned a series of four case studies through web-based software. Quantitative data was collected via the web-based software on the process students used to solve the case study. This data was correlated with a self-reported evaluation of the process used. There is a strong correlation between the two data sets. A majority of students (70%) self-reported that they opened resource documents first, while half of the six groups opened resources first according to the software. Of the total number of clicks used to solve the case study (674), the six groups averaged 40.3 clicks (35.9%) on resources alone. When asked which resources they used to solve the case study, students reported using the interviews and audio files (29.6%), images of affected plants (22.2%), soil and grade information (22.2%), and external websites (18.5%). This correlates with the software captured data; showing that the interviews and audio files (106 clicks), images (46 clicks), and external websites (37 clicks) were the most frequently accessed resources.

### **#39. College to Career: Transfer Student Orientation at Kansas State University**

**Dana Minihan, Don Boggs, and Kevin Donnelly**  
Kansas State University

Transfer students comprise approximately 40% of the student population in the College of Agriculture at Kansas State University. Retention of transfer students is vital to the College and University. To address retention concerns in the College, an orientation course entitled College to Career was designed specifically for transfer students. The study recognizes the importance of transfer students and their need to immediately be successful at a large four-year institution. Student success in the course, defined as a grade of A, was used to assess immediate progress towards degree completion. Averaged over four semesters, 30% of students earning a grade of B or less in the course were academically dismissed from K-State their first semester. The percentage of students dismissed increased to 34% the second semester, 48% the third semester, with 71% of students earning a grade of B or less being dismissed from the University by their fourth semester. This is in stark contrast to dismissal rates of students who earned an A in the course. Less than 1% of those students were dismissed their first

semester. After four semesters at K-State, only 6% of students earning an A were dismissed from the university. To complement the quantitative data, focus groups were conducted to gather qualitative data on the usefulness of the course. Results indicated student participants greatly supported the orientation course and the rationale for its creation and delivery. Data supports the need to continue the course to aid in retention efforts of transfer students.

### **#44. Discovery and Engagement through a Multidisciplinary Student Service-Learning Experience**

**Susan Clark, Mary Marchant, Cynthia Green, Allison Bridges, Mary O'Bryan, Stephanie Riviere, Brittany Richardson, Teresa Tubia, Karri Honaker, Jessica Martin, and Melissa Hendricks**  
Virginia Polytechnic Institute and State University

Service-learning is an effective teaching and learning strategy that integrates meaningful community service with instruction and reflection to enrich the scholastic experience, teach civic responsibility, and strengthen communities. It allows students to discover how theoretical knowledge gained in the classroom functions within a real-world environment and fosters a dynamic student-centered learning environment. The College of Agriculture and Life Sciences focuses on agricultural and environmental sustainability; food, nutrition, and health; and community viability. It strives to adapt curriculum to meet the needs of society by offering students opportunities to observe how agriculture, human nutrition and health, and community development are interrelated. To enhance academics through experiential learning, the college funded a proposal to have a faculty led team of nine undergraduate students representing seven departments within the College participate in an Alternative Spring Break at Heifer Ranch in Arkansas. The primary objective was to enable students to better understand and internalize complex global issues related to hunger and poverty by finding sustainable solutions; to better understand Heifer International's education mission; and to connect student's disciplinary knowledge with various service-based activities. Students learned how plant and animal production practices can satisfy human nutritional needs, enhance the environmental quality and natural resources while using on-farm and renewable resources. Through this experience plus reflective discussion, students broadened their perspective on global agricultural issues as related to world hunger and poverty, and strengthen their competency as partners in a more global agricultural economy. Future plans include partnering with Heifer and developing a multidisciplinary service-learning course.

### **#46. Developing and Teaching an Intensive Field Course in Tropical Agriculture: Strategies, Triumphs, and Lessons Learned**

**Robert Naczi**

**Delaware State University**

Tropical agriculture shares much with agriculture in the temperate zone, but the differences are striking. The goals of this project are to design and teach a field-based course on tropical agriculture, ecosystems, and conservation, in order to introduce undergraduates to the challenges, opportunities, and unique aspects of the tropics. Funding from USDA-CSREES (1890 Institution Capacity Building Grant: <http://www.desu.edu/special/belize/index.php>) covers most of the costs, enabling many to participate who otherwise would be unable. The course begins with one week of on-campus lectures and activities. Then, many sites in Belize provide settings for two weeks in the field. Two days for oral presentations, final examination, and course evaluations conclude the course. To build a foundational understanding of the role that natural forces play in tropical agriculture, students conduct research projects, participate in field trips, and attend lectures on the major tropical ecosystems of rainforest, savanna, and coral reef. Students visit family farms, corporation-owned plantations, and nature reserves to study modern and ancient methods for the production of such crops as annatto, bananas, cacao, cilantro, citrus, jippy jappa, maize, and shrimp. Realization of the critical role of conservation for both agriculture and ecosystems emerges as students observe conservation problems, and learn first-hand about management of the Bladen Nature Reserve. A total of 29 students have completed the course in its three offerings. Students evaluate the degree to which the course achieved its goals as 4.9 (mean value, 5 being the highest score possible). Finding an appropriate textbook on tropical agriculture remains a challenge.

### **#49. Using Audience Responses Systems to Teach Agriculture and Environmental Science in Higher Education**

**Gary Moore**

**North Carolina State University**

Teachers of agriculture and environmental science are recognized as being good teachers. But even the best teachers can improve. One innovation that holds promise for enhancing teaching are: Audience Response Systems (commonly known as clickers). Research was conducted in the College of Agriculture and Life Sciences and the College of Natural Resources at North Carolina State University to determine if the use of clickers: enhanced student learning, appealed to students, was viewed as worthwhile by instructors.

Five instructors in Animal Science, Agricultural and Resource Economics, Biotechnology and Environmental Technology participated in this study. They used clickers for one semester in their classes. There were no differences in student grades between the experimental and control groups but the lack of strict experimental control could explain this. Subsequent research in a more controlled setting found clickers increased student exam scores by half a letter grade. Students were extremely positive about using clickers. They enthusiastically supported the use of clickers and liked the anonymous and non-threatening nature of the technology. The instructors were positive about the use of clickers with two actually purchasing clicker systems for their departments. Additionally, the investigator compared two different brands of clickers in this study – Turning Point Technologies and the CPS System. The researcher found that both systems worked but each had unique features. It is a matter of person preference as to which system to use. It was concluded that Audience Response Systems do enhance the teaching-learning process.

### **#57. Retaining the Best: Exploring the Influence of Communication Apprehension**

**Eric Kaufman**

**Virginia Tech**

**Roslynn Brain**

**University of Florida**

**David Jones**

**North Carolina State University**

**Emily Rhoades**

**The Ohio State University**

Careers in agriculture often require oral communication skills, regardless of whether the career is based in the social sciences or the natural sciences. However, the benefits of oral communication skills training extend beyond career preparation. Research on college student retention and success has identified communication apprehension (CA) as an important variable. One study found that high CA students were over 30% more likely to drop out of college than low CA students. Recent research at four land grant universities sought to explore CA differences between college of agriculture students majoring in different degree programs. Students enrolled in an introductory oral communication course were administered the Personal Report of Communication Apprehension (PRCA-24) at the start of the course. Results indicate that there was no significant difference in CA between students in different degree agricultural programs. During the course of enrollment in the oral communication class, both social science and natural science students experienced

statistically significant reductions CA in all four areas measured by the PRCA-24: group discussion, meetings, interpersonal communication, and public speaking. The direct benefits of oral communication courses in colleges of agriculture and life sciences should be explored further. This is particularly important since higher CA may be preventing students from attaining success in college and their respective degree programs. Students may benefit from taking a contextual oral communication course early in their college careers. Based on findings in previous CA research, the benefits may include higher grade point averages and lower dropout rates.

### **#60. How to Become an Effective Online Teacher?**

**Gary Moore and Koralalage Jayaratne**  
**North Carolina State University**

Teaching online is a challenging task due to limited interactions and the asynchronous communication the teacher and the students have. Understanding students' learning environment and needs, designing course materials and assessing the learning outcomes are somewhat different from that of in-class teaching. Student enrollment data for the last ten years indicates that there is an increasing demand for online graduate courses in agricultural extension and education in North Carolina. Due to this growing demand for online courses, the faculty in the Department of Agricultural and Extension Education have been teaching online since 1998. The purpose of this case study was to synthesize the effective strategies used by the faculty in teaching courses online. The study revealed that understanding the learning situation of the online student is the major challenge in teaching online courses. Establishing synchronous communication links between the teacher and the students as well as among the students themselves is critical for understanding the learning situation of students and achieving the effectiveness of online teaching. Use of new technology to establish real-time communication linkages with the students has significantly contributed to improve the effectiveness of teaching. It was found that some of the rural students still do not have fast access Internet. This is a major limitation in selecting educational materials for online courses. Testing online students is a challenge but can be done by assigning proctors, using course management programs such as Vista or having open-book exams.

### **#61. Learning Outcomes Assessment for Project-based Study Abroad Programs in Developing Countries**

**Laura Hahn, Prasanta Kalita, and Alan Hansen**

**University of Illinois at Urbana-Champaign**

In this paper we will describe a study of student learning outcomes of project-based study-abroad experiences, and suggest principles and strategies for learning outcomes assessment in such contexts. Agricultural professions are becoming increasingly global in their activities; hence there is considerable pressure to encourage students to gain study abroad experience. At present very few students undertake visits to developing countries, which are fertile ground for solving problems with limited resources. The Department of Agricultural and Biological Engineering at the University of Illinois has successfully implemented project-based study programs in both South Africa and India. In both cases, American and developing country students work in teams to seek solutions to local agricultural problems. While there is no doubt that the students all profit from the experience, it is helpful to quantify the benefits of such visits and to establish strategies for students to apply in a process of self-reflection and evaluation. In this paper we will discuss (a) the variety of methods used to assess learning outcomes, some of which were developed in collaboration with students; (b) specific findings from the assessments, which included increases in students' global awareness, teamwork skills, and ability to overcome cross-cultural challenges; (c) the broader benefits of such outcomes assessments; (d) ways in which these processes can be adapted to be relevant to the context of the study abroad program location; and (e) a proposal for a formal study abroad course which grew out of these programs.

### **#65. Preliminary Findings of a Tri-State Higher Education Leadership Grant**

**Lisa Burgoon**

**University of Illinois**

**John Klatt**

**University of Wisconsin**

**Robbie Ortega**

**Purdue University**

The University of Illinois, University of Wisconsin, and Purdue University are collaborating on a student leadership development program, partially funded by a USDA Higher Education Challenge Grant. The twenty-one month program brings together ten students from each campus to experience a variety of education and service learning

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opportunities focused on advancing their leadership knowledge and skills. The purpose of the program, named "Leadership In Action" by participants, is threefold: (1) create learning modules on leadership competencies and make them available to other agricultural institutions to assist in developing student leadership initiatives on their campuses; (2) increase the leadership development opportunities for students enrolled at the three participating institutions; (3) evaluate the effectiveness of our learning modules and overall program by assessing the cohort students' growth in leadership competencies. The first cohort of students has completed their 21 month experience and a second cohort is half way through the program. Sixteen modules have been created and delivered to the students during five separate weekend workshops. Each weekend session engages students in learning the educational modules and facilitates deeper processing of the module information through service learning or civic engagement in the community. Information and assessment data collected from the first cohort will be presented. This data will include pre- and post-assessment of student leadership growth, program evaluations from the student-led programs on each campus, qualitative data from student reflections and the advisors critical analysis of the program to date.

### **#66. iPod, iLearn! Learning on Demand: The Use of iPods in the Classroom**

**Eric Kaufman, Jill Casten, Holly Kasperbauer, and Thomas Broyles**  
**Virginia Tech**

Learners in college classrooms have technology at their fingertips. More students own electronic/video devices than ever before. Students are intrinsically motivated to purchase and listen to these devices; instructors must capture this motivation through educational strategies and approaches with technology in the classroom. The purpose of this presentation is to discuss benefits of using iPod technology and specific strategies for the incorporation into curriculum. iPod technology is used as an educational tool in two undergraduate courses: teaching methods and oral communications. In the teaching methods course, the purpose is to introduce the concept of podcasts and integrate the use in current courses. A second purpose is to continue student use of iPods and podcasts in their student teaching experience. Students develop and disseminate podcasts to secondary students. In the oral communications course, the purpose is to engage students in evaluating oral communication techniques. Students find, download, and bring podcasts to class that demonstrate concepts being highlighted in class. A second purpose is conducting action research. As a result, students recognize the benefits of effective oral communication techniques. Students in the teaching methods course learned about the

technology, found example podcasts, and created their own podcasts for use in the classroom. In the oral communications course, students brainstormed ways to enhance learning with podcast examples of public speaking. Reactions from students have been positive, with students spending hours of time engaging in course content using their iPods. The researchers recommend that college instructors embrace technologies to best meet student learning needs.

### **#69. High School Students' Perceptions of Agriculture and Agricultural Careers**

**Erin Smith and Travis Park**  
**Cornell University**

According to the National Center for Educational Statistics, from 1998 to 2005, the number of students awarded bachelor's degrees increased by 22.7%; in agriculture and natural resources fields, degrees awarded decreased by 1.2%. College attendance is increasing, yet agriculture programs, especially in a traditional sense, are shrinking. This trend demands an understanding of the agricultural perceptions of high school students in order to better direct future agricultural education and recruitment efforts. During the winter of 2007, all eleventh grade students ( $n = 1,857$ ) in 17 schools across [State] were surveyed regarding their agricultural perceptions and stereotypes. Four types of schools were targeted for this study: rural and urban schools with agriculture programs, and rural and urban schools without agriculture programs. The purpose of this study was to determine perceptions among high school students about agriculture and careers in agriculture. Results indicated a lack of understanding regarding the importance of a college education for agricultural careers. Many students also held traditionally negative stereotypes of people in agriculture, including the perception that agriculture involves low technology, potentially harms the environment, and does not contribute to the safety of our food supply. Further, high school students in all areas, regardless of the rural nature of the school population or the presence of a secondary agricultural science education program, held similar perceptions about agriculture and agricultural careers. Regardless of demographic area or the presence of an agricultural science program, few students indicated an interest in agricultural careers.

## **#70. Factors Affecting Community College Students' Decisions to Continue Post-Secondary Education at Four-Year Universities**

**S. Keith and C. Akers**  
Texas Tech University

**G. Wingenbach**  
Texas A&M University

**R. Bobbitt**  
Texas Tech University

Students (n = 258) enrolled at a community college in Texas were asked what factors affected their decisions to continue education beyond the community college. Identifying significant factors may help educators and administrators increase the number of community college student transfers to four-year universities. The study also investigated potential relationships between student activities and/or other organizational involvement, and students' decisions to pursue a B.S. degree. The results showed several significant relationships between students' intent to pursue a B.S. degree and family influence, high school activities, and personal factors. Older students who did not have a parent or relative attain a post-secondary degree, and who did not perceive high school counselors or teachers as having influenced their educational goals were more likely to pursue the B.S. degree. Participation in high school activities (band, choir, etc.) and non-participation in the National Honor Society positively influenced students' decisions to pursue a B.S. Likewise, personal factors such as postponing a job, leaving a hometown, or enjoying college influenced students' decisions to continue their education at four-year universities. Additional analyses revealed that after enrolling in a community college, moderate associations existed between students' decisions to pursue the B.S. degree and younger students or those who were influenced by an athletics coach. Community college educators and administrators should continue investigating other factors and use the findings from this study to enhance counseling sessions with students who struggle with the decision to continue their education beyond the community college level..

## **#74. Hear it or Read it; then Picture it**

**Mark Headings**  
The Ohio State University

Previous survey data collected from groups of agricultural students at one university indicate most believe the single modality by which they learn best is by doing something. This implies that tactile and visual experiences are important in forming mental images that contribute to comprehension and

retention. A challenge for the instructor is to determine what materials, artifacts and activities will reinforce the learning process. Therefore, the objective was to investigate a specific course activity that could easily be incorporated into different course formats. Students in two different agricultural courses (which are offered multiple times per year) were asked to complete one to three Internet assignments at appropriate times during each course offering. Students were asked to search for and collect pictures and drawings on the Internet related to subject matter discussed during a given course. They were asked to also provide additional information, including the source and other descriptive information, and then submit it in a report format. This type of course activity is applicable to course offerings in practically all disciplines. Once the assignment was completed, students were given a brief questionnaire. Data from 85 responses to two key questions indicated the following: (1) 94% of the students believed this activity enhanced learning and retention of the material, and (2) 98% recommended this type of assignment for future students. In summary, this type of course activity emphasizes the aspect of searching/doing as well as the visualization aspect of learning and retention.

## **#75. Effect of Large Scale Multimedia Hydrologic Modeling Tools on Student Learning and Decision Making**

**Rabi Mohtar, Majdi Najm, Keith Cherkauer, and Brian French**  
Purdue University

**Erik Braudeau**  
IRD France

This paper examines how the incorporation of the concept of scaling as well as large-scale processes into student curriculum impact student learning and their decision making capabilities. With the wide range of scales of hydrological processes, spanning about eight orders of magnitude in space and time, defining large-scale hydrological modeling is critical. To achieve this goal, learning material were prepared to introduce the concept of scaling, provide hydrologic modeling case studies, and test for students' enhanced knowledge and improved decision making skills. The material were designed to accommodate different time allocations, levels (undergraduate vs. graduate), and students' technical backgrounds. An outcome-based evaluation procedure was used to measure the effectiveness of the use of large-scale hydrologic modeling in enhancing student learning and decision making capabilities. Results showed that introducing the concept of scaling and its application using large scale computer models improved student learning and their decision-making skills. Students' level of confidence in answering the



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pre- and post- tests also increased after the introduction of the scaling concept and following the computer model exercise.

### **#78. A Conceptual Framework for Studying Cognitive Levels of Teaching and Learning**

**M. S. Whittington, Whitney Beck, Daniel Foster, Jeremy Falk, and Jed Bookman**  
**The Ohio State University**

America's educators are criticized for failure to teach students to think. Research analysis provides evidence that professors deliver classroom discourse at the lowest cognitive level. In addition, it has been found in research that professors teach using the lecture technique at higher rates than any other technique; lecture has been correlated to lower levels of student cognition. Fortunately, a body of literature exists supporting the notion that thinking skills can be taught. However, research has not been conducted to determine the impact of lower level teaching on long-term student retention and transfer. Nor does research exist to document that, if professors provide cognitively stimulating class sessions and environments, that student cognition will be influenced. Consequently, educators know little, empirically, about the instructor variables, student variables, and classroom environment variables that are most useful for engaging, retaining, and later transferring content and cognitive processes. In Piaget's Theory of Cognitive Development, thinking is influenced by maturation, activity, and social transmission. It is proposed that Piaget's activity influence is likely to affect student cognition. Given all that is known, and all that is unknown regarding student cognition, retention, and transfer, a framework was needed to guide the long-term inquiry in student cognition. The Conceptual Framework for Studying Cognitive Levels of Teaching and Learning currently consists of multiple, multi-faceted variables within three constructs for explaining student cognition during class sessions. The framework is now used to focus a research team around pertinent variables thought to aid in explaining student cognition during class sessions.

### **#82. Students' Motivation and Learning Experiences in Active, Inquiry, and Service Learning Courses**

**Neil Knobloch**  
**Purdue University**

**Anna Ball**  
**University of Florida**

**Eunyoung Kim**  
**University of Illinois, Urbana-Champaign**

Professors who use learner-centered teaching approaches and strategies add human dimensions to the learning experience and create sense of community among the learners. The purpose of this national case study of learner-centered teaching ([www.ydae.purdue.edu/lct/NALCT](http://www.ydae.purdue.edu/lct/NALCT)) was to examine the perceptions of students and their professors about learner-centered practices implemented in 11 classrooms. The Assessment of Learner-Centered Practice questionnaire was used to assess the instructor's classroom practices and student motivation and data were disaggregated into three teaching approaches: active, inquiry, and service learning. The results showed students and their professors perceived all three teaching approaches as being learner-centered. Overall, 71% of student respondents (N = 356) reported that their instructor often established positive interpersonal relationships, and 87% of students indicated their professors encouraged personal responsibility. Across all three approaches, students in inquiry learning courses rated the instruction more learner-centered than active learning, and students in service learning courses rated their instruction more learner-centered than inquiry and active learning courses. This "stair-step" finding of the three teaching approaches indicated that students perceived the teaching approaches differently based on the extent of learner-centeredness and how it influenced their motivation and epistemic cognition in the particular courses. Learner-centered teaching approaches can be effective strategies to motivate and cognitively engage students in undergraduate courses, and hopefully these engaging learning experiences will help retain the best students in the agricultural, life, and environmental sciences. This project was funded by a United States Department of Agriculture Cooperative State Research, Education and Extension Service Higher Education Challenge Grant (Award No. 2003-38411-13447).

### **#83. Learning Style and Success in a Distance Education Course: Is there a Connection?**

**David Jones and John Rayfield**  
**North Carolina State University**

Today, the majority of U.S. universities offer distance education courses, with a much higher proportion in public than in private institutions (NCES, 1997). Because it is not limited by time or place, distance education expands the opportunity for student's educational needs. Administrators find distance education appealing because of the savings in the traditional brick-and-mortar infrastructure. Administrators see their campuses expanding without having to build expensive new buildings, parking lots and dorms. Administrators also tend to believe and promote distance education as allowing for more efficient use of faculty time.

Research has been conducted on various areas of distance education. However, there is little research on the success of students with different learning styles and how each learning style responds to distance education and distance learning.

The purpose of this research was to examine the link between course success (measured by course final grade), the students' learning style (measured by the Gregorc Style Delineator), and the number of communication tools students used (using Vista – course management tool) to contact the teacher or other students during the semester.

The research was conducted using three graduate level on-line, distance education courses in the College of Agriculture and Life Sciences. The research examined if students with a particular learning style were more successful in a distance education course as compared to other students with a different learning style. Additionally, the research sought to examine if there was a correlation between communication tool usage in Vista and student achievement in the course.

### **#85. Peer Teaching: A Way to Enhance Learning**

**M. Susie Whittington and Jamie Cano**  
**The Ohio State University**

According to Whitman (1988), peer teaching is nothing new. De Lisi and Cook (1999) agreed with Boud (2001), that peer teaching was a very fruitful way to prepare students for working for life, and that peer teaching was a method that teaches students how to cooperate and create learning together. The emphasis of peer teaching is on the learning process, including the emotional support that learners offer each other, as much as the learning itself. The objectives of the study were to examine student perceptions of the peer teaching process and the introduction of three layers of assessment: peer assessment, self assessment, and course instructor assessment. This project forced the researchers to

provide empirical evidence for a teaching method that has been advocated, but not thoroughly studied from a research perspective. Triangulation was possible between one-on-one interviews with students, focus groups among students, and quantitative-style questionnaires for providing rich data from multiple perspectives. One finding was that the quantitative component of the research needs to be further developed; the results of the quantitative component yielded no significant data. With a grade attached to their peer teaching, the students were more concerned about the grade and not as concerned about creativity, independent thinking, or more effective teaching. Students displayed elements of metacognition by analyzing their own learning. Finally, students developed an awareness of their individual and collective learning styles. As was indicated in the research, peer teaching is a powerful teaching methodology that can reap numerous benefits.

### **#87. An Assessment of Minor Crop Producers' Extension and Education Needs**

**Tanya Franke, Kathleen Kelsey, and Tom Royer**

**Oklahoma State University**

Cooperative Extension (CE) has traditionally been the only source for research-based knowledge available to producers. The land-grant university has provided demonstration and educational programs to producers that reflect the most recent and accurate production information available. Stakeholder engagement has been a cornerstone of CE and has been executed through informal communication channels. The Internet has empowered producers to find information rapidly leaving CE in a position to rethink how to engage stakeholders in the information age. The purpose of this study was to determine how producers obtain crop production information. Objectives of this study were to 1) Identify the types of events that Oklahoma minor crop producers attended, and 2) Discover the preferred delivery methods that aid producers in obtaining CE crop production information. A mailed survey led researchers to find that minor crop producers attended CE field days most frequently followed by crop consultant programs. More than 50% of the producers worked with their local county Extension educators and consultants to learn about new crop production practices. Producers indicated various ways in which they would like to receive communication and crop production information from CE. Conclusions drawn from this study include: 1) CE field days are still preferred by producers. 2) Extension educators are not actively engaging stakeholders and do not fully understand how to reach their audience to deliver relevant programs. 3) Producers are turning to seed suppliers/dealers and

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crop consultants. 4) Producers prefer receiving Extension information in the mail in newsletter format rather than by electronic formats.

### **#91. Using Course Evaluations to Improve Course Offerings: A Case of an Introductory Evaluation Course**

**Rama Radhakrishna**  
**Pennsylvania State University**

The purpose of this paper presentation is to share the evolution of an evaluation course over a six-year period (2001-2007). Specifically, the author describes changes made to improve the course using both student and peer evaluations over a six-year period. Data sources included enrollment trends, both student and peer evaluation data collected by the department using Student Rating of Teaching Effectiveness (SRTE) and Peer Evaluation of Teaching Effectiveness (PETE) forms and open-ended comments.

Examination of six-year data revealed several changes made to the course offerings using each year's evaluation data. These changes included: more hands on activities, group projects, evaluation article critiques, development of an evaluation survey, presentation of an evaluation model, and finally use of an innovative learning retention strategy RECAP sheets (recall, engage, apply, and progress). Both SRTE and PETE ratings were high for both course content and delivery (scores ranged from a low of 5.3 to a high of 6.6 on a seven-point scale). Open-ended comments from both student and peers suggested that the learning in class has become more interactive as opposed to teacher-centered. Students were given more hands-on projects that required application of evaluation concepts into research and Extension projects. The RECAP concept has helped students not only prepare for exam but also retain and apply evaluation concepts. Changes made over this six-year period are working well and viewed as positive by both enrollees and peers. Challenges and opportunities for further refining the course will be discussed and sample copies of RECAP sheets will be provided.

### **#95. Predictive Validity of a Simple In-class Critical Thinking Assessment.**

**Amy Devitt and Kirby Hayes**  
**Purdue University**

The interdisciplinary nature of Agriculture coupled with the rapid expansion of discoveries in the life and physical sciences presents a formidable pedagogical challenge for Agricultural educators. There is just not enough time to teach everything. In this environment graduating students with transferable intellectual skills is more important than ever.

Students' critical thinking (CT) ability is arguable one of the most important intellectual skills of college graduates. Early college interventions allow students to employ their CT skills throughout their education. While standardized tests measuring critical thinking are readily available for a fee, simple classroom approaches to measuring CT skills are still needed. The objective of this work was to analyze the predictive validity of a simple critical thinking exercise coupled with a scoring rubric for monitoring the critical thinking skills of freshman and sophomore agriculture students. A paragraph assignment was employed to assess students' CT ability and was completed after an in-class critical thinking exercise. Paragraphs were scored by an independent rater using a CT rubric that was developed at Washington State University. The ACT-CAAP CT test was administered to students following the ACT protocol. Paragraph and ACT-CAAP CT assessments were conducted within one week and correlations between assessment methods were drawn. Results showed a significant correlation ( $r = 0.708$ ;  $F = 26.19$ ;  $P = 0.0000246$ ) between ACT critical thinking scores and the in-class critical thinking scores. Results suggest the critical thinking rubric coupled with the paragraph assignment provide valid assessment of critical thinking skills of freshmen and sophomore agriculture students.

### **#96. Is One Exam Enough?**

**Neal Eash, Joanne Logan, Andrew Petty, Constance-Marie Hugo, and Ningfang Yang**  
**University of Tennessee**

Exams provide a means to measure student mastery of subject matter, yet few instructors agree on how many exams are needed to effectively assess student knowledge. This study was conducted to determine the relationship between the assessments and student progress: first exam score, final exam score, laboratory score, quiz scores, and final grade in the Introduction to Soil Science course at the University of Tennessee. Although it is a lecture class (between 60 and 100 students each semester), there is substantial class discussion over the subject matter. Using grades from several semesters we utilized multiple regression analysis to predict final grade from several metrics including exam scores, laboratory scores, quiz scores, and homework. Results indicate that approximately 77% of the variability associated with the final grade is explained after the first exam. The final exam explains about 80% of the variability between that score and the final grade. This suggests that students do "calibrate" with an instructor's exam but much less than we expected. This data also suggests that there is not a lot of movement in grades, either up or down, following the first exam. Our results suggest that multiple exams do not greatly improve a student's potential for success but do contribute to instructor workload.

## #104. Making the Most of Internships

**Mary Brakke**  
**University of Minnesota**

**Mary Wiedenhoef**  
**Iowa State University**

Internships fill an important gap in higher education. They provide a real-world purpose for learning, a social environment that imbues learning with affective meaning and engage a suite of under-utilized thinking skills. Because learning during an internship is more self-directed and self-assessed than class-based learning, it presents unique challenges for students and advisors. We developed an internship program that engaged students in efforts that diversify agriculture and favorably impact water quality in the Mississippi River Basin. Through questioning activities and interaction with other students before, during and after their internships, we sought to engage students in learning deeply from their experiences. We will focus our presentation on the strategies we used including: 1) use of an all-day “internship boot-camp” aimed at building a learning community, increasing student awareness of the internship learning environment and developing an understanding how one learns from experience and 2) questioning strategies we used which aimed at stimulating reflective thought and learning. Student evaluations indicate that: 1) applying knowledge, 2) reflecting on experience and 3) interacting with faculty were most important in helping them learn. The top three student-identified internship goals were: 1) improved ability to communicate with professionals in their field; 2) improved ability to work independently; 3) improved understanding of career options while the top three student-identified impacts of internships were: 1) improved ability to communicate with professionals in the field; 2) improved ability to ask questions; 3) improved understanding of career options. We will discuss students' evaluations and offer suggestions for further strengthening internships.

## #108. Job Satisfaction of Selected Agriculture Faculty

**Jamie Cano and Ryan Foor**  
**The Ohio State University**

Job satisfaction has been identified as an important indicator of faculty retention. Previous studies have specifically examined the level of job satisfaction among faculty in agricultural teacher education and extension education. However, after a thorough review of the literature, the researchers were unable to identify a study related to job satisfaction of faculty members specializing in the areas of agricultural communication, agricultural leadership, extension education, and agricultural teacher education. The objectives of this study were to describe the charac-

teristics of faculty in each specialization; describe faculty members' overall level of job satisfaction; describe faculty members' level of satisfaction with selected job factors (policy and administration, personal growth and satisfaction, and fiscal resources); explain the relationship between selected job factors and overall job satisfaction; and explain the relationship between overall job satisfaction and age, gender, tenure status, highest degree earned, number of years in current position, and total number of years in higher education. A total of 323 faculty members were identified as being involved in one or more of the selected specializations. Mailed questionnaires were sent to each individual resulting in a 74% response rate. The majority of faculty respondents were moderately satisfied with their job. A high correlation was found between each of the selected job factors and overall job satisfaction. Negligible correlations were found between each of the demographic characteristics and overall job satisfaction. Academic units should continue to use measures of job satisfaction to evaluate the climate of the work environment in order to retain quality faculty members.

## #109. Engagement, Self-Efficacy and Retention among Agricultural and Environmental Sciences Students: Preliminary Implications of Incorporating StrengthsQuest™

**Kent Gallaher, Foy Mills Jr., and Brenna Ellison**  
**Abilene Christian University**

In 2007, freshmen and transfer students in the Department of Agricultural and Environmental Sciences (A&E) at Abilene Christian University (ACU) were introduced to Clifton's StrengthsQuest™ Model of Positive Psychology (StrengthsQuest™) through multiple laboratory exercises in the introductory major's course. The premise for the exercise was increased positive student engagement will translate into greater student academic performance and improve student retention. Prior to the assessment of student engagement, a survey instrument commonly referred to as the “Hope Scale” was used to examine differences between students entering A&E and those in the general student population at ACU. No differences were observed between the two group's responses with the exception of Question 8, “I am very capable of succeeding at this university” (P=0.0106). Entering A&E students had lower self-reported academic confidence than those in the general student population. Student engagement was assessed by a pre/post survey instrument, the College Student Engagement Survey. Students reported greater engagement (P<0.10) on 40% of the survey prompts. Question 3, “At this school, I have the opportunity to do what I do best everyday” (P=0.0029) and Question 4, “In the last seven days, I

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have received recognition or praise for doing good schoolwork" ( $P=0.0009$ ) were highly significant. Additionally, fall 2007 to spring 2008 retention among this group of A&E students was 91%. Preliminary results indicate StrengthsQuest™ enhanced student self-efficacy and engagement among undergraduate A&E students and subsequently improved student retention.

### **#116. Comparison of Student Evaluations of Teaching at the Beginning and End of the Semester**

**M.R. Dicks, J.R. Pruitt and D.S. Tilley**  
**Oklahoma State University**

The role of student evaluations of teaching (SET) is a widely debated topic in academic circles due to its use in review, promotion, and tenure decisions. Many of the over two thousand articles in the SET literature question the validity of evaluations given that that some studies have shown that first impressions are lasting and are used to evaluate instructors. The increased prevalence of websites that allow students to publicly rate instructors has increased the amount of information available to students enrolling in courses regardless of the quality of comments. The objective of this research was to determine if the initial expectations of instructor performance changed between the beginning and end of the semester. Approximately nine hundred students in twenty two agricultural courses participated in evaluating instructors within the first two weeks and the end of the semester. Over four hundred students' evaluations were successfully matched across the semester. Overall instructor score means were not significantly different although Chi-square tests indicate that the distribution of responses did change. Chi-square tests suggest that most instructor variables such as ability to present and explain material and students' evaluations of course variables such as tests, relevant assignments, and students are adequately involved changed during the semester because students learn more about the course and instructor during the semester. This research indicates the importance of student expectations on the instructor rating in the SET but makes no inference as to the usefulness of the SET.

### **#117. Matching Course Presentation and Assessment Type to Preferred Learning Styles to Enhance Student Performance and Satisfaction**

**Richard Joost and Melanie Young**  
**University of Tennessee at Martin**

The goal of this study was to develop criteria for modifying instruction methods to better fit the learning styles of students. The study was designed to determine the possibility of matching preferred

learning styles (PLS) to specific presentation styles and assessment methods for material in an introductory plant and soil science course. A total of 94 students were administered a standard Myers-Briggs Type Indicator (MBTI) instrument at the beginning of each semester in the 2007-2008 school year. Classes were presented similar material by either traditional lecture or guided individual research/reading and student performance on objective assessments of their knowledge of the material was related to their PLS. We also evaluated student performance on objective vs. subjective assessments over similar material based on their PLS. The dataset was nearly evenly divided between males (48) and females (46). Over 52% of the students in our sample indicated a preference for the ST style of perception which means they typically learn in a stepwise manner and use objective data in decision-making. Sensor type learners performed significantly better on the objective assessments while the intuitive type learners performed better on the subjective assessments. Sensor learners also performed better when material was presented through traditional lecture than when they were required to seek out the information independently. It appears that the use of MBTI to discover learning styles may be useful in designing course strategies that better fit the student population potentially resulting in better learning and a higher degree of student satisfaction.

### **#118. Community Field Experience Promotes Service-Oriented Careers**

**Michelle Pierce**  
**University of Connecticut Health Center**

**Vanessa Sawyer**  
**University of Connecticut**  
**Patricia Poehlitz**  
**University of Connecticut (formerly)**

**Ann Ferris**  
**University of Connecticut Health Center**

One strength of experiential learning is a positive impact on personal growth including outcomes such as leadership, social conscience, and career development. We examined these outcomes in undergraduates enrolled in a semester-long, structured service-learning class focusing on childhood obesity prevention. In addition to class expectations, students provided programming for low-income, minority children in urban, after-school centers one afternoon/week. We assessed student outcomes using two validated instruments, the Cross-Cultural Adaptability Inventory and the Student Leadership Practices Inventory. We also conducted qualitative analyses using data from pre- and post-focus groups and reflection assignments. Nineteen of 26 participants (25 white/1 Asian; 23F/3M) were Nutrition majors. After participation, both cultural competency

and leadership scores increased significantly (paired t-test,  $p=0.01$  for both). Students reported beneficial outcomes from their field experiences, describing ways that community immersion had extended attributes such as self-confidence, cultural sensitivity, and communication skills. Students believed the “hands-on” experience enhanced their academic training by giving personal meaning (“it gives you a face”), requiring flexibility and reactivity, and by providing immediate feedback. They reported that their involvement encouraged them to seek proactive solutions to urban disparities. Most of the students used the experience to clarify career choices, either by expanding or further defining their options. However, all had gravitated toward provision of service at the community level. A community field experience affords students the opportunity to enrich their coursework through application of established principals and testing of personal theories, ultimately promoting informed career decisions. (Funded by USDA CSREES Higher Education Challenge Grant 523947.)

### **#123. The Challenges of Retaining Students in Animal Sciences**

**B.E. Brokaw, F. N. Mhlanga, and F. D. Mills Jr.**

**Abilene Christian University**

The Agricultural and Environmental Sciences (A&E) department at Abilene Christian University (ACU) offers three major programs of study for undergraduate students. Students can matriculate into Agribusiness, Animal Science or Environmental Science. Historically, the animal science (AS) program has been the main attraction for students enrolling in the department. Monitoring the initial impacts of implementing of Project 2012, a ten-year revitalization initiative for A&E, the proportion of students entering the department as AS majors between 2002 and 2007 was 38%, 44%, 36%, 48%, 38%, and 61%, respectively. Albeit the high enrollment rates relative to other departmental disciplines, the biggest challenge for AS has been retaining many of these students in the program. An analysis of retention rates for the same six year period showed an average retention rate in the AS program of only 52%, while rates for Agribusiness and Environmental Science were 70% and 58%, respectively. The reasons for such a high rate of attrition from the AS program are many. They vary from the students' lack of experiences with large animals to student misperceptions about the high scientific rigor required in AS. Animal scientists are a critical link to finding resolutions to issues facing the animal and food production industry. The objective of this presentation is to articulate the challenges facing the AS program at ACU with respect to student retention and to explore opportunities for retaining the best students in this program.

### **#125. On an Animal Science Curriculum Change for Student Retention**

**Ed Brokaw and Florah N. Mhlanga**  
**Abilene Christian University**

Student recruitment and retention in scientific disciplines is a major problem at many colleges in the US. This has been true for the animal science (AS) program offered in the Agricultural and Environmental Science Department at Abilene Christian University (ACU). Data over a six year period from 2002 to 2007 showed AS as the largest recruiter of students into the department. However, retaining these students in the AS program has been a problem. Most of them drop out of the program into other academic disciplines at ACU or at other universities. Over a six year period from 2002 to 2007, average retention was only 52%. The department concedes that the demographics of students entering into the department has changed such that many students entering AS now are women, come from urban backgrounds and their primary animal related experience and interests are with companion animals. Therefore, to partially address the problem of identifying and retaining students who are likely to complete an AS degree program, the department redesigned the AS curriculum. The primary objective of the curriculum revision was to create appealing courses and concentrations that may attract students into the AS program. The curriculum changes resulted in the development of seven new courses, creation of an animal science core and four AS tracks: Biotechnology and Research with two emphases, Business and Industry, Livestock Management with two emphases and Pre-veterinary Medicine and Health. The program presented offers more choices to students and has the prospect of improving student retention.

### **#128. Student Experiences as Peer Learning Assistants in the Life, Agricultural, and Natural Sciences**

**Neil Knobloch**  
**Purdue University**

**Anna Ball**  
**University of Florida**

Meaningful learning occurs when students are engaged in the learning process as a community of learners. One such model for student learning is the creation of teaching partnerships whereby undergraduate students are given some portion of the teaching responsibilities in a course. Research in peer learning points toward the effectiveness of using peers in teaching, however evidence is needed to describe the relative effectiveness of different approaches to peer teaching on student development. The purpose of the study was to explore classroom

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models for using peer learning to make learning more meaningful and develop career skills among learners. Forty-one students who served as peer learning assistants in nine undergraduate courses across five different land grant universities and state colleges in the Midwest participated. A twenty-item questionnaire with constructs including student engagement in meaningful learning and career development measured perceptions of peer learning assistants (PLA's) across different types of peer learning experiences. It was concluded that students serving as PLA's, regardless of the nature of the PLA experience, perceived positive gains in both meaningful learning and career development. It was further concluded that the role of a PLA as a tutor/coach was more positive in regard to developing meaningful learning. Comparably, the role of a PLA as a peer teaching assistant/educator was more positive in regard to career development. PLA's in the college classroom results in enhancing undergraduate students' cognition and motivation, as well as their personal and career development. This project is funded by a USDA Higher Education Challenge Grant (No. 2005-38411-15866).

### **#132. The Second "R:" Keeping Students Engaged in Writing Basics**

**Shelly Sitton, Traci Naile, and Sara Faber**  
**Oklahoma State University**

College students struggle with the study of grammar, punctuation and spelling, even agricultural communications majors. In Communications in Agriculture (AGCM 2113), the prerequisite for upper-level writing courses in the Oklahoma State University AGCM program, students develop foundation skills for effective news writing. To help retain students in the course, faculty designed new methods to encourage student-instructor interaction and peer-learning experiences, increase classroom participation and create personal connections with the department. Course revisions were implemented in spring 2008 to sharpen lower-order retention of information and create opportunities for higher-order development of writing and editing skills. Students prepared drafts of writing assignments during laboratories and received feedback within 24 hours; final assignments with textbook citations for error corrections were due seven weekdays after students received feedback. During this period, students could receive individual assistance from the instructor upon request. Peer interaction and ownership of grammar and punctuation content were encouraged through a five-week series of lecture-activity units designed as a team tournament. Lectures based on classroom discussion were followed by game-based activities used for application of content presented in the preceding lectures. Students participated in activities on student-selected teams to earn extra credit points. The methods were successful, as more than half of students requested instruc-

tor assistance weekly and indicated they participated in peer editing with team members. In addition, student interactions, voluntary discussion, and demonstrated skill levels increased. Faculty plan to use these methods in future semesters to retain and better prepare students for advanced writing courses.

### **#135. Using the Three R's: Rigor, Relevance, and Relationship**

**Jamie Cano, Jonathan Velez, and Jon Simonsen**  
**The Ohio State University**

The purpose of the study was to conduct an undergraduate faculty teaching partnership in an agricultural and extension education leadership course. The course instructor was able to synthesize academic rigor, service-learning and peer facilitation. The objective of this innovative teaching approach was to allow the students the opportunity to gain academic rigor through curricular content, personal relevance through service learning, and relational role models through the use of peer facilitators. Students were split into small groups and peer facilitators were assigned to each group. The peer facilitators, consisting of six upperclassmen who had previously taken the course, were asked to disseminate course content and assist in the facilitation of group service-learning projects for four weeks of a 10-week course. Student reaction was extremely positive. Participants offered overwhelming support for the importance and continuation of the peer facilitation process. Students were grateful for the opportunity to learn from their peers and expressed comments such as, "I really felt as if I retained much more of the information." Students appreciated the autonomy provided by peer facilitators and enjoyed the opportunity to freely express their ideas and opinions. Students stated, "The peer facilitator allowed me to express how I really felt," and "Our peer facilitator was like our own personal professor to guide us." The peer facilitators perceived increased growth and development in communication, leadership and teaching methods. The continued use of peer facilitators and service-learning projects is recommended.

### **#137. Evaluation of Interactive, Computer-Based Teaching (CBT) Modules for Forage Courses**

**Olive MK. Kemirembe, Marvin H. Hall, and Rama B. Radhakrishna**  
**Penn State University**

Rising cost of higher education coupled with demand from funding agencies for collaborative efforts to develop/deliver educational materials, and potential for capturing research and teaching expertise of faculty, have called for collaborative approaches to delivering instruction. The use of interactive, computer-based teaching (CBT) has

advantages in terms of diversity of topics and scope of materials covered, low cost, accessibility and consistent teaching quality. CBT modules using a multidisciplinary approach for teaching forage courses was developed by faculty from six land-grant institutions in the U.S. The purpose of the study was to determine the effectiveness of 11 CBT modules as a teaching tool and to determine the overall acceptance of the modules by the students.

Undergraduate students from six land-grant institutions enrolled in a forage course for the academic year 2006-07 were identified as subjects. Module effectiveness was assessed through a pre and post knowledge test. Modules were also evaluated for ease of navigation, content accuracy, design and layout, and readability.

Paired t-test analysis indicated significant differences between pre and post knowledge tests for all the 11 modules suggesting that CBT contributed to student learning. Students' average rating was four on a five point Likert-type scale for ease of navigation, content accuracy, design and layout, organization and readability of the modules.

Findings have implications for using CBT module format in other courses in the agricultural sciences. Faculty who developed these modules viewed collaboration among land-grant institutions as an innovative approach to curriculum development, faculty sharing of resources, and cost effectiveness.

### **#140. Focusing on At-Risk Freshmen Students: Can they be Saved?**

**D. Pavelock, M. Beverly, and K. Rogers**  
**Sam Houston State University**

Institutions of higher education are increasingly concerned about retention and graduation rates. Students considered "at-risk" due to their conditional admission to an institution need more assistance than traditional students. Sam Houston State University has been proactive in addressing this issue by developing a comprehensive approach to retention through the First-Year Experience (FYE) program and its SAM 136 course. These students attend a freshman seminar, participate in learning communities (cohort shares at least three common class sections), attend freshman orientation, and receive personalized academic advising and support services. This study considered entering freshmen in the fall 2005 semester who returned in fall 2006. At-risk students participating in the FYE (n=241) attained a 74.2% retention rate, compared to the 67.4% rate of at-risk students not in the FYE (n=98). Non-at-risk students in the FYE (n=187) achieved a 73.8% retention rate versus the 71.3% rate of non-at-risk students not in the FYE (n=1640). Considering all students, regardless of their at-risk status, those in the FYE (n=428) had a 74.1% retention rate versus

the 71.1% rate of all freshmen students not in the FYE (n=1738). Additionally, a cohort comprised of only agricultural majors (enrolled in AGR 136) was established in the Fall 2006 semester. Although this cohort was small (n=12), students in this section realized an 83.3% retention rate. The University's FYE program is helping accomplish the desired affect on retention, but it has not had the expected impact on GPA. However, plans to expand the program will support students throughout their academic career.

### **#141. Defining the Best Teaching in Non-formal Settings: A Phenomenological Study**

**Roslynn Brain**  
**University of Florida**

**Nicholas Fuhrman**  
**Virginia Tech**

New agent retention is a well-known challenge within Extension. Among the key reasons cited for agent career retention are personal satisfaction stemming from educating clientele and enjoyment of the teaching and learning process. Given the link between agent retention and teaching and learning, there is a need to better understand what constitutes "good teaching" in non-formal (outside of the classroom) settings. In addition, little research currently exists on "good teaching" in non-formal settings. The purpose of this qualitative study was to gauge Extension specialist perceptions of good teaching in non-formal settings. Six Extension specialists participated in semi-structured interviews where they discussed personal experiences, characteristics, and outcomes related to "good teaching" in non-formal settings. Interviews were audio-recorded and transcribed verbatim. Common themes between participants were identified using domain analysis and six domains emerged from the data. Participants perceived "good teaching" in non-formal settings to involve (1) a skilled, caring facilitator, and educational interaction which is (2) relationship-based, (3) assets-based, (4) accommodating, (5) simple, and (6) intended to result in enhanced motivation on the part of the learner. The results of this study suggest that when teaching in non-formal settings, educators should equally consider both the emotional and informational needs of learners. These findings may be useful when planning Extension professional development opportunities related to non-formal teaching methods.



**#142. Student Learning Outcomes Assessment as a Survey Tool for Curriculum Change and Student Retention**

**Ronald Hanson**

**University of Nebraska-Lincoln**

Student learning assessment outcomes can be an effective tool in designing curriculum changes and implementing student advising activities to gain a greater degree of student retention and to enhance student success. To establish a basis for measurement, the Department of Agricultural Economics at the University of Nebraska-Lincoln formalized a set of thirteen student behavioral learning objectives for students to achieve before graduation. Based on these thirteen student learning objectives, both a Graduating Senior Assessment Survey and an Alumni Assessment Survey were designed to measure student perceptions for accomplishing these learning objectives relating to their skills, knowledge, and proficiency. The survey addressed questions regarding the perceptions by both graduating seniors and former students for the various areas of the Department which included: (1) the quality of their educational learning experience; (2) the factors which influenced their choice of academic major; (3) satisfaction with department courses, advising, and career preparation; and (4) the students' participation in internships, international study, and industry related work experiences while attending the University. The Graduating Senior Assessment Survey is administered at the end of each Semester. The Alumni Assessment Survey to former students has been administered twice (2002 and 2007 with an overall response rate of 43 percent). An analysis of the survey results lead to several changes in the Department's current curriculum and instructional methods. This survey approach to measuring student learning outcomes assessment for curriculum change and student retention has been identified by University administration as a model program to other academic units.

**#148. An Evaluation of the Certificate in International Agriculture Program at a Land-grant University**

**Dennis Duncan, Maria Navarro, and Vicki McMaken**

**University of Georgia**

Most colleges of agriculture around the nation have been and are internationalizing the formal (majors and concentrations, course content, materials) and operational (teaching and learning methods, grouping of students, time and location of courses) aspects of their curriculum, using different tools, strategies, policies, and programs. Among the programs that have yielded significant results in the

University of Georgia for more than a decade, is the Certificate in International Agriculture. Students in any major can complement their program of study with a series of linked courses that allow them to gain working knowledge of the language as well as the agricultural, environmental, social, political, and cultural issues in a specific area of the world. The objectives of this presentation are the following: 1) Describe the certificate process and its requirements (internship, capstone, and language requirement); 2) Share the syllabi of some of the courses in the certificate; and 3) Present an analysis of the accomplishments, challenges, opportunities, and lessons learned during the past five years of the Certificate Program. The methodology used in the study integrated surveys, interviews, participant observation, and document analysis. Participants included faculty, staff, students, and alumni. While the certificate is yielding excellent results, many challenges lay ahead, including increasing recruitment of students; expanding and enhancing internationalization opportunities to more students in the college; increasing worldwide contacts to continue designing internships to fit specific student interests and skills; funding; and further developing the capstone course to adapt to changes in the certificate and in the university's curriculum.

**#153. Perceptions of Influence on College Choice: Recruitment Efforts Affecting Student Enrollment in a College of Agricultural Sciences and Natural Resources**

**Dwayne Cartmell, Cathy Herren, and Tanner Robertson**

**Oklahoma State University**

Individual characteristics and external influences aid in the traditional age (18-21) students' choice of college. A study was conducted to identify the affects of recruitment efforts of a College of Agricultural Sciences and Natural Resources' on undergraduate college-choice process during enrollment. This study sought to: 1) describe the usefulness of recruitment information in the decision process of undergraduate students in a College of Agricultural Sciences and Natural Resources (CASNR); 2) describe the influential characteristics of the institution, selected individuals, degree program characteristics, and social interaction opportunities in the choosing a college; and 3) describe when students began the decision-making process in selecting a college. An Internet survey was developed and distributed to a random sample of 1,744 full-time undergraduate students enrolled in a CASNR degree program at a Midwestern university. Parents or guardians were the most influential people in college choice. In addition, participants indicated that alumni of the university were influential in selecting a university. The two most influential institutional

characteristics participants noted were opportunities after graduation and the academic reputation of the university, respectively. Participants indicated visits to campus, personal conversations with faculty, and degree program information on a Web site or printed sources were used or were helpful in choosing a college. More than one-fourth of the participants began their decision-making processes before the ninth grade. Based on the results of this study, it is recommended that universities continue to increase opportunities to attract prospective students to campuses and strive to provide positive experiences.

### **#163. Retaining Secondary Agricultural Education Teachers: Impact of Senior Mentors within the Minnesota Teacher Induction Program (TIP)**

**Lyle Westrom**  
**University of Minnesota, Crookston**

**Richard Joerger**  
**Minnesota State Colleges and University**

**Brad Greiman**  
**University of Minnesota, St. Paul**

The Minnesota Teacher Induction Program (TIP) is designed to provide assistance to entry level teachers (ELT's). Senior mentors (retired/experienced) agricultural education teachers are assigned to each ELT in Minnesota. Surveys of stakeholders including ELT's, teacher educators, administrators, state supervisors and mentors determined priorities for senior mentors. TIP coordinators provided training to senior mentors. Senior mentors provide formative, risk-free support to teachers; the ultimate goal of this support is to improve the retention and success of ELT's. Senior mentors visit ELT's three to five times. In addition they are available to teachers via phone or email. Types of support include positive/encouraging feedback, classroom tips, assistance in prioritizing, sources of equipment/educational materials, an experienced resource and a liaison between state leadership and school administration. ELT's report that senior mentors also assist in lowering anxiety by being there to show support and answer questions. One ELT stated "the senior mentor helped me see the other side of the story". Results of this TIP program show retention rates ranging from 67% to 100% over a three year period. Senior mentors are one of the key components that contributed to that desire to stay in the profession according to ELT's.

### **#187. Re-envisioning Programs in Agricultural and Environmental Sciences: Implications for Recruiting and Retention in a Changing Environment**

**F. Mills, Jr.**  
**Abilene Christian University**

From 1997 through 2001, the Department of Agricultural and Environmental Sciences (A&E) at Abilene Christian University (ACU) observed a steady decline in students while undergraduate enrollment increased at the university. This was particularly alarming since interaction with other agricultural programs in Texas indicated level to increasing enrollment trends. Conversations with campus academic leaders prompted a comprehensive departmental self-study evaluated by the A&E visiting committee, an external review team and ACU administrators. Subsequently, A&E faculty members engaged in a visioning process resulting in the development and implementation of Project 2012 in 2002. Project 2012's intent was to strategically and aggressively position the department for growth. Achieving a viable, sustainable future serving students in agricultural and environmental sciences was paramount. Project 2012 was divided into four phases. Though each phase dealt with a specific part of departmental curriculum (e.g., environmental science), phase I immediately addressed image and strategic positioning of the department. A small entering class in fall 2002 (immediate post 9/11) was immediately followed by larger entering classes as aggressive recruiting efforts were implemented. Graduation of the small 2002 class coupled with successively larger recruiting classes caused total enrollment to rise by 40% between fall 2005 and fall 2006 even while overall university enrollment declined. Retention remained steady, but too low averaging 52% over the same period. Selected measures for improving student retention were implemented fall 2007. Fall 2007 to spring 2008 retention was 91%. Additional recruiting and retention measures continue being implemented to reach the goals of Project 2012.

### **#193. FAEIS - Essential Information for Retaining Students and Faculty**

**M.A. Marchant, W.W. Richardson, and J.R. Hunnings**  
**Virginia Tech**

The Food and Agricultural Education Information System (FAEIS) compiles nationwide higher education data for agriculture, natural resources, family and consumer sciences/human sciences, veterinary medicine and other related disciplines. These data include undergraduate and graduate student enrollment, degrees awarded at all degree levels, placement and faculty numbers and salaries by rank and discipline. FAEIS is used by the

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United States Department of Agriculture (USDA) in responding to Congressional inquiries to support higher education and related USDA programs. Higher education administrators use FAEIS data in recruiting and benchmarking students and faculty, as well as institutional planning, and regional and national comparisons. Faculty use FAEIS for USDA - Higher Education grant proposals. FAEIS data can help you learn about enrollment trends, emerging disciplines, student placement, and faculty numbers and salaries. You can study these data by discipline, institution or even institution type. FAEIS allows you to track trends of students and faculty by gender and ethnicity. The extensive FAEIS database can help you

understand how colleges and universities nationwide are organized, and how 'agriculture' is being redefined to include a broad array of disciplines. Multi-dimensional reports can be created in seconds with FAEIS Report Builder. You can select, filter and present the data exactly as you need it. The online Report Builder is fast, convenient, clear and easy to learn and use. FAEIS team members will demonstrate customized reports to answer questions related to faculty retention e.g. faculty salaries by rank, discipline and institution, essential information for retaining the best.

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