



NACTA

Journal
Abstracts

Volume 64, Supplement 1

a publication of
North American Colleges and Teachers of Agriculture



2020 NACTA Conference Abstracts

Presented online at the 2020 NACTA Virtual Conference

June 16 - 18, 2020

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ISBN: 978-0-359-63594-8

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Community Learning / Extension - Oral

2020-0002

Evaluating the impact of an educational intervention on farmers in El Salvador

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Texas Tech University

Rural farming communities in El Salvador are deeply affected by food insecurity. Understanding appropriate interventions to enhance food security among farmers in El Salvador could alleviate under-nourishment in rural areas. The objectives of this study were: 1) Qualitatively identify the state of food security among farmers in rural El Salvador; 2) Quantitatively measure the impact of an educational program on farmers' knowledge, attitudes, and perceptions of food security. A mixed-methods research design was used in this study. In the qualitative strand, interviews were conducted with small farmers about their food security. In the quantitative strand, a non-equivalent control group matching design was used due to size and access constraints. Data was collected using: (1) The FAO Food Insecurity Experience Scale, (2) a knowledge test, and (3) an attitudinal test. Results from the qualitative strand of the study were used to design a four-hour educational intervention on food security. The overall score on the Food Insecurity Experience Scale was 4.5, indicating that the food insecurity of the farmers was moderate to severe. The comparison of the knowledge scores between the farmers in the experimental ($M = 12.85$) and the control group ($M = .21$) showed a change in knowledge. Farmers in the experimental group ($M = 4.15$) presented higher intentions of adoption for food security and agricultural production techniques than the control group ($M = 3.64$). Results indicate that involving the community prior to designing an educational program for the community may enhance knowledge acquisition and adoption intentions of the community.

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Global Education - Oral

2020-0006

Leadership Outcomes of Short-Term Study Abroad

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University of Nebraska-Lincoln

The impact of global citizenship is far-reaching and encompasses skills and outcomes beyond simple economic and business success. Enhancing all students' knowledge and ability to navigate a global community is not just of interest to governmental units, policymakers, and global organizations, but also to universities who wish to adhere to accreditation standards. The objectives of this phenomenological study were to identify characteristics related to an individuals' motivation to complete a short-term study abroad program and the impact that experience had on their personal and leadership growth. Eighteen self-identified leaders that had participated in a short-term study abroad program participated in qualitative interviews. The data was analyzed using inductive thematic analysis, and then categorized into themes based on following sub-research questions: 1) What are the barriers/challenges students need to overcome to participate in a short-term study abroad program? (themes: financial/cost, safety, communication, and missing responsibilities), 2) What benefits did students experience by participating in a short-term study abroad experience? (themes: experiential learning, personal growth, and global perspective), and 3) In what ways did students' participation in a short-term study abroad experience further inform or influence their ability as leaders? (themes: growth and learning, openness to differences, group dynamics, and leadership). Findings from this study provide supporting evidence that short-term study abroad experiences can provide benefits to participants far beyond the time of study, impacting not only personal growth, but growth and knowledge in leadership roles. Future research should focus on examining the impact short-term study abroad has on leadership and career trajectory.

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**Scholarship of Teaching - Oral
2020-0010**

Using Keyhole Gardens to Enhance Agricultural Literacy: Perceptions of University Students and K-3 Teachers

Peter Skelton, Thomas Dormody
New Mexico State University

The project objective was to compare K-3 teachers (n=13) at Los Niños Elementary School in Las Vegas, New Mexico and New Mexico State University students (n=7) enrolled in “Methods of Teaching Biological, Earth, and Physical Sciences in Agriculture” on perceptions of keyhole gardens as a tool for enhancing national agricultural literacy outcomes. These above-ground gardens with a composting center look like an old-fashioned keyhole from above. The university students built two gardens from concrete blocks at the school and taught Grade 2 lessons on composting and planting the rainbow using the gardens. Some teachers observed garden construction and university student instruction. Other teachers received a one-hour training on the gardens from the NMSU Youth Agricultural Science Center director. For Agriculture and the Environment outcomes, teachers averaged 4.62 on a 5-point scale (exceptionally strong enhancement) while students averaged 3.47 (moderate enhancement). On Plants and Animals for Food, Fiber and Energy outcomes, teachers averaged 4.28 and students averaged 3.60 (both strong enhancement). For Food, Health and Lifestyle outcomes, teachers averaged 4.46 while students averaged 4.05 (both strong enhancement). On STEM outcomes, teachers averaged 3.92 (strong enhancement) and students averaged 3.22 (moderate enhancement). On Culture, Society, Economy and Geography outcomes, teachers averaged 4.48 and students averaged 3.88 (both strong enhancement). On all 21 outcomes, teachers averaged 4.39 and students averaged 3.68 (both strong enhancement). Although teachers had higher averages than university students in all five dimensions and overall agricultural literacy, both perceived keyhole gardens as a strong tool for enhancing K-3 agricultural literacy.

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**Innovative Teaching and Learning - Oral
2020-0013
Science and Agriculture Academy**

Nathan Conner, Christopher T. Stripling
University of Nebraska-Lincoln

Students in the natural sciences do not view agriculture, or agriculture-related research, as an attractive career option and they do not recognize the multidimensional and challenging nature of agriculture. What is more, educators have failed to help students make the connection between scientific, business, economic, environmental, and social issues and a degree in agriculture and the opportunity to address this failure represents the instructional challenge of this USDA-NIFA funded project. The objective of this project was to create a Science and Agriculture Academy (SAA), which was a community of high school science and agriculture teachers who receive two years of professional development and instructional support aimed toward increased awareness of the multidisciplinary nature of agriculture and the related degree and career opportunities in the food, agricultural, natural resource, and human sciences. The SAA included the development and facilitation of a weeklong professional development (PD) program. The PD focused on 12 learning modules on how people learn, three next generation science standards with emphasis on soil conservation, ground water, fertilizer chemistry, bio fuels, fungi, and agriculture as a business, and curriculum development. Participants worked with partners to investigate the next generation science standards, and to gather resources to be used in the development of their curricula materials. The PD produced curriculum that will be taught in high schools and aims to create a pipeline into the agricultural workforce.

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Scholarship of Teaching and Learning - Oral

2020-0016

Effectiveness of Student-Facilitated Discussions in a Small Graduate-Level Course

Maria Boerngen
Illinois State University

The objective of this study was to measure the effectiveness of student-facilitated classroom discussions, and to measure the impact of these activities on students' self-confidence. Students enrolled in a small graduate-level agribusiness course at Illinois State University read and discussed published research articles related to course content throughout the semester. Each discussion lasted from 60 to 75 minutes at the start of the weekly 170-minute class period. Based on a professor-provided discussion guide detailing how to prepare for and fulfill the role of facilitator, class notetaker, and participant, each student facilitated one discussion, served as notetaker in one discussion, and was a participant in the other discussions. Questionnaires were administered to the class in Fall 2019 at the beginning and end of the semester addressing students' prior class discussion experience, their pre-existing level of comfort and confidence with these activities, and their perception of the impact these student-facilitated discussions had on their mastery of course material and their self-confidence. Responses indicated 83% of students (n=5) strongly agreed that the discussions deepened their understanding of course concepts, and that they understood professor expectations; 100% (n=6) reported an increased confidence in their ability to contribute to class discussions and to lead a group. On a scale ranging from 1 ("Very negative") to 4 ("Very positive"), students' overall opinion about class discussions increased numerically (3.00 vs. 3.83). This pilot study suggests that student-facilitated discussions can provide positive learning experiences. Data collection will continue in subsequent semesters.

<https://voicethread.com/share/14533283/>

Innovative Teaching and Learning - Oral

2020-0018

Putting Pen to Paper: A Theory-based Approach to Teaching Academic Writing to Graduate Students

Jonathan M Orsini, Nicole Stedman, Ed Osborne
University of Florida

Completing a dissertation is recognized as one of the most difficult academic exercises in modern higher education. A successful dissertation requires high levels of critical thinking and analysis, proficiency in research, and skillful written communication ability. Many beginning doctoral students have not sufficiently developed these qualities, especially formal academic writing ability, and are expected to “learn-as-they-go” or learn through their experiences while attempting to complete the dissertation. This deficiency in a required skill for completing the dissertation process may increase the already significant psychological stress of graduate school. The resulting expectancy-reality discrepancy between student’s preconceived notions of their graduate school experience and their perceptions of early failure in the dissertation process can lead to reduced motivation, which inhibits the learning process and could be one factor which contributes to an estimated 50% attrition rate amongst doctoral students in the United States. Synthesizing elements of social cognitive theory, experiential learning theory, and cognitive load theory, a conceptual model for a class teaching academic writing for agricultural graduate students is proposed. The presentation will introduce the conceptual model, discuss the underlying theory, and share student and faculty experiences from a current graduate course in agricultural education and communication that closely mirrors the model.

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Scholarship of Teaching and Learning - Oral

2020-0020

University Capstone Course Students' Perspectives on Using Team-Based Learning

Trent Wells, Skyler P. Rinker
Southern Arkansas University

Student-centered instructional designs have increased in popularity within university courses in recent years. Students have indicated course instructors should use relevant instructional designs that encourage collaboration, promote higher-order thinking, and ensure relevance beyond course settings. As a flipped classroom design, Team-Based Learning (TBL) was recently implemented into a university capstone farm management and operation course. From a quantitative perspective, students from previous academic years have responded positively to using TBL in this course. However, a deeper qualitatively-focused exploration into the topic was warranted. Framed within social constructivism, our qualitative study explored students' perspectives on using TBL in this course. Our guiding research question was: What are the factors of TBL instruction that motivate students enrolled in this course to perform in the classroom? One-on-one interviews were conducted with four undergraduate agricultural students enrolled in the course during the Fall 2018 semester. Using qualitative data analysis procedures, three distinct factors emerged: (1) prior leadership and background experiences before engaging in the course, (2) teamwork and accountability components of the course structure, and (3) final course grades. These findings provided insight to TBL models designed with both teamwork and individual components at their core. Our findings align with previous research noting the use of TBL in a university capstone farm management and operation course promotes engaging experiences, thus allowing students to assume responsibility for their own learning. We recommend additional studies be conducted with students enrolled in courses using TBL to gain further insight regarding performance motivations within agricultural coursework.

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**Scholarship of Teaching and Learning - Oral
2020-0022**

Where does the glass labyrinth begin? Gender Bias in Student Evaluations of TAs

Laura Greenhaw, Emily Khazan, Jesse Borden, Steve Johnson
University of Florida

Bias in teaching evaluations has been documented across academia. Research indicates that women and minorities receive lower ratings from students when compared to white males. These ratings play an important role in the overall assessment of instructors' quality of teaching and thus impact promotion and tenure decisions. Likewise, student ratings of teaching assistants (TA) may impact future career opportunities. Our study sought to investigate gender bias in student evaluations of TAs. Students in a large, asynchronous, online course were deceptively assigned to either a putative male or a putative female TA. In reality, one female TA performed all TA duties, grading assignments and communicating with students under the guise of the student's assigned TA. At the end of the semester, a 14-question survey determined students' perceptions of their assigned TA, including teaching ability, approachability, professionalism, and knowledge of course content. Students were divided into four groups based on their gender and their perceived TA gender for statistical analyses. Overall, evaluations were extremely positive across student and perceived TA gender. The putative male and female TAs were rated differently across student gender. Female students drove these trends; 100% of females assigned to the "male" TA rated the TA positively, whereas only 88% of female students assigned to the "female" gave positive ratings. This study corroborates the broad literature demonstrating bias against women. The lack of strong statistical trend could indicate a shift in student perspective, or that gender bias is muted given how removed students are from their TA online.

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Innovative Teaching and Learning - Oral

2020-0024

Using Quality Matters Guidelines to Improve Online Instruction of Agribusiness Courses

Phil Hamilton, O. John Nwoha, Stefanie Halford
Blackburn College

Online instruction is becoming common to colleges and universities of all sizes. Often online courses are offered as part of complete online degrees; other times they are given as options to students who may choose an online, hybrid section or a seated (traditional classroom) section. Quality Matters (QM) is an international, U.S.-based, non-profit organization specializing in quality standards and professional development for online learning. The QM process is: centered on national standards of “best practice”, statistically supported research findings, and proven instructional design principles. QM is designed to stimulate student learning, is central to unceasing quality improvement; and is a component of an inter-institutional, faculty-driven, peer review process. The objective of this paper is to illuminate how QM can improve Agribusiness online and hybrid courses that allow instructors to improve learning opportunities while allowing students to be better able to navigate through their Learning Management System (LMS). Major components that will be demonstrated by the QM rubric include the Course Alignment Map (CAP) and integration of Bloom’s Taxonomy verbs into the CAP. A course already developed at Cameron University with this method is Principles of Agricultural Economics. Development of Agribusiness Management as a blended online/classroom course is in process. The next courses to be developed will be Agricultural Marketing, Agricultural Finance, and Agricultural and Food Policy. Early quantitative results indicate that QM online students’ exam scores are 18.6% higher than students in a seated section. Student comments of QM are positive since the course has student available detail each week.

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Scholarship of Teaching and Learning - Oral

2020-0030

Style Points: How Grouping by Experiential Learning Style Impacts Undergraduate Team Performance

Jonathan M Orsini, Laura Greenhaw, Bradley Coleman, J. C. Bunch
University of Florida

Employers increasingly seek candidates who can demonstrate ability to successfully work in and lead groups. Although group assignments are common in undergraduate courses, students frequently report negative experiences working in groups and teams. This is not surprising considering a team must develop certain characteristics including psychological safety, team potency, and cohesiveness in order to progress to the highest stages of development, most notably, performance. Research suggests it can take up to eight months for a small group to develop these characteristics, which presents a significant challenge in courses lasting fewer than 16 weeks. Research indicates that diversity on teams is important, however, it is unclear what grouping strategy is optimal for student team learning and performance. The purpose of this study was to investigate the impact of grouping by experiential learning style on team performance. Students in an undergraduate course were assigned to homogeneous and heterogeneous semester-long project teams based on learning style. Focus groups were conducted at the end of the semester to determine the impact of homogeneous and heterogeneous grouping on team learning behavior, student satisfaction, and team performance. Results suggest that learning style is not a critical variable in group formation as it relates to how small teams in undergraduate classes progress through the stages of development and engage in higher levels of team learning behavior. Future research should investigate alternative grouping strategies to determine what variables and level of homogeneity result in student teams achieving desirable outcomes.

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Scholarship of Teaching and Learning - Oral

2020-0031

Priorities Lost or Experiences Gained? An Examination of Outside-the-Classroom Activities During Student Teaching

Dwayne Pavelock, Doug Ullrich, Shyam Nair

Sam Houston State University

The student teaching semester in agriculture is rewarding, yet challenging. Student teachers must prepare lessons, conduct class, provide coaching and supervision for co-curricular activities, and complete assignments for college coursework. But is excessive time spent, and emphasis placed, on outside-the-class activities? Researchers sought to determine the extent of these co-curricular activities for student teachers. The 28-member, Spring 2019 student teaching block at [UNIVERSITY] maintained a journal of co-curricular (FFA) activities, hours consumed, and days away from school for livestock shows, career development events, conventions, etc., during their 70-day student teacher placement. Weekends and school holidays were excluded. Simple demographic statistics were examined. The number of school days missed for co-curricular activities ranged from 5 to 21, with a mean of 12.86. A mean of 239.29 total hours was found, with a range of 110 to 424 hours. SAE activities consumed the most hours, with a mean of 108.40 hours and a range of 23 to 212 hours. Very close behind were CDE hours, as a range of 0-265 hours resulted in a mean of 107.64 hours. Finally, FFA chapter activities was found to have a mean of 23.15 hours, with a range of 0-62 hours. Student teachers in 2-teacher departments spent the most hours on SAE activities, while those in departments with 5+ teachers spent the highest amount of time on CDE activities. Researchers have great concern that student teachers are spending too much time outside the classroom, causing harm to the development of their classroom instructional abilities.

Innovative Teaching and Learning - Oral

2020-0032

Using a Digital Portfolio for Professional Gain by Student Teachers

Dwayne Pavelock

Sam Houston State University

A digital portfolio, or e-portfolio, is an electronic collection of artifacts, files, and other evidence of one's skills, abilities, and/or accomplishments. Agriculture student teachers at [UNIVERSITY] have begun using a digital portfolio to document their field experience and to also present their skills and abilities during job interviews. The instructor of the course is able to assess learning and competency, while also assisting the student teacher in refining the evidence of their body of work. Portfolio content is categorized into six primary sections: Background Information (résumé, transcripts, certification exams scores, educational philosophy), Teaching Artifacts (semester teaching plan, lesson plans, worksheets, PowerPoints, modifications), Professional Information (professional organizations, teaching evaluations), Supporting Items/Evidence of Understanding (community engagement summary, classroom and FFA pictures, methods of student motivation and recognition), Classroom Management Plan, and Sample Teaching Video. The chosen platform is bulb Digital Portfolios (bulb, Inc.). In addition to being an assessment tool, student teachers are encouraged to use the e-portfolio during job interviews to exhibit evidence of their abilities and experience in developing quality, sequential lesson plans, modifying assignments for special needs students, creating a classroom management plan, and developing teaching and learning tools, just to name a few. Of further significance, the 2019 [STATE] legislative session included multiple bills being introduced that pertained to digital learning, addressing both student assessment and professional development. Although such legislation has not yet passed, researchers hope that [UNIVERSITY] agriculture student teachers will be at the forefront of digital learning and assessment.

Innovative Teaching and Learning - Oral

2020-0040

CLICK HERE TO WATCH: Incorporating Video Announcements into Ecampus Courses

Kelsey Knight, Becky Haddad, Haley Q. Traini
Oregon State University

The Agricultural Education and Agricultural Sciences (AEAS) department at Oregon State University (OSU) offers a variety of Ecampus classes, such as Farm Implements, Writing in Agriculture, and a series of Leadership courses. While there are many benefits to Ecampus (distance learning) courses, and degrees, it can be challenging to build rapport with students. Despite thorough, written instructions for difficult assignments, we noticed students still missed key aspects of assignments. In two leadership Ecampus courses offered by the department, we incorporated weekly video introductions. The weekly video announcements are less than five minutes and are recorded within two weeks of assignment deadlines. The short videos give student an opportunity to see their instructors and gives instructors the chance to proactively trouble-shoot difficult assignments. Since we record these videos in “real-time” relative to assignment submissions and feedback, we are better enabled to be agile in addressing concerns in student work. These videos are a chance to share assignment expectations and criteria with students and, just as if it were an in-person class. After incorporating video announcements in two Leadership courses, we are seeing an overall improvement in quality of work, specifically on the more challenging assignments. To this end, we seek to share best practice in incorporating video announcements into courses toward greater student success, connectivity, and engagement.

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Scholarship of Teaching and Learning - Oral

2020-0041

The Effect of Practice Testing, Distributed Practice, and Attendance on Exam Scores

Nathan P Kemper
University of Arkansas

Students (N = 142) in two principles of microeconomics courses were participants in survey research to determine the influence of practice testing, distributed practice, and attendance on exam scores. In preparation for two exams, students tracked time devoted to studying a practice test and the number of different days that they studied. Student attendance was also measured. Results from linear regression analysis ($R^2=0.49$) indicated that the amount of time devoted to practice testing had a significant negative effect on exam 1 scores ($\mu=-3.19$, p-value: <0.01) as did the number of days absent ($\mu=-2.02$, p-value: <0.01). Distributed practice had a positive significant effect on exam 1 scores ($\mu=1.42$, p-value: <0.01). Similar results were found on exam 2 ($R^2=0.43$) where results indicated that practice testing had a significant negative effect on scores ($\mu=-2.40$, p-value: <0.01) as did the number of days absent ($\mu=-2.77$, p-value: <0.01). Distributed practice had a positive significant effect ($\mu=2.57$, p-value: <0.01). The results support the conclusion that regular class attendance and distributed practice led to better outcomes on exams for students. Interpreting the negative effect of practice exams required deeper analysis. On exam 1, the top third performers averaged 90.2, were absent 1.4 days, and spent 1.4 hours studying the practice exam. The bottom third averaged 52.9, were absent 5.0 days, and 3.3 hours studying the practice exam. Exam 2 comparisons were similar. Apparently, students who were absent from class more frequently attempted to get caught up by spending large amounts of time studying the practice exam.

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College / University Curriculum - Oral

2020-0043

University-wide Leadership Minor Enrollment Demographics at a Land-Grant Institution

Megan Stein, Becky Raulerson

University of Florida

Leadership development happens at a variety of locations on a college campus. Students with a particular interest in the theory and practice of leadership have the option to pursue leadership coursework through a major or minor. At the University of Florida, the university-wide leadership minor has been housed within the College of Agricultural and Life Sciences and the Department of Agricultural Education and Communication since its inception in 2006. Students interested in the minor are selected and enrolled through an application process. The minor entails fifteen-credit hours which includes leadership, communications and ethics coursework. The purpose of this study was to describe student demographics of applicants in a university-wide leadership minor. Since the current application process was developed in 2012, 791 students have applied from all eleven undergraduate colleges at the university. In 2012, students applied for the minor from six of the eleven undergraduate colleges. While all eleven colleges have been represented since 2012, there is no constant configuration of enrollment by college. Data indicates students enrolling in the leadership minor are increasingly more female (63% female in 2012, n = 60; 79% female in 2019, n = 75). With frequencies indicating that leadership minor students are becoming more diverse in selected program of study, instructors of agricultural leadership courses need to be proactive in developing content for students with varying interests and background.

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Scholarship of Teaching and Learning - Oral

2020-0045

Enactive Mastery Experiences and Student Self Efficacy Towards Learning

Christina H Esquivel, Theresa Murphrey, Julie Harlin, Barry Boyd
Texas A&M University

Research has shown that self-efficacy is a necessary condition for many positive behaviors related to student engagement and persistence. Of the different methods to build self-efficacy, enactive mastery experiences were shown to be the most effective. Enactive mastery experiences are those experiences in which a learner completes an activity and has an opportunity to experience success. Research also has shown that the higher education classroom can use enactive experiences to develop students' self-efficacy for learning. Using a quasi-experimental, pre-test post-test design, 100 undergraduate students in two introductory agricultural science courses at a community college in [state] were asked to report self-efficacy towards learning beliefs for their course at week two and week fifteen of the Fall 2019 semester. Participants in the control groups were exposed to only the standard course curriculum. Those study participants in treatment groups were exposed to three types of supplemental, in-class, enactive experiences along with the standard curriculum. Results showed no statistically significant difference in post self-efficacy for learning scores between the treatment and control groups for either course. The means of post-test self-efficacy scores for all groups were lower than self-efficacy pre-test mean scores. These results indicate that additional research is needed to identify factors that erode student self-efficacy during a semester. Further, descriptive data revealed important concepts to consider as we prepare teaching strategies.

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Scholarship of Teaching and Learning - Oral

2020-0046

Instructor Influence and Agricultural Student Self Efficacy Towards Learning

Christina H Esquivel, Theresa Murphrey, Julie Harlin, Barry Boyd
Texas A&M University

Increasing student success and persistence in higher education has been a national priority for more than two decades. Many past institutional initiatives have focused on advising and student support services. While these strategies have been somewhat successful, problems with engagement and success still exist. New initiatives focus on helping students develop a growth-oriented mindset. Research shows those with growth-oriented mindsets express higher levels of engagement and persistence in education. The foundation for a growth-oriented mindset is self-efficacy. The literature showed that self-efficacy can be built through different types of experiences and experiences in a college course can build student self-efficacy. Students at a community college in [state] enrolled in two lecture sections of Introduction to Animal Science and two lecture sections of Horticulture with different instructors participated in a quasi-experimental study to analyze the impact of enactive mastery experiences on self-efficacy for learning. The 100 study participants recorded self-efficacy for learning beliefs at week two and again at week fifteen of the Fall 2019 semester. The study results showed while the use of enactive mastery experiences provided no statistically significant difference in post self-efficacy scores for either course, there was a statistically significant difference in post self-efficacy scores by instructor. The influence of the instructor on student beliefs and performance in lower grades is well documented, while in higher education it has not received as much attention. These results indicate that additional research is needed to document the impact of the adult student/instructor relationship on student learning beliefs.

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Innovative Teaching and Learning - Oral

2020-0049

Promoting Increased Cultural Intelligence in Agricultural Leaders through Critical Reflection

James C Anderson, Maddison Holder
University of Georgia

As society enters a new paradigm of globalization, the need for culturally competent, globally educated agricultural leaders is increasing. However, leaders are not currently equipped to address the 21st Century challenges in this diverse political, economic, and civil backdrop because many do not possess the level of cultural intelligence (CQ) needed to function across cultures. Therefore, increased CQ through the use of critical reflection is pertinent to the development of global leaders. The purpose of this study was to determine if blogging on cultural plurality; the acceptance of minority identities within a majority culture, encouraged students to evaluate their beliefs and implement culturally intelligent perspectives into their worldview. Thirty students from a land grant institution created 4 blogs throughout the semester. Blog topics were: Race, Ethnicity or Culture; Religion or Belief System; Sexual Orientation or Gender Roles; and Ability or Social Status. Brown's Model of Communication Processing was used as the conceptual framework. According to the model, individuals take in information using their prior experiences and knowledge and then determine if they should evaluate the information or deem it irrelevant. If they choose to evaluate the new information, it is sent through the reflective filters and either incorporated into one's beliefs or it is sent through the deflective filter and rejected. Of the 110 blog posts and 178 peer responses analyzed, 76 posts and 112 responses contained reflective statements. Results indicate that an increase in CQ is possible when students are guided through a learn-reflect-apply approach when exploring cultural plurality.

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Global Education - Oral

2020-0050

Promoting Global Education Through Cultural Immersion Experiences in Morocco

James C Anderson, Maddison Holder
University of Georgia

A globalized society is inevitable; therefore, the need for globally educated students and leaders is crucial to society's success. While cultural immersion experiences offer an array of benefits to cultural competency levels and global mindsets, there is a lack of knowledge surrounding how educators can best prepare students to have the highest quality experience in another country. Creating an environment where students have the opportunity to explore their own cultural biases and learn about minority cultures and identities could allow students to increase their cultural competence, depending on their prior experiences and how they react to the new knowledge they have gained. This study was designed to examine the benefits of various pre-departure orientations and determine how their cultural competency levels were effected at the end of their international experience. Three students from California, New York, and the UK participated in this study. Brown's Processing Value Judgments Model was used as the framework was used to design pre- and post-experience interview protocols. According to the model, students take in new information and, depending on their prior experiences and knowledge, actively evaluate the information using reflective filters and integrate into their new mindset or deem the information irrelevant or incompatible. Brown's eight reflective filters were used a priori to code and analyze the interview transcripts. Results indicate that when students went through specific, long-term training before cultural immersion, they were more likely to actively reflect on new information and experiences. Moving forward, global educators can benefit from purposeful pre-departure training.

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**Innovative Teaching and - Oral
2020-0051**

Wait, Excel does that?! The Function of Microsoft Excel in Information Technology in Agriculture Class

Kelsey Knight, Becky Haddad, Melissa Millhollin
Oregon State University

The Oregon State University (OSU) Department of Agricultural Education and Agricultural Sciences (AEAS) offers a 100-level Information Technology in Agriculture course for all Agricultural Sciences undergraduate students. This three-credit course is offered every term through Ecampus (distance education) and once a year in-person, and covers the basics of Microsoft Office Suite including Microsoft Excel. Many students enter with above average knowledge of other Microsoft platforms, though most have limited exposure to Excel. The Excel component of this course has evolved over the years, and every year students are shocked at the breadth of functions within Excel. During the term, students complete three basic assignments in Excel and further their competency with data analysis, a full enterprise budget, and a mail merge assignment. When Excel is first introduced to students, they have the opportunity to practice basic Excel functions, such as alphabetizing a list, creating graphs and charts, and finding an average. They build on these skills to compile and analyze data toward making production management recommendations. Students further demonstrate mastery from the previous assignment and practice more advanced Excel functions by calculating gross revenue, expense summary, and net farm income. Finally, students move beyond mathematic functions to complete a mail-merge. For all Excel assignments, students have realistic agricultural scenarios to apply Excel functions in their future agricultural careers, and other aspects of their personal and professional life. Consistently, Excel is one of the biggest growth areas in the class, and we are excited to share more about our work.

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Innovative Teaching and Learning - Oral

2020-0052

Distilling Scientific Messages in the Agricultural Classroom

TaylorAnn Washburn, Kelsi Opat, Erica Irlbeck
Texas Tech University

Future science and agricultural communicators need to practice applying skills in real-world settings. For science communicators, learning how to distill their message to the lay public is critical in successfully disseminating scientific content. For agricultural communicators, practicing the art of crafting complex subject matter into comprehensible content is necessary to better serve intended audiences. Faculty at [University] brought both groups together to refine their respective skills in a mutually-beneficial setting. Despite the need for these synergistic opportunities, few currently exist in the undergraduate or graduate college classroom. The Center for Agri-Science Communications (CATT) developed an innovative opportunity for members of a cohort primarily of graduate students in the Department of Plant and Soil Science, to practice sharing their research to future agricultural communicators. CATT paired cohort members with small groups of undergraduate students enrolled in a scientific writing course within the Department of Agricultural Education and Communications. Cohort members, having practiced distilling their message for various audiences, were asked to explain their research to a small group of undergraduate students; in turn, the undergraduate students were asked to write a one-page article regarding the cohort member's research area. CATT program organizers and the instructor of the undergraduate course observed that participants mutually benefitted from the opportunity to practice disseminating and crafting scientific content. Undergraduate students found value in writing about innovative, real-life research being conducted at [University], and cohort members gained feedback on explaining their research to a public they may encounter in their future careers.

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College / University Curriculum - Oral

2020-0056

Reactions of Non-education Majors to Teaching Primary Students about Science

Nick Fuhrman, Hallie Harriman, Kerrie Bethel, Jason Peake
University of Georgia

Group facilitation and public speaking skills are essential for students pursuing virtually any career. For non-education majors specifically, often little class time is devoted to providing students with opportunities to teach others about their chosen field. Science communication is the foundation of the grant-funded course, "Project FOCUS," which is designed to enhance the ability of undergraduates to communicate relevant science information to primary students. Although the experience has been beneficial for the audiences receiving the science lessons, little is known about the impact of the public speaking experience on the undergraduates themselves. The objectives of this presentation are to reveal the motivations and concerns of undergraduates engaged in Project FOCUS and examine how addressing the students' motivations and concerns impact their orientation toward public speaking. Enrolled students engage in 10 reflective journal exercises throughout the semester and participate in small group discussions. These exercises allow students to practice reflexivity in their own public speaking experiences. Results of the journals and group discussions revealed one-third of undergraduates enrolled out of genuine interest in course material; motivations for enrollment included: seeing the impact of their instruction, serving in a volunteer-role, and sharing science passions. Students also expressed concerns about entering the classroom environment due to a lack of teaching experience and speaking anxieties. When working with students not majoring in education, faculty should consider providing experiences that allow undergraduates to recognize the impact of their instruction on learners, such as through teacher-mentor feedback and guided class discussions on primary students' reactions.

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College / University - Oral

2020-0057

Perceptions of Students, Faculty, and Staff Concerning Visitation Dogs on College Campuses

Jessica Blythe, Brianna Hughes, Kindra Carr, Lindsay Parenti
West Virginia University

Visitation dogs are used in colleges across the country to assist college students, faculty and staff cope with depression, stress, and anxiety. This stress can be caused by moving from home, adjusting to a new environment, and financial constraints which, can lead to lower grades and lower graduation rates. Studies support the potential of using visitation dogs for helping students deal with stress, and anxiety, while transitioning to college. Although visitation animals assist students in dealing with these challenges, they may also cause stress for others. Animals may cause discomfort among members of certain cultures as well as individuals with prior negative experiences. The main purpose of this descriptive study was to describe how students, faculty, and staff perceive the use of visitation dogs on a college campus. This study investigated respondent's general perceptions of dogs, perceptions of the use of visitation dogs on college campuses, and perceptions of interactions of visitation dogs on college campuses. The conclusions highlighted most respondents responded positively towards visitation and therapy dogs on campus, it should be noted some respondents indicated visitation dogs have caused stress (14.1%) in their workplace or in their learning environment, while 3.1% indicated they felt afraid (3.1%) or uncomfortable (6.1%) with visitation or therapy dogs on campus. , It is recommended that careful considerations and education is needed to prevent the percentage of campus members who are uncomfortable around dogs from feeling additional stress or anxiety due to the dog's presence.

College / University Curriculum - Oral

2020-0060

Implementing New Agricultural Safety Curriculum for Post-Secondary Students Using a Hands-On Approach

Catherine DiBenedetto, Hunter F. Massey, Jacob P. Koch
Clemson University

Over the past several decades concerns for safety of adults and youth living, working or visiting agricultural environments has been on the rise. Changing demographics, background, training and experience levels lack alignment with safety modifications based on the technological advancements in agriculture, presenting a need for continued education and safety training. To enhance agricultural safety knowledge, a new post-secondary agricultural safety course was implemented during the fall semester of 2019 at [University]. The core content of the course was administered via a typical classroom setting and included hands-on demonstrations performed in a laboratory setting. The course focused on providing relevant industry standards from Occupational Safety and Health Administration (OSHA) resources. The safety topics included: general home, farm and workplace safety, personal protective equipment, power tools, pesticides, lawn mower, all-terrain/utility-task vehicles, tractors and related equipment, safe loading procedures with State Transport Police (STP), silage and grain storage, hazard identification and farm/business audit, OSHA and industry standards, and engineering controls. Experts in their respective fields were invited to campus to teach specific topics. Combined with the course materials, students conducted a farm/business safety audit to apply the concepts they learned to identify hazards at an undisclosed location and presented their findings and recommendations to the owner of the business/farm. Students in the course indicated they had a positive experience with both the lecture material and the hands-on demonstrations. One comment indicated the individual felt the course was both important and relevant to any student becoming involved in agricultural pursuits.

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Innovative Teaching and Learning - Oral

2020-0061

Innovation2: Agricultural-Robotics Content and Course Delivery

Don M Johnson
University of Arkansas

Robots are playing an important and increasing role in agricultural production and processing. In agricultural equipment manufacturing, robots are widely used for routine procedures such as welding, gluing, assembly, and materials handling. In food processing, robots are used for meat processing, fruit and vegetable handling, food packaging, and in product palletizing. The purpose of this presentation is to describe a Special Topics Agricultural-Industrial Robotics course being taught for undergraduate agriculture students. The course is built around activities operating and programming a six-axis, ABB IRB120 robot donated to our Agricultural Systems Management program by Tyson Foods and the Arkansas Department of Workforce Education. Students begin the course studying about the development of industrial robots and learning about robotics safety before moving on to learning the robot's coordinate system, how to "jog" (manipulate) the robot, and learning how to write RAPID programs to automate robot operation. Once students have learned these basic skills and concepts, they progress through a series of increasingly complex scenarios requiring them to program the robot to complete various simulated industry-based tasks related to manufacturing and materials handling. Throughout the semester, course lessons, readings, quizzes, and lab activities, along with student videos of completed labs, are being added to the course Blackboard™ site to develop a resource that can be used for individualized independent student study in future semesters. This presentation will describe both the course and the development and potential uses of the Blackboard™ site for individualized student use.

Teaching with Technology - Oral

2020-0062

Threaded Messaging: Video Tools to Increase Student Connectivity

Becky J Haddad, Kelsey J. Knight, Lauren LaGrande, Heather Garcia
Oregon State University

A common complaint from distance students highlights a mismatch in delivery methods relative to alignment with desired connectedness, particularly to peers. One means of allowing greater asynchronous connectivity in our Writing Intensive Course at Oregon State University focuses on the implementation of VoiceThread, a tool shared by our Extended Campus (distance education) instructional design team. This tool allows students to respond to prompts posed by the instructor through video, text, and audio formats and subsequently respond to each other using the same. This approach to distance delivery discussions shifts away from traditionally text-based discussions to “live” discussions as students respond to each other, share files and pictures, and engage in a more “class-like” setting. While this tool can be confusing at first, students quickly understand the interface and engage beyond what is traditionally accessible in text-based formats. One student commented, “I really enjoy using this new discussion tool! As an Ecampus student, I feel very disconnected from my peers, but being able to hear them respond to my posts is super cool and has a personal touch to it.” Further opportunities for clarification and simulated interaction promote a focus on civil engagement with ownership, a necessary skill in preparing students for 21st-century careers. In sharing this approach, we hope to highlight initial setup challenges, sharing and transferability across courses, and best-practice for engaging students in non-text applications.

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Innovative Teaching and Learning - Oral

2020-0063

Don't Panic: Using a Student Advice Sheet to Ease Student Course Concerns

Becky J Haddad, Lauren LaGrande
Oregon State University

With increasing numbers of students participating in distance courses, it is increasingly critical to find ways to meet students with approachable expectations in ways that resonate with them. One particular area we have chosen to connect with students is to solicit advice from peers who have successfully completed the course. We compiled and shared this feedback to students at the start of the following term. This idea was presented during a Writing Intensive Course (WIC) faculty luncheon, and subsequently adapted for the WIC for the Agricultural Sciences major at Oregon State University. Former students offer advice such as, "There's a lot of writing required in the first week. The rough draft is tough, but it makes the rest of the term easier," and "At first I was afraid of this class...then I was frustrated with the process...then I realized it is a learning experience that I had to go through to appreciate." Student feedback on this recently redeveloped course shows our efforts and student connections are paying dividends in student success: "This class was challenging and perhaps a bit intense but I learned so much about the writing process and how I can become a better writer that I would not change a single thing. My instructor was amazing and her feedback was not only valuable it also had a personal touch that was refreshing and kept me motivated the whole term."

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**Scholarship of Teaching and Learning - Oral
2020-0067**

The Correlation Between Students Accessing Guided Notes and Total Course Scores

Nellie Hill
Texas Tech University

As critical as the skill of note taking is to lecture information recall, postsecondary students find this task difficult. Guided notes, intentionally incomplete lecture outlines, indicate to students when and where to record important information, in theory reducing cognitive load, leaving more space to process the lecture. To determine if there is a relationship between students accessing guided lecture notes and their total score in a course, a bivariate correlation was conducted. Twenty-four guided notes were provided to students during the semester of a scientific writing in agriculture course. Though students were not required to access the notes, Blackboard statistical tracking tallied student access to each guided notes file the day before or the day of the associated class session. The two continuous variables of the study were the percentage of instances the student accessed the guided notes and the student's total score percentage. On average, students accessed 30.67% of guided notes and the average total course score percentage was 85.49%. Bivariate correlation analysis using Pearson's r revealed a significant, positive relationship between students' ($N = 94$) percentage of guided notes accessed and total course score percentage, $r = .221$, $p = 0.032$. As guided notes access increased, so did the student's total course score. Providing guided notes to students can help students achieve higher academic performance, should the student decide to utilize the resources provided. Instructors should explore what guided notes format works best for them and their courses.

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Innovative Teaching and Learning - Oral

2020-0068

Effective Strategies for Connecting and Engaging with Students in Large Classes

Nellie Hill

Texas Tech University

In a higher education climate that simultaneously seeks to reduce institutional costs while increasing student learning outcomes, it is critical to attend to the challenges presented by classes with high student enrollment. Instructors need scalable tools to effectively engage with students without overburdening class preparation. Inspired by the work of Carbone, Felder and Brent, and McKeachie, common active learning and student engagement strategies in the classroom have been tailored to encourage students to develop relationships with the instructor as well as between each other. Strategies include a brief introduction meeting with between the student and the instructor at the beginning of each semester, purposeful assignment of students into teams for group work, utilization of gallery walks for class presentations, scaffolding group work assignments, and in-class active learning all utilized in a large (N=100) scientific writing in agriculture course. Student feedback was gathered on several of these strategies to assess the student's experience. One student commented on the introduction meeting: It created a safe space to ask any questions or elaborate on concerns. Another student said of the gallery walk: I liked that it took us out of our comfort zones and made as work with people on an assignment that we normally would've done on our own. One student commented on their group work experience: I liked being able to work with others and getting to know other people. Other instructors can learn from these insights to identify strategies to improve engagement in their large enrollment courses.

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Scholarship of Teaching and Learning - Oral

2020-0069

Cultivating undergraduate research skills in agricultural communications

Cara Lawson, Maggie Elliot, Courtney Meyers
Texas Tech University

Many scholars have identified benefits stemming from undergraduate research experiences. Along with the ability to interpret data and communicate results, students who participate in undergraduate research can better understand contemporary concepts within a field or discipline. Both universities and industry employers value these skills. The potential to equip agricultural communications students with research skills appears evident. However, agricultural communication has traditionally lacked assessments of undergraduate research. During two semesters, students in a senior-level capstone course in agricultural communications were placed into groups and assigned an agricultural organization to research using a social media monitoring platform. Student groups had to formulate research objectives and select an appropriate study timeframe. To conclude their research projects, students created detailed reports to answer the research objectives and present their findings. Via a questionnaire administered at the conclusion of the project, students indicated they enjoyed conducting research and despite some challenges, they appreciated the opportunity to synthesize data. Students also reported personal growth in multiple research skills, such as producing a meaningful report, designing some element of the project, sorting and selecting appropriate data, and others. While the research project afforded students the opportunity to take ownership of a learning task, many participants expressed frustration with the ambiguous nature of the project. However, the reported gains in research skills aligns with the constructivist approach that learning occurred, as evidenced in the student reflections. Agricultural communications instructors are encouraged to integrate opportunities for undergraduate research into class curriculum and actively engage in research with the students.

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**Scholarship of Teaching and Learning - Oral
2020-0070**

An analysis of changes in student writing self-perceptions during a writing-intensive course

Cara Lawson, Whitney Whitaker, Courtney Meyers
Texas Tech University

Regardless of academic discipline or future career responsibilities, college students are challenged to meet future employers' demand for strong communication skills. However, writing is a domain of consistent struggle for many students. Based upon concepts of writing self-efficacy and writing apprehension, the Media Writing Self-Perception (MWSP) scale was administered to undergraduate students in a writing-intensive agricultural communications course. Researchers used a pretest/posttest design to evaluate differences in writing self-perceptions as the semester progressed and to determine any relationships between overall MWSP scores and scores on major assignments. A statistically significant difference was found in writing apprehension, self-efficacy, and elaborative/surface construct scores from the beginning to the end of the semester. Results indicated a significant, large positive correlation between MWSP pretest and posttest scores compared to grades on major writing assignments, which supports the assertion that stronger self-perceptions of writing self-efficacy lead to improved writing overall. Students also reflected upon their MWSP scores, which provided further insight about their perceptions of writing. Several themes emerged from the analysis of their open-ended responses to reflection questions. These themes illustrated how students varied in their preferred styles of writing and highlighted how the variety of writing assignments contributed to influencing their writing self-perceptions. This study supports the growing body of literature that indicates rigorous, diverse assignments are beneficial to improving writing skills and allowing time for reflection helps students understand how they can improve as writers.

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Community Learning / Extension - Oral

2020-0074

“I can do it all on my own” Small Farmers and their decisions to seek classes

Jason D McKibben, Cole Payne, Shannon Allen
West Virginia University

Farming is one of the only professions where the main objective is survival; the hope of seeing another year. This study questioned whether small farmers in West Virginia feel that they can have strong influence over their own success or outside factors decide their fates. More specifically, if those who do feel responsible, would be willing to partake in classes or training. Locus of Control is thought of as how someone perceives their control over the outcomes of their lives. It can be broken into two categories: internal and external. Farmers with an internal locus will see themselves as the ones who control the success and failures of their farm. Those with an external locus will believe that all things happen because of outside factors. Data were collected during face to face encounters at the West Virginia Small Farms Conference and the West Virginia Women in Agriculture Conference. Participants were asked to answer twenty-two agree or disagree questions about their perceptions of control over success. They were then asked a series of informational questions such as how often they take classes in order to further their knowledge and what was their primary source of information. This study found that there was no correlation between West Virginia small farmers' Locus of Control and interest in taking classes or what source of information they utilized the most readily. Predictably, there was a small correlation between where the farmers sought information and the frequency in which they sought formal training or classes.

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Scholarship of Teaching and Learning - Oral

2020-0075

Student Responses to Data on Learning in Previous Classes

Brian Schutte, Israel Joukhadar, Joseph Wood, Kulbhushan Grover
New Mexico State University

Quantitative evidence on student performance is widely recognized as information that instructors should use to revise course content and course delivery methods. In this study, we considered quantitative evidence from previous classes as means to promote confidence among students beginning an upper level biology course characterized by diversity in student majors. To accomplish this objective, we administered pre-then-post tests to identify factors most associated with learning during 2017 and 2018 (herein, this analysis is referred to as “Learning Factor Analysis” and abbreviated “LFA”). We then presented the LFA to students on the first day of class during 2019 and 2020. Immediately following LFA presentations, students completed surveys that gauged self-perceptions of competence (herein, these surveys are referred to as “First-Day Surveys”). Results for the LFA indicated that the acquisition of new knowledge was more associated with class attendance and homework performance than student major and year in school. First-Day Survey results indicated that students generally believed that they would do well in the class. LFA effects on self-perceptions of competence were conditioned by student major; however, this conclusion is tenuous because of low sample sizes for specific majors. Additional results from First-Day Surveys indicated that students with lower GPA (2.5 to 2.99) tended to benefit from the LFA presentation more than students with higher GPA (3.5 to 4.0). This is an encouraging result because it suggests quantitative evidence from previous classes can be part of strategies for promoting success among students who previously performed poorly in collegiate courses.

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**Scholarship of Teaching and Learning - Oral
2020-0079
Knowledge Retention in Agricultural Finance**

Cheryl Wachenheim, Erik Hanson
North Dakota State University

A course sequence is designed so students can succeed in subsequent classes as they work through the sequence, reducing the risk of student failure, and allowing instructors to assume students hold a particular level of knowledge. We assess knowledge retention through four sequential courses in the agricultural finance sequence at North Dakota State University. A survey and 25-question standardized exam were administered at the beginning and the end of each of the four courses in the finance sequence during their respective semesters for two years. Information about students was available through the Office of Institutional Research including demographics, pre-college performance, high-school environment, and college-major, credits and courses. Retention was defined as knowledge retained measured at the end of one class to the beginning of the subsequent class in the sequence. This paper highlights the valuable role of assessing versus assuming students with completed prerequisites are prepared for a course. Some students generally improved in their time between classes, specifically those that participated in pre-term instructional sessions that occur for students taking one specific course, supporting devoting initial course time to revisiting existing knowledge. ACT math and reading sub-scores were both positively associated with knowledge retention over time. Students with greater farm management decision making experience also had better retention than others.

**Innovative Teaching and Learning - Oral
2020-0082
Measuring the Impact of USDA Internships**

Steven “Boot” Chumbley, Maria Consuelo Donato, Shad. D. Nelson
Texas A&M University Kingsville

Our goal was to determine the impact of a summer USDA internship experiences on undergraduates' knowledge related to USDA research and career opportunities. Thirty-two students completed internships with USDA research scientists during the summer of 2019. A researcher developed instrument measuring knowledge of USDA jobs, research skills and understanding of graduate school requirements on a 5-point Likert-types scale guided this study. The surveys were taken both before and after the internship experience. Instrument validity was established by a panel of experts. The overall mean score pre-internship was 2.79 (SD = .97). The lowest scores were related to “knowledge of USDA job requirements (m = 2.53, SD = .91)” and “knowledge of USDA job opportunities (m = 2.53, SD = 1.14)”. The highest mean scores were found in questions related to “knowledge and appreciation of AGNR sciences” (m = 3.25, SD = .95). The overall mean score post-internship was a 3.99 (SD = .89). The highest mean knowledge scores were found within the prompt, “knowledge and appreciation of AGNR sciences” (m = 4.31, SD = .78). The lowest mean score was “knowledge of USDA job opportunities” (m = 3.66, SD = .94). The greatest increase in knowledge was seen from the prompts “career opportunities in USDA agencies” (m = 2.59 to 4.0) & “knowledge of educational requirements for USDA jobs” (m = 2.53 to 3.84). This information will help project coordinators to tailor the internship experiences, and training beforehand, to address gaps in knowledge and preparation for USDA career success.

Innovative Teaching and - Oral

2020-0087

Teaching Food Safety with a Washing Machine and a Garbage Disposal

Dan Witten

MORNINGSIDE COLLEGE

Research shows that by engaging students in active learning situations they become aware of a variety of perspectives and approaches to solving real-world issues. This activity was used to create a learning experience in a Food Policy course to help students address food waste and the importance of food safety. Students created a product using equipment not traditionally considered food grade using fruit that would have typically gone to waste. Students interacted with stakeholders and students from an introductory agriculture class to harvest, clean, and sort apples to make apple juice. This event was completed in two stages. Stage one occurred before formal discussion of food safety or manufacturing procedures. Policy students watched a demonstration of the process using a washing machine and garbage disposal, then reflected upon the process discussing improvements required to make it more likely to pass an inspection. During stage two, students worked with members of a Crop Science class and local producers to harvest fruit that otherwise would have been lost. Policy students discussed food waste and food safety practices with the other students from the other course. Through these activities, students gained knowledge of food handling policies such as HACCP and the amount of food that can be lost at harvest. Post-course student evaluations showed that the activity helped improve understanding of the preventative measures that go into keeping our food supply safe. Recommendations for improvement include; sampling different varieties of apples and incorporating more classes on campus to check for food borne bacteria.

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College / University Curriculum - Oral

2020-0096

The need for a carnivorous companion animal nutrition program in Iowa's community colleges

Becky Wiers, Nancy Grudens-Schuck, Howard Tyler
Iowa State University

Research-based educational opportunities for veterinary professionals to learn about pet foods are not adequate to address the range of products offered by the continuously expanding pet food industry. At the time of our study, there were no college courses in Iowa designed to educate veterinary technicians and assistants about the pet food industry and its products. Veterinary clinic staff may be knowledgeable regarding basic aspects of clinical nutrition or digestive anatomy and physiology, but these foundational areas are insufficient to successfully counsel veterinary clients on everyday pet food questions. We conducted a needs assessment in 2017 to gauge the need among new and existing veterinary professionals for a pet food nutritional education course or program in Iowa. The needs assessment was structured as a Level 1 survey of direct users: veterinary technicians and assistants, veterinary clinic staff, and community college animal science students. Survey questions were intended to establish gaps in knowledge, prior training, and interest in professional development in the area of pet food nutrition education. Results of the survey indicated significant interest from participants in learning more about pet nutrition. Knowledge gaps existed among students as they indicated knowing less than experienced veterinary professionals about the history of the pet food industry and commercially made cold pet food options. We observed a universal educational need for learning about risks and benefits of homemade diets, freeze-dried foods, and high-end retail commercially dry pet foods.

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**Scholarship of Teaching and Learning - Oral
2020-0099**

Brief written reflections improve interest of introductory animal sciences students: a randomized controlled intervention study

MaryGrace Erickson, Danielle Marks, Michel Wattiaux, Elizabeth Karcher
Purdue University

The past century of education research has made it clear: people learn more deeply when interested. In addition to signifying affectual curiosity, interest also connotes deeper cognitive and psychosocial processes such as personal valuing and identification. Although abundant literature describes techniques for stimulating the affectual aspects of interest, few studies have empirically explored classroom techniques for activating interest's value and identification dimensions. Our randomized controlled intervention study assessed the effectiveness of 10-minute written task value reflections designed to enhance the interest of introductory animal sciences students. During the spring 2019 semester, we randomly assigned participating students (response rate=82.6%) into two covariate-balanced blocks—intervention (TVI, n=45) and control (CTRL, n=41)—prior to the course. On 6 weeks during the 16-week semester, students completed either written reflections on the value of course laboratory material (TVI) or a control summarization task (CTRL). We fit several linear fixed effects models to investigate the intervention's immediate and long-term effects after controlling for pre-course interest. Results showed that the reflections significantly enhanced situational interest (SI) following an initial test of the intervention at week 6 (estimated marginal means (EMM) of SI(scaled 1-7): TVI=6.21±0.12, CTRL=5.88±0.14, R²=0.13, F(2,77)=5.63, p<0.01) and at the end of the semester (EMM of SI(scaled 1-7): TVI=6.27 ±0.14, CTRL=5.72±0.16, R²=0.14, F(2,68)=5.593, p<0.01), but not at tests on weeks 7 and 12. Results show promise that written task value reflections can serve as simple, low-input strategies to boost interest in similar contexts.

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Innovative Teaching and Learning - Oral

2020-0100

Better Together: A Model for Team Teaching as Academic Advisors

Melissa Millhollin, Dawn Moyer

Oregon State University

Oregon State University's Agricultural Sciences major attracts students with a wide array of interests, skills, and goals. An orientation class taught at the department level is designed to help students meet advisors, faculty and graduate students, as well as one another, in the context of learning specifics about their degree and the plethora of opportunities available. We boast a particularly unique and innovative approach, as our departmental academic advisors are the instructors who team-teach this course. "Team teaching-a pedagogical technique that shifts the role of instruction from the individual to a team-provides students with the opportunity to take a more active role in learning." One of the benefits noted with team teaching this course was the generational and experiential differences of the instructors, fostering two different perspectives to the course. "Teachers of different backgrounds can culturally enrich one another and the students." The main benefit students gained from this approach was the opportunity to develop relationships with both advisors early in their degree program. Students noticed how the instructors positively engaged with each other and their peers, which created a sense of openness, approachability, and comfort for the students. "Because both students and teachers learn so well, team teaching boosts student satisfaction. This improves recruitment and retention." An end-of-term survey showed students were more likely to approach their advisors with questions or concerns after this class than before, increasing their likelihood to stay within the major due to the rapport they have built with their advisors-instructors.

Innovative Teaching and Learning - Oral

2020-0105

Creating and Communicating a Virtual Reality Forest Conservation Tour: Graduate Students' Reflections

Jamie Loizzo, Whitney Stone, Jacqueline Aenlle
University of Florida

Virtual reality (VR) is no longer a futuristic technology and concept. VR technologies are more accessible and cost effective than ever and have the potential to be used with a variety of public learners for communicating science-based information through a virtual, place-based approach. Graduate students (n=8) in a project-based learning science communication course at the University of Florida used consumer-grade 360° photo cameras and mobile devices to develop VR tours of a 2,040 acre university teaching and research forest to introduce forest conservation, prescribed burning, and climate change content. The students then wove together images and content in Google Tour Creator and deployed the tour to public audiences via a Google Expeditions kit at three non-formal locations: a natural history museum, brewery, and campus tabling space. Students completed pre- and post-written reflections about their experiences and learning. Presenters used qualitative methods to examine students' situated learning experiences. Data included student reflections and transcripts of audio recordings of guided VR tours. Results showed: a) students had varying levels of comfortability approaching public audiences, yet they overcame their reservations to engage adults and youth, b) students grew in confidence communicating about VR and conservation, while indicating a need for an expert's presence to supplement knowledge gaps, and c) students demonstrated the ability add their independently learned content knowledge to individual tours. In this session, presenters will describe the course structure, VR assignment and technologies used, as well as highlight excerpts from student reflection results.

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**Scholarship of Teaching and Learning - Oral
2020-0107
Great Teachers Can Create Great Classrooms**

Brian D Whitaker, Bill Lamberson, Mike Smith, Bonnie Walter, Curtis Youngs
The University of Findlay

Top educators continuously are profiled and studied, which often leads to their emulation by peers. Great teachers not only have control over their classroom, but often have the unique ability to inspire and motivate students, even those resistant to learning. However, there is a lack of information and examples of how the best teachers create classrooms and stimulate student learning. The objective of this project was to identify and describe what the characteristics are of the classroom environments and students and that were being taught by the best animal science teachers. The inclusion criterion for selecting faculty was being bestowed an excellence in teaching award through a professional organization. Lecture was captured using a digital all-inclusive camera and later analyzed for student behaviors, trends and attitudes during the class time and instructor-student interactions. Despite a variety of topics being taught, multiple trends emerged during observation of these classrooms. Most students in every class were not distracted and asked questions. The teachers engaged nearly every student by distributing something physical to the students, posing questions during class and calling on students by name. Each teacher taught differently, but they all understood their audience; they grasped the subject matter and most importantly, they valued students learning. Collectively, these findings can be adopted by other teachers and be applied and utilized in their own environment in an attempt to foster improved classrooms and student learning through excellent teaching.

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Community Learning / Extension - Oral

2020-0109

Role for urban agriculture in promoting life skills, entrepreneurship and healthy eating among youth attending Felege Hiywot Center

Theoneste Nzaranyimana, Kathryn Orvis, Mark Russell, Aster Bekele
Purdue University

Unemployment and poor diet related diseases in underrepresented youth continue drawing much attention to policy makers and practitioners. This exploratory study assessed underrepresented middle and high school aged youth intentions towards gaining life skill, entrepreneurship and healthy eating as the result of attending a STEAM summer institute Felege Hiywot Center (FHC), an urban agriculture program. Applying a sequential mixed-methods research design, a sample of 24 youth were recruited for the study. A survey was developed by adapting existing surveys for entrepreneurial intentions, life skills and healthy eating and utilized pre and post program with the youth. The survey was followed by individual interviews that were conducted to investigate further themes from the survey findings. Descriptive statistics were used to illustrate how youth scored in different variables of interest. Approximately 54% of participants demonstrated that their healthy eating improved; 54 % improved their attitude towards entrepreneurship; and 57% demonstrated that they developed life skills like teamwork, cognitive, goal setting, problem solving, time management and leadership responsibility as a result of the program. To broaden the understanding of survey results, the study analyzed individual interviews from 3 youth, 2 parents, 3 board members and 3 alumni. The results confirmed that FHC urban agriculture program strongly promoted life skills, entrepreneurship and healthy eating intentions. The mixed methods approach provided nuances of life skills, entrepreneurship, and healthy eating intentions among youth. The significance of the urban agriculture youth led program implied the need of well-structured urban agriculture for optimal results.

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Innovative Teaching and Learning - Oral

2020-0113

International Agricultural Students Deliver Multicultural Messages

Cele Stone, John Rayfield, Rudy Ritz
Texas Tech University

Today, college graduates should be exposed to international perspectives to fully understand social, cultural, political, and economic integration in relation to agriculture. Evidence shows, students develop intercultural competence and global viewpoints through international learning experiences helping students bridge the cultural gap. The [Department] at [University] addresses this need by offering a multicultural course where students are challenged to explore other cultures. Students participate in class discussion, examining the relationships between agriculture and society through the lens of global issues such as climate change, food security, sustainability, and water conservation. In an effort to enhance cultural awareness, the instructor invited international graduate students from the department to present information about their home country's culture. Students enrolled in the course were required to submit a one-page reflection for each presentation, stating not only what they learned, but how it impacted them personally. Global enlightenment was a common theme among responses. One student reported, "Overall, I saw the country in a totally different light which is why every multicultural speaker has given me a new perspective on the world of agriculture." Economic and class differences were also popular points, as another student confessed, "When he described the poverty level and their lack of education, I humbly realized how blessed we are as Americans." Utilizing multicultural speakers to provide an international experience seemed to impact student perceptions. That type of experience has been shown to create more productive citizens, equipping them to engage in community issues with global ideas.

<https://youtu.be/XJs9dfpgvbl>

Innovative Teaching and Learning - Oral

2020-0114

Learning research by doing research

Mark J Anderson, M. M. Beverly, S.F. Kelley, P. M. Urso, K. J. Stutts, J. Suagee-Bedore
Sam Houston State University

Research Methods is a required class for all SHSU Agricultural Science M.S. students, but a significant knowledge gap on the how and why of research exists, particularly for non-thesis students. Due to this gap, a change was made in the pedagogy of this course beginning with the addition of two projects. The first was a class project where the class designed a research study from concept to implementation. Each week, students brought ideas for the next phase of the project, discussed them, and made decisions on the direction of the project. This promoted student buy-in to the project and provided an opportunity to be engaged. These phases included the research question, research design, data collection and interpretation, with charts and graphs, abstract development and presentation of a poster. Additionally, students worked on individual projects where students had to answer any question of interest. These ranged from “What would you do for a Klondike bar?” to a comparison of driving ability between the sexes. The individual project involved data collection from either student data or any other previously generated data. Each phase of the individual project was due a week after the class project, enabling students a second opportunity to understand each phase and process. Finally, the individual project would conclude with a 12-minute professional conference-style presentation. By utilizing both of these projects in class, alongside traditional methods of lecture and reading of journal articles, we were able to provide a well-rounded, hands-on opportunity to all students regardless of previous experience.

Global Education - Oral

2020-0118

Experiential Learning Supports Workforce-Oriented Agricultural Education in Afghanistan

Paul Ebner, Mirwais Rahimi, Kevin McNamara, Mohammad Alam Ghoryar
Purdue University

Both the central government of the Islamic Republic of Afghanistan and its international partners cite growth and improvements in agriculture as keys to rebuilding the country and maintaining security. Several groups, however, have identified knowledge and training gaps in agriculture-focused higher education as critical challenges to realizing Afghanistan's agriculture potential. To bridge these gaps, university programs, like the new Department of Food Technology at Herat University (Herat City, Afghanistan), have designed new curricula to produce graduates with skills needed in the local economy. As part of the new curriculum, we introduced experiential learning platforms in effort to transfer food technology skills and principles previously identified by Afghan food processors as the most valuable in new employees. The programs used student-led research as a means for students to master food quality assessment methods. Students conducted research, analyzed data, and presented their research and its implications in various forms, allowing the negotiation of their new learning. Students improved knowledge of course content and laboratory skills and reported being much more motivated to learn by conducting a research project and presenting their results to stakeholders. The programs also produced primary data on issues previously identified as critical by Afghan food processors. Thus, additional benefits included: 1) demonstration of capacities of the new academic department to stakeholders; and 2) data robust enough for peer-reviewed publication by Afghan faculty. These programs could serve as models for other Afghan academic programs aiming to transfer applicable skills to their graduates both in agriculture and beyond.

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Scholarship of Teaching and Learning - Oral

2020-0120

Peer Group Formation and Evaluation: Does Intentional Team Formation Matter

Misti D Sharp

University of Florida

In agricultural sciences, development of teamwork skills is often emphasized as real-world agricultural problems are often solved by interdisciplinary groups. In order to better prepare students for this, faculty might decide to integrate teamwork into the course structure. This study asks to what extent does team composition matter in the educational outcomes and satisfaction in the team learning activity? A random assortment of students is often chosen, but for this study Clifton Strengths ® is used to create groups in a junior level data analysis course, based on the criteria of having at least one person from each dominant strength [relationship building, executing, influencing and strategic] in each group. Due to a non-uniform distribution of strengths among the students in the course, some teams did not have every strength represented. This provided an opportunity to compare team performance and team satisfaction. After completing the same assignments, a team satisfaction instrument was administered. Preliminary results suggest that team performance on assessments was higher for well-formed teams, but the team satisfaction was not different between the two different treatments. One hypothesis for this outcome is that intentional team formation based on personal strengths speeds the process of storming and norming so that students can more quickly begin performing. Some limitations of the study are that sample size is small (n~40 per treatment), and while some individual characteristics were controlled for (like individual class performance), other personality characteristics could have influenced team dynamics and thus team satisfaction.

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Scholarship of Teaching - Oral

2020-0123

An Experiential Approach to Teaching Leadership in Agriculture Abroad

William Fritz, Karen A. Plumley
Delaware Valley University

Delaware Valley University and Rutgers University collaborated on an agricultural leadership course culminating in a week-long trip to The Netherlands. The course enrolled students of diverse backgrounds and interests majoring in a variety of agriculture-related fields. During the semester, students learned leadership theory and concepts, which were applied through writing assignments, presentations, and practical tasks while abroad. In-class assignments included writing a state agricultural issue paper and presentation, attending a professional agricultural meeting, and completing a newsletter and presentation, and presenting a comprehensive group presentation on the culture, history, and agricultural policies of The Netherlands. Abroad, students had several graded leadership assignments to complete. In the first, each student assumed leadership responsibilities as a 'meeting manager' for half of a day, which included preparing and organizing the group according to the agenda, and assuring that the group stayed together and behaved appropriately. In the second, each student introduced, thanked, and presented a gift to a host at each of the agricultural sites visited. Lastly, students led a nightly discussion on the various agricultural visits and compared them to agricultural practices, concepts, and issues in Pennsylvania and New Jersey. As indicated by student feedback on course evaluations, the course was successful in building a strong foundation in leadership concepts. Students gained a more substantial understanding of agricultural issues, practices, and policies in the United States and in Europe. The ability to network and share experiences with students studying agriculture at another university were both unique and invaluable.

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**Teaching with Technology - Oral
2020-0126**

The Lab Look Back: Utilizing Spotlight Video Coaching in Developing Pedagogical Skills

Tiffany Morey, Daniel Foster
Pennsylvania State University

The Lab Look Back is a tool to promote video spotlight coaching for the development of pedagogical skills in a teaching methods course. The Lab Look Back has three steps. Step one, the instructor shows 5-minute (or less) of video while students record their individual thoughts. Step two, the students participate in a 5-minute reflection phase through the lens of unique context in small groups. In step two, students are tasked with identifying changes that would be appropriate with the context/ scenario provided. Students are also asked to be able to articulate rationale for pedagogical decision making. Finally, in step three, the students engage in a 5-minute group sharing session where they create transferable knowledge. This experience is enhanced through the use of appropriate educational technology. Projection screens provide students with an up close, high definition viewing experience of the videos being shown. The use of writable surfaces in the room allows students to record their thoughts and feedback. Personal devices enable students to capture and upload their writing to a designated space in the course management system which serves as a digital archive for the feedback shared during each week in class. This engages students in giving and receiving feedback in innovative ways. Participating in the feedback and reflection process is a critical skill for students to develop, and the use of different forms of educational technology allows for them to experience it in a variety of ways to help them become proficient digital citizens.

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College / University Curriculum - Oral

2020-0128

Attendance Correlations to Grade and Trends over a Decade

Phil Urso, M. M. Beverly, S. F. Kelley, M. J. Anderson
Sam Houston State University

Overall grade in a course can be correlated to attendance. Sam Houston State University has maintained attendance records for animal science courses for over a decade. Student attendance records and grades for core courses in the animal science program were analyzed for differences and trends with a decade difference. Students that completed Introductory Animal Science, Animal Nutrition, Anatomy and Physiology of Domestic Animals, Meat Science, Animal Feeds and Feeding, Animal Reproduction, and Animal Breeding and Genetics from 2009 and 2019 were used for comparison. Student overall grade and attendance, in the form of percentage attended, were utilized in PROC GLM in SAS. Overall grade increased over time from 78.8% to 81.3% ($P < 0.001$). Course also had an effect on overall grade, students in senior level courses had a higher grade ($P < 0.001$). Attendance was equally affected by time and course ($P < 0.001$). Attendance in core animal science courses rose from 79.5% to 88.8% from 2009 to 2019. Whereas, students in junior level courses were more likely to attend class ($P < 0.001$) than other courses. Professors for each course stayed consistent over time for most courses, so other methods of course delivery could possibly explain these changes. Features such as online delivery of resources and technology advancements in the classrooms might have promoted student engagement and attendance. Students also change over time, and these differences might be a function of generational variation. Further accumulation of these records and expansion into special topics and non-core classes might elucidate different patterns of student and grade interactions.

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College / University Curriculum - Oral

2020-0130

Internships: What students do, are they prepared, and does it make them career-ready?

Sergio Abit, Glenn Arthur Garcia, Joshua Maples, Pamela Abit
Oklahoma State University

Experience is the best teacher. One of the best ways that students gain real-world experience is by temporarily joining the workforce as summer intern. In fact, internships are part of curricular requirements in many degree programs. Two key concerns related to internships are whether they meet learning expectations and whether students are prepared-enough to succeed in their respective internships? This study was conducted to: a) evaluate whether internships have met learning expectations, b) collect information about course-related background knowledge necessary for students to succeed in internships, and c) gather information about activities that make students career-ready. Thirty-four undergraduate students who completed their 10-week summer internships within 2015 to 2018 participated in a study that involved an anonymous 15-question survey instrument. Most interns worked 35 to 45 hours per week and all except one felt that the monetary compensation was fair. Results also reveal that while 41% felt unsure or unprepared going into it, the internships met most or exceeded learning expectations of 70% of the respondents. Introductory courses in soil science, weed science, crop production, and soil fertility were among the courses most frequently identified as critical to the success of most internships. Eighty-eight percent were provided enough mentorship prior to being made to do the job independently and overall, 97% of students expressed that the internship helped prepare them for a future career.

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Innovative Teaching and Learning - Oral

2020-0131

Blog Assignment: Delivery and Student Perceptions

Sergio Abit, James Lasquites, Blake McNelly, Pamela Abit
Oklahoma State University

Writing assignments such as research essay, literature review, and analytical review of an article are staple components in many courses. These writing assignments accord opportunities for students to gain deeper understanding and awareness about a concept or topic. However, the downside is that these assignments involve and almost entirely benefit only two parties: the teacher and the one student who wrote it. The use of blogs as writing assignment was used as a substitute to a term paper that is usually required in a senior-level soil science course. Students worked in pairs in preparing a blog on assigned scientific topic. Students were provided with a rubric along with specific instructions to write the scientific blog in a conversational manner and an 850-word limit. The final version of all blogs were posted in a class blogsite for everyone in the class to read and study ahead of scheduled quizzes about the blogs. Student survey reveal that all respondents (n=27) agree or strongly agree that writing a blog was a good way to learn a new topic and that reading other students' blogs offered opportunities to learn new and interesting things. Eighty-five percent of students prefer writing blogs instead of term papers. In addition, 64% of students disagreed or strongly disagreed that writing a full-length term paper would have offered more learning than writing a blog. The biggest challenge with the assignments was keeping it under the 850-word limit. These results indicate that blogs could be viable alternatives to full-length term papers.

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Innovative Teaching and Learning - Oral

2020-0132

Be the Leader You Would Follow: Promoting Minority Leaders in Agriculture

Jason H Bullock, Joy E. Morgan-Fleming, Wendy J. Warner
North Carolina State University

To promote agricultural careers and develop leadership skills among minority youth in school based agricultural education (SBAE) programs, an interactive educational and leadership-based experience for secondary agricultural education students called “Minority Leaders in Agriculture” (MLA) was planned and implemented at NC State University. Program leaders secured funding, facilities, speakers, volunteers, and resources to plan, market, and implement the program during June 2019. Participants from across North Carolina experienced a campus tour, recruitment presentations from College of Agriculture and Life Sciences (CALs) leaders and graduate students, historical presentation on minority leaders in agriculture from a professor emeritus, interactive workshops to promote personal leadership development, and dialogue with faculty representatives from various departments in CALs. Evaluation results indicated participants felt the event was beneficial, exposure to at least one new agricultural career occurred, and SBAE teachers indicated they would bring students to a follow-up or similar event in the future. Program leaders concluded that a continuation and expansion of similar educational programs will be pivotal in contributing to the increased diversity and inclusion in agricultural education programs at the secondary and post-secondary level and also recruiting more students to meet the diverse needs of the agricultural industry in the 21st century. With cost being minimal due to departmental and grant funding, program leaders recommend that institutions continue to create opportunities for minority students to develop leadership skills, experience a college campus for a day, and interact with current undergraduate students, graduate students, and faculty members to learn more about academic and career opportunities in agriculture.

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Innovative Teaching and Learning - Oral

2020-0134

Planting SEEDS of Diversity, Inclusion, & Culture in Agricultural and Extension Education

Jason H Bullock, Joy E. Morgan-Fleming, Daniel P. Collins
North Carolina State University

Planting SEEDS (Supporting Education and Extension through Differentiated Strategies) was designed to provide an interactive workshop for agricultural education teachers and Extension professionals to bring awareness and understanding of differentiating instruction for diverse learner populations. Objectives for the program were to 1) provide training on working with exceptional audiences, 2) provide a working with diverse learners resource kit, and 3) instruct participants on how to differentiate instruction based on diverse learner needs. Planting SEEDS workshops were held in three separate locations throughout North Carolina with participants completing interactive activities based around the following topics: the diverse needs within participants' specific program, school, and community; how to modify programs to meet varying abilities; participants' own abilities and the lens for viewing their abilities; promoting leadership through diversity and inclusion; differentiating instruction within agriculture; and thinking beyond curriculum and assessments. During the "Leading through Diversity" section, participants were asked to name the first word that came to mind when hearing the terms: Culture, Diversity, and Inclusion, separately. The top 3 words for each prompt were: 1) DIVERSITY— difference, unique, and variety; 2) For CULTURE – background, tradition, and family; and 3) INCLUSION – acceptance, included, and together. With the agriculture industry becoming more global and the increasing ethnic diversity in the student population, there is a need for individuals and leaders who value and have knowledge related to diversity, inclusion, and culture. As agricultural and Extension educators, we need to continuously incorporate differentiated instruction surrounding these topics into our classes.

<https://voicethread.com/share/14540707/>

Ryan Anderson, Marshall Swafford

Texas State University

The primary goal of teacher education programs is to ensure their graduates attain the necessary knowledge to support student learning using the most effective means possible. Researchers have noted that teachers' perception of their preservice teacher preparation program was significantly related to their sense of efficacy about their teaching effectiveness. The population for the study ($n=126$) included secondary agricultural education teachers in [STATE] who had been teaching five years or less and were licensed through an approved program. Data were collected using SurveyMonkey®. A response rate of 84% ($n=106$) was achieved. Teacher self-efficacy was measured using the instructional strategies subscale of the larger Teachers' Sense of Efficacy Scale-Short Form (TSES-SF). Perceptions regarding teacher preparedness were measured using a researcher prepared scale. Results of a Pearson Product-Moment Correlation revealed a moderate relationship ($r = .41, p < .001$) between perceived preparedness and teaching self-efficacy for instructional strategies. The variance in efficacy for instructional strategies does not imply that teachers are not being adequately prepared to teach but does challenge conventional wisdom regarding the influence of experience on teaching efficacy. Furthermore, the teachers' efficacy toward instructional strategies mirrored their perceptions of preparedness. To address the questions and concerns in this study, it is recommended that agricultural education programs continue to focus on preparing teachers to implement effective teaching strategies while providing experiences on which beginning teachers can rely to address future challenges.

Online Programming - Oral

2020-0139

The Relationship Between Metacognitive Awareness and Self-Regulated Learning

Ryan Anderson, Marshall Swafford
Texas State University

Participants were selected from enrollees in an online agricultural science course during the spring semester. Specifically, the students were enrolled in an online dual enrollment metal fabrication course and through direct administration, 60 students completed the instrumentation used to measure motivation and online self-regulated learning. Student metacognition was measured using the Metacognitive Awareness Inventory (MAI). The MAI is a 52-item instrument using a true/false format to measure eight constructs of metacognition. Self-regulated learning in online courses was measured using the Online Self-Regulated Learning Questionnaire (OSLQ). The OSLQ is a 24-item instrument using a five-point Likert-type scale to measure six constructs of self-regulated learning in online environments. Students enrolled in the dual enrollment agricultural science course tended to have the highest level of self-regulated online learning within the construct of environment structuring ($M=3.73$, $SD=.89$). Students tended to have the lowest levels in time management ($M=3.30$, $SD=.96$). In regard to metacognition, the mean score was 60.9 ($SD=9.2$) with a range of between 52 and 87 points for the lowest and highest scores respectively. This indicates a moderate metacognitive awareness. Students in this course were more likely to create an adequate learning environment for themselves to focus on completing their work than they were to manage their time. Although the students were able to manage their learning environment, they were only moderately aware of their cognition. Although the negative correlation between metacognition and self-regulated learning was not surprising, it still stands in contrast to conventional wisdom.

Teaching with Technology - Oral

2020-0140

Women's Perceived Barriers to Pursuing STEM Careers

Ryan Anderson, Marshall Swafford, Shyanna Ussery
Texas State University

The gender gap in STEM careers continues to be an important and complex issue facing the United States workforce. Therefore, the objective of this study was to identify barriers women perceive as obstacles to successful employment in STEM careers. This study used the Delphi method to identify perceived barriers women face in the pursuit of STEM careers. The study used a series of three web-based questionnaires. The first round of the study used a questionnaire with an open-ended question to facilitate the generation of a wide array of response categories. In round two, respondents were asked to rate the 24 perceived barriers in round one on a Likert-type scale and to make changes as necessary. In round three, respondents were asked to provide a dichotomous indication of whether they agreed or disagreed with each of the items. Consensus on 20 perceived barriers was reached after three rounds. The major barriers identified by the respondents were: male domination of STEM careers, lack of awareness of educational and career opportunities, STEM education and toys directed at boys, a lack of female mentors/role models, minimization of barriers, personal expectations, the time required to become proficient in a STEM field, lack of encouragement from men, and the perceived glass ceiling of women in STEM careers. The agricultural profession is well-prepared to make a significant impact on the gender gap in STEM, as our profession is grounded in promoting career success among secondary and post-secondary students. We recommend that educators promote STEM career opportunities.

Community Learning / Extension - Oral

2020-0142

Communicating the Nature and Extent of the 2015 Gold King Mine Spill Impact on Agricultural System in Navajo Nation

Gaurav Jha, April Ulery

NEW MEXICO STATE UNIVERSITY

The Navajo Nation uses large areas of the Animas watershed for agricultural and ceremonial purposes. The resulting contamination from Gold King Mine Spill that traveled down the Animas River into New Mexico, became concerning among the local growers that heavy metals from the mining region might be contaminating soils, water and plants in the watershed.. The objective of this outreach and extension of results analyzed by our research team was to help multiple stakeholders assess the safety of their agricultural fields and resume normal cultivation in the region. Fifteen irrigation ditch transects and eight agricultural fields were monitored for nine metals of interest. Metal(oid) concentrations of plants growing in these fields were also measured and compared to international dietary standards. These results were shared with the farmers and consumers in the Navajo Nation at the local chapterhouses. The monthly teach-ins and radio talks have helped the farmers understand the extent of contamination after the mine spill and the safety of their produce. Spatial field maps are among the tools we used to illustrate the concentrations of arsenic and other contaminants in their fields. Fact-sheets of results and visual representations like use of colorful symbols and different shapes have simplified the understanding of scientific units and concentration values for the non-scientific farming community.

Scholarship of Teaching and Learning - Oral

2020-0144

Current Methods used by Agricultural Educators to Integrate STEM Content into the Classroom

Rachel Hendrix, Kindra Carr, Kirk Swortzel

West Virginia University

The term “STEM” has worked its way into the education systems across the nation. Teachers incorporate science, technology, engineering, and math content into their curriculum every day to provide a meaningful learning experience for students. Agricultural education serves as an ideal venue to incorporate the components of STEM to accomplish curriculum goals. The objective of this study was to determine ways agriculture educators integrate the components of STEM into their classrooms. Agricultural educators from Mississippi and Tennessee were surveyed to assess their methods of incorporating STEM. Results indicated that most teachers incorporated STEM components as part of hands-on laboratory activities meant to reinforce classroom material. Labs were most frequently used to cover animal science, plant science, soil science, horticulture, and mechanics topics. Results also showed that while educators commonly incorporated science, technology, and mathematics into their courses, they were least likely to incorporate engineering. If we are to continue preparing educators for the needs of the 21st century, it is vital that we continue identifying new ways of effectively integrating all four STEM content areas into agricultural education.

<https://voicethread.com/share/14534162/>

Scholarship of Teaching and Learning - Oral

2020-0146

Exploring Transformational Learning through a Semester-long Environmental Education Program

John Ewing, Alexandra Dutt, Mark Brennan

The Pennsylvania State University

Environmental and outdoor education programs are inherently experiential in nature and rely on the outdoors as their setting and focus. The Student Engagement and Experiential Discovery (SEED) program at Shaver's Creek Environmental Center is a semester-long program that provides undergraduate students interested in environmental education the chance to get outside to learn. The semester includes seven courses and an 11-day Discovery Trip to New England. Students visit individuals and organizations doing exemplary work in the fields of environmental education, outdoor recreation, and interpretation. This study and presentation will explore how transformative learning relates to experience-based environmental education through the specific context of the SEED semester. Early-and end-of semester interviews from each participant were compared in order to distinguish changes in student learning. Interview data were analyzed for emergent themes and were then tested against the hypothesis that the SEED semester provided a platform for transformational learning to occur. Students indicated that seeing the application of knowledge learned in the classroom being applied to real-world situations allowed them to increase their learning. Experiential projects that allowed students to utilize the skills they gained were highly rated by the students and seemed to be very influential in strengthening environmental, intrapersonal, and interpersonal relationships. The outdoor experiential learning methods that proved to be most effective in fostering a transformative experience within the SEED semester included interactive natural history lessons, the 10-day discovery trip to New England, and varying group projects involving active learning techniques.

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Global Education - Oral

2020-0147

Group activity versus individual pursuits: Participant daily perspectives of an immersion experience (#AgEd2Malaysia)

Daniel D Foster, Melanie Miller Foster, Joseph Cho, Brad Kinsinger
Penn State

When creating an itinerary for a short-term study abroad experience, instructors choose different types of experiences to achieve the program educational objectives. Instructional design challenges include utilization of time between in differentiating instruction to meet program objectives: structured group activities (i.e. tours, class sessions, etc) or time where students have a degree of autonomy in how they utilize time for learning. A barrier to evaluating impact of immersion experiences is that data is often collected at the end of the experience as opposed to on a daily basis, thus the nuance between varied experiences are lost. The purpose of the study is to assist instructors in creating immersion itineraries that meet the program objectives through impactful daily activities. Data was collected daily on a four-week experience from 12 preservice and inservice school-based agricultural educators. Daily each participant provided data through the TIPS method (Things, Ideas, People, and Self-reflection) as they engaged in experiences that include time for both group activities and individual pursuits to meet the objectives related to agricultural education, production agriculture, policy, religion, and culture of Malaysia. TIPS data was coded and analyzed by the research team utilizing content analysis research methods. Researchers found that the data reflected higher frequencies for group structured activities as opposed to individual pursuits in regards to daily learning impact. Implications are that productive conversations should occur with instructional designers on group versus individual time in experiences.

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Global Education - Oral

2020-0148

#AgEd2Malaysia: Reflective perspectives comparison of U.S. pre-service and in-service agricultural educators

Daniel D Foster, Brad Kinsinger, Melanie Miller Foster, Joseph Cho
Penn State

To address growing global challenges in our world, advancing global competency in educators who have influence on future workforce population is critical. Educational experiences involving immersion and reflection can contribute to developing global competence. The purpose of this study was to compare daily reflections of U.S. pre-service agricultural educators and U.S. inservice agricultural educators participating in a Fulbright-Hayes four-week immersive international professional development experience to explore agricultural education, production agriculture, policy, religion, and culture of Malaysia. (#AgEd2Malaysia). The population included 12 participants (six preservice and 6 inservice) from 6 different U.S. states. Daily structured reflection data was collected using the TIPS (Thing, Idea, People, and Self) method. The daily participant journals were coded and categorized to create themes, which were analyzed by the research team. Participants identified growth in pedagogy, curriculum content, cultural awareness, self-awareness, and more as a result of the experience. Future research is recommended to explore specific designed interventions with the most learning impact.

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Global Education - Oral

2020-0149

A Case Study in Study Abroad Engagement in a College of Agriculture: Describing participation from 2015-2018 in comparison to university and national benchmarks

Daniel D Foster, Jana Russell
Penn State

U.S. universities enrollments continue to trend having more diversity which is reflected in enrollment data of colleges of agriculture. A need for efforts to support and assist these populations in a successful post-secondary education is evident. Study abroad enrollment, as well as student diversity within those enrolled, is also increasing, resulting in the need for more studies on how diverse students within colleges of agriculture can benefit from these experiences before, during, and after returning. In order to determine how to best fit these needs, comprehensive examinations of offered study abroad programming, students who are participating, and available resources must be compiled at individual universities. In this case study, global engagement opportunities within a U.S. universities' college of agriculture were examined. Demographic data over a four-year period including all participants of study abroad opportunities (N=580) was compared to averages from publicly available institutional and national level data benchmarks. When comparing the ethnic breakdown of participants within the college against that of all enrollees from the university, the college showed less diversity in the ethnicity of participants. Additionally, when looking at the national averages on reported ethnicity of participants, the overall university showed similar percentages with the national averages, yet the college itself was still less diverse. Literature show an increase in student diversity in universities and colleges of agriculture, however this is not being reflected in global engagement participations, such as study abroad, showing a need for improved efforts to increase participation of diverse populations.

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K-12 Curriculum - Oral

2020-0152

The Elementary E.G.G. Program: Impacting Agricultural Literacy Through STEM-Curriculum

Elizabeth Karcher, Danielle Marks
Purdue University

The shortage of graduates pursuing careers in the poultry industry is linked to low awareness and interest. Increasing agricultural literacy in students could promote engagement in future poultry science opportunities. The objective of this study was to create and evaluate an integrated STEM-curriculum with a poultry science context. The Elementary E.G.G. Program consists of five online modules, an interactive notebook, a simulation game, and a team project. In Fall 2019, 480 Indiana 4th and 5th grade students (13 teachers, 19 classes) enrolled in the pilot program. Quantitative data was collected to assess student poultry knowledge prior to and post program implementation via online questionnaires. Student notebook responses provided qualitative data of agricultural literacy development. Student quantitative responses (n=172; 35.8% response rate) were analyzed using paired sample t-test on SPSS Version 26. Student content knowledge scores increased from 56% (SD=1.93) at the start of the program to 68% (SD=2.74) at the completion of the program ($p < .0001$). Teacher feedback, both qualitative and quantitative, was evaluated via a post program questionnaire (n=9; 69.2% response rate). Inductive qualitative data coding indicated that teachers agreed that each of the components supported the program objectives and encouraged student interest and engagement. The majority of responding teachers agreed that the curriculum aligned with STEM standards and would recommend others to enroll. The results of this pilot program demonstrate an opportunity to integrate STEM and poultry science into the elementary curriculum as a means to increase student agricultural literacy.

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Global Education - Oral

2020-0153

Relationships between Social Stress and Learning Styles in Study Abroad

Gary Wingenbach, Brittany Shipp, Vanessa Gonzalez, Ana Casas, Gary Wingenbach
Texas A&M University

It is common to be anxious when traveling internationally. First-time study abroad students' anxieties could affect their learning abroad. Social phobia scrutiny fears (i.e., fear of being observed or watched during routine activities) and social interaction anxieties (i.e., distress from common social interactions) interact to create social stress, which affects how we think, feel, and act. Social stress may affect learning ability in foreign settings. A student's preferred learning style could affect the experience too. Is there a relationship between social stress and learning style? We explored relationships between learning style and social stress in a short-term international experience. Students' assessed their learning modes and styles with Kolb's Learning Style Inventory (LSI) during pre-travel orientation. The Social Phobia Scale (SPS) and Social Interaction Anxiety Scale (SIAS) were administered at the end of a two-week study program; both scales were combined to measure social stress. Participants' (N = 33) learning modes were distributed evenly across the LSI. SPS and SIAS scores were minimal (i.e., negligible fear or distress), but a moderate correlation ($r = .37$) existed between reflective observation and social phobia, and a substantial relationship ($r = .51$) existed between reflective observation and social interaction anxiety. Reflective observation learners have a tentative approach to learning; they observe experiences from many perspectives. Perhaps these learners are more sensitive to being observed in public, correlating to their elevated social stress levels. Educators should prepare learners for social stresses as related to their preferred learning modes to better prepare them for short-term international experiences.

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Innovative Teaching and Learning - Oral

2020-0154

Developing Student Intercultural Competence in an Introductory STEM-based Course

Elizabeth Karcher, Jacey Wickenhauser
Purdue University

The agricultural workforce is increasingly diverse. Therefore, it is essential that college graduates have the skills to excel in an increasingly global setting. Employers seek students with developed intercultural competence (IC) and the ability to work in diverse environments. Study abroad programming is one strategy to develop IC in students, but a majority of students do not participate in international programs. In spite of this, potential exists to embed IC development in on-campus curriculum. The objective of this study is to determine student IC development after completion of a 16-wk STEM-based introductory course with targeted intercultural activities. In Fall 2019, 168 students enrolled in the course and were assigned to treatment (n=104) or control (n=64) groups based on their randomly selected laboratory period. Students in the 3 treatment labs received 5 reflective intercultural learning assignments throughout the semester, while the students in the 2 control labs received 5 unrelated assignments. The Intercultural Development Inventory (IDI) was administered to all students during weeks 2 and 15 (response rate = 93%). During week 15, students completed the Scale of Ethno-cultural Empathy, and the Global Mindedness Scale (response rate = 88%). Students in the treatment group showed increased intercultural development, based on the IDI, compared with students in the control group (9.46 ± 1.72 vs. 0.074 ± 1.79) ($p < .0004$). Implementing targeted intercultural activities into STEM-based courses may be one method to develop students' intercultural competencies and ability to effectively communicate in a diverse workplace.

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Global Education - Oral

2020-0155

Developing Student Empathy in a Combined Learning Community Study Abroad Course

Elizabeth Karcher, Jacey Wickenhauser
Purdue University

The agricultural workforce is increasingly diverse. Therefore, it is essential that college graduates have the skills to excel in an increasingly global setting. Employers seek students with developed intercultural competence (IC) and the ability to work in diverse environments. Study abroad programming is one strategy to develop IC in students, but a majority of students do not participate in international programs. In spite of this, potential exists to embed IC development in on-campus curriculum. The objective of this study is to determine student IC development after completion of a 16-wk STEM-based introductory course with targeted intercultural activities. In Fall 2019, 168 students enrolled in the course and were assigned to treatment (n=104) or control (n=64) groups based on their randomly selected laboratory period. Students in the 3 treatment labs received 5 reflective intercultural learning assignments throughout the semester, while the students in the 2 control labs received 5 unrelated assignments. The Intercultural Development Inventory (IDI) was administered to all students during weeks 2 and 15 (response rate = 93%). During week 15, students completed the Scale of Ethno-cultural Empathy, and the Global Mindedness Scale (response rate = 88%). Students in the treatment group showed increased intercultural development, based on the IDI, compared with students in the control group (9.46 ± 1.72 vs. 0.074 ± 1.79) ($p < .0004$). Implementing targeted intercultural activities into STEM-based courses may be one method to develop students' intercultural competencies and ability to effectively communicate in a diverse workplace.

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Innovative Teaching and Learning - Oral

2020-0157

A new undergraduate research model for complex projects

Art A Wolfskill, S. Nair, D. Chen, R. Irani-kermani
Sam Houston State University

Experiential learning is an important tool for students to understand statistical techniques. Simplified hypothetical datasets are often used to provide hands-on learning opportunities, but real data can increase student engagement, as the results are more meaningful and anecdotally, students have more “buy-in” to the project. Use of real datasets allows students an opportunity to understand and manage actual data to solve practical problems and understand real business situations. However, real datasets are generally complex, and developing research projects that can be realistically completed by undergraduate students in one semester is challenging. Moreover, it is a time-consuming task for the instructor to find new datasets every semester. The Quantitative Methods in Agribusiness course taught at <university> is a Project-Based Learning class where student teams work on research projects with real data. We developed a new model to overcome this dataset issue. In this model we take one large dataset and develop an overarching research project. Then the Agribusiness faculty team reviews the data to divide them into sub-projects that are complex enough to challenge the student teams, but not so complex as to deter them from conducting and completing the research and answering the research question. A teaching improvement grant allowed us to develop 10 such overarching projects with subprojects so that the instructor has enough datasets for five years of coursework. The course culminates in a faculty-graded poster presentation session as the final exam. Each student reviews every poster to gain a full picture of the overall research project. Cool!

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College / University - Oral

2020-0160

Students' Participation in 4-H and FFA and Their Knowledge of the Farm Bill

Theresa P Murphrey, Stacey Dewald, Chris L Skaggs
Texas A&M University

Students entering careers across the broad discipline of agriculture would benefit from knowledge about the U.S. Farm Bill, as it can impact their career. Students' knowledge of the U.S. Farm Bill could increase through agricultural-related organizations (e.g., 4-H & FFA). This exploratory study sought to understand the relationship between college of agriculture students' participation in agricultural-related organizations prior to college and their basic knowledge of the U.S. Farm Bill. Agriculture students ($n = 532$) participated in a survey via Qualtrics. After data was collected, we conducted a two-way ANOVA and found statistically significant differences between students who participated in 4-H ($M = 1.01$, $SD = 1.06$) and those who did not ($M = .67$, $SD = 1.00$) on U.S. Farm Bill knowledge [$F(1, 530) = .12.51$, $p = .001$]. Similarly, we found statistically significant differences between students who participated in FFA ($M = 1.01$, $SD = 1.09$) and those who did not ($M = .50$, $SD = .88$) on U.S. Farm Bill knowledge [$F(1, 530) = 35.27$, $p = > .001$]. Results showed that there were differences in students who participated in agricultural-related organizations and their basic knowledge of the U.S. Farm Bill. We suggest that agriculture students who were not involved in agricultural-related organizations prior to college be provided learning opportunities related to the U.S. Farm Bill. These activities could be incorporated into already existing courses. Awareness of topics related to the U.S. Farm Bill has direct applicability to many industries across agriculture and could improve employability of students.

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**Teaching with Technology - Oral
2020-0162
Virtual Reality in Veterinary Medicine Education**

OP McCubbins, Jennifer Schleining
Texas A&M University

Fewer students with rural backgrounds are enrolling in Veterinary Medicine programs, while a need exists for veterinarians in rural areas. According to the USDA, there are currently 500 counties across 44 states, mostly in rural areas, underserved by a veterinarian. Regarding final-year students in veterinary schools, only about 10% are interested in pursuing a position in food animal medicine, which are mainly located in rural areas. Students from non-rural backgrounds who do have an interest in rural medicine typically lack experience with livestock and conditions specific to rural communities. As such, veterinary medicine educators must spend time preparing students for the challenges and rewards of rural veterinary practice. To address the challenges above, 360-degree virtual reality (VR) experiences were developed and implemented across four modules - Rural Practice Culture, Animal Behavior, Judicious Use of Antimicrobials, and Field Necropsy techniques - in a rural practice elective course for third-year veterinary students. Fifty-six students participated in this study that sought to measure their perceptions on the usefulness of VR, their learning preference, and overall experience with VR. Most of the students had a good or very good experience with VR (57%), thought that VR helped them learn rural practice concepts (65%), and thought that VR would be important in the future of veterinary education (62%). Students preferred traditional 2D necropsy techniques videos over the 360 VR version hosted on YouTube. Further research is needed to improve the user experience and to report learning outcomes following VR use.

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College or University Curriculum - Oral

2020-0165

University Professors' Content and Delivery to Develop an Understanding of Climate Change

Amber L Beseli, Travis D. Park
North Carolina State University

Climate change is considered one of the largest challenges facing our current and future generations. It is incumbent upon universities and colleges of agriculture to prepare students who understand both climate change and the human and agricultural impacts on climate change. This research focused on the content and delivery of climate change content at a southern land-grant university. Twenty-four professors completed a questionnaire about climate change content and how they teach it to students. Professors are extremely sure or very sure climate change is occurring. However, they lack agreement about the cause (human or natural causes) of climate change. Professors do not appear to be teaching about local and state climate-change policy, but professors do teach about topics related to the Greenhouse Effect and international policy. When preparing course material, professors most commonly use personal knowledge, their personal research, scientific journals, and textbooks. When examining how climate change is included into course design, professors most commonly include climate change as an overall theme interwoven throughout the entire semester. While teaching about climate change, the majority of professors teach scientific aspects related to climate change, but they do not teach the emotional or policy side. The most frequently used teaching methods are lectures, class discussion, and assigning scientific readings. This presentation will provide examples of the climate change content professors are covering, the methods they use to teach climate change, and recommendations on how climate change instruction can be improved at the university and college level.

<https://voicethread.com/share/14540705/>

Innovative Teaching and Learning - Oral

2020-0168

Return to Romania: Building on a Service Learning Course to Enhance Skills in Engagement

Leah R Thompson, Paul Ebner, Alexandru Indrea, Alina Constantinescu, Florian Borlea
Purdue University

We recently developed a course using a service-learning platform to introduce undergraduate students to international engagement, agricultural extension methodologies, and dairy quality analysis. In this course, US and Romanian undergraduate students from different backgrounds formed binational teams to work directly with smallholder dairy farmers in an effort to improve the quality of their milk. In the first iteration of the course, which took place the year prior to the course described here, students conducted a quality assessment of milk produced throughout a Romanian village to better identify barriers to the farmers' developing a milk collection program. In the second iteration of the course, students, working in the same Romanian village, introduced practices that could mitigate the quality challenges (high total bacteria and coliform concentrations) identified in the previous class. This authentic/experiential learning platform, including a homestay experience, proved to be a highly motivating learning environment as reported by student participants. Students also reported improved dairy analysis knowledge and the confidence to apply their learning to new scenarios upon completion of the course. Dairy producers involved in the project reported an increased understanding of cleaning and sanitation and a high likelihood of adopting the cleaning and sanitation protocols introduced by the students. In addition to increased knowledge in both students and dairy producers, the authentic/experiential learning platform allowed students to practice behavioral competencies important to successful engagement programming.

<https://voicethread.com/share/14533481/>

**Scholarship of Teaching and Learning - Oral
2020-0169**

Weaving the Social and Natural Sciences: Perspectives and Science Literacy Attainment of Undergraduates in an Interdisciplinary Course

Rosalind G Gawryla, Kevin Curry Jr.
The Pennsylvania State University

The foundation of science literacy in young adults is a crucial precursor for making informed decisions and participating civically in policies pertaining to agriculture, food, and natural resources. Simply conveying knowledge regarding scientific issues about agriculture is not enough, however, to mold the opinions of the public. Changing public perceptions and behavior requires an understanding of the social sciences. The purpose of the study was to measure the degree to which students increased their science literacy and engaged in interdisciplinary thinking in an undergraduate course. Students enrolled in a three-credit science literacy general education course ($n = 19$), completed a science literacy skills assessment in a pre/post design, and participated in one of three focus groups ($n = 16$) at the end of the fall 2019 semester. On the test of science literacy skills, a paired samples t-test revealed a significant gain of 27.7% between the start and end of the course ($t = 6.69$, $p = <.001$, $d = .83$). Qualitative analysis provided insight into the ways in which students rationalized the natural science and social science subject matter and how the two learning domains are woven together to give them skills to engage the public in communicating complex agricultural issues such as climate change, genetically engineered foods, antibiotics, and hormones. Results suggest the course was successful in building the science literacy skills of undergraduates and highlighted the specific capacities of science communication that were developed as a function on an interdisciplinary understanding of the natural and social sciences.

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**Scholarship of Teaching and Learning - Oral
2020-0174**

Encouraging Student Success: The Effect of Peer Mentor Interaction on Non-Cognitive Factors in First Year Students

Rebecca L Hapes, Theresa Pesl Murphrey, Kasee Smith
Texas A&M University

Student success is a goal across academia; however, success is related to factors beyond academic abilities and can be connected to multiple non-cognitive factors. These factors include grit, optimism, self-efficacy, and locus of control. Several student success models attribute these non-cognitive factors with impacting success and thus consideration of these factors is critical as we strive to positively influence individual student's success. The experiences students encounter during their first year at an academic institution can be particularly impactful on these factors. The creation of mentoring programs and the integration of peer mentors into the learning environments could encourage a positive impact. The use of peer mentors within higher education across colleges of agriculture has not been studied extensively, especially in relationship to non-cognitive development of students. We used a quasi-experimental study design to examine the effects of peer mentors on collaborating with first year students enrolled in a first-year experience course to determine if peer mentor involvement in student groups affects individual and/or group non-cognitive growth and development. Findings revealed that no statistical differences were documented between the treatment and control group for grit, indicating that the use of peer mentors in the learning environment does not influence, either positively or negatively, the grit of first year students. Given institutional emphasis on retention, persistence and student success, documenting methods to both understand and positively influence these factors is critical.

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K-12 Curriculum - Oral

2020-0175

Promoting Agricultural Content in Science Classes through Science Teacher Workshops

Maud M Walsh, Jennifer K. Irving
Louisiana State University

With the goal of encouraging middle- and high-school science teachers to incorporate concepts of sustainable agriculture into their classes we conducted a five-day professional development workshop, "SuSTEMable Agriculture," in the summers of 2018 and 2019.* Faculty in the LSU School of Soil, Plant, and Environmental Sciences and scientists from the United States Department of Agriculture Natural Resource Conservation Service gave presentations and tours related to topics such as plant breeding and soil conservation. Each day we led related classroom activities in follow-up sessions and facilitated discussions about lesson planning and ways to integrate agriculture topics in their biology, environmental science, chemistry, or other STEM classes. After the workshops ended, teachers were able to order supplies to use in their classrooms. We used pre- and post-workshop assessments to measure changes in teachers' perceptions of their own understanding of representative concepts and their comfort level in teaching about them. We measured teacher pre- and post-content knowledge using short essay questions. Results indicate a significant positive change in teacher knowledge and in teachers' confidence in their abilities to teach about select topics in sustainable agriculture. We are in the process of surveying teachers about their implementation of agricultural-related activities in their science classrooms.

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Innovative Teaching and Learning - Oral

2020-0176

Budget Development for Farms Transitioning to Organic: A Research-Based Teaching Tool

Shyam S Nair, Douglas Constance Nithya Rajan, Ronnie Schnell, Muthu Bagawathiannan
Sam Houston State University

Development and analysis of enterprise budgets are important topics in Farm and Ranch Management courses across the US. However, for expediency most instructors use the enterprise budgets built by the state extension services to teach enterprise budgets and breakeven analysis. Enterprise budgets for fields transitioning to organic production are different from budgets for already-certified organic crops because although they follow all organic practices for crop production, the product cannot be labeled or sold as organic during the three-year mandatory transition period. Field experiments were conducted at <university> over two years to understand various aspects of transitioning to organic practices for grain crops as part of a research and educational grant funded by United States Department of Agriculture (USDA) National Institute of Food and Agriculture. Directed study courses were offered to three students who had already taken the Farm and Ranch Management class to build budgets for farms transitioning to organic for three grain crops: corn, grain sorghum, and soybean. Each student worked on developing an enterprise budget for one crop using the cost and yield data from field experiments conducted during the organic transition period. They also built organic enterprise budgets for after the three-year transition period and used historic price data from the USDA Agricultural Marketing Service to assess price sensitivity. This project provided hands-on learning opportunities for the students and improved their understanding of building and analyzing enterprise budgets. The students will present the results of their projects in the <university> Undergraduate Research Symposium.

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Innovative Teaching and Learning - Oral

2020-0177

Team-Based Research Projects With field Experiments: A Cool Tool to Improve Student Learning.

Shyam S Nair, Robert Lane, Song Cui, Nithya Rajan
Sam Houston State University

Even students from agricultural background lacks a clear understanding of the concept of sustainability, its importance in agriculture, and practices to enhance it. We are in the second year of a research and educational project funded by USDA NIFA that seeks to enhance sustainable agriculture education. This is a multi-institutional integrated project with one land grant university and two non-land grant universities are partners. Field experiments were conducted at non-land grant universities on cover cropping and forage systems and results from the cover crop experiments were used to select treatments for a cropping system trial at the land-grant university. We have 8 undergraduate students directly working on the research with each student working on individual small research projects (directed study courses) that are parts of the large research project. The direct management of the undergraduate students is done by graduate student working on the project. Knowledge sharing between the students and data sharing between institutions allows the students to understand the big picture. The undergraduate students are involved in all aspects of the project from planting of a designed experiment to data collection, data management, and presenting results at conferences. Graduate students from the land-grant university is providing hands-on training for the undergraduate students at non-land grant university on advances instrumentation. This project is not only enhancing student knowledge in sustainable agriculture, but also is generating passion for undergraduates to engage in research. The field experiments are also helping to provide hands on learning opportunity for students in several courses through field visits.

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Scholarship of Teaching and Learning - Oral

2020-0178

Real-time Response Online Quizzes: A Cool Tool for Student Understanding and Engagement

Shyam S Nair, Art Wolfskill, Danhong Chen, Roozbeh Irani-kermani
Sam Houston State University

Online classroom management systems are gaining popularity as they help in improving student engagement. These systems allow instructors to administer real-time online quizzes to which the students can respond using their smartphones. Such quizzes allow the instructor to gauge student understanding, enabling detailed discussion of the concepts behind questions missed by students. However, the usefulness of the quizzes may vary with the course and the method of administration. The instructor used real-time online quizzes administered through Kahoot! in a Principles of Agricultural Economics Class at <University>. Quizzes were administered in several ways; one after every major concept, two to three quizzes spread throughout the lecture, and a quiz at the end of every class. At the end of the semester, an online survey was conducted to understand student perceptions and preferences about the quizzes. The survey had 74 responses (90.24%). We used descriptive statistics to summarize and visualize the data, and multiple linear regression to assess the impact of gender, current GPA, and expected course grade on student satisfaction with Kahoot! quizzes. Results showed that 75.68% of the students considered the Kahoot! quizzes as very useful and 21.62% found them to be somewhat useful. 77.03% of respondents indicated that the quizzes helped them understand concepts better, 67.57% of students thought they improved their learning, and 68.92% responded that it was a fun activity. Regression analysis results showed that the students' perception of usefulness of the Kahoot! quizzes was not significantly influenced by gender, GPA, or expected grade in the course.

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Innovative Teaching and Learning - Oral

2020-0181

Soils Gone Wild: A Flipped Approach to Teaching a Soils Lab

Michael Mashtare, Erica Lott, Charlotte Lee, Chantal Levesque-Bristol
Purdue University

In Spring 2019, we launched a flipped (hybrid) lab format in our Soil Science and Forest soils courses. At launch, students were randomly assigned to the treatment (hybrid) or control (traditional) groups. Students in the hybrid group completed all video instruction and reading remotely (e.g., at home) prior to completing their in-lab bench activities, experiments, and weekly lab hand-in. Students in the traditional group were required to complete all lab-related activities in the lab. In the following semesters, students were provided the option to choose their format. All laboratory videos were recorded by different external faculty with subject matter expertise. This provided the faculty with the opportunity to review the course curriculum, while also introducing the students to the faculty that would be teaching related upper-level courses. To assess student comprehension, quizzes were administered between each video. To assess the new format, anonymous surveys (Likert scale and open-ended questions) were administered. Students were asked to describe their assigned or self-prescribed format, and to answer questions related to autonomy, enjoyment, effectiveness, and value. Academic performance between the formats was also compared. Results showed that student sentiment differed between the formats with students preferring the hybrid format. Students saw value in having external faculty in the lab videos, believed that in-lab quizzing helped them grasp the material, and saw the lab instructional team as available and supportive of their learning. This approach provides a model for laboratory-rich courses, especially as we struggle with enrollment/lab/space limitations and adapting to diverse student learning styles.

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Global Education - Oral

2020-0182

Offering Students Elevated Research Opportunities through Immersive International Experiences

Amber L Beseli, Adrienne LaBranche Tucker, J. Jose Cisneros
North Carolina State University

This presentation will provide insight into a novel research experience available to NC State University undergraduate students in the College of Agriculture and Life Sciences. Research Pack Abroad, named as a nod to the NC State Wolfpack mascot, provides opportunities for undergraduate students to conduct agriculture and life sciences research at international research institutions. Students spend two months contributing to existing research at an international institution and are fully immersed in the international research setting. The research institutions draw researchers from around the world, as a result the students are exposed to different approaches to research and protocols as well as how to communicate scientific terminology among international researchers. The program is not faculty-led so the students travel independently and are immersed in the culture, as such, they develop new skill sets for maneuvering through complex situations, which ultimately increases their capabilities to problem solve long after the experience ends. Through the combined professional and personal growth experienced in the two-month experience, the students return to North Carolina with a changed frame of mind and new view for their future careers. This presentation will provide detailed information on this international research experience program, share success stories of this program, and share ideas of how others can develop a similar program at their colleges and universities.

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Innovative Teaching and Learning - Oral

2020-0184

Using Enneagram Typologies to Predict Self-Directed Learning

Jennifer Strong, Erica Russell

Texas A&M University

When discussing personality tests, Myers-Briggs is the most well-known and researched, but there is a new test gaining popularity; Enneagrams. There are nine different Enneagram types used to categorize peoples' personalities. Type One, The Reformer, is principled, purposeful, self-controlled, and a perfectionistic. Type Two, The Helper, is generous, demonstrative, people-pleasing, and possessive. Type Three, The Achiever, is adaptable, excelling, driven, and image-conscious. Type Four, The Individualist, is expressive, dramatic, self-absorbed, and temperamental. Type Five, The Investigator, is perceptive, innovative, secretive, and isolated. Type Six, The Loyalist, is engaging, responsible, anxious, and suspicious. Type Seven, The Enthusiast, is spontaneous, versatile, acquisitive, and scattered. Type Eight, The Challenger, is self-confident, decisive, willful, and confrontational. Type Nine, The Peacemaker, is receptive, reassuring, complacent, and resigned. When discussing Enneagrams in class, we found 95% of the students not only knew their typology but could discuss their strengths and weaknesses based on their type. Based on this knowledge, we conducted a correlational study comparing students' Enneagram type with their Self-directed Learning (SDL) stage. Stage One of the SDL model, Dependent, correlated with The Individualist, The Enthusiast, and The Challenger. SDL Stage Two, Interested, correlated with The Investigator and The Peacemaker. Stage Three of the SDL, Involved, correlated to The Helper, and The Loyalist. Self-directed learners correlated to The Reformer and The Achiever. Based on these results, it is recommended instructors engage with their students using Enneagram typologies as a predictor of where students are in the process of becoming self-directed learners.

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Community Learning / Extension - Oral

2020-0186

Facilitating Experiential Education through a Multi-State Initiative

Joshua Toft, Dustin Perry, Alyx Shultz, Michael Pate

Montana State

Experiential education provides the foundation on which the successes of agricultural education are built. Comprehensive agricultural education programs make use of a three-circle model of classroom, FFA, and SAE which all commonly include an experiential learning component. Despite the prevalence of experiential learning within agricultural education, many barriers exist to its successful implementation. Two barriers commonly cited by educators are concern over safety of experiential or “learning by doing” laboratory and field experiences and lack of sufficient skill competency to effectively facilitate experiential learning. To address this concern, researchers initiated a multi-state experiential-based agricultural safety training experience. This experience was designed to help mitigate barriers to experiential laboratory learning and considered two factors when attracting secondary agricultural educators to participate: knowledge acquisition, and curriculum obtainment. One hundred and sixteen agricultural educators across three states participated in this experience. Pre- and post-test questionnaires were used to measure participant demographics and motivation for attendance. Findings indicated knowledge acquisition was a stronger attractor for participation in the experience than curriculum obtainment. In response, researchers recommend further research be conducted to establish the specific knowledge and curriculum desired by educators in these experiential-based training experiences.

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Innovative Teaching and Learning - Oral

2020-0187

Music as an Intelligence Typology: Results of Using Music as An Example of Theory in an Agricultural Leadership Course

Jennifer Strong, Erica Russell

Texas A&M University

Music has been recorded as an integral part of the human existence for thousands of years, and the importance music plays in the world continues today. Scholars such as Aristotle and Darwin spent years researching the importance of music across numerous facets of life: from psychological effects and the importance of musical cognition, to its effects on the natural environment, as well as the social effects that specific genres of music may have on society as a whole. Even sociological and psychological impacts music can play is evident in the expression and potential empowerment of individuals of differing ages, ethnicities, and socioeconomic statuses. Music has been identified as one of the recognized alternative multiple intelligences. This study sought to study students' ability to find leadership theory in the music they consume. This was projective instrumentation as it allowed participants to interpret their personal interest into the song choice and the corresponding leadership theory it related to. Students were asked to submit the title and internet link to the song (or mp4) as well as a one-page reflection paper discussing why they chose the song and how it represented the selected leadership theory. One-hundred-forty-seven students identified specific leadership theories in songs which spanned multiple genres. Seven songs were identified by multiple students as containing specific lyrics which demonstrated leadership concepts. The results also contained personal reflections which validate this activity as successful and impactful for students as an innovative classroom activity.

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Scholarship of Teaching and Learning - Oral

2020-0188

Community in Diversity: An Exploratory Case Study of Underrepresented Students Enrolled in a Post-Secondary Agricultural Education Program

Jason H Bullock, Joy E. Morgan-Fleming, Wendy J. Warner

North Carolina State University

This study utilized an exploratory case study approach to explore the motivations for enrolling and perceptions of barriers for underrepresented students enrolled in a post-secondary agricultural education program. Population for this study consisted of four (4) undergraduate students who self-identified as a member of an underrepresented group (URG) categorized as: 1) ethnic minority, 2) LGBTQ+, 3) low income, and/or 4) first generation college student. Semi-structured interviews were used to collect data with thematic content analysis used for data analysis to determine the themes present for motivation for enrolling and perceptions of barriers among participants. Motivations themes included involved students in high school agricultural education programs, positive influence of adults, agriculture is 'fun' and 'interesting', community feeling, and exposure to teaching. Perceptions of barriers for participants were thematically identified as financial burden, mistaken identity and possible discrimination, loneliness, and inability to talk to others about culturally sensitive topics. This study focused on underrepresented groups, therefore generalizability across all students enrolled in agricultural education is not possible. However, this study does provide valuable insight into the perspectives of underrepresented students and provides a voice for these students to hopefully invoke change in policies, structures, and programs in agricultural education locally and nationally.

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Innovative Teaching and Learning - Oral

2020-0191

Photo Elicitation: Using Images to Apply Trait Theory in the Classroom

Jennifer Strong, Maranda Egge

Texas A&M University

Leadership concepts are best remembered by students if there is a connection from theory to application. Photo elicitation is one way to help students connect leadership competencies to tangible examples. Photo elicitation is a critical, participatory/action research and teaching tool used to access the perspectives of the participants. Photo elicitation helps students to critically think and view photographs in a way they can conceptualize individual meaning and connect sometimes abstract concepts to tangible images. When teaching trait theory, pictorial representations engage students to find a deeper meaning to the leadership traits. Students were in self-selected groups of four to five students working together on their visual leader representation. Students first made a list of their preferred leader traits. Then, working together, each group used photo elicitation to choose images to represent selected traits. Upon completion, each group explained their visual leader traits and what each cut and pasted picture meant. This activity showed not only how trait theory can be actualized into practice but also the abilities of the students to use alternative learning methods to express their ideas on ideal leadership traits. Through teamwork and individualized perceptions, the students used photos of humans, animals, inanimate objects, and other scenes to represent what leadership meant to them. These pictorial representations correlated to the students' ability to critically analyze and describe why each photo was chosen. When challenging students to critically think and digest content, photo elicitation serves as a cornerstone to enhancing educational growth.

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Scholarship of Teaching and Learning - Oral

2020-0193

The Professional Development of TAs Using the Culture-centered Approach Pedagogical Model

Abigail Borron, Catherine Jones, Maria Martinez, Jessica Holt
University of Georgia

With the ongoing need to train and prepare career-ready professionals upon graduation, it is essential that program curricula incorporate key elements that methodically transition students from the field of classroom learning to career execution. In agricultural communication, such a transition incorporates the notion that students should not only be able to translate complex science-based issues into strategic communication messages, but they should also be civically minded in a democratic society. As such, the use of the Culture-Centered Approach Pedagogical Model (CCAPM) facilitates students' critical investigation of personal identity and self, their positionality amid structural complexities, and how this relates to their professional role. One key tool of this critical investigation is through weekly critical reflexive analysis—a form of student journal writing—which is commonly used as a source of data that is analyzed by the instructor to help facilitate follow-up group discussions with students. While this model was originally designed to target undergraduate students, this presentation demonstrates the applicability to graduate students as well – specifically as it relates to serving as teaching assistants (TAs) in a culture-centered agricultural communication course. Key areas of results to be discussed include (1) how CRAs critically guide TA personal development as well as involvement in the class; (2) how CCAPM helped TAs facilitate class discussions around complex and/or contentious issues of food insecurity, and (3) how CCAPM uniquely prepared TAs to better navigate through and facilitate complex issues beyond the classroom and into their own research and career endeavors.

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Community Learning / Extension - Oral

2020-0196

Utilizing Program Evaluations to Measure Agricultural Leadership Program Participant Change

Joy Morgan, Daniel Radford, Blake Brown
North Carolina State University

In the fall of 2019, a pilot study was conducted to evaluate the effectiveness and impacts of the North Carolina Agricultural Leadership Development Program with the 2014-2016 cohort. This two-year program, designed for early and mid-career agriculturalists, focuses on personal and civic leadership development through the lens of agriculture and utilizes a variety of assessments (MBTI, EQ-i, Human Patterns), Crucial Conversations training, field trips, domestic and international study tours, policy tours, and leadership education to prepare the next agricultural leaders. This pilot study asked participants to evaluate their change level and impacts in their personal and professional lives due to their participation in the program. Within their personal lives, participants indicated an increase in self-confidence, creative thinking, business skills, value of time, desire to seek out mentors, appreciation of cultural differences, and exposure to new ideas and concepts. In their professional careers, participants indicated the greatest change occurring in their use of resources, involvement in professional organizations, use of time, approach to problem-solving, networking skills, and decision-making skills. Other key findings include participants: met people whose success they could imitate; were exposed to people and ideas that helped facilitate change within their farm or business; became more aware of the agricultural diversity in North Carolina and increased their involvement in local, state, and national organizations. As agriculture continues to change, efforts should be placed on preparing the next generation of leaders. These results indicated program strengths and weaknesses allowing program leaders insight to meet the changing needs of agriculturalists.

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Scholarship of Teaching and Learning - Oral

2020-0197

What Do Secondary Agriculture Teachers Want From Their Administrators?

Wheeler G Foshee, Christian Stanley, Meredith Hall, Christopher Clemons
Auburn University

Understanding secondary agriscience teacher success and classroom longevity is a complex and multifaceted evaluation of experiences and perceptions of the profession. Agriscience education teachers often have a unique relationship with personal and professional stakeholders. Through these real or perceived relationships we identify what Ambady and Rosenthal (2010) described as “thin slices of behavior”. In collaboration with previous research efforts this study sought to focus on the types of relationships which exist within agriculture education programs and how these fractional experiences contribute to classroom success and longevity. This purpose of this qualitative study was to investigate the perceptions, attitudes, and expectations secondary agriscience teachers have regarding positive administration support. This study was grounded using Deci and Ryan’s (2008) theory of Social Determination and framed in the phenomenological approach. To better understand supportive administration three research questions guided this study: (1) how would you as an agriculture teacher describe supportive administration? (2) what are your perceptions of how interpersonal relationships affect administrative support? (3) what positive characteristics have you observed from administrators that are supportive of agriculture education and FFA programs? The participant frame for this study consisted of ten secondary agriscience teachers in [STATE] in rural and suburban school systems. Onsite interviews for up to two hours were conducted with each participant. Participants were interviewed using five semi-structured interview questions. Independent analysis of participant comments were evaluated and organized using each of the five semi-structured questions.

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Innovative Teaching and Learning - Oral

2020-0200

Introducing Employee Accountability in a Floriculture Laboratory

Bryan D. Rank, Mathew S. Wilson

Iowa State University

Non-cognitive skill development is essential to the employability of undergraduate agriculture students as they enter the workforce. Employers report that they need entry-level employees who are responsible and punctual. In order to introduce a real-world context of punctuality and responsibility into a floriculture course, we implemented an employee accountability program in the associated laboratory section. The employee accountability program measured student involvement/responsibility based on the need for the instructor or greenhouse assistant to water plants that were not watered by absent students. Attendance and involvement were encouraged by the implementation of workplace concepts such as sick leave and bonuses. Penalties for the exhaustion of sick leave beyond the appropriated amount resulted in a point reduction. Likewise, bonus points were awarded for remaining sick leave as a buyout at the end of the semester. Students were required to keep detailed records of crop progress such as average crop heights, temperature and relative humidity logs, watering/fertilization logs, weekly laboratory activity descriptions and summaries, anecdotal and visual observations, as well as pesticide application labels and safety data sheets. Among students enrolled in two autumn semesters of the course [total n=30 (2018: n=20 & 2019: n=10)], 4 (13.3%) incurred penalties, 10 (33.3%) did not incur penalties or bonus, and 16 (53.3%) received bonus points. Student recordkeeping showcased a variety of involvement levels often corresponding strongly to the resulting penalty/bonus point allocation. The implementation of the accountability penalty/bonus points as incentives for student involvement may help students develop non-cognitive skills in preparation for their careers.

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College / University Curriculum - Oral
2020-0203
Using Trade Publications in the Classroom

Chad T Miller, Karen Schneck
Kansas State University

The horticulture industry, like many industries, offers a variety of trade publications. Through trade publications, there is a plethora of information that can be incorporated into classroom curriculum. This information can provide real-world and relevant concepts through articles, editorials, trend reports, etc. that are timely. The objective of this study was to better understand undergraduate student knowledge about trade publications and assess the potential for use as a teaching resource in the classroom, specifically in a plant identification course. A pre-assignment survey was administered to the class to assess student use and understanding of trade publications. Using a Likert-rating scale (not at all familiar to extremely familiar) The survey showed that 60% of the students (n=42) indicated that they were not at all to slightly familiar with trade publications related to the horticulture industry. Only 20% of the students indicated they were currently or had subscribed to a trade publication. Seventy four percent of the students agreed that subscribing to a trade publication would be beneficial to their professional development, while the remainder were not sure. When asked why they did not have a subscription, over half (53%) of the responses (n=34) indicated that they didn't know of any specific publications while 47% indicated that the subscription fee was an issue. The initial data suggest a great opportunity to further implement trade publications to further enhance classroom content and increase student exposure to the industry. A follow-up activity will be assigned in the course, followed by a post-activity survey.

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Innovative Teaching and Learning - Oral

2020-0204

Experiential Projects in Agribusiness Marketing Education

Danhong Chen, Shyam S. Nair, L. A. Wolfskill, Roozbeh Irani-kermani
Sam Houston State University

Project-Based Learning (PBL) is a well-established teaching approach in which students learn through actively engaging in the exploration of real-world problems. Through the PBL process, students gain a better knowledge of the subject matter, understand the importance of teamwork in the business setting, and are better prepared for their first job. This study describes the class organization and evaluates the effectiveness of using PBL in an agribusiness marketing class. With the enrollment capped at 30 to foster effective learning, the class is divided into six teams of five members each to complete a marketing plan throughout the semester. Each student is assigned to one of the five managerial roles including marketing manager (team leader), product manager, pricing manager, distribution manager, and promotion manager. The role assignment ensures that each student team leader/member is held accountable for specific responsibilities. To assist students in gaining skills and competencies by professionals in agribusiness marketing, we employ marketing plan guidelines from the National Agri-Marketing Association, the largest network for agribusiness marketing professionals in the U.S. The key learning outcomes in this class are an evidence-based marketing plan for an innovative agricultural product/service and an oral presentation of the plan. Through the experiential projects, students learn to communicate qualitative and quantitative information effectively both in writing and verbally. Student evaluation results from the previous six semesters indicated that PBL is an effective tool in helping achieve the course objectives and students were highly satisfied with the course and the instructor.

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Innovative Teaching and Learning - Oral

2020-0205

Broadening participation in STEM with microbiome-based CUREs in an online class at scale

Jennifer Drew, Angelica Ahrens, Eric Triplett
University of Florida

Course-based undergraduate research experiences (CURES) are recommended to increase persistence and interest in STEM and may even have greater effects for improving outcomes for under-represented minority (URM) STEM students. The Microbiology and Cell Science program at the [University] is building a resource for online CUREs based on an oral microbiome -diet- human genomics study with students as subjects. In an IRB approved protocol, students contribute saliva samples and complete a validated Diet Survey . Total DNA from saliva samples is used for microbiome and human SNP analysis. Based on high throughput 16S sequencing data, microbiomes were analyzed for diet associations. Univariate analysis showed significant bacterial phylum and genus associations with the high, medium, and low scoring diets. Specific dietary components also were correlated with specific taxa. Human DNA was genotyped with a SNP array and to date, one SNP was found to be significantly associated with diet and microbiome. The CURE project has been piloted in multiple courses and preliminary data suggests that students are participating in authentic research while acquiring quantitative skills and posting learning gains. The next stage is to bring this CURE to scale and to develop a robust assessment strategy and instrument. We are adapting existing assessment resources for in-person CUREs to the online and large enrollment environment. This CURE pilot uses high throughput and advanced technologies, computation approaches and implements many 'big data' tools – all skills that are necessary for the next generation of the STEM workforce. Furthermore, microbiome research and education strategies are highlighted and part of a recent, national cross-agency effort.

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Alia DeLong, Mickie Swisher, Carlene Chase, Oscar Liburd, Xin Zhao, Zhifeng Gao
University of Florida

Rapid global change requires rapid solutions in a changing agricultural landscape. When agricultural scientists collaborate with farmers to develop research designs together, they can co-create more adoptable solutions. This presentation discusses the professional development of one graduate student in an interdisciplinary, multi-institution project. The project's overall goal was to develop sustainable organic strawberry production systems in the Southeast. The biological scientists on this project investigated on-station experiments while the social scientists worked with local farmers to facilitate their role as farmer researchers who contribute to research design. The graduate research assistant acted as a liaison between scientists and farmers, building relationships with local farmers as well as technical advisers to inform biological scientists about industry needs and priorities. The graduate research assistant facilitated annual industry liaison panel meetings, conference workshops, field days, research assessments and farmer field trials. These activities enabled the graduate student to practice and develop effective teamwork skills, build relationships with relevant stakeholders and help expand the scope agricultural research to be truly interdisciplinary. In this project, the biological scientists and social scientists worked together with farmers to redesign the research trials in ways that responded to the immediate needs of farmers. This presentation also addresses lessons learned for future research teams who adopt this approach to learn from. Given the rapid change in the agricultural sector, future research projects should include development of graduate students as social scientists who are integrated into a traditionally biological field.

College / University Curriculum - Oral

2020-0210

A Multi-Faceted Approach to Improving Student Writing in Non-Writing Courses

Brianna L Anderson, Jennifer Hardesty, Barbara Anderson
University of Illinois at Urbana-Champaign

The Department of Human Development and Family Studies (HDFS) has been involved in ongoing efforts to improve the use of effective written communication among undergraduate students. To accomplish this, we created a sustainable and multifaceted program that HDFS instructors, and other instructors of agriculture, could easily integrate into their courses to help students develop the writing skills needed to be successful at the University of Illinois and in their future careers. Our program contained three major components: a writing improvement curriculum in an introductory course, revision and implementation of a departmental writing guide for all courses, and development of a peer support system involving upper level HDFS writing mentors. Both quantitative and qualitative measures were used to assess program effectiveness among 32 students in an introductory, 16-week course. Students were asked to self-report satisfaction with each of the components of the writing improvement program. Overall, students reported positive perceptions of each component, as well as the overall program ($M = 3.97$; $SD = 1.06$). Student writing improvement was assessed using a pre-test/post-test model that included assessment through an online grammar program and a writing sample. A paired sample t-test indicated significant improvement in each of the concepts taught in the program (Sentences $p = .000$; Punctuation $p = .001$; Verbs $p = .003$; Pronouns/Possessives $p = .006$; Precision/Style $p = .002$; Quotations $p = .000$; Overall Score $p = .000$). Ultimately, this program was found to be an easy to implement, high return approach to improving writing in non-writing courses.

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Scholarship of Teaching and Learning - Oral

2020-0211

Broadening Agriculture Science Education for Hispanic Students through Florida – Texas – New Mexico Consortium

Krish Jayachandran, Mahadev Bhat, Kateel Shetty, Alexis Racelis, Pushpa Soti, Kulbhushan Grover
Florida International University

Broadening Agriculture Science Education for Hispanic Students through Florida–Texas–New Mexico Consortium conducted a five year study to recruit, cultivate, and develop the next generation of scientists, and to produce a highly-skilled workforce for food, agriculture, natural resources, and environmental systems from Hispanic communities with multiple objectives: (a) to provide scientific and professional training to 50 undergraduate and 12 graduate students in food and agriculture disciplines, that deal with the integrative aspects of natural resources, ecosystem sustainability and sustainable food production; (b) to prepare students for pursuing careers in the scientifically challenging and globally competitive US food and agriculture industry; (c) to increase the percentage of underrepresented undergraduate and graduate degrees awarded in food and agricultural sciences relative to the number of degrees in other fields; (d) to enhance the quality of STEM education through inter-state partnership between Florida International University, University of Texas at Rio Grande Valley, New Mexico State University via student and faculty exchange visits, joint student research and professional developments, and conference presentations. Through research, internships, cross-campus student exchange and joint workshops, and special experiential learning activities, students gained scientific skills analyzing crop production, farm natural resources (including soils, water, and biodiversity), food security, and financial and social aspects of farming. We mentored these skills through a curriculum that transcend multiple disciplines - Sustainable Agriculture, Soil Sciences, Environmental Sciences, Entomology, Conservation and Renewable Resources, Natural Resource Economics. The greatest impact of the program is to foster a scientifically rigorous, STEM-rich agriculture education to students. With state-of-the-art technical training, students entered technically challenging workforce and higher agriculture science education.

K-12 Curriculum - Oral

2020-0213

Outbreaks Squad: Students as Superheroes Fighting the Spread of Foodborne Illness

Pamela N Martinez, Barbara Chamberlin, Jennifer Richards, James Swart, Amy Smith Muise,
New Mexico State University

Outbreak Squad, a learning game for grades 5+, was designed as part of Hands On – Real World Classroom, a curriculum integrating food safety into mathematics, science, social studies and language arts instruction in grades K-8. The design team realized early on that the game also supported civics engagement. Through the lens of food safety, it helps students think about systems, strategy, and global impacts: providing an opportunity to learn how the government supports and directs communities when foodborne outbreaks occur. Working with content specialists, we devised scenarios based on actual events to make the outbreaks as plausible as possible. Players direct a team to research, educate, heal, and protect the community: these characters were user-tested with middle school youth to be sure they came across as relatable, diverse, and heroic. Enforcers make sure that food service establishments follow laws about safe food preparation, proper storage, and preventing cross contamination. Researchers look for new and more effective ways to prevent outbreak. Medics stop the spread of an outbreak and treat those infected. Educators spread knowledge and understanding about preventing illness. Health care professionals heal people already affected by an outbreak. The game is well balanced – players experience just how detrimental outbreaks can be when those sickened come to their demise, and learn that people who are pregnant or immunocompromised are the most vulnerable, while also using prevention and education to keep outbreaks from occurring or reduce their impact.

Teaching with Technology - Oral

2020-0214

Showcase by Learning Games Lab: Educational Ag Media to Enhance your Instruction

Pamela N Martinez, Barbara Chamberlin, Jeanne Gleason, Amy Smith Muise
New Mexico State University

Many classrooms today take advantage of digital resources. Incorporating educational media such as games, animations, interactives and videos enhances blended learning. Finding meaningful and relevant resources can be difficult. Creating products for agricultural science students demands a careful design process to accommodate pedagogical, content, and quality-of-experience goals. The Learning Games Lab design process draws on the expertise of content experts, instructional designers, and professional animators, artists, game designers, writers, and programmers. Using a formative testing process throughout the development cycle, experts are able to create material that reinforces content and classroom instruction. For over 30 years the department has been creating internationally recognized products for food safety, animal science, plant science, soil science and environmental science. This showcase will provide participants with a review of our college level learning tools, including the Science of Agriculture collection, addressing key concepts in soil, environmental, and animal sciences; resources on water treatment and sustainable water reuse; virtual microbiology labs; and database tools such Selected Plants of Navajo Rangelands, a searchable guide for rangeland management that gives plant names in Navajo, English and Latin. These tools see significant use online and on mobile devices. Science of Agriculture interactive modules were used 22,000 times in 2019, while animated videos from the site were viewed on YouTube 76,000 times. The Virtual Labs suite had 1.2 million web uses in 2019 and 6,366 downloads on the Apple store. Overall, our digital media tools related to agriculture had 43 million uses in 2019.

Scholarship of Teaching and Learning - Oral

2020-0219

Homework Assignments that Promote Content Integration and Application

Heloisa Rutigliano
Utah State University

Several studies have supported the notion that active learning activities such as problem-solving cases and simulations increase comprehension and retention of information. Instructors who teach basic science courses find it hard to integrate their course material with clinical, real-life scenarios. The objectives of this study were to assess student perception of active learning techniques and their usefulness to promote understanding and integration of class material. Three different types of group assignments were given to students: 1) clinical case discussions followed by questions relating the case with course content; 2) creation of concept maps to integrate course information and to explain the basic immunological mechanisms associated with given clinical findings of simple immune-related disorders; 3) development of a new product (immunodiagnostic assay, vaccine or drug) to prevent, diagnose or cure a disease of significance in veterinary medicine. Students received an anonymous survey to assess their impressions on the usefulness of these assignments. Students considered concept maps (4.6 out of 5) the most helpful active learning technique followed by clinical case discussions (4.4 out of 5) and product development (3.3 out of 5). Students' scores in questions directly related to concept map assignment material were greater in the year where concept maps were used compared to the year when they weren't used. By using concept maps, veterinary students were able to apply and integrate their knowledge of basic immunology to clinical scenarios and demonstrate the complex and interconnected nature of veterinary immunology.

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Global Education - Oral

2020-0221

Student Perceptions Abroad: The Impacts of Climate Change in Trinidad & Tobago.

Rafael A Quijada Landaverde, Mary Rodriguez
The Ohio State University

Climate change is a challenge for Small Island Developing States (SIDS). The small geographical area, isolation and high exposure make it difficult to design and implement adaptation and mitigation strategies to climate change. As in other regions of the world, in SIDS there is a lack of trained professionals to reduce vulnerability to climate variation. Preparing professionals with ability to understand and adapt to the SIDS' local conditions contributes to the Caribbean region development. International experiences are opportunities for students to interact with environments where climate change affects and differs from their communities' reality. The purpose of this study was to gather students' experiences related to climate change during a short-term study abroad program. This qualitative study used a photo-elicitation interview with undergraduate students (n = 11) who participated in a week-program in Trinidad and Tobago in 2019. During the program, students visited agricultural productions and local organizations and participated in cultural activities. The effects identified can be classified into agricultural and the broader ecosystem of the island. Specifically, the agricultural sector has experienced decreased production coupled with both flooding and droughts. The broader ecosystem has seen a reduction in quantity and quality of the habitats of native species. Furthermore, the degradation and loss of soil have disrupted the delicate balance of the ecosystem. The results show the students' capacity to identify climate change effects in Trinidad and Tobago. Experiences abroad are an excellent educational methodology to develop students' knowledge of issues that vary from socio-geographic, economic, and cultural elements.

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**Innovative Teaching and Learning - Oral
2020-0226**

I Thought This Was a Shop Class...Why Are We Reading a Book? Using a Book Club to Increase Mechanics Teaching Efficacy

Rachel Hendrix, Travis Veach, Jason McKibben
West Virginia University

Agricultural mechanics has become the fastest growing segment of agricultural education but has remained one of the lowest areas of confidence for agriculture teachers. This study sought to improve preservice teacher mechanics efficacy by facilitating the development of new paradigms regarding the role of mechanics in agricultural education. Students enrolled in an agricultural mechanics course were asked to read, discuss, and reflect upon Justin Crawford's book *Shop Class as Soul Craft*. The use of a philosophical book covering the value of work offered an opportunity for students to explore the modern role of mechanics in agricultural education and combat stereotypes often associated with the subject matter. Reflections showed that students began to view agricultural mechanics not as an outdated relic or a simple set of physical skills, but rather as an arena for solving problems, managing uncertainty, building resilience, and developing independent thought. Students also made connections between the learning processes required for mastering mechanics and those required for other subjects. These connections helped students build efficacy by realizing that mechanics was not an alien concept or an arcane knowledge, but something that could be learned through diligent study and practice. Future plans for this study include collecting further data on participants as they complete their pre-service training and become agricultural educators, and exploring the effects of specific themes on agricultural educator mechanics efficacy.

<https://voicethread.com/myvoice/thread/14536403/90239952>

Innovative Teaching and Learning - Oral

2020-0227

Enhancing Student Interest in Plants and Plant Sciences

Kulbhushan K Grover, Srijana Dura, Mohammed Omer, Paramveer Singh, Seyed Nourbakhsh
New Mexico State University

With so many competing and more lucrative career options, recruiting and retaining undergraduate students into Plant Sciences is a challenge. Innovative and entertaining ideas must be applied to motivate and attract students towards Plant sciences. The objective of this inquiry-based learning project was to enhance curiosity and keen interest in the wonderful world of plants. The project also aimed at promoting independent problem-solving, team-work and presentation skills among students. A multi-faceted group project, 'Know Your Plant Project' was introduced in a freshmen level general education course Introductory Plant Sciences that had students from various majors in and outside the college of agricultural sciences. For this project student teams were assigned a "mystery" plant or plant product. To ensure students consider a global perspective beyond domestic plants and issues, assigned "mystery" plants and plant products included international examples. Each team must then identify the plant or plant product they are assigned, research various aspects and uses of the plant or plant product, and create a presentation, including PowerPoint, for the class. Students were evaluated for their individual contributions towards the group activity by the instructor and through confidential peer-evaluations. A reflective element was also included in the project. A vast majority of students indicated the project was a positive experience. The results of the project demonstrated that inquiry based hands-on experiences are instrumental in 1) helping students connect abstract ideas to the real world, 2) building personal connections between students, and 3) generating and maintaining interest in agriculture and plant sciences.

Scholarship of Teaching and Learning - Oral

2020-0228

Cultivating Scholarship of Teaching and Learning in Agricultural Sciences Education and Communication Faculty

Sarah E LaRose, Hui-Hui Wang

Purdue University

Postsecondary institutions have increasingly placed greater emphasis on excellence in teaching. While faculty in colleges of agriculture traditionally have conducted research on their own specific fields of expertise, over the past twenty years they have been encouraged to conduct research on their own teaching through development of their own scholarship of teaching and learning. Although various resources exist to support faculty in their scholarship of teaching and learning (SoTL), some faculty still express uncertainty about how to go about conducting this type of research. As a means of cultivating teaching excellence in the Department of Agricultural Sciences Education and Communication, a series of workshops were developed and run by junior faculty in the department utilizing funding from the Purdue Teaching Academy. Through these workshops we endeavored to enhance the already existing culture of teaching excellence, revive a spirit of scholarship within communication and education, and create intentional collaboration opportunities. The workshops were organized around three guiding questions: 1) What is SoTL?; 2) How can I design research opportunities within the courses I teach?; and 3) What other resources or strategies do I need to be successful? The workshop series was very well received by faculty and resulted in plans for at least five new studies. Faculty previously unfamiliar with SoTL reported increased knowledge and confidence in conducting research on their teaching, while other faculty requested similar future collaborative learning opportunities.

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Global Education - Oral

2020-0229

Using the Social Change Model as the Basis for an International High-impact Experience

Jennifer Strong, Robert Strong Jr.

Texas A&M University

Creating high-impact experiences, especially those occurring in a global agricultural setting, has become a priority for many colleges of agriculture. Grounding these experiences in a theoretical base is imperative to their success. In the summer of 2019, 18 students traveled to Belize for two weeks to apply their knowledge of leading change in an agricultural context. High-impact learning experiences included working with local farmers, visiting and helping women's entrepreneurial groups, experiencing historical Mayan agricultural practices, as well as learning about and experiencing Belizean culture. The theoretical underpinning of this international high-impact experience was the Social Change Model. This model presents change as the ultimate goal leadership, which is to make the world a better place for society, ourselves, and others. The Seven C's (1) Consciousness of Self, (2) Congruence, (3) Commitment, (4) Collaboration, (5) Common Purpose, (6) Controversy with Civility, and (7) Citizenship were incorporated into the high-impact learning experiences in country. Students were then asked to complete daily reflections which focused on at least one of the Seven C's. These reflections were graded for applicability, critical thinking, and depth of thought. Students were also required to respond to another student's reflection to create a rich dialog. Course leaders found linking the Social Change Model to the in country high-impact experiences gave structure for the students' critical reflections. Qualitative analysis of the reflections found students engaged in an impactful learning environment where applicability to the model led to deeper assimilation of knowledge.

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Scholarship of Teaching and Learning - Oral

2020-0232

Cool Learning: Cultivating critical thinking in a university plant and soil science course

Carley C Morrison, Natalie R. Money, Jesse I. Morrison, Brian B. Baldwin, Leah E. Gann
Mississippi State University

Employers identify a decrease in post-graduates' ability to adequately communicate and function in the workplace. Moreover, development of critical thinking skills in higher education, specifically in agriculture and science-related fields, has become inadequate. Frequently, students are focused on earning good grades and choose to study topics and use learning techniques that are familiar, rather than seeking challenging opportunities to solve problems and extend their learning. Consequently, instructors must employ teaching and evaluation methods that are conducive to critical thinking development. This study describes students' (N = 9) perceptions of critical thinking activities and assessments in a split-level plant and soil science post-secondary course. Over the course of one semester, three written tests containing critical thinking questions were followed by focus groups. The first exam was conducted before students were introduced to the critical thinking process in class. During the first focus group, students indicated a lack of familiarity with critical thinking, and preferred multiple-choice exam questions rather than case studies. Following this, the students were exposed to case study/critical thinking activities prior to taking the remaining two exams. Focus groups conducted following the remaining exams revealed increased confidence, and realization of how critical thinking can transfer after graduation. However, students requested more practice with critical thinking in class before each exam. Additionally, traditional teaching methods did not prepare them for thinking critically. It is recommended that instructors seek training on teaching the critical thinking process, as well as emphasize the importance of critical thinking skills as students enter into careers.

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Global Education - Oral

2020-0233

Limitations and Opportunities of 4-H Clubs in Honduras: A Stakeholders View.

Rafael A Quijada Landaverde, Amy Boren-Alpizar, Stephen Brady, Dustin Homan, Patricia Arce, Marjorie Mayr

The Ohio State University

Honduras is a Central American country with high levels of poverty, illiteracy, and social inequality. Honduran youth face a lack of opportunities for personal and professional preparation. For many young people in Honduras, gangs and migration are the only viable options for obtaining resources to meet their primary needs. Since 2018, The Ohio State University, Texas Tech University, and Zamorano University have been working to spread 4-H clubs in the central-eastern region of Honduras. Keeping the foundations of 4H, these institutions seek to implement clubs as a technical education option while promoting moral values among local youth. The primary objective of this study is to identify learning opportunities and limitations of the implementation of 4H clubs in Honduras. For this study, 26 stakeholders participated in a 20-hour training program designed by the three academic institutions that included 4-H history and philosophy, 4-H club structure, 4-H club activities, and academic resources. To evaluate the perceptions of the participants, a modified and contextualized version of the Workshop Questionnaire developed by Russell (2011) and a round table discussion were used. The lack of human resources (34%), the appropriate space (30%) and time (26%) are the main limitations identified by the stakeholders. In addition, food production, carpentry, and hairdressing are some technical education opportunities in the community. The results will be used for the elaboration of the curriculum of the clubs and the formulation of proposals addressed to possible international cooperation entities or donors for the search for the program financing.

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Innovative Teaching and Learning - Oral

2020-0234

PERSONALITY TYPE AND STUDENT PERFORMANCE IN AGRICULTURAL BUSINESS COURSES

Roozbeh Iranikermani, L. A. Wolfskill, Shyam S. Nair, Danhong Chen
Sam Houston State University

Many academic disciplines have investigated the correlations between Jungian personality types and the academic performance of college students. Different types react differently toward different education methodologies, different instructors and different class times, therefore student performance varies in different courses. We found no previous studies on the impacts of personality type on student performance in agricultural academic programs. To learn about the impact of student personality type on their performance in different courses with different learning styles, we administered three common, but distinct personal assessment examinations. The Myers-Briggs Type Indicator (MBTI) is used to learn about student personality type. Further, the Strong Interest Inventory provides insight into students' strengths, and the William Moulton Marston DiSC profile test informs us about students' behavioral responses. We use the Seemingly Unrelated Regression procedure in STATA to evaluate the effects of different personality types, strengths, and DiSC profiles on the final course grades in various agricultural undergraduate courses. Cumulative GPA was not used as one of the independent factors as we believe the variable should be considered more of a result than a cause and will create endogeneity in such a model. We analyzed a sample of 86 students (39 female, 47 male). The results show there is a significant correlation between student characteristics and their academic performance in different courses. This study provides advisors of the higher education sector with useful evidence for guiding students and can also benefit the university administration in attempts to reform the admission policy based on student capabilities.

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College / University Curriculum - Oral

2020-0235

Extension Agent Training 101: Preparing Undergraduate Students for Careers in the Cooperative Extension Service

Haley Rosson, Madison Quinn

West Virginia University

Today's Cooperative Extension Service professional serves in myriad, multi-faceted roles, ranging from content matter expert in subjects from agronomy to zoology, to local change agent and master of both andragogical and pedagogical teaching practices, all within the context of a coordinated effort between three levels of government, funding, and perspectives. When teaching Extension-related undergraduate coursework, it is therefore vital that students understand and are effectively prepared to facilitate relevant, needs-based programming opportunities. To synthesize this preparation for future agents, a lab section devoted to Extension/non-formal teaching methods was added to the Agricultural and Extension Education curriculum at West Virginia University for the Fall 2019 semester. In order to truly emulate many of the activities an agent must learn to coordinate, several course assignments involved the creation of tangible products, such as varying forms of personal correspondence, newsletters and/or news articles, and brief instructional videos. Students also prepared numerous presentations, targeted toward specific youth and/or adult populations, such as a 4-H leadership training and a method demonstration. Several times throughout the semester, students also prepared presentations in response to surprise "office visits," designed to simulate the many and varied questions posed by visitors to the local Extension office. The course's capstone assignment entailed collaborating with a local county agent to plan, design, implement, and evaluate a needs-based program to be delivered during the regional Buckwheat Festival. Student evaluations highlighted the practicality and real-life applicability of the course, noting a significantly higher feeling of preparedness and confidence to enter an Extension career.

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Innovative Teaching and Learning - Oral

2020-0237

Initiating Faculty Field Experiences to Create Contextualized Case Study Curricula

Robert Strong, T. Grady Roberts, Christopher Stripling, James R. Lindner
Texas A&M University

This project was funded by the United States Department of Agriculture's National Institute of Food and Agriculture to develop the Preparing Organizational Leaders in Agriculture (POLA) Academy. The Academy was composed of thirty-six (N = 36) multidisciplinary and multi-institutional group of faculty with potential for impacting large numbers of students for the potential to lead to greater innovation as a result of the bridging social capital created. The multidisciplinary nature of this proposal is found in the academic diversity of faculty participants and the breadth of the agricultural issues observed during the field experiences. By including a field experience for POLA Fellows, a robust understanding of the individual and organizational impacts of weather-related disasters on agriculture was realized. POLA Fellows created case studies using contextually-rich multimedia collected during their field experience so that students can see and hear real people explain their own situations. POLA Fellows were divided in three teams to make site visits to Florida, North Carolina, and Texas to learn more about specific impacts from weather-related disasters on agriculture and collect data for individual case studies. These field experiences were four to five days in length and included in-depth visits with a variety of purposively selected stakeholders impacted by weather-related disasters. Three project team members travelled with each group of participants to help facilitate the experience, consult on leadership concepts, case study development, and collect evaluation data. The presentation will include data in the forms of text, interviews, videos, and photographs.

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Innovative Teaching and Learning - Oral

2020-0238

The Nexus of Natural Disasters and Undergraduate's Agricultural Leadership Capacity

Robert Strong, Christopher Stripling, Matthew Sowchik, T. Grady Roberts
Texas A&M University

The interconnection of natural disasters and impacted individual's leadership capacity in agriculture provides numerous areas of inquiry. Hurricanes, drought, fires, floods, freezes, and tornados negatively impact food resources through contamination and the loss of products. Hurricane Harvey had a \$200 million negative impact in Texas. Faculty at Texas A&M University obtained USDA funding to create a program that provided faculty with professional development opportunities and context-specific experiences that allowed them to examine leadership frames of Texas ranchers post-Hurricane Harvey. Context-specific experiences—like talking with an agricultural producer impacted by hurricanes—are useful for illustrating the abstract concepts of leadership. Providing faculty with these professional development opportunities better prepares them to integrate leadership, change management, and teamwork skill areas into their courses. Their students will be better prepared to lead their organizations in adapting and recovering from disasters. Ten university faculty across the southern U.S. were selected to participate in an online leadership academy to gain content knowledge in leadership, change management, and team building. These faculty have developed case study topics including water, infrastructure, non-profits, cropping systems, decision-making, environmental impacts, etc. based on Harvey's impacts. Field experiences centered on Harvey's geographic landfall examined the experience of Texas ranchers during hurricane recovery and addressed the context in leadership. Using knowledge from the online training and field experiences, participants created case studies to use in undergraduate courses where the content intersects leadership. These case studies are housed on an open-access repository for anyone interested in utilizing the curriculum.

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Global Education - Oral

2020-0240

Global Opportunity: Opening Doors for First in Family to Study Abroad (FIFSA)

Tammy Bennett, Tammy Shannon, Rob Shannon, Derek James, Ketja Lingenfelter
The Pennsylvania State University

First in Family to Study Abroad (FIFSA), a new course in the College of Agricultural Sciences at Penn State, will provide first-generation college students the opportunity to travel internationally. "ERM 499: Costa Rica Sustainable Agriculture and Natural Resources," is supported by the Environmental Resource Management program and the college's offices of International Programs, Multicultural Affairs and Undergraduate Education. This is the first embedded course designed primarily for first-generation students offered at Penn State. The presentation will include background on working class first-generation college students, the need for student engagement opportunities and the step-by-step development plan of the First in Family to Study Abroad (FIFSA) course. The College of Agricultural Sciences at Penn State (UP) has the highest percentage of first-generation college students at University Park. First generation college students from working class families comprise on average 32% of the student population at four-year institutions of higher learning in the United States (Schwartz et al., 2018). These students often focus on individual experiences outside of the university to the exclusion of involvement in university organizations, out of class activities, research and study abroad opportunities (Donaldson and Graham, 1999). The First in Family to Study Abroad (FIFSA) program will provide first generation college students at Penn State the opportunity and support to travel internationally with faculty during an embedded course to Costa Rica. First generation college students will learn global competencies, cultural awareness and build a resume that shows leadership, diversity, multicultural understanding, cross-cultural competencies, learning by doing, and valuing and building partnerships at EARTH University and rural communities while abroad.

Innovative Teaching and Learning - Oral

2020-0241

From Field to Screen: Using Farmer Videos to Connect with Students

Lauren E LaGrande, Josh Stewart

Oregon State University

With less than 2% of the public directly involved in agriculture, both agriculture students and non-agriculture students are having trouble connecting with those who may be “in their field” of study, but are physically out in the field, such as farmers. Multiple agricultural communications studies have revealed there is a trust deficit in the agriculture industry. Previous literature has supported that the general public feels a disconnect to those who produce their food. In order to help merge a crossroads between consumers and producers, an agricultural communications instructor at Oregon State University presented students with a video of a farmer out in his rice field explaining the economic, environmental, and nutritional contributions of rice. This video was made with two objectives in mind. The first objective was to show students what a modern-day farmer looks like and to showcase their multidimensional knowledge and diverse skillsets. The second objective was to use the video in an assignment which required students to write a short story about the farmer. Prior to watching the video, students had trouble writing about agriculture in a storytelling fashion. Students were so accustomed to writing about agriculture in a research format, that they struggled to “humanize” the industry through storytelling. The instructor collected feedback regarding the video and was surprised to see how much students enjoyed it. Comments ranged from “I can’t believe farmers can be that young!” to “The farmer was actually really educated; he knew more than just how to plant a seed.”

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Online Programming - Oral

2020-0243

Food Literacy: Using Online Modules to Train the Next Generation of Food Experts to Become Opinion Leaders

K. Jill Rucker, Shaylee Wallace, Betsy Garrison, Leslie D. Edgar
University of Arkansas

Food literacy is the ability to make informed choices about food, food production, and food consumption. Because of social media, many consumers are persuaded by popular opinion leaders (i.e., bloggers, Instagrammers, and Facebookers) who lack education and training in nutrition, health and wellness, and agriculture. Researchers at [University] created a series of online modules to enhance the quality of instruction for agriculture and human environmental science students studying nutrition, dietetics, family consumer sciences, and agricultural communications/leadership. A series of three modules sought to increase students' knowledge about food literacy (Human Health and Nutrition: Exploring Fact versus Fiction), cultural competency (Communicating Food and Nutrition Facts to the Public while being Culturally Sensitive), and leadership (Becoming a Food Leader: The Application of Theories and Models). Each module included interactive components (case studies, hands-on activities, videos, active listening guides, individual/team assignments, and social media exercises) to be included in the classroom or online. Each module was created by a content expert in an online learning platform based on the Quality Matters™ platform to ensure equal educational access. Modules were pilot tested in four undergraduate classes. Modifications to modules were made based on student and instructor feedback. Modules were implemented to encourage students to be involved in a social media forum to combat negative food messages, create deeper meaning for students regarding current health and nutrition issues, and teach students to create fact-based messaging on social media to influence food literacy. This project was funded by a USDA Higher Education Challenge Grant.

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Innovative Teaching and Learning - Oral

2020-0244

Utilizing Leadership Assessments to Strengthen Teams in a Capstone Course

K. Jill Rucker, Shaylee Wallace, Tabitha Hudspeth, Isabel Whitehead, Casandra Cox
University of Arkansas

Leadership education has been effective in improving student-centered learning. Leadership assessments are tools used to assist students in developing and understanding individual leadership styles and skills. The use of self-assessments in leadership education allows students to view their strengths and weaknesses regarding leadership in an unbiased manner. Students at [University] participate in multiple self-assessments as they move through their coursework. Communication Campaigns in Agriculture is a capstone course where students create a top to bottom marketing and communications campaign for a real world clients. Students are divided into teams of 4-5 students. Previously, students were allowed to select teams. Yet, this approach proved to be problematic as teams were not diverse, friends turned to adversaries, and students were unable to resolve conflict. Therefore, instructors implemented a new approach using leadership assessments (True Colors, task v. relationship orientation, introvert v. extrovert), a self- assessment of skills, and GPAs. Assessments were compiled into an innovative, color coded visual summary sheet, which also included student preferences on work environment as well as a place for students to voice concerns about team dynamics. Visual summaries for each student were hung on a wall so instructors could visually assign student teams. Teams were built based on compatible leadership styles, skill levels and individual strengths and weaknesses. This method of assigning teams yielded positive results. Throughout the semester instructors noted improvements in overall team performance including conflict resolution, quality of work, team management, team engagement, creative thinking, and team satisfaction.

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K-12 Curriculum - Oral

2020-0245

Cultivating the Next Generation of Agri-STEM Professionals through Careers, Community, and Culture

Neil Knobloch, Ryan Kornegay, Levon Esters, Zachary Brown, Stephen McBride, Victoria Parker
Purdue University

Instruction in STEM related fields has become a top priority in the U.S. because of the high demand for skilled STEM professionals and the lack of students prepared to meet this need. The U.S. and the world face serious societal challenges that will require innovative agricultural STEM-based solutions. This has contributed to the need to foster K-12 student interest and engagement within STEM and agricultural life sciences (AgLS). Unfortunately, AgLS are interdisciplinary areas that have largely been underexplored for underrepresented minority (URM) K-12 students. This project focuses on engaging URM middle school students in learning about STEM in an AgLS context by focusing on four major societal challenges; food security, renewable energy, environment, and nutrition. This is accomplished by making cultural, community, and career (3 Cs) connections to students' classroom experiences. Agri-STEM professionals and community partners were brought into the classroom as a component of an existing curriculum project to bridge further real-world connections to the 3 Cs and the societal challenges. These individuals served as informal mentors by sharing their background and personal experiences, engaging students in hands-on activities, and by providing feedback and advice to students on assigned projects throughout the lessons. Five relevant themes emerged from this research: (1) student engagement and learning, (2) STEM awareness/career exploration, (3) community engagement, (4) student collaboration, and (5) student impressions/reflections. Current data has shown us the importance and effectiveness of bridging connections to culture, community, and careers to enhance the classroom experience.

Arionne Patterson

Innovative Teaching and - Oral

2020-0252

Grad Students Going Alt-Ac: How to Help Them

Rose Judd-Murray
Utah State University

The purpose of this workshop is two-fold: 1) identify the new buzzword “alt-ac” and 2) give participants practical tips for assisting graduate students in defining, determining, and excelling in alt-ac careers. One of the great pleasures of working within higher education is mentoring and guiding graduate students through the process of career exploration and advancement. However, the days of guiding them directly into the path of a tenured position at a university institution are gone. Many graduate students are disenchanted with academia and/or the academic job search and are discouraged about the possibilities for career placement and success. If these realities and scenarios have left you feeling inadequate as a mentor, you need tips and suggestions for encouraging your graduate students to seek for Alt-Ac (Alternative Academic) options. Alt-ac jobs may be in or outside of academia and include options for all career stages. Furthermore, alt-ac pathways aren’t just buzzwords for Twitter and Ph.D. forums, they are realistic pathways that prepare your students to adequately enter today’s job market. Learning how to focus on the wide-range of potential alternative careers, understanding alt-ac challenges, and hearing from those within alt-ac will give you the confidence and ability to be an effective mentor for current and future generations of graduate students.

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College / University Curriculum - Oral

2020-0262

Developing for the College Brand Equity through Publications

Shelly Sitton, Erica Summerfield, Dwayne Cartmell, Ruth Inman
Oklahoma State University

All products of an organization help develop a brand in the eyes and minds of consumers. For a college of agriculture, the consumers — alumni, students, faculty and staff, and prospective students and guardians — develop part of their brand perceptions through university publications. These documents influence their level of involvement with and perception of a degree from the institution, thus influencing an organization and how it performs. Brand equity is an aspect of branding that can be measured to determine a consumer's attitude toward a brand. By surveying one portion of a consumer base to assess brand equity, this study measured the attitudes of college alumni toward a student-produced publication and aspects of its brand equity, specifically, brand awareness, brand association, perceived value, and quality. This study also looked at alumni use of the publication and their self-reported demographics. Attitudes toward the brand equity of the student-publication were found to be positive, revealing overall positive brand equity in the minds of respondents. Respondents reported using a printed copy of the publication and reading many of the articles before throwing the publication away. The information gained from this study will allow creation of a marketing plan to more fully enhance the brand equity of the publication. By reviewing the results of this study with a NACTA audience, the authors will discuss ways to solidify a brand based on consumer attitudes toward a publication of the college.

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Innovative Teaching and Learning - Oral

2020-0263

Promoting and Measuring Collaboration Networks in a Capstone Course

OP McCubbins, Thomas H. Paulsen, Ryan Anderson ,
Texas A&M University

The ability to work with others is an essential skill in education and in the workforce. Employers want graduates that can efficiently and effectively work with diverse others to solve problems. To promote the development of those skills, the [Course] at [University] was redesigned to further emphasize teamwork and collaboration in an authentic capstone setting. The course utilizes small groups, known as committees, throughout the semester and requires students to make management decisions in order to operate an actual farm that serves as the applied learning laboratory. To determine if this course redesign was helping to promote collaboration amongst the students, we utilized Social Network Analysis (SNA). A sociometric instrument was used to gather interaction data between students. Interaction data were collected at the beginning, middle, and end of a 16-week semester in the fall of 2015 and spring of 2016. The graphical and statistical software, UCINET, was used to analyze the interaction data and to visualize the resulting collaboration networks. The fall 2015 whole-class network had a 70% increase in the density of the network, and the spring 2016 whole-class network density increased by over 80%. In the smaller, committee networks, some saw a slight decrease in network density from beginning to midpoint measures, before rebounding and increasing for the end of semester measure. Overall, the collaboration networks flourished within the structure of the [Course]. The total number of collaborative interactions between students increased dramatically as the semester progressed and more management decisions were made.

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Innovative Teaching and Learning - Oral

2020-0266

Evaluation of an Assisted Reproductive Technology Infused Lab Exercise to Enhance Live-stock Reproductive Management Instruction

Brittany Johnson, Olga Bolden-Tiller, Gemechu Wirtu

Tuskegee University

Tuskegee University, an 1890 land grant institution, for many years has trained students in animal agriculture as part of its mission. However, assisted reproductive technology (ART) training has been limited in the curriculum. The purpose of this study was to develop, implement, and determine student perceptions of an ART infused cattle lab exercise as a part of a TU animal reproduction course. The lab included two components: lecture and hands-on training. Student perceptions of the lab exercise were evaluated by survey using the Science Laboratory Environment Index (SLEI). The SLEI evaluated the lab exercise based on five scales: Student Cohesiveness, Open-Endedness, Integration, Rule Clarity and Material Environment. Factors outside of the SLEI were also evaluated, including effectiveness, likability, and structure. Twelve students enrolled in the course were surveyed following the lab exercise (81% responded) and survey results analyzed on a Likert Scale where 5=strongly agree, 4=agree, 3=neutral, 2=disagree, 1=strongly disagree. Student cohesiveness ($4.2 \pm 0.18/5$), effectiveness ($4.2 \pm 0.08/5$) and likability ($4.2 \pm 0.25/5$) scored the highest score and material environment ($2.5 \pm 0.29/5$) the lowest score. Student scores were relatively neutral in the areas of open-endedness ($3.3 \pm 0.25/5$), rule clarity ($3.6 \pm 0.45/5$), integration ($3.6 \pm 0.61/5$) and structure ($3.6 \pm 0.28/5$). In conclusion, the students found the enhanced lab effective in teaching the principles of ART to better understand reproductive management, suggesting an increased preparedness for educational and career opportunities associated with the ART workforce, which could ultimately result in improved livestock programs. However, the course could be more effective, particularly with an improved material environment.

Scholarship of Teaching and Learning - Oral

2020-0272

Herd That? Investigating Students' Communication Scores in a Beef Production Course

Shannon Norris, John Ryan Rodriguez, Holli Leggette, Theresa Murphrey, Andy Herring
Texas A&M University

Because scientific professionals require advanced training, Texas A&M University administrators created communication- and writing-intensive courses. We developed two communication modules—communicating accurately and concisely (CAC) and communicating orally (CO)—to implement in the Fall 2019 beef production course (N = 60). We investigated if completing CAC and CO influenced students' ranch management presentation scores and if time spent completing the modules could predict scores. Twenty-three students (38%) completed at least one optional module, and students averaged 32:52 minutes (SD = 21.58) to complete each module. We used a one-way ANOVA to compare the effect of completing CAC and CO on presentation scores ($p < 0.05$), and we met the assumption of homogeneity using Levene's test (CAC, $p = 0.51$; CO, $p = 0.51$). There was not a significant effect between students who did complete CAC and those who did not [$F(1, 59) = 2.55, p = 0.116$]. We found a significant effect between students who did complete CO and those who did not [$F(1, 59) = 4.16, p = 0.046$]. Using a simple linear regression, we found time spent completing modules was not a significant predictor of scores ($\beta = -0.01, p < .841$). We recommend instructors score the modules within their courses rather than as extra credit. We piloted each module to last 1–2 hours. Considering students completed the modules in nearly half of the expected time, they might not have retained content. Scoring metrics specific to CAC and CO may also assist in evaluating communication skills.

<https://voicethread.com/share/14523719/>

College / University Curriculum - Oral

2020-0276

Undergraduate student views of environmental education in Louisiana, Texas, and Honduras

Amy Boren Alpizar, Pablo Lamiño Jaramillo, Carla Millares Forno

Texas Tech

Over the last 30 years, many researchers have explored the roots of people's environmental attitudes, behaviors, and influences. Many studies exploring the effects of environmental education on youth demonstrate the important role young people have in transforming societal views on the environment. While several studies have explored environmental education in high-school age youth, few studies have examined environmental education with university and college level students. The purpose of this study is to understand and compare students' environmental behavior, perceptions, and strategies to increase the environmental awareness of undergraduate students at universities in Texas, Louisiana, and Honduras. This study also seeks to compare students' perceptions of the environmental education efforts of their universities. For this quantitative study, the data were collected from a stratified sample of undergraduate students. Data were analyzed using descriptive statistics and multivariate analysis of variance (MANOVA). Overall, participants from the university in Honduras scored higher in almost all the dimensions of environmental behavior, attitude, and awareness, followed by Louisiana and Texas. Results show that there is a significant difference among universities on the environmental education strategies students prefer ($p = 0.05$). Texas and Louisiana participants feel they would be more likely to perform environmental activities if there were monetary incentives. The students in Honduras feel they would be more likely to perform environmental activities if they see other people taking environmental action. Designing environmental education activities that tap into students' interests may assist in enhancing the impact of environmental education on college campuses.

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Global Education - Oral

2020-0277

Comparing agriculture students' migration intentions in El Salvador and Honduras

Amy Boren Alpizar, Pablo Lamiño Jaramillo, Rafael Quijada Landaverde

Texas Tech

According to the United Nations (UN), youth is defined as young people between 15 and 24 years of age. This group is the most mobile in the world and in many countries youth migration is now considered an epidemic. Rural youth migration in El Salvador and Honduras is a recognized problem, but there are few studies concentrated on the causes of rural outmigration and the impact of agricultural education programs for youth on the decision to migrate. This study aims to identify and compare the migration intentions of high school students in agricultural and non-agricultural programs from two rural communities from El Salvador and Honduras. For this quantitative study, a two-group model was employed. The target population (N = 209) was composed of high school students in rural areas with similar economic and social characteristics. Overall, results from the comparison between El Salvador and Honduras showed that there is a significant difference between both countries regarding their migration intentions ($p < 0.05$). Students from El Salvador were more likely to migrate than Honduran students. Youth who were part of the formal agricultural program have a higher intention of migrating than the group without agricultural training ($p < 0.05$). The results present an interesting opportunity for agricultural educators in these countries to make their curriculum more relevant to their students' lived experiences, thus providing educational content that coalesces with the contextual realities and perhaps diminishing students' intentions to migrate.

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Community Learning / Extension - Oral

2020-0278

Self-efficacy through experiential learning: A glimpse of agricultural education in action

Amy Boren Alpizar, Sofia Brizuela Obando

Texas Tech

“I hear, I forget, I see, I remember. I do, I learn.” This Chinese proverb provides the answer to issues in enhancing engaged learning in students. Today’s youth will lead tomorrow’s communities, their actions and perspectives will have an effect on the community in which every member has a role. Consequently, it is paramount that youth develop the skills needed to create a better future for their communities – especially youth who are marginalized and underserved. These youth could serve as powerful change agents and leaders in their communities with the development of both leadership and technical skills. The purpose of this grounded theory study was to determine the role that a non-formal agricultural and leadership education program run by a local food bank plays in the development of at-risk youth. The participants in the study include former members of the program, parents/guardians of program members, service providers, and current members of the program. The data were obtained through interviews, observations, document analysis, and a focus group. Using experiential learning theory, social contingency theory, and social support theory a preliminary grounded theory emerged regarding the development of youth self-efficacy in at-risk youth, called “Self-Efficacy Paradigm Framework.” The data indicated that the non-formal agricultural and leadership education program behaves as an environmental enhancer that triggers knowledge acquisition through meaningful experiences; the experiences lived by these youth teach us that agricultural and leadership education programs can serve as an important catalyst in the development of young people from many different walks of life.

Global Education - Oral

2020-0279

Farmer field schools as agricultural education programs for indigenous women in Honduras

Amy Boren Alpizar, Pablo Lamiño Jaramillo, Sarahi Morales

Texas Tech

The farmer field school (FFS) is an experimental training methodology justified in the principles of adult education, that looks to simplify the transference of experience through an innovative, participatory and cooperative learning style. In Honduras, the first experience with FFS was led by Zamorano University in 2000. Beginning in 2017, FFS were designed and implemented specifically for indigenous women. In many rural, indigenous communities, women have assumed the traditionally male role of producer and household head, as men have migrated out of these communities in search of jobs. Many women have expressed frustration at the gender and cultural discrimination they face when trying to improve their agricultural production through training and acquisition of inputs. The purpose of this study is to understand the perception of the indigenous women in the implementation of the FFS trainings. Ten indigenous women who participated in the FFS program agreed to take part in this ethnographic study, sharing their experiences in a semi structured interview. The results indicated that overall, participants considered FFS as a safe place where they can learn new agricultural techniques to apply in the field. Although they dislike the gender and cultural discrimination they experience from others, they still engage in a form of self-discrimination, viewing men as the ultimate agricultural decision-maker. In spite of the conflict in gender roles, the women did report that FFS is an effective teaching tool. Using specially designed FFS can be a way of reaching marginalized groups with agricultural training.

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**Scholarship of Teaching and Learning - Poster
2019-0001**

Developing extension capabilities to promote the improvement of soft skills for Animal Science students

Abner A Rodriguez, Luis C. Solorzano
University of Puerto Rico

There is a need to enhance soft skills such as communication, decision-making and problem solving, self-management, teamwork, professional experiences, and leadership among the undergraduate student population. Extension experiences are needed for their academic development as well. The objective of this project was to develop extension capabilities to promote the improvement of these soft skills for Animal Science students using small ruminants as models. Three teams composed of pairs of undergraduate students surveyed four small ruminant producers each regarding their research needs. Producers were located in 7 agricultural regions and 11 municipalities of the island. The survey was divided among seven topics areas: nutrition, health, reproduction, genetics, management, edible products, and others, with the opportunity to recommend three research projects per area. Team 1 collected 28 producer recommendations, Team 2 collected 29, and Team 3 collected 16. The most recommended research areas by the producers were nutrition (24%), health (21%) and reproduction (17%). Based on the producer's recommendations, students submitted written reports about their sheep or goat farms visits and developed a research protocol that was carried-out under the mentoring of Faculty. In summary, the development of extension capabilities using small ruminant as models improves the academic, research, and extension experiences of undergraduate students, as well as promoting their improvement of soft skills.

Community Learning / Extension - Poster

2020-0004

Part of the Solution: Leveraging Partnerships to Educate Kansans in the Evolving World of Industrial Hemp

Dana J Ladner, Braden Hoch, Jason Griffin, Lucas Haag
Kansas Department of Agriculture

The 2014 and 2018 Farm Bills legalized the growing of industrial hemp in the United States and permits interstate commerce. As a new regulated commodity/specialty crop, Kansas agencies believe it is vital to provide science-based education statewide to growers, distributors and processors. The Kansas Department of Agriculture (KDA) teamed with K-State Research and Extension (KSRE) to reach stakeholders across the state and into neighboring states. In 19 months, 2,901 individuals attended KDA/KSRE education/outreach in-person meetings on industrial hemp at one of 25 locations across the state. Additional outreach to countless individuals across the region has been accomplished via newspaper and magazine articles combined with webinars, television and radio reports, webpages, social media outlets and individual consultations. To enhance knowledge on the growing of industrial hemp, the Agronomy Department and the Department of Horticulture and Natural Resources at Kansas State University have course presentations specifically focused on the crop. As the industrial hemp industry grows, it is vital that regulatory, extension and academic units work collaboratively to benefit the state. Not shying away from industrial hemp, Kansas has embraced it and provided information to stakeholders and students to help ensure its success.

Innovative Teaching and Learning - Poster
2020-0005
STEM, Agriculture and the Black Male Experience

Chantel Simpson
North Carolina A&T State University

Diversity within fields of STEM and agriculture is a growing trend as the field seeks to increase the population to citizens with the ability to make well informed agricultural decisions and meet the needs of 21st century agricultural workforce. Unfortunately, African American males are a population that is both underrepresented in STEM and agriculture as well as in all programs of higher education. This research describes the perceptions and experiences of ten self-identified African American men pursuing STEM or agricultural degrees, their motivations for pursuing their degrees and the issues that they have faced while navigating their undergraduate degree programs. Utilizing theories of motivation, this research examined the roles of motivation on overcoming both real and perceived issues and provides recommendations for faculty and staff members to better support this population of students. Participants in this study described high intrinsic motivation and the desire to complete their degree programs in order to give back to their communities, but also expressed feeling as if their ethnic backgrounds forced them to have to prove their knowledge to instructors and peers in order to garner respect.

**Community Learning / Extension - Poster
2020-0011
Charismatic Ambassadors For The Farm**

Kimberly A Cash, James E. Wetzel
Lincoln University

Urban populations are projected to outnumber rural populations by the year 2025. The majority of urban populations have little or no contact with agriculture, which creates a disconnect from the origin of our food. This increases fear of our food systems. In an attempt to reduce this fear, the use of small to medium sized animals, related either to animal production stocks or part of the production environment, are used to attract patrons to outreach displays. The use of chickens, embryology, aquatic and terrestrial invertebrates, miniature breeds, and baby animals of production species, can promote a willingness to learn about agriculture. Chickens with eye-catching patterns and behaviors, or exotic breeds, serve as stand-ins for production breeds. These chickens are familiar with handling, thereby, making them adapted to crowds and display many natural behaviors, which can be promoted with accompanying narration by the spokesperson. Invertebrates harvested from aquaculture ponds and plant plot edge areas are selected for visibility and interesting attributes related to their biology. Many patrons are initially disgusted by invertebrates, but following the spokespersons lead willingly learn about and touch them. This direct interaction between display animals and patrons is encouraged and engages the audience, providing experiential learning opportunities rather than minimal contact. These opportunities are instrumental in educating about agriculture and reducing consumer fear. In addition, collection, handling, and transport methods are key to training of spokespersons, which are often college students pursuing degrees in agriculture. These students gain stronger public speaking skills, which increases future employment potential.

Innovative Teaching and Learning - Poster

2020-0012

A Retrospective Pre-Post Survey to Analyze Perceived Learning in an Environmental Systems for Agricultural Structures Course

Jonathan A Watson
University of Florida

In 2019 instructors in the Agricultural Operations Management (AOM) program in the Department of Agricultural & Biological Engineering at the University of Florida developed a retrospective pre-post survey instrument to measure changes in perceived knowledge, skills and attitudes (KSA) for students enrolled in AOM4642: Environmental Systems for Agricultural Structures during the Fall 2019 semester. Thirty-two AOM students enrolled in the 16-week course completed the survey. Post course, students retroactively rated their perceived learning of KSA. Changes in pre- to post course assessment measures were compared using simple t-tests and mean scores, standard deviations, variance and statistical significance were reported. Constructs measuring KSA were created using collapsed variables and tested for internal consistency and scale reliability against a threshold reliability coefficient of 0.70. The specific objectives of this research study were to: 1) measure changes in students perceived knowledge, skills, and attitudes, 2) evaluate student sentiment toward course materials, activities and instructor effectiveness, and 3) solicit feedback from students on ways to improve the course. From results of the survey, students indicated significant increases in their perceived learning with respect to KSA. Students commented on the effectiveness of several instructional activities indicating those activities enhanced their experiences but did note some of the lecture materials needed to be shortened to help with information retention. Students generally felt their instructor was approachable and facilitated their learning although many recommended more lab activities and opportunities to practice problems applying concepts learned in class. From these findings, the instructor will design new hands-on lab activities, update lecture materials and notes, and implement live-polling and in-class formative assessments.

**Innovative Teaching and Learning - Poster
2020-0014**

The search for onion maintainer lines: An undergraduate genetics class group exercise.

Chris Cramer
New Mexico State University

In order to illustrate the concepts of allele frequency, probability, and the binomial expansion, a real-world example of obtaining onion maintainer lines from open-pollinated populations was created in the form of a group exercise for a junior-level, undergraduate heredity and population genetics course. For the exercise, students are provided background information about the genic-cytoplasmic male sterility system and growth lifecycle of onions. The importance of maintainer lines to hybrid cultivar development and seed production is explained. Students are asked to determine the probability of obtaining one plant that is a maintainer line out of five or ten plants selected from open-pollinated populations that vary in their *ms* allele frequency and/or N cytoplasm frequency. They are asked to explain the implications of each scenario in the ability to obtain a maintainer line. For extra credit, the request is flipped to how many plants need to be sampled in order to have a 95% probability of obtaining five plants that are maintainer lines without knowing *ms* allele and cytoplasm type frequency within the source population. This group exercise integrates multiple concepts taught throughout the semester even though the exercise is provided during the unit on population genetics. By working in groups, students learn from each other and collectively synthesize answers to the problem that would be difficult for some students to complete individually. This exercise uses higher order cognitive thinking in the form of deduction and analysis. The exercises with the associated answers will be provided.

Innovative Teaching and Learning - Poster

2020-0015

'Write your own problem' exercise for an undergraduate genetics course

Chris Cramer

New Mexico State University

Genetics problems used on homework assignments and exams often assess a student's ability to remember and utilize key concepts in their solution. Students often follow problem solution examples without understanding the solution methodology. As part of an undergraduate genetics course, an exercise was developed in which students synthesize their own problem complete with an answer when given certain parameters and guidelines. Students write a narrative to the problem giving background information and directions to the reader. They are encouraged to be creative in their narrative. Students also provide the answer to the problem. In writing their own problem, a student demonstrates their grasp/mastery of a specific genetic concept. Prior to the exercise, problem solving is demonstrated to students and students complete practice problems related to the particular concept. Students are then given practice with the exercise. They are asked to write a problem as part of an in class exercise. Students share their written problems to determine if they can be solved successfully. This practice helps students when they first experience a 'write your own problem' on a homework assignment or exam. This exercise has been quite effective in identifying gaps in student understanding of genetic concepts that may have been missed with prewritten problems. The exercise is graded based upon how well the problem followed the guidelines provided, how well the narrative provides enough information to and guides the reader to solve the problem, and to what extent the provided answer to the written problem is correct.

Teaching with Technology - Poster

2020-0017

Student Learning from Online Documentaries: A Pre- and Post-Course Assessment.

Jose A Lopez

Texas A&M University-Commerce

The objective of this study was to assess student learning in a junior-level course on trends and issues related to agriculture and the food industry using online documentaries. The course requires students purchase, rent, or view from a subscription-video-streaming-service website of their choice selective documentaries, but most documentaries are available at Hulu, Netflix, Amazon Prime, IMDb, or YouTube. The survey was conducted in the fall 2019 semester using Qualtrics XM Platform™. Of the total 40 undergraduate students enrolled in course, 31 students participated in the pre-semester survey, 26 in the post-semester survey, and 24 in both surveys. Most students were juniors (58%), followed by seniors (29%), sophomores (10%), and freshman (3%). Pre- and post-course student perceptions and information on media-sensitive topics covered in the course (chemical use in agriculture, GMOs, CAFOs, hormones in food, biotech crops, greenhouse gas emission, safety standards, industrial farming, organic farming, non-GMO advertised food products, and hormone-free food products) were collected and analyzed. Our results indicated the student perceptions on the topics (as negative, neutral, or positive) were not statistically different pre- and post-semester, but students feeling more informed on each topic was consistently statistically significant for all the topics at the 0.05 level. In addition, 77% of the students felt the course helped them develop a more positive opinion of agriculture; 81% felt the course helped them realize media is more negatively biased than they thought; and 100% felt they were now more familiar with issues faced by the food and/or agriculture industry.

College / University Curriculum - Poster

2020-0019

Certificates for Technical Agricultural Careers Supported by Industry

Brad Ramsdale

Nebraska College of Technical Agriculture

Providing innovative, technical education to our students to meet the demands of the agricultural industry is the core of our institution's mission. Feedback from industry advisory councils has long assisted our strategic planning and program development. In response to industry demand, our college established three certificate credentials in the Agronomy-Ag Mechanics Division with the objective of preparing students for the technical careers of Irrigation Technician, Ag Chemical Application, and Agricultural Welding. These certificates are 15 to 18 credit hours to meet Nebraska system requirements and courses were chosen in collaboration with industry. Also developed were industry-advised concentrations which have additional recommended courses to allow the student to maintain full-time status over the two semesters required for completing the certificates. A significant industry partnership with Reinke Manufacturing was key to successfully establishing the Irrigation Technician Certificate. The partnership provided a center-pivot for the college's farm, a mini-pivot, and control units for the laboratory. Reinke offers scholarships/work agreements for students, matching them with a local dealership. Additionally, curriculum allows students to achieve Reinke Platinum Plus certification. These technical certificates are the primary reason our enrollment in the associate degree option of Agricultural Equipment Management increased by 100% from 2007-2013 compared to 2014 to 2019. During these last 6 years, 78% of the students enrolled have completed the Irrigation Technician curriculum. Other successes include 80% of students successfully passing their Commercial Applicators Certification on the first try and 100% student success on passing the American Welding Society D1.1 1G certification test.

College / University Curriculum - Poster

2020-0021

Helping Young Farmers Prepare to Rent Farmland: Expert Recommendations

Maria Boerngen, Blake Hartman
Illinois State University

Approximately 60% of Illinois farmland is rented. Within this market, gaining access to rented farmland is often a competitive process with accredited farm managers representing landowners in the process of selecting and negotiating with farm operators. Local connections and proven production and financial records increase the likelihood that experienced farmers will be chosen. Young farmers' relatively limited resources and experience are barriers that make it more difficult for them to rent farmland early in their careers. Therefore, the objective of this case study was to identify the steps young farmers can take to increase their prospects of renting farmland. Telephone interviews were conducted with ten accredited farm managers selected from the membership of the Illinois Society of Professional Farm Managers and Rural Appraisers (ISPFMRA). Questions addressed their farm management experience, methods of choosing and negotiating with farm operators, and the importance of factors such as business records and personal relationships in this process. Results of this study indicate that young farmers should establish good reputations and strong connections in their communities, and thoroughly document their available financial and equipment resources. They should stay informed about production agriculture trends, be prepared to offer a fair cash rent, and avoid "rent chasing" (i.e., trying to outbid an incumbent tenant). In states with competitive land markets, the results of this study can inform farm management instructors' efforts to prepare their students for career success.

Innovative Teaching and Learning - Poster

2020-0029

Using Escape Rooms to Reinforce Learning: Outcomes from an Experimental Design Study

Megan Stein, Summer Odom

University of Florida

Educators are consistently searching for innovative ways to engage students. However, how do students respond to new practices? The purpose of this study was to examine through experimental design the learning and student reactions to a class activity using escape rooms. Escape rooms were designed as exam reviews to reinforce student's learning from a personal leadership course. To successfully complete the exam review and "escape," students had to work together to solve a series of puzzles that directly correlated to content covered in class which could be expected on the upcoming exam. For the experiment, students were divided into two groups. All of the students participated in an escape room for the first exam review (n= 54). From there, group one (n = 27) participated in a traditional exam review (flash cards, additional student led material) for exam two and then an escape room for the final exam. The second group (n = 27) participated in an escape room for the second exam and a traditional exam review for the final exam. Twenty-six students were excluded because they were absent for the first exam review. Analysis of the data indicates that escape rooms do not have a negative effect on students. However, there are differences between those who were excluded from the study (did not participate in ER 1 and/or did not participate in either review or ER 2/3). Their scores were lower. For implementation, students scored better when a traditional review split up the escape rooms (ER, traditional, ER).

Scholarship of Teaching and Learning - Poster

2020-0033

Mental Effort Required for Laboratory Activities in a Principles of Electricity Unit

Don M Johnson, M. A. Wise

University of Arkansas

Students ($N = 24$) in a junior-level university agricultural electricity course completed the Subjective Mental Effort Questionnaire (SMEQ) after each of three laboratory activities in a principles of electricity unit. The SMEQ measures perceived mental effort on a 0 to 150 scale, where 0 represents “Not at all hard to do” and 150 is an unanchored value beyond “Tremendously hard to do” (scaled at 115). We also asked students for written suggestions on what future students should do to better prepare for each lab activity. The first lab activity involved using digital multimeters (DMMs) to measure voltage, amperage, and resistance in AC and DC circuits. The mean SMEQ score was 54.1 ($SD = 15.2$), indicating “some to a reasonable amount” of mental effort was required. The second lab activity involved use of Ohm’s Law and Kirchoff’s Laws to analyze series, parallel, and combination DC resistive circuits. The mean SMEQ score for this activity was 85.5 ($SD = 22.6$), indicating “a lot of mental effort” was required. The final activity involved analyzing an AC circuit containing both resistive and inductive loads to solve for impedance, inductive reactance, phase angle and power factor. The mean SMEQ score for this activity was 73.3 ($SD = 16.9$), indicating a “fair amount” of mental effort was required. Based on mean SMEQ scores, the lab activities in this unit were judged to be at an appropriate level of difficulty. Student suggestions for future students included completing assigned readings, studying their notes, and writing out relevant formulas.

Innovative Teaching and Learning - Poster

2020-0035

Hatching Egg and Table Egg Case Studies in Project-Based Learning

Nicole M Zukiwsky, Frank E. Robinson

University of Alberta

Two project-based assignments were presented to a fourth year applied poultry science class of 26 students. The objective of the projects was for students to learn about efficiencies in the poultry industry through exposure to poultry and real-world industry activities. Six laboratory sessions throughout the term served as the foundation for the projects where students participated in hands-on activities focusing on the process of egg incubation, chick hatching and table egg quality. For the first project, each student received 12 broiler hatching eggs from a local farm. Eggs varied in size and quality. Individual students followed the eggs throughout the incubation and hatching process. Students evaluated egg weight, egg colour, specific gravity and candled each egg prior to incubation. After incubation students assessed hatchability and chick quality. The second project was similar as each student received 12 table eggs from a local farm in which they performed various tests to assess the quality of each egg. Students measured egg weight, shell thickness, specific gravity, yolk colour, albumen height and Haugh score. Students were instructed to create an open-ended portfolio of their design to describe the characteristics and fate of each egg. Overall there was a high level of student engagement and participation during lab sessions. The hands-on labs presented students with knowledge that reinforced factual concepts learned through lectures. The students demonstrated a range of creativity and uniqueness through their individual portfolios. Based on feedback, students would benefit from being given more structure on portfolio guidelines and grading rubrics.

Teaching with Technology - Poster

2020-0036

Alumni Perspectives on the Transferability of Skills Learned in an Agricultural Farm Management and Operations Capstone Course

Scott Smalley, Skyler P. Rinker, Mark S. Hainline ,
Iowa State University

The agricultural industry and workforce is continuously experiencing challenges and changes as practices, production, technology, and education evolve. With these changes, the need to ensure that stakeholders of agriculture are equipped with the necessary skills and knowledge is critical. The [University] capstone course is a student-managed farming operation allowing students to gain hands-on experiences relating to farm management and operations. Using the framework from Finch and Crunkilton's (1999) systems program model and qualitative case study methodology, interviews were conducted with alumni. The interviews helped to understand the alumni's perspectives regarding the transferability of skills learned in the course and application to the agricultural workforce. Through a series of one-on-one telephone interviews, 10 alumni shared their perspectives regarding the transferability of skills from the course. A common theme relating to the value of the course produced two sub-themes associated with (1) the value of the curriculum and (2) experiential learning experiences. It was concluded that learning experiences and acquisition of skills learned in the course are being applied by graduates who are involved in the agricultural industry both technically and professionally. An adaptation of Finch and Crunkilton's (1999) systems program model was designed that highlights the specific elements of the course. It is recommended capstone courses are designed with the intent of preparing students to enter the workforce regardless of the industry. Furthermore, post-secondary faculty who coordinate these courses should periodically collaborate with alumni who are involved in the specific field to improve the relevancy of the curriculum.

Teaching with Technology - Poster

2020-0037

Examining Agricultural Students' Experiences and Skills in an Agricultural Capstone Course

Scott Smalley, Skyler P. Rinker, Mark S. Hainline ,
Iowa State University

Students who enter the agricultural workforce are expected to possess specific knowledge and skills as defined by agricultural industry employers. As agriculture changes over time, so do the skills required by agricultural employers. [University] course is a student-managed farming operation capstone course for students, focused around farm management and operation. Using the framework of Roberts and Ball's (2009) context-based model for teaching agriculture, a survey of students was conducted during two semesters regarding their competence and confidence of certain technical and professional skills expected by agricultural industry employers. Students rated their competence of technical skills before and after completion of the capstone course and rated their confidence of professional skills after completion. Technical skills receiving the highest change in mean before and after completing the course were grain management ($\eta = 0.83$), commodity production knowledge ($\eta = 0.74$), farm management ($\eta = 0.72$), project management ($\eta = 0.65$), and understanding of commodity markets ($\eta = 0.62$). Professional skills with the highest means included students considering themselves to be trainable ($M = 4.77$, $SD = 0.65$) and respectful ($M = 4.76$, $SD = 0.68$). It was concluded the capstone course is improving student competence of technical skills and on average, students somewhat agreed they were confident regarding professional skills needed for the workplace. It is recommended this study be replicated for more in-depth analysis and a longitudinal study regarding how skills learned in the capstone course are being applied in the workforce be utilized as a way to further this research.

Teaching with Technology - Poster

2020-0038

Students' Evaluations of Yellowdig, A Social Learning Platform

Kelsi Opat, TaylorAnn Washburn, Erica Irlbeck ,
Texas Tech University

Keeping students engaged, as well as creating a sense of community, can prove challenging in online courses. Yellowdig, a social learning/discussion board platform, formatted similarly to common social media platforms, promises to enhance engagement and increase student satisfaction with courses. The researchers incorporated Yellowdig into a semester-long online professional development course with 22 students (N = 22). Students were required to participate in discussions at least once a week and perform certain tasks – a combination of creating original pins (posts), commenting on pins, receiving comments on their pins, obtaining upvotes (likes) on pins from classmates, and receiving special recognition from the instructor – to earn credit. An online survey was used at the conclusion of the course to gather student feedback on Yellowdig. Answers from each student were analyzed for positive or negative sentiment by two researchers. After coding independently, the researchers compared answers. They were found to have 100% agreement. Students reviews about using Yellowdig were mixed with 13 (57%) and 10 (43%) negative. Student feedback indicated that more instructor-led discussions and structured topic categories would make for a more meaningful learning experience. This presentation will discuss feedback from students who were required to use Yellowdig. The researchers will also present ideas for effectively using Yellowdig in future online courses using the data.

**Scholarship of Teaching and Learning - Poster
2020-0039**

Unlimited Quizzes: Enhance Learning in College Agriculture Science Courses

Michelle S Burrows, Tyson J. Sorensen
Utah State University

Students enrolled in Agriculture, Food and Natural Resource (AFNR) courses often arrive at college with limited study skills appropriate for higher education. Research shows several intentional strategies can help improve students' knowledge retention. Distributing practice materials and frequent assessment have been shown to increase long-term retention of knowledge (Roediger & Pyc, 2012). Furthermore, interleaving has shown to be effective in long-term knowledge retention (Kang, 2016; Roediger & Pyc, 2012). Kumar (2015) recommended frequent quizzes to help students prepare for exams. In light of the research on student study habits and success in college, there is disagreement as to the effects of online quizzes as a study tool for undergraduate students (Bell, Simone & Whitefield, 2015). Therefore, our research objective was to examine the effects of unlimited quizzes within an AFNR course ($n = 59$) by determining relationships between unlimited quiz attempts and success on course exams. Each student's number of quiz attempts and exam scores were recorded and OLS regression was used to identify relationships between number of quiz attempts and exam grades. The results of this research indicate there is a positive relationship between number of quiz attempts and exam score ($p < .05$). Additionally, more than 80% of students indicated unlimited quiz attempts led to being better prepared for exams, and 78% felt unlimited quiz attempts reduced exam anxiety. Results of this study indicate the positive benefit of utilizing unlimited quiz attempts as a study tool, and has implications for teachers of AFNR courses regarding planning and teaching.

Innovative Teaching and - Poster

2020-0047

Autonomy, Collaboration, and Personal Development through a Capstone in Leadership

Summer R McLain, Jera Niewoehner-Green, Paige Andrews ,
The Ohio State University

Capstone courses at Ohio State are culminating experiences which aim to integrate classroom learning with real world application. Within the Community Leadership Major and Leadership Studies Minor in the College of Food, Agricultural and Environmental Sciences, the Capstone in Leadership course focuses on the applying leadership theories, principles, concepts, and skills through a project aligned with a student's academic or career interests. While the opportunity for autonomy is rare within many university majors, and even in the context of capstone courses, this course engages students in the critical analysis of a leadership issue within an organization or group. Students plan, conduct, reflect, and report on a self-directed leadership project with the support of the instructor and capstone cohort. Examples of student projects include designing professional development for 4-H educators, increasing agricultural literacy through facilitating farm tours, and partnering with local food banks to increase efficiency and improve services. This presentation will include an outline of the course design, student work outcomes, and practitioner reflections. Student feedback and reflection papers reveal major themes of learning through collaboration, relationship building, personal growth, and discovery of personal leadership styles. This uniquely designed capstone allows for students to apply knowledge gained within the degree program and practice leadership within their community. This experience is one they can build upon as they further develop as leaders in the agriculture and natural resource industry.

Innovative Teaching and Learning - Poster

2020-0053

Learning and Leading: A Case Study on Implementing Active Learning Strategies in a Large Lecture Course

James C Anderson
University of Georgia

A common consideration in large lecture classes is how to keep students engaged throughout the semester and what instructional strategies can be used to encourage transference of knowledge from theory into praxis. The purpose of this case study is to present strategies for implementing active learning into lecture-based classes to substantively engage students in the content and better prepare them for utilizing concepts in real-world settings. Active learning allows students to take ownership of their learning as co-creators during the learning process. An introductory leadership course with a service learning component was redesigned to follow a learn-do-reflect model. Using an interactive and transparent learning approach, students in this course explored leadership models, roles of leaders and followers, concepts of effective leadership, and ethical issues that impact decision making. Next, they applied this knowledge while leading in various group and team scenarios, including the planning and implementation of a team-oriented service learning project. Finally, they tied it all together by reflecting on what they have learned, how well they were able to transfer this knowledge into useful tools in real situations, and what areas of development they will focus on moving forward. Since the redesign one year ago, student enrollment has increased with over 200 students representing a variety of majors across campus completing the course. In addition, more than 20 service projects and over 2,000 volunteer hours geared toward food security, animal welfare, youth education, environmental conservation, and community development have been completed in the local community.

Innovative Teaching and Learning - Poster

2020-0054

Collaborative Syllabus Development: An Innovative Approach to Student Engagement

Thomas H Paulsen
Morningside College

Student empowerment has been shown to be integral to the learning process. When students feel empowered, they also feel more competent in their learning activities, find them more meaningful, and feel they have additional control in the learning process. Further, research shows that empowerment increases students' personal initiation, persistence in task completion, and increases feelings of positive self-efficacy. One innovative way students can be empowered is through the collaborative development of a course syllabus. This presentation describes the collaborative process used to develop the Teaching Agricultural Laboratories course at [Institution]. Students actively engaged in collaboratively developing the course through an extended KWL activity (what students Know, Want to know, and what they Learned). Students were first asked to identify previous Experiences with agricultural labs, what they Knew or thought they Knew, Why it was important, what they Wanted to learn, Where they could learn it, and finally how we could Assess their learning to complete the EKWWAL process. Not surprisingly, the content, importance, and assessment ideas developed by the students aligned quite nicely with my initial course plans and the required Teacher Educations Standards previously identified for the course. Final course reflections supported enhanced engagement due to students' perceived empowerment in the development of the course. Specifically, students reflected upon the new agricultural laboratories experiences provided through the course and 10-hour practicum experience, felt the assessment activities they completed were relevant, and demonstrated attainment of knowledge and skills needed to utilize laboratories successfully in agricultural education programs.

**Scholarship of Teaching and Learning - Poster
2020-0055**

Social Network Analysis: An Innovative Approach to Determining Student Collaboration in a Cross-Curricular Project

Thomas H Paulsen, Daniel Witten, Richard Crow, Annie Kinwa-Muzinga
Morningside College

Social Network Analysis (SNA) provides an innovative approach for determining powerful insights into relationships between individuals in a population. Specifically, SNA allows researchers to analyze these relationships statistically and visually through modeling. Since SNA is a research tool that can be used to identify the effectiveness of specific teaching strategies and student activities that foster student collaboration, we sought to measure the impact of a collaborative student-learning activity built across two separate courses in the Morningside College agriculture curriculum. Students from introductory animal science and crop production courses were grouped and asked to develop a business proposal for integrating two unique enterprises on a partnering farm. Students from an upper level agricultural course served as project mentors. After a farm visit to determine potential resources, groups randomly drew a livestock and crop enterprise and were given ten weeks to develop their business plan. We measured collaboration before and after the project with a simple instrument that asked students to identify peers with whom they had collaborated in each of the partnering courses. The overall density of the network increased from 0.230 to 0.315 (36.8%), the number of ties increased from 378 to 517 (36.8%), and the average degree of centrality increased from 0.441 to 0.47 (3.6%); while the geodesic distance decreased from 2.031 to 1.824 (10.2%) and the number of cliques decreased from 156 to 59 (62.18%)—all indicators of improved network strength. End-of-course student reflections supported the positive impact this cross-curricular project had on student collaboration, and more importantly, student learning.

College / University Curriculum - Poster

2020-0058

Predicting Sophomore Retention in a College of Agriculture

Christopher Estep, Catherine W. Shoulders, Donald M. Johnson ,
University of Arkansas

Currently, only about 60% of students who begin as a freshman at a four-year university will complete their degree program within six years. This is particularly important for colleges of agriculture, as the industry already faces a shortage of qualified graduates. An essential piece of the retention process is ensuring students persist from their freshman to sophomore year. Accordingly, the purpose of this study was to determine if selected student academic and demographic variables could predict sophomore retention. Student data was obtained from the University of [State] Office of Institutional Research for all first-time, full-time freshmen ($n = 1048$) entering the [college of agriculture] during the fall semesters of 2008 to 2012. Inter-correlations were calculated to examine relationships among variables and stepwise logistic regression was used to determine predictors of retention. Variables measured were ACT scores, High School GPA (HSGPA), freshman first-semester GPA, gender, first-generation student status, and Pell Grant eligibility. First-semester GPA was moderately correlated with retention ($r = .45$), while ACT ($r = .13$), HSGPA ($r = .22$), and first-generation status ($r = -.10$) all had low correlations with sophomore retention. Additionally, first-semester GPA explained 29.1% of the unique variance in retention. Odds ratios indicated that each one standard deviation (.89) increase in first-semester GPA resulted in a 218% increase in the relative odds of sophomore retention. Increased retention efforts should focus on identifying and assisting struggling freshmen early in the first semester to enhance retention.

College / University Curriculum - Poster

2020-0059

Examining Predictors of Freshman Grades in a College of Agriculture

Christopher Estep, Catherine W. Shoulders, Donald M. Johnson ,
University of Arkansas

Academic success of college students has long been a concern in higher education. Research has shown that around 25% of college freshmen do not return as sophomores, and only about 60% of all students entering a four-year university will graduate within six years. Much of attrition can be attributed to students' grades during their freshman year. Therefore, this study sought to determine if selected student academic and demographic variables could predict freshman GPA. Student data was obtained from the University of [State] Office of Institutional Research for all first-time, full-time (FTFT) freshmen (n = 1048) entering the [college of agriculture] during the fall semesters of 2008 to 2012. Pre-entry academic variables measured were high school GPA (HSGPA) and ACT scores; demographic variables consisted of gender, first-generation student status, and Pell Grant eligibility. Inter-correlations among variables were calculated and multiple linear regression was used to determine predictors of GPA. HSGPA ($r = .56$) and ACT ($r = .39$) were most highly correlated with freshman final GPA. Being male ($r = -.21$), a first-generation student ($r = -.10$), and Pell Grant eligible ($r = -.08$) all had low to negligible negative correlations with freshman GPA. Finally, the regression model was statistically significant and explained approximately 32% of the variance in Freshman GPA. Year of admission, gender, ACT, and HSGPA entered the model; HSGPA was the best individual predictor, explaining 15.4% of the unique variance. Further research is needed to determine additional variables affecting freshman GPA beyond standard admissions data.

**Scholarship of Teaching and Learning - Poster
2020-0071**

A Snowball's Chance in Facebook: Reaching an Agricultural Audience in Survey Research

Austin Moore, Erica Irlbeck, Courtney Meyers, Nan Li
Texas Tech University

Newsletters remain a common tool for agricultural and commodity groups to communicate with their constituency. However, due to an ever-expanding communications landscape, there is some question as to the effectiveness of this communication tool. Through the efforts of a 2019 study, the researchers may have gained some insight into this question. The study required the recruitment of rural land owners and managers. Initial efforts to research this target population began on August 25, 2019. Researchers contacted individuals with commodity groups, livestock associations, local conservation chapters, and county extension agents asking them to distribute a research invitation to their members/clients. Many affirmatively responded and offered to place a notice within their newsletters. After 8 weeks, 50 responses were recorded. Seeking to push the research ahead, the team then decided to publish a Facebook post on October 11, 2019 requesting readers to share the study with individuals who fit the profile. This social media snowball sampling technique was immediately effective. Within two weeks, an additional 148 responses were recorded. The difference in these recruitment rates was roughly 7/week for newsletter as opposed to 74/week for social media. While not conclusive, this result suggests a need for further study into the effectiveness and persuasiveness of newsletters as a communication tool within agricultural communities of practice.

Stop and Think: Reflective Writing to Track Attendance in a Science Communication Class

Austin Moore, Kelsi Opat, Erica Irlbeck ,
Texas Tech University

The value of reflection is well documented in encouraging a learner to process and contextualize information. Reflection can be an afterthought, however, for large, in-person college classes where students quickly gather their effects and disperse when class ends. To address this, in-class reflective writing was used to track attendance in a large (N= 100) science communication class at [University]. Daily reflections required students to quietly ponder then hand-write a response to a lecture-related question or task related to an upcoming assignment. Responses were collected and used for both an attendance grade and as a touchstone for the instructor to identify any gaps in communication. At the semester's two-thirds point, a reflection was assigned to offer feedback on this practice. Eighty students were in attendance that day and completed reflections. These responses were independently sorted by the instructor and a colleague into three groups: positive, neutral/mixed, and negative. Positive responses (n = 52, 65%) included statements such as "keeps my brain engaged," and "tie[s] what we learned in today's lesson with the real-world," and "my opinion matters." Neutral/mixed responses (n = 20, 25%) included comments heavily preferring those questions directly related to homework, while others found them to be "annoying. . .but appreciated." The negative responses (n = 8, 10%) included objections to wasting paper as well as those who found the activity "tedious" or "just another thing we gotta do." Overall, student response was positive and instructive for future improvement, while instructors found the practice helpful for monitoring student understanding.

Community Learning / Extension - Poster

2020-0077

Agricultural Educators' Perceptions of Early Intervention & Suicide Prevention of Farmers

Jessie Comer, Dale Layfield

Clemson

The consistent increase in stress factors of farmers is becoming a silent epidemic, with farm income as a leading factor. As of November 2018, net farm income was predicted to drop 12.1% from 2017. These factors contributed to a suicide rate among farmers that continually outpaced suicide rates of other occupations during 1992-2010. Agriculture teachers maintain a strong rapport and trust in rural communities that they serve. Yet, little is known if these opinion leaders are adequately trained to recognize stress factors and other indicators leading to negative impacts on farmers. The objectives of the study were to assess: 1) South Carolina agriculture teachers' knowledge of stressors leading to depression/suicide, 2) knowledge of warning signs, and 3) their readiness to participate in training on this subject. The survey used in this study was based on a review of the literature related to farmer stress and suicide research. A total of 76 responses were secured from a population of 146 teachers using Qualtrics©. Agriculture teachers identified the top three stressors for farmers as unpredictable/bad weather, damage caused by rain, floods, drought, and concerns about the future of the farm. Availability of suicide prevention training in their schools was confirmed by 47% of the teachers; 84% responded they would participate in training related to farmer stress/suicide, if offered. Topics recommended for training included control of risk factors, identifying mental health issues, and developing support groups. Recommendations are that agricultural education state staff incorporate training facilitated by licensed mental health professionals.

College / University Curriculum - Poster

2020-0083

A National Multi-Decade Look at Trends for Graduates of Agriculture and the Related Sciences

Aaron J Giorgi, M. Susie Whittington

Ohio State University

College participation and degree attainment play an important role in the livelihoods of individuals (Seidman, 2005). Additionally, level of educational attainment correlates to career outcomes such as monthly income (Ford, 2018), or labor market utilization rates (USDOE, 2019). The study was designed to describe patterns of enrollment and graduation rates in postsecondary education. The objectives were to describe, nationally, across multiple decades, the types of degrees in which students graduated in agriculture and the related sciences (ARS), as well as the rates of graduation by sex and race. Data were compiled from the digitally available Digest of Education Statistics. Descriptive results were used to show that nationally, for both the all degree fields, and the degrees in ARS field, the quantity of graduates has continuously increased in all degrees since 1970. During the last decade, graduates in all degrees for ARS, have increased by approximately 41%. Graduates with a bachelor's degree in ARS have comprised less than two percent of all bachelor's degrees awarded. As of the 1980-81 academic year, bachelor's degree graduates, in all fields, were predominately women. Graduates with bachelor's degrees in ARS were mostly women beginning in 2011-12. The quantity of graduates by race for all bachelor's and associate's degrees, and specifically for ARS, continuously increased over the last decade. Those classified as Pacific Islander and Alaskan Native or American Indian decreased. Additionally, the percentage of graduates in ARS became less White, while Hispanics and multi-racial persons doubled their percentage makeup in the last decade.

College / University Curriculum - Poster

2020-0084

A University Level Exploration of First-Generation Students of Agriculture and Related Sciences

Aaron J Giorgi, M. Susie Whittington, Anne McDaniel ,
Ohio State University

College degree attainment has been described as a pathway to meritocratic societal outcomes (Torche, 2011; Seidman, 2005). First-generation college students (FGCS) have been documented as historically disenfranchised from college outcomes (Cataldi et al., 2018). In addition, career outcomes are equivalent for first- and continuing-generation graduates who obtain a bachelor's degree (Torche, 2011; Ford, 2018). Data support that FGCS are enrolling in agriculture and the related sciences at higher rates than in other disciplines. The purpose of this study was to describe trends in student campus involvement among underrepresented populations including first-generation students enrolled in colleges of agriculture and the related sciences (ARS). The objectives of this study were to describe Ohio State University (OSU) students' involvement on campus, participation in leadership, and sense of belonging. Data were collected using two university-wide surveys, the OSU Student Life Survey and the Multi-Institutional Study of Leadership. Descriptive comparisons were drawn between students in agriculture and the related sciences and students in other fields of study. Comparisons were also drawn between first- and continuing-generation students. A university level approach to exploring student experiences was warranted due to the lack of nationally representative, publically-available data on FGCS in colleges of agriculture and the related sciences. The study was used to describe student experiences on a large, Midwestern, tier one research, land grant institution. Comparisons were statistically drawn between ARS and FGCS. Implications for supporting the needs of ARS students, and specifically FGCS in ARS fields was the desired outcome shared as a result of this study.

Scholarship of Teaching - Poster

2020-0086

Cross-Curricular Project Impacts on Student Learning

Dan Witten, Rich Crow, Thomas Paulsen, Annie Kinwa Muzinga
Morningside College

Research shows that through cooperation, collaboration, and communication in small groups, students are able to achieve higher levels of thinking and retain information for longer periods of time. This presentation will demonstrate how students from two introductory courses, crop science and animal science, collaborated to solve real-world problems through the development of an agricultural enterprise plan. As part of this project, students also collaborated with outside professionals, mentors, and students from other classes on campus. Students were encouraged to use niche and non-traditional marketing techniques as part of the project. The culmination of the project included local professionals critiquing each group's plan. Students were asked to identify their level of knowledge of 14 different crop and livestock enterprises on a pre- and posttest questionnaire using a 5-point Likert-type scale. A paired-samples t-test was conducted to compare differences between pre- and posttest mean scores for each enterprise. Positive, statistically significant differences were found for 13 of the 14 enterprises. To wrap up the activity, students participated in individual exit interviews where they reflected on their experience. Responses included: "A project like nothing I have ever done before" and "It will not only help me now but in the future". Concerns from faculty and students with this approach included; uninterested students; lack of group cohesiveness, and partial work completion. To increase student interest in the future, we recommend increasing the number of individual interactions with other majors on campus and introducing different circumstances or project parameters.

Innovative Teaching and - Poster

2020-0088

Building the Better Burger: Using Playdough to teach Food Safety

Dan Witten

Morningside College

Active participation can allow students to build experience and knowledge through hands-on learning. Working with this idea, a student-centered experience was created to improve learning within a US Foods and Food Policy course. This presentation will show how Policy students worked with secondary students to inform them about the importance of Good Management Practices (GMP) and quality control measures through the use of a food manufacturing activity. Students were asked to build their own burger using various art supplies including; playdough, construction paper, and markers. As groups worked to create their burger, a disease vector (washing machine detergent) was introduced through handshakes and interaction with the post secondary students. Once the burger was created, students had to market the product to a possible consumer. During the marketing portion of the activity, students were asked to discuss the precautions that went into the production of the product. A black light was used to highlight the disease introduced into their burgers. While reviewing post secondary student reflections and course evaluations, many felt the experience of interacting with the secondary students and activity in general added to their learning by showing them places where they can learn about the food borne illnesses found in the food supply and simple steps that can be taken to keep consumers safe when preparing food. Changes to the activity include; the use of different materials to serve as the “burger”, increasing the types of “vectors” used, and controlling the disease vector so it can be tracked.

Scholarship of Teaching and Learning - Poster

2020-0091

Student Perceptions of the Veterinary Profession Post High-Impact Practice

Clint Ary, Emily Lewis, Jason Roberts, Will Bird, Joey Mehlhorn,
University of Tennessee at Martin

Today many students start considering a college major prior to high school. This early focus on career choice is driving universities to rethink recruitment strategies and to develop high-impact opportunities which quickly engage students in their desired field of study. This is important so students can be more prepared for the competitive veterinary school application process and later for the job market. Students planning to apply for pre-veterinary programs are looking for an edge and universities are looking to meet the demand. The use of intensive academic summer programs can be an effective way to connect students with their chosen career path and your university. A four-week, on-campus agriculture program was developed at the University of Tennessee at Martin for sophomore and junior students. The majority plan to study veterinary medicine as a career. A survey was conducted to evaluate student perceptions of key attributes of the veterinary profession. Results were compared to perceptions of current practicing veterinarians and college seniors completing the veterinary school application process. Key components of the survey include analyzing student perceptions of a veterinary career and the admission process, such as college GPA and the importance of soft skills. Student results were mixed due to the diverse previous exposure to the veterinary profession. Findings suggest a need exists for additional educational opportunities for young students planning to pursue a veterinary medical career. Results from veterinary practitioners revealed many would have preferred additional training in soft skills, debt management, and practice management before entering the profession.

Innovative Teaching and Learning - Poster

2020-0092

Annotated Bibliographies and Open Textbooks in Agriculture: A Case Study

Colby Moorberg
Kansas State University

Few open educational resources (OER) exist in agriculture. However, there are many extension publications, government reports, and similar resources available in agriculture that can be readily adopted as free reading materials for college agriculture courses. Annotated bibliographies can facilitate the use of such material by including direct links to the content, avoiding any copyright infringement, and providing context for each resource. The development of the open textbook, *Soil and Water Conservation: An Annotated Bibliography* will be presented. The goals of this project were to 1) create an open textbook in the form of an annotated bibliography, 2) increase student engagement, and 3) train students on how to critically evaluate credibility and usefulness of online resources. Development of the textbook and observations from incorporating student contributions to the textbook using an open pedagogy approach will be presented. *Soil and Water Conservation: An Annotated Bibliography* serves as a model for developing new OER in agriculture that can use existing publications while also engaging students through open pedagogy approach to textbook development.

Innovative Teaching and Learning - Poster
2020-0095
Food Talk Fridays: “Finding Food in Town” Challenge

Robert L Williams
Texas A&M-Commerce

Food Choices, Challenges, & Consequences is a university core signature course available to all students in the first year track. Lectures, discussions, and guest speakers are included in class activities for Mondays and Wednesdays. The objective of this presentation is to share one innovative teaching strategy that is used for class on Fridays. Food Talk Fridays is a rotation model used to divide the Friday class into 4-week units for more effective discussions on each aspect of the course name: choices, challenges, and consequences. The challenges unit is about finding food of various types and sources in the town where the university is located. Basic tools of qualitative research including interviews, observations, and collection of text/artifacts were used by each student to create an abstract and oral report on their assigned food type/source. A culminating event that requires all students in signature courses to present some aspect of what they learned during the semester through visual and oral communication is required. Students from each of the three groups rotating through the “Finding Food in Town” unit work together to develop a presentation that synthesizes the individual findings into a collective research poster presented at this event. The class has been one of the top choices for signature courses during the past three years with very favorable student evaluations. The “Finding Food in Town” presentations have been well received by others attending the event as well as the external reviewers who assess for visual and oral communication skills.

Scholarship of Teaching and Learning - Poster

2020-0101

Randomizing multiple choice answers does not impact exam performance

Carrie L Pickworth

North Carolina State University

Many times questions or answers are randomized on multiple choice exam questions to reduce student academic misconduct in classrooms with limited space. The objective of this study was to determine if order of multiple choice answer options impacts student performance on exams. Data were collected from two courses at differing academic levels (102 and 402) in which exams (4 or 2 exams, respectively) were administered where the answers to the multiple choice questions were randomized creating two test forms (A and B) over the course of two years. Exam forms were randomly assigned to students at each exam. Impact of question rotation was assessed related to total exam score, score on multiple choice questions, and time taken on the exams (402 only). Data were analyzed using Proc Mixed in SAS. Significance was determined at $P < 0.05$. The randomization of the multiple choice question answers did not impact student performance on any of the exams for either academic level. Total exam scores and percentage earned on multiple choice were not different ($P > 0.05$) for exam form nor any interactions with year or exam number. However, the time taken to complete the exam was impacted ($P < 0.01$) by the form of the exam. Students with the A form took an average of 6 min longer to complete their exams than students with the B form of the exam. In summary, randomizing answer options on multiple choice exams does not impact student performance on exams.

Community Learning / Extension - Poster

2020-0108

A Mixed-Methods Study on Teaching Methods for Andragogy on Gene-Editing Technology

Robert Thiel, Amanda Bowling, Joy Rumble ,
Ohio State University

Feeding the ever-growing population by the year 2050 is continually at the epicenter of agriculture research, with gene-editing technologies being one possible solution. Consumers' acceptance of gene-editing technologies stand as a major hurdle as opposition to gene-editing technologies can be accredited to the lack of knowledge by the adult consumer. The purpose of this mixed-method study was to describe which method of instruction between behaviorism and constructivism that consumers preferred when learning about gene-editing and determine which method resulted in the highest amount of knowledge gained. Participant data (n = 65) were collected from eight focus groups across the country through a multiple-choice knowledge gained scale and open-ended questions. Half of the participants received a behaviorism-test-constructivism-test and the other half received a constructivism-test-behaviorism-test. The qualitative results of teaching method preference indicated that the participants preferred the behaviorism style over constructivist style due to the clarity of materials, the efficiency of time, and individual work. A large portion of participants felt the exposure to both teaching methods gave them more knowledge, that the information was interesting, and that they wanted more information. The quantitative results indicated that the behaviorist teaching method scores appeared 16% higher than the constructivist style of teaching. The results also showed that having participants receive both teaching styles was not deemed significant for participants' knowledge gained.

Global Education - Poster

2020-0112

CASNR Student Interest in Agriculture Study Abroad Subjects, Activities, and Financial Aid

Jennifer Lopez, Robert L. Williams, Doug D. LaVergne, David R. Drake

Texas A&M-Commerce

One unique way to prepare students in higher education for an interconnected world is through study abroad. Students in agricultural sciences will become the future leaders in the fight against world hunger, environmental sustainability and changing food demands, so exposure to international experiences can become an essential first step. The purpose of this study was to assess a College of Agricultural Sciences and Natural Resources (CASNR) program's undergraduate student interest in the subjects, activities, and the willingness to pay for an agriculture-based study abroad. An online questionnaire was utilized in order to collect data from a random sample of 201 undergraduate students in a CASNR program. Data were analyzed for 56 participants using appropriate statistical tests to determine the preferred subjects and activities for an agriculture-based study abroad, and what students would be willing to pay. Students indicated animal sciences and wildlife and conservation as the most appealing subjects for an agriculture-based study abroad. They indicated an interest in taking courses abroad for credit and participating in hands-on activities in their international experience. While cost was a barrier, students indicated that they would be willing to pay up to \$1,999 if they received financial support. These results provide the first step in the development of an agriculture-related study abroad program for a 4-year university. Further action includes determining what resources and connections have been and should be made in order to develop a hands-on agriculture-related study abroad, as well what resources are available to help students fund their experience.

College / University Curriculum - Poster

2020-0116

Factors Influencing Students' Decisions to Select Agricultural Education as a Major

Chad W McKay, Daryl L. Nash, Sara E. Pope ,
Wilmington College

Upon entering a college or university, students have limitless possibilities when it comes to selecting an area of study. One choice is to pursue agricultural education. The current supply of teacher candidates often does not meet the demand for high school agricultural education instructors. Thus, the purpose of this study was to analyze whether belonging to the National FFA Organization (FFA) or holding an FFA officer position while in high school leads students to pursue an agricultural education major at Wilmington College. Researchers surveyed students enrolled in a first-year agriculture course each year from 2000 to 2018 (N = 1534). Due to incomplete records, data from 2001 and 2014 were excluded. Logistic regression was used to determine whether participating in FFA in high school (yes=871, no=663) (Cox & Snell R² = .068) or holding an FFA office in high school (yes=569, no=965) (Cox & Snell R² = .093) predicted choosing an agricultural education major (yes=429, no=1105). Neither were significant predictors. Nevertheless, college and university recruiters can continue to rely on FFA programs throughout the United States to play an important role in generating interest in studying agricultural education at the college level. Although the results were not statistically significant, this research provides recruiters with information about potential students that may help them choose their target markets.

Scholarship of Teaching and Learning - Poster

2020-0117

Analysis of Canvas Screen Time and Student Grade Outcome

Sandy Mehlhorn, John Cole, Isaac Lepcha ,
University of Tennessee at Martin

In today's technological environment, are students more or less likely to take advantage of online materials provided by their professor? A study was conducted to observe any correlation between student course grade, exam scores, and the amount of time a student spends logged into Canvas, the course management software used by UT Martin, to access class resources such as notes, lecture slides, and course video. The total amount of time spent on Canvas was collected each week for each student two consecutive semesters for several agricultural courses, including in-person and online courses (n=85). Students averaged approximately half the time on Canvas as the instructor. There were definite increases in time spent just before significant events such as exams or projects. Overall, students who spent more time on Canvas during and after midterms appeared to score higher overall grades, although there appeared to be no statistical correlation. There were also insignificant differences in time spent by online students versus on-campus students. Studies such as these can be useful in examining student study habits and regularity within an online interface and how it impacts their overall course performance.

Innovative Teaching and Learning - Poster

2020-0119

Say “Yes!” to the Stress! A Meaningful and Engaging Online Instructional Strategy

Kimberly Bellah
Murray State University

Balancing a full-time agricultural teaching career with being an engaged online graduate student oftentimes means one or the other role will suffer. Online coursework is often priced at a premium for convenience, but should not be shortchanged in terms of meaningful content. As such, creating content designed for immediate implementation in graduate students' classes was the sole purpose of this study. The objective of this qualitative phenomenological study was to describe 13 graduate students' participation in an online course challenging them to change the culture of their existing classroom. After recording a pre-reflective video capturing thoughts about potential barriers, challenges, anticipated student reactions, teacher attitude, and opportunities, graduate students then selected, implemented, and reflected on four “Yes Projects”. Each project required visual data and reflection experiences. The final post-reflection video addressed changed attitudes and impactful experiences throughout the semester. Overwhelmingly, graduate students reported a changed culture in both their classrooms and flexibility with students. They reported initial reticence in departing from their “norm” and that this course provided opportunity to take some of the ideas and desires they wanted to implement but lacked the motivation to do so on their own. They also reported their students noticed a change in the environment and in their teacher regarding a shared community in the middle and high school agricultural classroom. Finally, graduate students appreciated being able to see immediate benefit from an online graduate course that resulted in meaningful professional development related to their graduate degree.

Innovative Teaching and Learning - Poster

2020-0125

Learning Bovine Reproductive Anatomy Using a Bovine Palpation and Cervix Simulator.

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The Physiology of Reproduction course at Abraham Baldwin Agricultural College discusses the principles of reproduction in farm animals and includes the use of abattoir specimens and diagrams to learn key reproductive structures in the female bovine. Simulation models can be an effective tool at providing experiential learning opportunities. The purpose of this study was to integrate a bovine palpation and cervix simulator into the current course curriculum. The female bovine reproductive anatomy curriculum occurred during a three-week period in spring 2020. Data was collected from students enrolled in the Physiology of Reproduction course and effectiveness of integrating the simulator was assessed using an optional survey at the end of the female bovine reproductive anatomy curriculum. Survey questions were formatted on a five-point Likert scale (1 = strongly agree, 5 = strongly disagree). Of the 23 students that elected to participate in the survey, 78.3% strongly agreed or agreed that the simulator helped them locate key reproductive structures and the cervix simulator clarified the differences in bovine cervical anatomy. Approximately, 82.6% strongly agreed or agreed that the simulator helped them better understand bovine reproductive anatomy and increased their interest in learning more about bovine reproduction. Overall, 87.3% of students strongly agreed or agreed that the simulators were useful learning tools and 91.3% of students indicated that they were better able to visualize bovine reproductive anatomy in 3D. In summary, the bovine palpation and cervix simulator is an effective teaching aid and increases student interest in the subject matter.

K-12 Curriculum - Poster

2020-0129

Mini soil health sessions for high school students during summer agricultural programs

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Kindergarten – 12 outreach activities are an important part of the expanding soil health research and education programs at 1890 universities. An assessment of the educational impact of these outreach activities was conducted for each session at the University of Maryland Eastern Shore (UMES) and Delaware State University (DSU). One to two day sessions on the fundamentals of soil health and basic soil analyses were provided for a total of 50 high school students in 2018 and 2019. The students' soil health knowledge was assessed at the beginning of the sessions (pre-assessment) and then again at the end (post-assessment) using nine and fifteen multiple choice questions in 2018 and 2019, respectively. Eight of the nine questions from the 2018 assessment were the basis of the 2019 assessment and seven questions were added for a total of 15 questions. The pre-assessments indicate a relatively poor knowledge of soil health, averaging 61.1% in 2018 and 64.9% and 58.5% at UMES and DSU, respectively, in 2019. Mean scores increased slightly to 61.8% in 2018 and 67.0% and 64.7% at UMES and DSU, respectively, in 2019 after the sessions, thus 4.0% was the highest increase (DSU, 2019). By examining the assessment questions we found that those questions answered correctly by > 50% of the participants increased from the pre-assessment (60.7%) to the post-assessment (73.3%), which indicates particular gains in participant knowledge. It appears the short and varied sessions on soil health offered multiple learning opportunities; however, substantial knowledge gain requires a longer, more focused process.

Global Education - Poster

2020-0135

The Value of International Experience Using a Third-Party Provider

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The purpose of this innovative idea is to showcase the perceived benefits from recently completed international agricultural internships using a third-party provider. International rural internships in agriculture offered unique opportunities for recent participants which include; the exploration of traveling abroad, increasing global awareness, building connections with farming families, and enhancing professional competencies. Agriculture education is rooted in the expansion of knowledge through experiential learning. There is a need for students to gain global industry experience recognizing that agricultural markets are not confined to any one geographical area. As a result of the completed internships, participants realized that much of what they gained is transferable within their career trajectory as agricultural educators . Most post-secondary institutions offer formalized internship programs, providing students with valuable work experience. An international internship presents students with professional and personal challenges and offers new perspectives. These experiences can be achieved by utilizing the services of a third-party provider. The third-party provider used helped to remove perceived international travel barriers, assisted participants by finding placements based on specific agricultural interests, and offered a variety of countries to complete the experience in. The provider that was used by recent participants is well equipped to support students in all aspects of international travel. Participants' experience was maximized through a full immersion of an agricultural operation where hands on learning and mentorship were provided throughout the duration of the 12-week program. These recently completed international internships could serve as a model for other institutions to utilize .

The Role of Student Interests in Creating Effective Learning Experiences in Soil Science

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Interest in a subject matter can be a powerful driving force in motivating students to be successful learners. Identifying, cultivating, and sustaining subject interest is particularly challenging in introductory classes because of their large size. Soil science is often a required subject for various disciplines. Harnessing students' interests is important to creating effective learning experiences in soil science education, especially at the introductory level. The objective of this study was to use "interest theory" to enhance the learning outcomes from an introductory soil science course. The study was conducted over a two-year period (2018-2019) with a total of 118 undergraduate students from various fields (forestry, wildlife biology, environmental science, etc.) filled out a questionnaire (with 100% response rate) at the beginning of the introductory soil science course to identify their pre-existing interests in soil science, which were used to design various learning experiences (e.g., in-class demonstrations, games etc.) tailored to their majors and interests. Detailed student's comment revealed a wide range of interest types: a required course (8%), prior-experience (18%), personal interest (29%), utility value (15%), specific interest (26%), and no interest (4%). Interest types covered four phases of interest development (with no interest, 4%): triggered situational interest (65%), maintained situational interest (21%), emerging individual interest (9%), and well-developed individual interest (1%). Course evaluations and other metrics were used for assessing the students' interests in soil science. Empirical studies like this provide a unique insight on how to enhance course content with students' interests using various pedagogical innovations.

Scholarship of Teaching and Learning - Poster

2020-0141

A Comparison of Face-to-face and Online Students' Visual Reflections in a Research Methods Course

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Guided reflection is used by educators to assist students in learning and managing stress. The purpose of this study was to explore online and face-to-face (FTF) graduate students' perceptions of their own academic and coping experiences throughout a Research Methods course. Specifically, how do online versus FTF students perceive their engagement with course content as a piece in their holistic lives? Twenty-four online students and 18 FTF students enrolled in the Fall 2018 Research Methods in the Social Sciences course submitted weekly visual reflections that portrayed their relationship with the class, along with a written justification for the image. Five weeks dispersed through the 16-week semester were selected for analysis. Data were analyzed using the constant comparative method. Online and FTF students' visual reflections were further analyzed to discover differences and similarities through the weeks. Within the five weeks analyzed (Weeks 1, 4, 8, 12, and 16), online students displayed, chronologically, a high need for time management, multiple tasks to be managed outside the course, a need for balance, relief of the upcoming break and end of the semester, and focus on the final "hurdle." Within the same weeks, FTF students displayed confidence in their ability to succeed, awareness of connections between content and themselves, a growing level of comfort with the content, keep chugging along, and a high level of course satisfaction. FTF and online students can have different experiences in the same course. By examining these experiences, professors can better prepare their teaching methods to match students' needs.

College / University Curriculum - Poster

2020-0151

Integrated knowledge and skills in ORCHID CULTURE support Agripharmatech program

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Windward Community College

Agripharmatech is a Career and Technical Education-integrated STEM program, which provides basic academic and technical education to prepare students for transfer to four-year institutions in the agribiosciences and STEM fields, entry into diverse workforces, and venture into agribusiness entrepreneurship. Orchid Culture was first developed in 1987, and has been continuously refined to enrich student learning experiences since Certificates of Achievement in Agripharmatech were permanently established in 2014. Orchid Culture is a required course that fulfills all the program goals, and serves as a venue for student recruitment and retention. The course contents include: 1) basic principles and concepts of orchid morphology, taxonomy, evolution, genetics, breeding, plant growth, and pests/diseases; 2) practical laboratory work in orchid tissue culture, and field practices including orchid propagation, transplanting, watering, fertilizing and pest/disease control; 3) collaborative interactions with orchid nurseries and societies that provide students with opportunities to participate in orchid shows and field practicum to gain both experience in industrial settings and direct access to the workforce; 4) exposure to research internships through USDA grants that support students in undergraduate research, and scientific presentations at local, national and international conferences. As high as 64% of students in this course remained in the program to pursue the Certificates in Agripharmatech. The integrated approach applied in Orchid Culture class allows students to fully engage in the active process of learning, improves student learning outcomes, and promotes student participation in academic activities, social and community services.

Innovative Teaching and Learning - Poster

2020-0156

Effective Strategies for Infusing Diversity, Equity and Inclusion into Laboratory Courses

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University of Arkansas

Universities understand the importance of diversity, equity and inclusion (DEI), including cultural competence. Li (2013) acknowledged that study abroad is used to develop cultural awareness but is not possible for all students. The purpose of the presentation is to describe the strategies used to improve students' DEI capabilities in two laboratory courses from different disciplines, Hospitality and Apparel. Pineapple Café, a hospitality course with a restaurant-type of setting, is the venue for completing the laboratory portion of a Culture and Cuisines of the World course. While developing service management and food preparation and delivery skills, students engage in the cultural study of foods from around the world. Presentations about the culture and cuisine, including geography, history, agriculture, spices, language, and the influences of other countries, are featured during the meal service. Through Pineapple Café, the students bring the world into their classroom for themselves and their diners. In the same academic unit, an apparel production laboratory course results in an exhibit and runway show that features aspects of the apparel industry including trend forecasting, designing, pattern development, sourcing, production, and display. During the trend forecasting and design portion, students develop both written and oral DEI-related impact statements about their final products. Topics have included cultural awareness, women's rights, sexual abuse, body size, disabilities, gender neutrality, and mental health. During the production as well as the exhibit and runway show, students engage in natural conversations with fashion show attendees that develop deeper understanding of other's cultures and individuality.

College / University Curriculum - Poster

2020-0158

Incoming Agricultural Education Student Needs Study

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This study investigated the perceived preservice needs of incoming Agricultural Education (AGED) students at Tarleton State University. Incoming AGED majors (N = 86) were surveyed with a Borich (1980) model which determined their perception of the “Importance” and their “Ability” of 20 competencies specific to Agriculture, Food and Natural Resources (AFNR) teachers in Texas. The research objectives were: (a) describe the population of incoming AGED students at Tarleton State University according to specific demographic variables; (b) determine and prioritize preservice needs of incoming AGED majors utilizing a Borich model of Mean Weighted Discrepancy Scores; and (c) rank the students’ preferences to teach the seven major domains of AFNR curricula in Texas. The study utilized a descriptive model. All incoming AGED majors were surveyed in AGSD 1100 – University Transition course sections specific to AGED majors. Participants were primarily female (58.1%) with a mean age of 18.22 with 39.5% coming from rural communities and 41.9% coming from suburban communities. Overall, the incoming AGED majors completed an average of 3.48 years of secondary AFNR courses and 4.05 years of FFA membership. Based on Mean Weighted Discrepancy Scores, the students perceived their greatest need for preservice education to be in the general areas of Agricultural Mechanics, Food Processing, and Ecosystem Management. Moreover, the highest preferences to teach were the domains of “Foundations of Agricultural Education” and “Animal Science” while the lowest preferences were “Plant and Soil Science” and “Food Science and Processing”.

Innovative Teaching and Learning - Poster

2020-0163

Developing an Assessment Program for Safe Agricultural Equipment Operations with Students

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Ohio State University ATI

Safe equipment operation is an integral part of technical education and is essential to many careers. However, anecdotal reports from instructors indicated a decline in student equipment-ready preparedness, highlighting serious safety concerns. The declining agricultural base and a move away from manual transmissions are likely contributing factors. To objectively evaluate student preparedness, 267 incoming and returning students completed an equipment operation self-evaluation survey. Students reporting limited experience could opt out of the subsequent assessment with the understanding this would require remedial equipment operations training. Students self-reporting sufficient operational skills were required to view a video describing the assessment test and basic safety essentials for tractor and skid loader operation. Facilitators ensured student familiarity with all equipment controls prior to assessment. Students were evaluated for their ability to safely operate a tractor with manual clutch (n= 98), skid loader (n= 91), and a tractor with attached two-wheeled implement (n= 78), through a pre-determined course designed to evaluate smooth starting, stopping, turning, backing and obstacle avoidance. Student success rates for the manual clutch, skid loader, and implement backing courses, were 88, 95 and 89% respectively. The high success rate indicates that students possess high self-awareness of their operational skills. Alarming however, a high percentage of students were not comfortable enough with equipment operation to even make an assessment attempt. Students reported lack of prior opportunity and strict parental oversight as reasons for not feeling confident enough to participate in assessment. Next steps include development of training programs for those lacking necessary experience.

Scholarship of Teaching and Learning - Poster

2020-0164

Information-Seeking Behavior and Effective Learning: Adapting Strategies for the iGeneration

Rebekah Oliver, Dan Cernusca

North Dakota State University

Information-seeking behaviors are critical for effective learning, but difficult to measure and manage, especially within the iGeneration now populating the college classroom. This study investigated learning behaviors of students in an undergraduate genetics course, the process and development of in-class peer interaction, and entry-to-exit changes in self-reported learning behaviors. Desired peer interaction was discussed and demonstrated in a 50-minute intervention conducted by experts during a week-three class period. Learning behaviors were measured with an adapted survey instrument administered on the first and last day of class. Entry-to-exit behavior changes were analyzed using a t-test (constructs identified with factor analysis) and Kruskal-Wallis analysis (individual questions). Behaviors changed significantly after the intervention: factor analysis showed lower use of traditional and digital sources of information. No significant change was observed for the learning strategies constructs, including course topic perceptions and learning preferences. However, within the learning-preferences construct, exit responses indicated significantly-lower multi-tasking frequency, and greater (but non-significant) teaching of and learning from peers. Within the information-sources constructs, significantly-lower exit responses were reported for use of Wikipedia, library databases/catalog, the textbook, the instructor, and two or more peers. No significance was found for use of search engines. Changes for consultation with one peer and class materials were not statistically significant, although the mean for use of class materials increased. These results underline the complexity of interaction between learning behaviors and use of information sources. Other variables measured in the study suggest that our intervention may shift student behaviors toward more effective approaches to learning.

K-12 Curriculum - Poster

2020-0167

A Historical Review of the Curriculum for Agricultural Science Education (CASE)

Andrew Hauser, Rebekah Epps

University of Kentucky

Over the last decade agricultural education classrooms have changed the presentation of curriculum. The Curriculum for Agricultural Science Education (CASE) has focused on implementing scientific literacy in agricultural education classrooms since 2009. CASE continually addresses the need to increase scientific literacy and the lack of a national agricultural education curriculum. CASE is modeled after the Project Lead the Way curriculum created to integrate science, technology, engineering, and mathematics in secondary schools (Adelson & Blais, 1998). The purpose of this study is to synthesize the research behind the creation and implementation of CASE curriculum. This review examines the events, individuals, and developmental steps taken over time to implement CASE into high school classrooms. The study was conducted utilizing information from primary and secondary sources and supplemented by interviews with individuals involved with the creation of CASE. Authenticity was ensured by utilizing government reports, first-hand accounts, and articles cited in literature. Results show continual growth in the number of students and teachers involved with CASE and development and integration of a successful curriculum. As of the 2019-2020 school year, CASE is present in 46 states and the Virgin Islands and 2,335 teachers hold CASE certifications (CASE, 2019). There are ten CASE courses within four pathways, providing unique opportunities to cater to student interests and contribute to student success (CASE, 2019). Additionally, CASE has fostered relationships with technology companies to access materials for experiential labs. This review synthesizes the research behind the creation and implementation of the CASE curriculum.

Innovative Teaching and Learning - Poster

2020-0170

Developing an Agriculture-based Living Learning Community for Academic Success

Todd Winters, Anthony Delmond, Bethany Wolters, Laura Kepler
University of Tennessee at Martin

There is much documentation and research in regards to partnerships between academics and student life in Higher Education. One high impact learning practice that has seen growth results is a model of education that moves learning into the space where students reside. In the fall of 2016, Living Learning Communities (LLC) were established in one residence hall, Cooper Hall, on the University of Tennessee at Martin campus. The College of Agriculture and Applied Sciences LLC started out with 8 suites (roughly 60 students) in the fall of 2016 and expanded to 16 suites (roughly 112 students) for fall 2019. With this growth and facilitation of the living-learning program model, we have increased participation from faculty and staff within the College. This has created better relationships between students and faculty, and a correlation of better academic performance and student satisfaction. The development of a raised-bed garden has helped to create a point of pride and relaxation for students living in the residence hall and outdoor plant science class experiences. Study sessions being hosted in the LLC community rooms has led to better understanding of class content and performance in academics when it comes to the business side of Agriculture. Evidence strongly indicates that the involvement of faculty and staff is a key factor for the success of Living Learning Communities.

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Keywords: High Impact Learning, Living Learning Communities”

Global Education - Poster

2020-0171

Developing Agriculture Study Abroad Experiences in Italy

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Today's incoming college students, Generation Z, are dramatically different than any group seen in the past. They tend to be focused on meaningful experiences that help them grow as a person and feel like they are making a difference in the world. As a result, universities need to help foster opportunities for students to improve employable soft skills while meeting their personal goals. International immersion experiences can be instrumental in enhancing students' soft skills and providing a well rounded college experience. In fall 2019, the University of Tennessee at Martin began planning an agriculture study abroad program for fall 2020 to Siena, Italy. The goal is to provide quality experiences that would broaden students' outlook culturally, academically, and professionally. Planning began with a small leadership team and required administrative and faculty buy-in. This presentation will reflect the steps for development as well as roadblocks that have been experienced in the planning phase. It is the hope that this information will help other programs seeking to provide international opportunities. Faculty reflections on the process have been positive but it has required some out of the box planning. Having open and clear communication among administration and other colleges has been critical. Developing a partnership with a foreign university was more complicated than expected and required flexibility and teamwork to accomplish. The student response has exceeded expectations with more than 30 signed up to participate. The initial networking with key players has allowed the program to move faster than expected. Keywords: Study Abroad, Italy, International Agriculture, Cultural Immersion.

Community Learning / Extension - Poster

2020-0172

Evaluating the Establishment of an Urban Farming Program Community Lacking Access to Fresh Produce

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Urban areas containing food deserts struggle to provide fresh produce to meet population needs. Gary, Indiana, designated as a food desert, was the target community where a partnership developed to support urban farmers grow fresh produce. This study seeks to increase opportunities for effective training, learning and networking in the context of urban agriculture. This is accomplished through local leadership, hosting networking events, developing and delivering an Urban Agriculture Certificate program, and creating a tool share program. A mixed methods approach measured baseline information, networking event impact, knowledge gain and behavior modification through the certificate program. Results from networking events indicated 100% of attendees: “received answers to my questions/concerns about urban farming today”, “know more about some of the community benefits of urban farming”, and “met others (at events) that I can continue to communicate with about urban farming in the future”; and 87.5% indicated they “know where to go to get technical assistance with their farm”. When asked if they learned any new urban agriculture concepts or methods, 100% of attendees said ‘yes’. From the formative evaluation, respondents were able to identify what they felt was going well with the project. Responses included ‘urban farming is being defined as it will benefit all residents’ and ‘helping community partners come together and start to learn who each other is, and learn from each other’. Educational aspects of the project are succeeding at improving the connections between community members of a growing urban agriculture community.

College / University Curriculum - Poster
2020-0173
Creating Great Educators Using Maker Education

Andrew Hauser, Jacelyn Nesmith, Rebekah Epps ,
University of Kentucky

Formal education has been blamed for “killing” creativity. Agricultural education uses constructivist approaches to teach key agricultural principles. It is important for pre-service agricultural teachers to be provided with methods to enhance instruction. The Maker Education Model (MEM) is a constructivist approach taught to and used by pre-service educators at the University of Kentucky. The MEM focuses on utilizing student innovation and uses creation-based learning as the primary learning style. The model consists of five detailed stages to enhance student retention and creativity. The stages are a form of scaffolding, building from copy (lowest) to create (highest). The middle stages, completed in the following order, are advance, embellish and modify. Copy tasks students with creating something exactly as it has been done before. Students create something completely new in the create stage. The middle stages have students add their own knowledge to morph something previously created into something new. Pre-service agricultural educators observe formal and informal career and technical instruction teach a lesson. Tasked with re-teaching this lesson, pre-service teachers have to understand the steps of the maker education model, their audience, and the methods of the observed educator to create an effective lesson to teach to their peers. Lessons taught utilizing the framework of the MEM has increased creativity as students are utilizing concepts through creating items rather than rather than just remembering content.

Innovative Teaching and Learning - Poster

2020-0183

Putting the Fun in Soil Fundamentals: The Gamification of Soil Science

Michael Mashtare, Erica Lott, Charlotte Lee ,
Purdue University

The use of games to increase student motivation and course engagement is becoming an increasingly popular technique in higher education. In 2016, we began using “soils” editions/versions of Jeopardy and Matching games in our discussion/recitation sections to aid in subject mastery and exam preparation. While these in class games have generally been well received, students have frequently requested additional gaming platforms that could be used outside of the classroom. Based on this feedback, a question pool for each exam and subject mastery modules (e.g., soil textures, monoliths, calculations, legal land descriptions), were populated and delivered using a commercial gaming platform. Surveys (n=194) using a Likert scale and short answers were used to assess how useful (in terms of learning) and enjoyable the gamified exam preparation was in comparison to traditional methods (e.g., posted practice exams on Blackboard, review sessions). Specifically, the surveys were used to assess if students used the gamified exam preparation by itself or in combination with more traditional methods, how it compared to traditional methods and in-class Jeopardy, if they utilized it individually or in group settings, barriers to using it, if they perceived that it helped their performance in the course, and well as other measures including student autonomy. We also tracked whether student interest in the online games changed over the course of the semester. The results of this study will be useful as we continue to adapt our introductory soil science and forest soils courses to further stimulate student motivation, engagement, and learning.

Community Learning / Extension - Poster

2020-0189

Using an Internship Program to Build Career Interests: Implications for Student Recruitment

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Agricultural colleges in the United States use various strategies to recruit prospective students for graduate study. Generally, students are aware of some of the well-known degree programs such as animal science and crop science. However, students are often not aware of the lesser-known degree programs such as Extension Education. This study describes how an internship program can be used to generate interest among prospective students for Extension Education graduate study. We conducted this survey research in summer 2019 with a group of 31 undergraduate and graduate student interns hired for a 10-week internship with NC State Extension. Interns worked in County Extension Centers under the supervision and guidance of Extension professionals. At the end of the internship program, interns were asked to complete a retrospective pre and posttest survey. Twenty-two students responded to the survey for a 71% response rate. We found that the respondents who were very or extremely interested in pursuing a career in Extension increased from 36% before the internship to 68% after the internship, and the respondents who were very or extremely interested in pursuing a graduate degree in Extension Education increased from 36% before the internship to 45% after the internship. The internship program increased students' interest in Extension careers and in pursuing an Extension Education graduate degree. These findings are consistent with other studies that showed internships help students to understand career pathways, gather information, and make career decisions.

Global Education - Poster

2020-0190

Students' International Program Preferences for Destination, Cost, and Scholarships

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Study abroad experiences provide students with opportunities for personal and professional development. The objective of this study was to determine students' most desired study abroad destinations, confidence in securing scholarships and service opportunities, and ability to pay for international programs (IP). Undergraduate students in large enrollment, required courses by majors, and orientation courses in the college were targeted for data collection, and all grade classifications were represented (n=311). An open response survey question was asked to allow students to identify their preferred IP destinations. Italy was listed as the most preferred country in which to study abroad (n=99), followed by New Zealand (n=73) and the Galapagos Islands (n=73). In 2018, students reported Italy as their most preferred IP destination, however, Australia and Spain were numbers two and three. Students reported "maybe" (n=153, 49.4%) when asked about confidence in their ability to find study abroad scholarships for which [they may be] eligible. Students also reported "yes" (n=228, 73.5%) when asked about confidence in their ability to complete a study abroad scholarship application. While some students reported they were able to contribute \$1,000-\$2,000 to their IP (n=81, 26%), many indicated they were unsure about how much they were actually able to contribute to their IP (n=96, 31.3%). Evaluating students' preferred destinations, confidence in finding and completing scholarship applications, and the amount of money they have to allocate towards their program contributes to the scholarship of teaching and learning by offering IP faculty leaders with guidance and insight when developing their international program.

Community Learning / Extension - Poster

2020-0192

Developing Agriculturalists Who Lead in Their Industry, Family, and Careers

Joy Morgan, Daniel Radford, Blake Brown ,
North Carolina State University

The North Carolina Agricultural Leadership Development Program is a two-year program designed to develop personal and civic leadership skills among North Carolina agriculturalists. Originally started in 1984 for tobacco farmers, this program changed to include all sectors of agriculture in 2005. Lacking an evaluation since the change, an evaluation was conducted to gain an understanding of the specific accomplishments in a participant's personal and professional life that they attributed to the program. Four cohorts were surveyed and their feedback on open-ended questions was coded. This feedback was used to assist in measuring the program objectives and mission. The greatest professional accomplishments in order of reference included: job promotion, public speaking engagements, networking within the agricultural industry, serving on boards, making better business decisions, having crucial conversations, and advocating for agricultural issues. One participant mentioned "I was in the 40 under 40 for Greenhouse Production and featured in a Forbes article for women in Horticulture. The program assisted me in becoming a stronger manager and leader." Personally, the greatest accomplishments noted an increased prioritization of their families, better communication skills, and devoted community membership. One alum stated "I am a better father and husband because of the program. I learned how I operate, how I fight, and how I argue, all of which impact others. The program saved my marriage." Evaluations are a critical component of leadership programs as we strive to build leaders that not only lead in North Carolina agriculture but also lead in their families and careers.

Innovative Teaching and Learning - Poster

2020-0195

Pack Peers Make a Mentoring Difference

Wendy Warner, Mary Kate Morgan, Joy E. Morgan, Travis D. Park
North Carolina State University

Transitioning to college can be an intimidating experience for many first year and community college students. Challenges can present themselves in a variety of forms - academic, personal, or social - and can include obstacles such as how to study effectively, navigating campus, and meeting new people. Similar to other institutions, NC State University holds a large "Welcome Week" for students including a new student convocation, student involvement fair, college-specific meet and greets, and recreational activities. However, the size of the crowd at these large events often does not encourage personal relationship building and may leave students feeling lonely and overwhelmed. In an attempt to combat this isolation and aid students in their transition to NC State University, Pack Peers – Peer Mentor Program was started in 2018. All incoming first year students in agricultural education and agricultural science majors are paired with an upperclassman to help with those often difficult, first few weeks on campus. One hundred and twenty students entering the Department of Agricultural and Human Sciences have had the opportunity to participate in the program. Approximately 45 upperclassmen volunteered to serve as mentors, with about 15 students who have served as mentors for two years in a row. An estimated 60-70% of new students have utilized their Pack Peer and 20% of former freshman/transfer students who initially participated as mentees have returned to serve as a mentor. The department plans to continue offering the Pack Peers program in the future.

Scholarship of Teaching and Learning - Poster

2020-0202

Confidence in Online Teaching and Quality Matters: A Self-Efficacy Survey of Ag Faculty

Jamie Loizzo, J.C. Bunch, Shelli Rampold, John Jordi, Lauren Weisberg,
University of Florida

More than six million U.S. students take at least one distance education course each year (Babson, 2017). To keep up with the growing demand for distance education, many university faculty and instructors have migrated their instructional practices from face-to-face approaches to online interactive multimedia methods (McQuiggan, 2012). In an effort to create a distance education culture of quality, Florida's 2025 Strategic Goals for Online Education requires distance collegiate courses undergo an approved review process that includes meeting the Quality Matters (QM) instructional design standards to demonstrate rigorous online course development (Board of Governors, 2015). Past research indicates college teachers have varying levels of online teaching self-efficacy, including high to low levels of confidence using web-based tools for fostering knowledge growth (Horvitz et al., 2014). However, there is little research regarding their self-efficacy in implementing QM standards to achieve excellence in online instruction. An online survey questionnaire was distributed to University of Florida College of Agricultural and Life Sciences faculty and instructors to gauge their self-efficacy in QM and four areas of online teaching, i.e., student engagement, instructional strategies, classroom management, and use of computers. Useable responses were collected from 50 participants. Descriptive analyses revealed respondents were overall moderately self-efficacious in QM. Regarding the other areas of online teaching, respondents had the greatest self-efficacy in computer use and instructional strategies; respondents were less self-efficacious in areas of online classroom management and student engagement. In this session, presenters will discuss the online teaching and QM self-efficacy constructs, highlight results, and make recommendations.

Scholarship of Teaching and Learning - Poster

2020-0212

Making Informed Curriculum Decisions Using Data as a Guide

Clint Ary, Jason Roberts, Joey Mehlhorn, Scott Parrott
University of Tennessee at Martin

As the cost of a college education continues to increase, parents and students want to make the most of their college major choice. They desire the greatest chance of success after degree completion. Universities are looking for ways to better equip students for post-graduation employment. This is especially critical for programs with a licensing or accreditation component to ensure that students can meet the requirements for licensure upon graduation. Today's university culture of assessment and making data driven decisions has resulted in programs moving beyond anecdotal data for making curriculum decisions. Data analysis has long been part of the accreditation model, but it is a powerful tool to help programs improve the quality and effectiveness of programs and increase student success. The University of Tennessee at Martin has been tracking student data on several key aspects of its veterinary technician program to measure the likelihood of student success on passing the Veterinary Technician National Exam (VTNE). A baseline was developed in 2018 which has allowed for measurement of key success metrics of current and future student success. The data has allowed faculty to change course sequences, laboratory experiences, and preparatory training materials. Results indicate performance in specific courses is significant in student pass rates on the national exam upon graduation. The student pass rate on the VTNE has improved as a result of program modifications that better align with student success data. These findings can be shared with future students to help provide effective strategies for success.

College / University Curriculum - Poster

2020-0218

Factors Related to a Successful Agricultural Internship

Rudy S Tarpley, A. Brant Poe, Sandra K. Graham, Chandra L. Andrew, T. Wayne Atchley,
Tarleton State University

Since 1989, undergraduate students in Agricultural Services and Development at Tarleton State University have completed a “block” series of capstone courses prior to a 400+ hour internship. After the internship, intern supervisors completed final evaluations consisting of 24 competency measures. An additional item in the evaluation asked “Would you hire this individual at the completion of the program if given the opportunity?” This study determined which of the 24 evaluation variables were significantly correlated with whether or not supervisors would hire the intern. Research objectives included: (a) describe the 2012-2019 block interns according to demographic variables; and (b) determine which of the 24 internship supervisors’ evaluation items were correlated with the hirability status of the interns. This study utilized a descriptive/correlational design. Supervisors’ evaluations were collected from the fall, spring, and summer internships dating back to 2012 (N = 508). The average number of students on block was 22.1 (23 blocks). The typical student was male (52.8%) and served in an internship an average of 132.9 miles from the campus. Further, 92.1% of the students would be hired if given the opportunity. A regression analysis indicated that the following evaluation variables were significantly related to the hirability status of the student: “Ability to Learn,” “Knowledge of the Field,” “Potential as a Professional,” “Relationship with Peers,” “Attendance and Punctuality,” and “Speaking Ability.” Results of this study can be utilized to develop and update units of instruction within the block, recruit future supervisors, and develop recruitment/retention strategies for the department.

Global Education - Poster

2020-0220

Agriculture and Climate Change: A Cross-Global Project-Based Undergraduate Curriculum

Kulbhushan Grover, Emily Creegan, David DuBois, Naima Khan
New Mexico State University

Climate change research has established a rise in global temperatures and subsequent increased frequency and severity of weather events. Globally, agriculture is the base of self-sufficiency and is both contributing to and being impacted by climate change. Already vulnerable regions with high poverty rates and large populations are suffering the most. However, there is little research on climate change and agriculture, in addition to curriculum on climate variability and cross-global mitigation and resiliency strategies. Bangladesh is an extremely densely populated country where farmers are entirely dependent on natural resources, including rainfall, surface and groundwater. However, with impending climate impacts and a lack in education, university students need to be trained - with farmers - on regional climate change measures. The objective of this project is to develop curriculum that cultivates real-world climate change resiliency strategies, partnering developed and developing-economy University courses and students. This may be best facilitated by online course development. Both Bangladesh and the Southwest United States suffer from climate impacts and agriculture, and a lack of project-based education. An example curriculum strategy focus is on water resource management and resiliency in relation to salinity intrusion and drought effects. As a project officer for the Department of Environment, Bangladesh Ministry of Environment and Forestry, Climate Change Division, one of the authors, Dr. Khan has established relationships with both University of Dhaka and Jahangirnagar University, in Bangladesh. The presentation will include curriculum highlights about the assessment of soil, water, and air and atmospheric agricultural implications and hands-on project-based restoration strategies.

Online Programming - Poster

2020-0222

Academic Continuity Planning through E-Learning: Advice from Colleagues

Catherine DiBenedetto, Michael Vassalos, Anne Marie Rogers ,
Clemson University

Widely speaking academic institutions are being urged to consider learning environment preferences, student success tools, technology experiences, technology use in the classroom and accessibility regarding E-Learning (online modalities). During the 2019 fall semester [University] evaluated the implementation of a campus-wide academic continuity plan through E-Learning for emergency preparedness. E-Learning day was planned to evaluate core capabilities of public information/warning, community resilience, long-term vulnerability reduction, risk and disaster resilience assessment and economic recovery. [University] defines academic continuity as a continuation of academic services through eLearning in the event all or parts of instructional site locations become closed and/or unavailable. Campus-wide announcements through social media and email communication and training sessions were conveyed to faculty to make them aware of the plan. A university-wide survey was administered to evaluate the effectiveness of the plan. The majority of faculty (77.5%, n = 165) included E-learning day in their syllabus and 19.34% (n = 41) of faculty utilized training. Creating materials to use online was noted as most difficult to prepare for the day by 18% of the respondents. Less than half (46%) of the faculty agreed that E-Learning is a viable alternative to face-to-face instruction. Faculty indicated the University needed improved communication about the purpose of the academic continuity plan. The timing of the plan was a major concern. Some thought they had been given too short notice at an inopportune time of the semester. Most students (93%, n = 4855) indicated they received communication from their instructor prior to E-learning day.

College / University Curriculum - Poster

2020-0225

Impacts on recruitment and retention of underrepresented students in agricultural sciences

Susan Rowe, Katie Gaebel, Penelope Diebel, Kim Preston, Michael Moses, Jonathan Velez
Oregon State University

Data from a Pacific Northwest university shows a decline in student persistence in agricultural disciplines since 2012 with the biggest decline in Pell Eligible (10%) and underrepresented (9%) student populations. Underrepresented student enrollment numbers have not significantly changed. This mixed method study investigated factors affecting the recruitment and retention of underrepresented students, ranking the perceived impact of identified variables, and developing administrative recommendations. This presentation focuses on the qualitative data (focus groups and interviews), examining key factors students reported as impacting their choice of major and persistence in agricultural programs. Focus group tasks followed a modified q-sort protocol generating two sets of data: transcripts of all audio recorded conversations and three lists of ranked factors per group. Individual semi-structured interviews employed open-ended questions to guide discussion about students' chosen major, involvement in extracurricular activities, and factors affecting retention. Students identified three primary factors shaping choice of major: personal interest in disciplinary topics, influential people in their lives, and the coursework and other available co-curricular components such as opportunities to do research. Students identified agriculture related stereotypes and misconceptions as the primary barriers to recruitment. Finally, relationships with individual people and groups supporting students were identified as crucial determinants of retention as were the academic challenges of being an undergraduate and the lack of diversity in the faculty and student body. These results have direct implication in the direction of current and future efforts for recruitment, persistence, scholarship and services directed to foster a more diverse student population in agriculture disciplines.

Scholarship of Teaching and Learning - Poster

2020-0230

Integrating Experiential Learning Model in a Crop Production Course

Kulbhushan Grover, Shelly Stovall

New Mexico State University

Research shows that students are better able to effectively apply principles when instruction is combined with experiential learning. A semester long project based on Kolb's model was introduced in a crop production course along with several assessment strategies to evaluate its effectiveness. The project incorporated all the four components of the experiential learning model: i) Concrete Experience, ii) Reflective Observation, iii) Abstract Conceptualization, and iv) Active Experimentation. The students worked in pairs and managed 13 different cover crops and 6 vegetable crops and recorded their observations through the semester, and submitted a final project report. During the project, students recorded crop growth and soil quality parameters, reflected on their observations of their own crop plots as well as those of others, and synthesized concepts. Students also documented issues they faced, how they addressed those issues, what decisions they made in their efforts to grow the best possible crop, and what they would do differently if they grew the same crop again. Multiple assessment tools were introduced to evaluate effectiveness of the project in enhancing the student learning including a self- and direct-assessment of conceptual knowledge, direct assessment of application of conceptual knowledge and direct assessment of synthesis. The results showed that the experiential learning project improved the conceptual knowledge of the students along with their ability to synthesize and apply the concepts.

Innovative Teaching and Learning - Poster

2020-0231

Information Technology Literacy: Ranking Active Learning Strategies

Susan L. Jones, Joy Morgan
North Carolina State University

The ability to effectively use a computer in the workplace is now essential in agricultural careers. A computer applications and information technology course specific to NC State employed active learning strategies in the fall 2019 semester to support student learning. Active learning provides opportunities for students to talk and listen, read, write, and reflect as they approach course content through different activities that require students to apply what they are learning. This goal of this project was to 1) identify active learning strategies that work best to teach information technology 2) identify how active learning strategies impact learning; and 3) improve active learning strategies for future implementation in the course. During the last week of class, students in AEE 226 were asked to voluntarily rank ten strategies used from one to ten, with one being the strategy they felt they learned the most from and ten being the strategy they felt they learned the least from. Qualtrics was utilized to rank the results and identify the top strategies. Top rankings included "Dividing Class by Major," "Developing Career Specific Scenarios," and "Technology Integration," with "Group Teaching," and "Puzzles" earning the lowest rank. An observation from the final rankings is students enjoyed active learning when in a smaller group, rather than when asked to speak in front of the class. Information technology is continuously improving and emerging. Active learning strategies used to teach these skills should continue to be innovated to provide students active learning environments beyond a lecture format.

Scholarship of Teaching and Learning - Poster

2020-0239

An Analysis of Pre-Service Agricultural Educators' Self-Efficacy with Exceptional Learners

Kimberly A Bellah, Sara Edwards

Murray State University

Upon reviewing the literature, a serious deficit was identified within preparation programs for pre-service agricultural educators. Specifically, this problem area lies in pre-service educators' self-efficacy working with individuals with disabilities in their classrooms and beyond. This study sought to describe the perceived self-efficacy levels of pre-service agricultural educators in their ability to work with individuals with disabilities in the total program of agricultural education, as well as to identify areas of opportunity within pre-service preparation programs with regard to differentiation abilities. A voluntary 22-question survey instrument was administered via email to pre-service agricultural education students enrolled at [Name] State University during the Spring 2019 semester. Participants responded to each question using a Likert-type scale from one (not at all confident) to six (completely confident). The pre-assessment yielded responses from 6 participants (n=6) for a 100% response rate. From this sample, 66.7% (n=4) were male. Overall, females expressed a higher initial mean efficacy score of 4.93. Students were then invited to participate in an experiential learning-based intervention, which served as an early field experience opportunity to work with exceptional learners. Following the intervention, an identical post-assessment was administered with one additional question asking participants to describe any specific experiences working with exceptional students. Higher self-efficacy scores were reported in the post-assessment, but the sample was significantly smaller (n=2). Several recommendations came forth from this study, specifically suggesting that current pre-service preparation programs need to place more emphasis on training with exceptional learners during early field experiences.

Innovative Teaching and Learning - Poster

2020-0248

Use of A Food Processing Facility to Improve Food Safety Internal Auditing Skills of Undergraduate Students

Ravi Jadeja, Conner McDanial

Oklahoma State University

The goal of this study is to improve food safety internal auditing skills of undergraduate students to comply with regulatory and third-party audit program requirements. Two of the major challenges associated with training limited-experienced participants on auditing skills are to familiarize them with auditing criteria and prepare them to execute audits in a high-paced food production environment effectively. A 3 credit hours course, Quality Control II, was developed and offered three times by the instructors to teach undergraduate students internal audit skills (2016 to 2019 with 15 to 27 students in each class). The first class was taught using traditional lecture methods, and the rest of the two classes were taught using a USDA meat processing facility located at the Robert M. Kerr Food & Ag Products Center, Oklahoma State University, as a model facility. A total of 6 quizzes (10 points each) and four midterms (100 points each) were used in each course to gauge students' understanding of food safety regulatory/third party audit requirements and auditing techniques. It was observed that when students utilized a processing facility to learn about internal audit concepts, their quizzes and midterm scores increased by 23.5% and 18.3%, respectively. The use of a model processing facility could improve the internal audit skills of undergraduate students.

Innovative Teaching and Learning - Poster

2020-0253

A Complete On-Campus Food System: From the Classroom Farm to the University Pantry

Ivette Guzman, Srijana Dura, Meg Long ,
New Mexico State University

Curriculum that links textbook concepts to real-world food production introducing students to food sovereignty is invaluable to the next generation of farmers, agricultural workers, and food systems researchers. We will need to feed 9.8 billion people worldwide by 2050, while the average US farmers' age is 58.3 years indicating an alarming need to encourage young farmers. In addition, food systems will need innovative ways to address the problems of hunger and poverty in communities. The objective of this experiential curriculum was to take textbook sustainable organic concepts from the classroom and simulate the food production process from soil to seed to harvest to market and finally to consumer. Undergraduate and graduate students in the New Mexico State University (NMSU) Vegetable Crop Management course, Hort 485, learned to seed, manage, harvest, and pack USDA certified organic produce at the NMSU Student Research and Education Gardens. Food safety modernization act guidelines and sustainable practices, like composting organic farm waste, were emphasized. In collaboration with the Aggie Cupboard, a donation-based food pantry for NMSU students, staff and faculty, the organic vegetables were delivered to the pantry at no cost twice per week during the fall. A total of 1,200 pounds of USDA certified organic produce was delivered by the horticulture students. Weekly connections were made between the horticulture students and the pantry customers. Food sovereignty in food systems is a critical lesson to learn in order to face future challenge to feed the world, from local to global communities.

Scholarship of Teaching and Learning - Poster

2020-0255

Evaluating Horticultural Pedagogical Content Knowledge in Pre-Service Agricultural Education Students

Kathryn S Orvis, Sarah LaRose, B. Allen Talbert ,
Purdue University

Agricultural Education (AgEd) undergraduate students often leave university programs with limited knowledge of specific Agricultural content that they are then expected to teach following graduation. Subject matter expertise and pedagogical content knowledge are two significant factors in an educator's ability to successfully impact their students' learning. To address this in the area of Horticulture, a 'Greenhouse and Landscape Fundamentals for Educators' course was developed for an AgEd program. This course was designed using constructivist learning theory to support pedagogical content knowledge needs of students for content not addressed in other areas of their program. Basics of landscape design, plant propagation, and greenhouse management are covered in one semester where students participate in content delivery, hands on lab activities, reflection, and peer to peer teaching. To determine where strengths and weaknesses are in the content and to provide an overview of student perceptions of their teaching abilities, a pre and post survey was developed and administered to 20 students. The survey measured background content knowledge in plant propagation and included the STEBI B instrument that measured teaching efficacy beliefs. This research provides insights as to how students perceive their pedagogical content knowledge of a plant propagation unit, in an effort to best support preservice teacher preparation. Additional items examined included where students struggle with processing and teaching the content and evaluating change in attitudes toward science, such as self-efficacy. Students leave the course with an improved understanding of the content, and improved confidence in their ability to teach horticultural content.

Scholarship of Teaching and Learning - Poster

2020-0256

Team Effectiveness of Students in Complementary Groups with Balanced Personality Types

Lori J. Unruh Snyder, Rachel Edwards

North Carolina State University

The objective of this study was to create a class assignment with a balance of student personalities to create effective teamwork success. The population of students for this study was conducted within a two-level professional development class with undergraduate students in a variety of concentrations and academic standings. The students were arranged in “balanced” groups to test whether this would result in a positive group experience with a group project. The DiSC personality assessment was given to the students and a criteria determined the “authoritative” students and “passive” students who would be paired together with two or three other “random” students who are not fully authoritative or passive. The hypothesis was that the authoritative person would step up to be the group liaison and that the experimental group formation would lead to higher scores in the peer-evaluation and increase overall student satisfaction with teamwork. Overall, the design of this study was to determine that a group project or assignment plays a vital role in the teamwork efficiency of a group. When comparing the four control groups with the four experimental groups, it was obvious that the control group had lower average scores on their peer-evaluation forms. However, it is shown that when all four groups percentage is average together, the control groups have an average of 90% while the experimental group has an average of 95%. This supports the hypothesis that students who are organized into complementary or balanced groups will have more overall satisfaction with the group project.

Community Learning / Extension - Poster

2020-0258

Perceptions of South Carolina Agritourism Owners Regarding Student Labor

Dale Layfield, Kayla Jackson, Preston Byrd, Michael Vassalos
Clemson

A 2013 study comparing agritourism to other farm entrepreneurial activities stated that agritourism “is more successful in increasing farm profits, creating jobs and conserving the natural and cultural heritage.” As owners of these venues often focus their activities on educating young visitors, there is a lack of research on engaging youth in experiential learning activities. The purpose of this study was to examine [State] agritourism farmer’s integration of students for farm labor. The objectives of this study were to: 1) Describe the demographic characteristics of participants in the study; 2) Describe the characteristics of [State] Agritourism venues; 3) Describe [State] Agritourism farmers’ use of youth labor in their operations and 4) Describe educational efforts of [State] Agritourism venues. This study included 343 members of the [State] Agritourism Association (AA). A total of 82 AA members responded to a researcher-developed survey using Qualtrics with 26 of 68 (38%) members responded that they employ student labor (non-family) at their agritourism venue. Although only 26 respondents indicated they employ students, 40 SCAA members expressed they favor student labor since it offers a good first job and resume builder, and 33 expressed that they favor student labor for the educational value. Recommendations were that Clemson Cooperative Extension agribusiness specialists 1) provide in-service to AA members on best practices for engaging youth workers, and 2) consider training opportunities for youth in FFA and 4-H on how their unique skills could be used through internships at agritourism venues.

Global Education - Poster

2020-0260

Experiential Career Cross-Training for Turfgrass Science Students

Lori J. Unruh Snyder, Richard Cooper
North Carolina State University

Turfgrass Science is a unique area of study for undergraduate students with less than 25 land grant universities offering these programs. Opportunities for study abroad and peer-mentoring of Turfgrass Science students have been lacking within NCSU's program. In Fall of 2018, students completed a five-day study abroad experience in the Dominican Republic, where they participated in seminars and workshops at the Corales Punta Esplada golf course and worked with a local Dominican college to make presentations to local high school students in an effort to improve their awareness of career opportunities in turfgrass management. A post-travel survey revealed that both the Dominican and NCSU students felt improved confidence in their technical training and their ability to communicate cross-culturally despite some language barriers. In spring of 2019, a two-day "Turfgrass Science Academy" program was offered to high school students interested in the NCSU, where they experienced workshops organized by the student leaders who went to the Dominican Republic. There were 14 participants (7 parents; 7 students: senior (3), junior (1) sophomore (2), and freshman (1)), who learned about turfgrass identification, field research and management techniques for golf courses. They responded to two questions asked on the Likert scale (1=so-so, 3=pretty good, and 5=fantastic) for their overall experience =4.92 and experience during the Turf alumni dinner = 4.64. All participants (N=14) responded they have a clear understanding of the Turfgrass Science Program and the educational opportunities at NC State. All participants responded they would recommend the program to their friends and schools.

Innovative Teaching and Learning - Poster

2020-0261

Understanding Readability for All

Shelly Sitton, Tori Lock, Dwayne Cartmell, Ruth Inman
Oklahoma State University

If you've ever picked up a magazine and needed a dictionary to understand a story, chances are you were struggling with an advanced readability level. Good publications know their audience and generate readable content. Originally targeted toward alumni and students, the Cowboy Journal was first published in 1998 by [University] agricultural communications seniors. This study reviewed the readability by volume of the Cowboy Journal from fall 2008 to spring 2018. Articles for this study were selected from the 20 issues of the Cowboy Journal from 2008 to 2018, resulting in the examination of 364 articles. Entire articles, excluding titles, photo captions, infographics, and bylines, were used as units of analysis for this study. To analyze readability, articles were opened in Microsoft Word and measured using the Flesch Reading Ease test and Flesch-Kincaid Grade Level test built into the software. The articles had an average Flesch Reading Ease score of 50.8 and an average reading educational level of 10.76. Of note, the reading level was consistent across all magazine issues. These levels indicate the researched articles are "difficult" to "fairly difficult" to read; the reader would need at least a 10th- to 11th-grade reading level to understand the writing. For a target audience of college alumni, this level is acceptable; however, the articles may prove too challenging to prospective students or friends of the university who do not possess a four-year degree. The authors will discuss the importance of readability when developing assignments, handouts, and materials for varying audiences.

Innovative Teaching and Learning - Poster

2020-0265

Knowledge Type and Qualities: A Conceptual Model to Aid in Teaching Agricultural Content

Bradley D Borges, Christopher M. Estep

University of Arkansas

Effective teachers must consider many factors when preparing lessons such as, learner background and appropriate teaching methods. Another important consideration is the nature of the content, or knowledge to be obtained. Knowledge can be categorized and into four types, including situational, conceptual, procedural, and strategic. Within each type, knowledge is classified along a quality spectrum according to level (surface/deep), structure (isolated knowledge/structure knowledge), automation (declarative/complied), modality (verbal/pictorial) and generality (general/domain specific). The purpose of this study was to create a conceptual model combining knowledge qualities and types with Bloom's Taxonomy to provide instructors with a tool to help organize content and teaching methods. By combining what we know about the nature of knowledge and the content with Bloom's, agricultural educators can write effective learning objectives. For example, in a small engines course, a unit might require students to troubleshoot engines. According to Bloom's, this learning objective falls in the cognitive level of evaluation. However, examining requisite knowledge types and qualities, we find that students must use situational knowledge to identify the task and procedural knowledge to evaluate the processes needed to complete the task. Conceptual knowledge is required to identify the parts and tools needed to complete the task, and finally, strategic knowledge is used to combine all other types of knowledge into a strategy to complete the project. Additionally, the complexity of each task will determine the knowledge qualities used by the learner. By understanding the nature of knowledge, instructors can better plan, teach and assess learners.

Innovative Teaching and Learning - Poster

2020-0270

NMSU Composting Club: Teaching through Hands-On Experience

Angie Swanson, Gaurav Jha, Nicole Pietrasiak, Emily Creegan, Ivette Guzman, April Ulery
New Mexico State University

At [U] take-away containers are Styrofoam, recycling services are minimal, and options to reduce waste are few. In 2017 a PhD student in the Plant and Environmental Sciences department started a compost club, collecting organics from the faculty lounge area, and club members tracked the weight of the organics going into an on-campus compost. In May 2019 we began tracking the weight of organics (food-prep scraps) put into a second compost pile from a student-run restaurant on campus. The costs of this project are very low: grants funded the construction of the composting structures, students donate time to keep the project going, and upkeep is minimal. Students learn about composting by maintaining the compost and getting direct, hands-on experience, and some students enthusiastically bring organic waste from home. In the Fall 2019 semester (August to early December) the club diverted approximately 767 lbs of organic waste from the landfill. Compost presentations were incorporated into curriculum in the Intro to Horticulture, Intro to Soils, and Climate Change for a Changing World courses. In the Spring 2020 semester, we incorporated composting principles and practices into our Intro to Soils lab with the objective of demonstrating carbon cycles and microbial decomposition. We have demonstrated how a small, student-led composting effort can make a big impact, both in reducing wastes on campus as well as providing experiential learning opportunities in our Plant, Soil, and Environmental Science classes. Lab exercise instructions, learning objectives, and student feedback will be shared in our presentation.

**Innovative Teaching and Learning - Poster
2020-0274**

What? So What? Now What? of Audience Analysis: Practical Application of Kolb's Theory of Experiential Learning in Agricultural Communications

Shannon Norris, Jean Parrella, Carrie Baker ,
Texas A&M University

One of the biggest challenges communicators face is mastering audience analysis. Evaluating demographic, psychographic, and sociographic tendencies are vital to preparing a message. Appealing to these characteristics require teaching students to develop thorough audience personas. We used Kolb's theory of experiential learning—concrete experience, reflective observation, abstract conceptualization, and active experimentation—to teach audience analysis in an introduction to agricultural communication and journalism course at Texas A&M University. First, we asked students to identify a target audience to prepare a message related to food, fiber, or natural resources. Students then developed an audience persona highlighting key descriptors of possible backgrounds, behaviors, and motivations. To engage reflective observation, students shared personas with classmates who asked their partners “So What?” and “Why?” questions. If students described socioeconomic status in their personas, “So What?” questions could help students think critically about how messages should be tailored to address an audience's financial situation (i.e., individuals might not be able to afford products, could be impacted by food deserts, may experience a lack of transportation, etc.). Next, students answered “Now What?” questions to make abstract conceptualizations about how their messages should be delivered. In the previous example, if students' target audiences lived in lower socioeconomic areas, we encouraged students to consider which modes of communication could best reach individuals with limited resources. Finally, we encouraged students to use active experimentation to develop messages for target audiences. Students who analyzed audiences using Kolb's theory expressed they felt prepared to craft tailored messages for specific groups.

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