

Teaching/Undergraduate and Graduate Education: New Approaches to Animal Sciences Curriculum

389 Integrated Program for Reducing Bovine Respiratory Disease Complex (BRDC) in Cattle, Coordinated Agricultural Project (CAP): Translation of research into teaching programs in 2013. M. G. Thomas*¹, G. R. Hagevoort², T. T. Ross², R. M. Enns¹, H. Van Campen¹, A. L. Van Eenennaam³, H. L. Neibergs⁴, C. Chase⁶, and J. E. Womack⁵, ¹Colorado State University, Fort Collins, ²New Mexico State University, Las Cruces, ³University of California, Davis, Davis, ⁴Washington State University, Pullman, ⁵Texas A&M University, College Station, ⁶South Dakota State University, Brookings.

Bovine respiratory disease complex is a common cause of morbidity and mortality in cattle, especially young animals exposed to stress. This disease is considered a complex because of numerous pathogens, environmental and management factors. The general research objective of this CAP is to use genomic approaches to identify chromosome regions associated with susceptibility to BRDC. Results will be translated to beef and dairy industries via selective breeding tools and methods for disease prevention and management (<http://www.brdcomplex.org/>). A translational effort is encompassed in teaching and extension efforts. The educational infrastructure of this CAP is greatly assisted because its activities are organized within established and collaborating programs, Southern Great Plains Dairy Consortium-Teaching (SGPDC-T; <http://sgpdct.tamu.edu/>) and Engaging the New Biology Graduate Education Online (<http://enbgeo.iddl.vt.edu/>). Objectives of the teaching effort include (1) sponsor students to attend SGPDC-T, where research components of the BRDC-CAP are ongoing, and (2) develop 2 nationally accessible distance-learning courses on the integration of animal health management with genomic and animal breeding approaches (i.e., Improvement of BRDC Resistance and Animal Health and Genetic Approaches to Disease). The SGPDC-T module for herd health has been greatly enhanced by involving veterinary expertise. Specifically, laboratory instruction of symptoms and necropsy demonstration was beneficial to help students visualize consequences of BRD on calf health. The research component of this CAP is presenting and publishing genomic. This information is being discussed and is incorporated into content of the on-line courses. This CAP is in the third year of a 5-year effort and welcomes additional student participation, especially students from under-represented minorities. In summary, the education component of the BRDC-CAP (USDA-AFRI 2011-68004-30367) is benefiting from multi-disciplinary learning approaches that coincide with the genomic research of susceptibility to BRDC.

Key Words: cattle, disease, genomics

390 Predicting instructor quality in undergraduate animal science courses using the IDEA survey. M. J. Anderson, K. J. Stutts, M. M. Beverly, and S. F. Kelley*, *Sam Houston State University, Huntsville, TX.*

The Individual Development and Educational Assessment (IDEA) survey uses student feedback to assess and improve teaching, learning, and the higher education process. The IDEA survey contains questions pertaining to course objectives, teaching methods and styles, and a description of the course with the goal of determining the quality of the instructor and overall course. The objective of this study was to determine which of the survey questions were most important when predicting the quality of the instructor in undergraduate animal science courses. A step-wise regression analysis was performed on data from 238 courses

spanning a 6-year period. Thirty-five of the 43 questions on the survey were included in the analysis. Eight questions were not included in the analysis because they involved students' preconceptions that could not be affected by the instructor during the course. This analysis indicated that only 9 of the 35 questions entered into the model were significant. These 9 questions had an r^2 of 0.7620, compared with an r^2 of 0.7808 for all 35 questions. The analysis indicated that these 9 questions account for the majority of variation within the model. The top 3 questions with positive relationships toward predicting the quality of instructor were: The instructor (1) displayed a personal interest in students and their learning, (2) explained course material clearly and concisely, and (3) found ways to help students answer their own questions. Conversely, 2 questions describing the progress on developing skills in expressing oneself orally or in writing and the instructor's ability to inspire students to set and achieve goals that challenged them, had negative relationships when predicting the quality of the instructor. This indicated that students believed that these areas were counterproductive toward increasing the overall quality of the instructor. In conclusion, an animal science instructor can improve the quality of their teaching by displaying an interest in the students, being very clear on their explanations of course material, and by helping students establish critical thinking skills.

Key Words: IDEA, undergraduate teaching, animal science

391 Developing an undergraduate animal science beef cattle industry tour course to facilitate experiential learning. J. L. Wahrmond* and A. J. Cooper, *Department of Agricultural Sciences, Texas A&M University-Commerce, Commerce.*

An undergraduate course for animal science students was developed at Texas A&M University-Commerce to provide students unique experiential learning opportunities. The beef industry in Texas and the Southern Plains is greatly diverse. Types of operations and management styles change by region and with the available resources within that area. Students enrolled in the course gain first-hand and hands-on experiences by visiting beef operations and facilities that are unique to their geographical regions. Many students majoring in Animal Science at Texas A&M University-Commerce plan to seek careers in the beef industry. It is important that these students have opportunities, such as those available in this course, to understand and appreciate the many segments of the beef industry and how these segments work together, despite their diversity. Students also gain a better understanding of growing niche markets and products. This 3-credit hour course is taught during a 13-d mini-mester, and begins with traditional classroom instruction. Students are provided an overview of the course, including information regarding each of the facilities and operations to be visited. During the remainder of the first week, day trips are planned to tour facilities and operations within approximately 2-h drive of Commerce, TX, including cow-calf operations, backgrounding operations, a feed mill, and breed association headquarters. During the second week, an overnight trip is planned. Students and instructors leave on Monday and return on Friday. Locations toured during the second week include those facilities and operations that are unique to geographic regions other than Northeast Texas. Stops during the overnight tour trip include feedlots, harvesting facilities, and outdoor cattle management operations specific to the geography of particular regions. After the overnight tour portion completes, students return to the classroom for the final 3 d

of the course for reflection and a final examination. Student learning outcomes are assessed by comparing and pre- and post-examinations and questionnaires.

Key Words: education, experiential learning, undergraduate

392 Using case studies to provide a global perspective on reproductive management decision-making. K. G. Pohler*¹, A. Ball², and M. F. Smith¹, ¹*Division of Animal Sciences, University of Missouri, Columbia*, ²*Division of Applied Social Sciences, University of Missouri, Columbia*.

The ability to solve problems on an international scale is becoming increasingly important. Within the United States, a large proportion of the agricultural labor force consists of international workers; therefore, the ability to educate and communicate cross-culturally is essential. As part of the curriculum in Reproductive Management, a senior level course, we developed 5 case studies that required solving reproductive management problems in Brazil. Learning objectives of these case studies included (1) Become more knowledgeable of Brazilian beef production, (2) Enhance critical thinking and decision making skills, (3) Solve management problems in another country, and (4) Connect theory to practice in an international work place. During the fall 2012 semester, students were assigned to a case study in groups of 3. Each group prepared a 3–4 page report that included a clear statement of the problem; detailed description of the problem solution; and a list of related research or government articles. Further, students summarized the case in both English and Portuguese. During a lab session of the course, students presented their cases and recommendations in a poster session format. Prior to working on these case studies approximately 30% of the students indicated they had some international experience (e.g., study abroad opportunity or travel with family) with 70% having no prior international experience. Nearly half of the students indicated minimal knowledge of the Brazilian beef industry. Outcomes from these case studies included (1) Increased competency of students' reproductive management skills, (2) Ability to integrate and apply classroom/lab information toward solving a production problem, (3) Increased ability to work as a team and solve problems cooperatively, and (4) An overall 80% change in their perception of international agriculture. Collectively, the case studies accomplished the learning objectives and allowed students to engage in problem solving on an international scale.

Key Words: case studies, problem solving, international agriculture

393 Elements of mastitis unit integrated through blended learning. C. A. Allen* and W. L. Hurley, *University of Illinois, Urbana*.

Traditional teacher-centered classes assign readings to prepare for in-class lecture, homework to demonstrate mastery, and exams to assess knowledge. In contrast, blended learning (BL), also known as hybrid courses, mixed mode teaching, backward classroom, or reverse instruction, uses computer technology to partially or fully deliver course content. The shift of content delivery to an online medium provides the opportunity to use in-class time for engaging students in problem-based hands-on learning activities, and applying their knowledge through practical work, group presentations and solving realistic problems. The instructor's role becomes one of facilitator of learning rather than transmitter of knowledge. An upper-level undergraduate course in lactation biology at the University of Illinois extensively uses BL. The mastitis unit provides an example of how BL is implemented. Students gain access to background information on mastitis via an online module available through a course management system. Included in

the online module is information on mastitis, definitions, resources, sample case studies, and a quiz. Students find information about dairy farms and dairy cattle, terminology, mastitis types, pathogens involved, and strategies for solving the mastitis cases. Students are given sample case studies and are expected to explain the cases, solve them, and give recommendations. The 2 sample cases also provide conclusions and recommendations from the attending veterinarian. An online quiz assesses the student's knowledge regarding the background mastitis content. Students also visit the university dairy farm to gain context for the mastitis information provided and the online cases. In class, students work in groups solving additional mastitis cases. The groups then share their case solutions and conclusions with the class through a creative, image-rich presentation mode. Students actively engage in refining their understanding of mastitis and the cases during these class presentations. Adapting this mastitis unit to a BL format allows for an integrated presentation of the topic and a robust learning environment.

Key Words: animal sciences, blended learning, mastitis

394 Alternative class exercise for information retention and retrieving course materials. D. Masser¹, J. Falk¹, and A. Ahmadzadeh*², ¹*Dept. Ag Ed. & 4-H Youth Develop, University of Idaho, Moscow*, ²*Dept. Animal & Vet. Sci., University of Idaho, Moscow*.

Research has shown that memory retention is improved when course materials make an imprint in students' memory, or the students experience excitement and/or pressure during the learning process. Using a dairy science course, the objective of this particular classroom exercise was to evaluate the effect of using quiz bowls on students' active learning, retention of information, and students' satisfaction, attitudes and achievement. The quiz bowl, as an alternative method of reviewing the course materials, was performed at the end of the semester and before the final exams. Each student was assigned to prepare 5 challenging questions and provide the answers from the course materials. Students were informed that 70% of these questions would be used in the final exam. To conduct the quiz bowl, teams of 4 to 5 students were formed. Two teams competed during each round, and all teams participated, hence all students had the opportunity to become engaged. Students who had completed the course within the past 4 years were asked to complete a questionnaire to assess their satisfaction with the quiz bowl as a course review for the final exam. On a scale from 0 to 100, students rated their degree of agreement on each question in the survey. Responses were collected and summarized (mean \pm SD). Fifty-three out of 74 students responded. Mean response score across all questions was 88.5 ± 3 . The mean score to main questions were as follow: retention of information = 86.7 ± 14 ; better prepared for the final exam = 91.3 ± 11 ; increased critical thinking = 85.5 ± 13 ; satisfaction with the amount of information included in the quiz bowl = 90.1 ± 12 ; preference of quiz bowls vs. traditional course review = 89.2 ± 18 ; learning the course content = 86.3 ± 16 ; satisfaction with the questions prepared by the class = 85.2 ± 12 ; satisfaction with questions prepared by the class = 85 ± 12 . Based on the students' responses, quiz bowl may be used as a viable alternative method for enhancing students' learning and information retention.

Key Words: quiz bowl, course review, information retention

395 The captive wild animal management minor at the University of Missouri—A partnership between Animal Sciences and Fisheries and Wildlife Sciences. T. A. Strauch*, M. R. Ryan, and J. N. Spain, *University of Missouri*.

In 2007, the Division of Animal Sciences and the Department of Fisheries and Wildlife Sciences at the University of Missouri began offering a minor in captive wild animal management. The initiative was based on student interest in exotic animals and exotic animal husbandry. The curriculum was structured around existing courses, taking advantage of academic strengths in the 2 primary disciplines and designed with input from national leaders in the captive wild animal industry. Students complete common core courses, and choose advanced courses that best match their professional goals. Two new courses and a required internship experience were developed. The minor requires a minimum of 38 credit hours, but if a student's major is animal sciences, fisheries and wildlife sciences, or biological sciences, 18–23 of the 38 credit hours are embedded in requirements for the major. New courses include an introductory course, with guest speakers who are professionals in the field, and a senior seminar in captive wild animal management. Student interest has been high. At any given time, roughly 140 students state they are pursuing the minor, representing 17–20% of the total undergraduates in each discipline. Approximately 84% are female. In 2012, 25.6% of incoming animal sciences freshmen expressed their primary species interest as zoo animals, second only to small animals at 30.2%. Students have interned at locations in 11 states and career interests include, but are not limited to, zoo keeping, endangered species conservation, advanced research, veterinary medicine, wildlife rehabilitation, and production agriculture. To date, 65 students have graduated with the minor. Within a year of graduation, the students have been professionally active as follows: wild animal position, n = 18; graduate school, n = 11, domestic animal care, n = 4; research assistant, n = 3; vet school, n = 3; other/unknown, n = 26. The minor furthers student knowledge in whole animal biology, encourages students to integrate information across disciplines, and broadens skills for future employment in animal related careers.

Key Words: interdisciplinary, wild animals, management

396 Developing a curriculum addressing legal issues in animal agriculture. E. Rumley*, *Animal Science, University of Arkansas, Fayetteville.*

Consider laws such as California's Proposition 2, regulations including those governing organic production, and policies such as FDA's guidance for the use of antimicrobials in livestock and poultry. In today's increasingly regulated society, legal issues are affecting agriculture, and specifically animal agriculture, in more varied ways. As a result, students focusing on animal sciences are increasingly confronted by laws and regulations that affect their future lives and careers. To address this need, an issues-oriented course discussing the legal issues involved in the production of poultry, swine and livestock has been developed at the University of Arkansas. The curriculum focuses on the laws, regulations and policy arguments involved in different aspects of animal agriculture. The course begins with an overview of the American legal system and develops into a discussion of animal welfare vs. animal rights, highlighting the legal implications of each viewpoint. From there, course topics range from animal welfare to humane slaughter, from farm animal confinement to the use of antimicrobials, and from food labeling to animal identification. Students completing the course are able to identify areas in need of additional legal study, areas undergoing policy shifts at the local, state, regional and national levels, and areas in which close scrutiny of legal and policy matters can result in effects to poultry, swine and livestock operations.

Key Words: law, legal issues