Teaching/Undergraduate and Graduate Education

T420   Opinions of farm versus urban freshman college students on issues involving animal agriculture before and after animal science instruction. E. A. Bobeck*, D. K. Combs, and M. E. Cook, *University of Wisconsin-Madison, Madison.*

Increasingly, incoming university animal science majors have urban demographics with no history of direct contact with farm animals and no or neutral opinion regarding issues facing animal farming. A study was conducted to determine 1) opinions of incoming students on critical issues involving animal farming practices, and 2) changes in their opinions after 4 mo of instruction involving basic principles and issues of animal farming. A class of 114 students was given 2 identical surveys (start and end of semester) with 14 questions regarding demographics and animal use issues. Students marked a continuous scale of 129mm where 1 = agree and 129 = disagree for issue questions and identified their survey with a student-generated identifier (favorite food+superhero). Paired *t*-test analyses were conducted only on students with strictly farm (n = 14) and strictly urban (n = 19) backgrounds who completed both surveys using the same identifier (33/114 students). Before education, students with urban backgrounds were less likely to agree with animal farming issues involving value to society (27.0mm), morality (28.4mm), welfare (53.8mm), humaneness of agricultural practices (61.0mm), and ethics of breeding livestock for valuable traits (29.3mm) than farm students (4.2mm, 7.2mm, 27.2mm, 38.7mm, and 12.4mm, respectively, *P* < 0.05). Urban students were more likely to purchase organic animal products (60.2mm) and animal products based on environmental/ welfare standards (57.5mm) than farm students (99.9mm and 94.5mm, respectively, *P* < 0.05). After education, the opinions of urban students did not differ from farm students for questions involving humaneness of agricultural practices (36.1mm vs. 24.5mm, *P* > 0.05), breeding for valuable traits (16.6mm vs. 10.1mm, *P* > 0.05), and purchase of animal products based on environmental/ welfare standards (72.4mm vs. 91.5mm, *P* > 0.05). Data showed that urban students tend to be neutral with regards to animal farming issues, but when exposed to science-based instruction on animal farming, attitudes change to agree more closely with students with farm backgrounds.

Key words: survey, student opinion, agriculture issues

T421   Connecting lecture to the real world in animal sciences. J. J. Parrish*, J. R. Schindler, and R. L. Monson, *University of Wisconsin, Madison.*

A structured authentic learning experience was devised to connect lecture and the real world in a reproductive physiology course in animal sciences. The course had on-line, podcast lectures (2/week) and a 2 h lab/week. There were 4 lab sections with 73 students total. A cow project was created in which groups of 4 students within a lab section were assigned 1 of 20 cows for the semester. Student groups completed experiences with or without instructors that included: observation of estrus, design and implementation of a timed artificial insemination (AI) scheme, actual AI of their cow, determine potential pregnancy by return to estrus and plasma progesterone levels, and ultrasound for pregnancy 63 d following insemination. The specific goals of the project were to: 1) understand estrus behavior, 2) identify and administer drugs used in timed AI, 3) understand how drugs used in item 2 effect physiological events, 4) make connections between molecular mechanisms of hormone action and physiological events, 5) AI and detection of potential pregnancy in the group's cow, and 6) teach students to handle, interact and develop the skills needed to work with a large domestic animal. Students were assessed in 2 ways. First, an individual essay exam was given in lab to assess goals 1 to 5. A separate question addressed each goal. Second, group reflection on the project was required at the end of the semester but content of that reflection was not specified. The reflection was scored for an overall increase (scale 1 to 5, none to multiple indications of an increase) in understanding of animal physiology and increase in understanding cattle behavior and ability to work with cattle via completion of the project. The average exam score ± SEM was 78 ± 2% and students deemed to have accomplished goals 1 – 5 satisfactorily (>65% exam score) was 82%. When the group self reflection was evaluated, the mean ± SEM score assigned for understanding of physiology and understanding how to work with cattle and their behavior was 4.2 ± 0.2 and 4.8 ± 0.1 respectively. The described cow project was an effective means of connecting lecture material to the real world in a structured authentic learning experience.

Key words: reproduction, cattle

T422   Enhancing the pool of underrepresented minorities in veterinary medicine. O. U. Bolden-Tiller*, *Tuskegee University, Tuskegee Institute, AL.*

The Tuskegee University School of Veterinary Medicine (TUSVM) has trained over 70% of all African American veterinarians in the United States. The Department of Agricultural and Environmental Sciences is home to almost 300 underrepresented minorities (URM) majoring in Animal Sciences, which has long served as a feeder program for TUSVM. A capstone course, Domestic Animal Anatomy (DAA) that is partially taught by TUSVM students, was initiated to enhance student performance in Veterinary Anatomy. The objective of the current study was to determine the impact of DAA on academic performance in veterinary school. Former students enrolled in DAA from 2007 to 2010 who had finished at least one semester of Veterinary Anatomy completed a survey consisting of quantitative items, primarily on a Likert scale, aimed to gauge students' opinions on the impact of the course on their performance in Veterinary Anatomy. TUSVM students who participated in teaching DAA completed a similar survey aimed to gauge their opinion on how their participation in DAA impacted their performance in veterinary school. Overall, DAA had a positive impact on student performance in Veterinary Anatomy and other veterinary courses. Similarly, TUSVM students who participated in teaching DAA also tended to perform well in veterinary school. There remains a disparity in the number of underrepresented minorities in the field of veterinary medicine. Here we have identified a mechanism that enhances the performance of URM in veterinary school and provides a format for training future veterinarians in undergraduate teaching.

Key words: underrepresented minorities, veterinary medicine, anatomy

T423   Comparison of multiple choice and short essay assessment vehicles on student performance in an upper division animal reproduction course. L. J. Spicer* and M. E. Payton, *Oklahoma State University, Stillwater.*

The primary assessment vehicle in most basic science courses in undergraduate programs is the multiple choice question (MCQ) exam. Regular assessment of students' knowledge, comprehension, and com-

petence is also important for motivating learning. In addition, short essay question (SEQ) exams take longer to grade and grading can be subjective. The aim of this study was to compare student performance on MCQ and SEQ exams. This study analyzed exam performance records from 653 students collected over a 9 year period in an upper division animal reproduction class. Student numbers for each year ranged from 50 to 98. Records from each student included results from 3 exams given during a 15-week semester. Each exam varied between 20% to 80% of either MCQ or SEQ, and results for each question style were summarized as the percentage correct. One-third of the MCQ were true-false questions. The first analysis used the MIXED procedure of SAS to determine if differences in performance scores existed between MCQ and SEQ among exam 1, 2 or 3, using year as a random effect. MCQ scores were not significantly different for the 3 exams, but scores were significantly different for the SEQ. There was a difference ($P < 0.001$) in scores for MCQ and SEQ for exams 1 and 2. However, for exam 3, the difference was not significant ($P > 0.23$). Over all records, Pearson correlations coefficients revealed a significant positive correlation between MCQ and SEQ scores (r = 0.56, n = 1907) and this correlation did not differ among exam 1, 2 or 3. The correlation between MCQ and SEQ was similar regardless of whether SEQ point totals were 32–50 (r = 0.56, n = 796) or 20–30 (r = 0.59, n = 1111). Correlations conducted within year and exam also revealed positive correlations ($P < 0.001$) for all exams and years, but correlations ranged from a low of 0.46 (n = 50) to a high of 0.83 (n = 84). Results indicate that MCQ and SEQ, in general, provide similar student assessment scores, and that student scores in SEQ increase as they become familiar with examination style.

Key words: assessment, exams, undergraduate

T424   Variables that affect academic performance in undergraduate animal science courses. M. M. Beverly, K. J. Stutts, and S. F. Kelley*, *Sam Houston State University, Huntsville, TX.*

The objective of this study was to evaluate the effect of student absenteeism and student characteristics on academic success in undergraduate animal science courses. Data were collected on 2,129 students enrolled in animal science courses at Sam Houston State University during 2 fall and 2 spring 16-week semesters. Data collected included number of absences, gender, classification, major field of study, and final course grade for each student. Least squares means for absences and final course grades were calculated using the mixed procedure of SAS. All main effects and all 2-way interactions were included in the model. Mean number of absences for all students was 3.75 per course. Students were divided into 3 groups based on number of absences in a course during the semester: low (0–2), average (3–6), and high (7 or more). Students with a low number of absences had the highest ($P < 0.01$) mean final course grade (83.6). Students with an average number of absences (79.5) had a higher ($P < 0.01$) mean final course grade than students with a high number of absences (69.5). There was also a significant effect of gender and student classification on final course grade. Female students had a higher ($P < 0.01$) mean final course grade (81.3) than male (77.3) students. In addition, students classified as juniors (80.4) or seniors (81.6) had a higher ($P < 0.01$) mean final course grade than students classified as freshmen (78.2) or sophomores (77.0). Regarding absences, males (4.2) had a higher ($P < 0.01$) mean number of absences than females (3.4), and seniors (3.3) had a lower ($P < 0.01$) mean number of absences than freshman (4.2) and sophomores (4.0). These results indicate that students with a greater number of absences attained a lower final course grade and females outperformed males and upper classmen outperformed lower classmen

in terms of final course grade in undergraduate animal science courses. Male students and students classified as freshmen or sophomores were more likely to have a greater number of absences than females or students classified as juniors or seniors.

Key words: undergraduates, attendance, course grades

T425   CyberSheep: Improving student understanding of animal breeding concepts with a virtual sheep flock. K. L. Kessler*[1], R. M. Lewis[2], J. P. Cassady[3], and K. M. Cammack[1], [1]*University of Wyoming, Laramie,* [2]*Virginia Polytechnic Institute and State University, Blacksburg,* [3]*North Carolina State University, Raleigh.*

Animal breeding educators have identified the need to develop genetic simulation tools that provide undergraduate students an opportunity to apply course concepts. The CyberSheep program, developed at Virginia Tech, is an online genetic simulation tool in which students manage a flock of sheep for 6 generations within a cooperative breeding scheme. Each generation occurs within a one-week time frame, enabling students to observe consequences of their culling and mating decisions in "real time". Flocks compete to accomplish one of 2 main objectives: 1) maximization of market weights or 2) maximization of flock net worth. Students are also challenged to eradicate a lethal recessive allele. Undergraduate students playing at the University of Wyoming and North Carolina State University were anonymously evaluated before and after the simulation to determine its contribution to their understanding of concepts presented in an introductory animal breeding course. Students were asked to evaluate their level of understanding of fundamental concepts used in CyberSheep, including animal evaluation based on genetic merit and level of inbreeding. Survey scores were analyzed using the GLM procedure of SAS. Based on a 5–point scale, students rated their initial understanding of these 2 concepts at 3.5, coinciding to a moderate level of understanding. Scores rose ($P \leq 0.014$) to 3.8 in the final survey, indicating a slight improvement in understanding of these same concepts with the use of CyberSheep. Greatest improvement was seen in understanding of cooperative breeding schemes with the score rising ($P < 0.001$) from 2.7 to 3.5. Survey scores were not affected by university ($P \geq 0.415$). In general, students were satisfied with their level of learning from CyberSheep with a score of 3.6, and found the simulation to be ′informative′ and ′fun′ with an average score of 3.5 for each. It was concluded that animal breeding students benefited in their understanding of fundamental concepts through the use of CyberSheep.

Key words: animal breeding, education, genetic simulation

T426   Academic preferences of freshman college students in the Department of Animal Industry of the University of Puerto Rico at Mayagüez. G. Ortiz-Colón*, J. M. Huerta-Jiménez, L. del Valle-Mercado, M. Pagán-Morales, and E. Jiménez-Cabán, *University of Puerto Rico at Mayagüez, Mayagüez, PR.*

The student retention in the College of Agricultural Sciences of the University of Puerto Rico at Mayagüez has been under 61% for at least the last 6 years. Within the College of Agricultural Sciences, the situation of the Department of Animal Industry (DAI) is not different. The last reported DAI student retention was only 59.4%. The reasons for this low retention in the DAI have not been previously investigated. We hypothesized that the DAI course work is not fulfilling the students' expectations. Surveys were developed to evaluate the professional interests of DAI freshman students and delivered to those taking the introductory course of Animal Industry. Of the 141 surveyed individu-

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als, 68.8% were 18 years old and 56.1% were males. Most (69.8%) of these students had no previous agriculture experience, while only 7.2% had participated in 4H Clubs, and only 5.0% had been Future Farmers of America. Most (84.4%) of the students had not taken a course in agriculture before being accepted into the DAI. Moreover, 53.2% of the students came from urban settings (developments and condominiums). While 35% of the students intend to become veterinarians in the future, only 7.9% would like to become animal scientists and 7.1% expressed a desire to change to other academic programs. When students were asked to choose what species they would like to specialize in, 24.8% chose companion animals, 16.6% indicated wild animals, and 12.4% beef cattle. Because the DAI does not have the animals or facilities to supports course work related to companion animal management and wild animal management, 41.4% of the clientele might be dissatisfied with the curriculum offered by the DAI and this might contribute to the low retention rates observed in this department.

Key words: Hispanic serving institutions, animal science, student retention

T427   Impact of duration of an online animal science nutrition course on student learning assessments. K. D. Ange-van Heugten* and A. Renjifo McComb, *North Carolina State University, Raleigh.*

To determine whether learning assessments differ when the same online course is offered over 5 wk versus 10 wk semesters, Principles of Animal Nutrition was taught twice during the summer of both 2009 and 2010. All offerings had the same instructor and teaching assistant. Both 5 and 10 wk durations in 2009 started with 30 students and finished with 29, while for 2010, both 5 and 10 wk durations started with 35 and ended with 35 students for 5 wk and 31 for 10 wk. Assessments were identical between 5 and 10 wk, but varied between 2009 and 2010. The 2009 5 wk course had 4 students finish with an F grade, 3 of which dropped after final grade distribution. No students in the 10 wk class received an F or dropped after final grades. In 2010, both the 5 and 10 wk class had 1 student finished with an F. Students in the 5 wk course were compared with those in the 10 wk course with and without outliers (late withdrawals). When all students were included (5 wk n = 64 and 10wk n = 60), 2009 and 2010 did not differ. Similarly, when student outliers were deleted, 2009 and 2010 did not differ. When all students were evaluated, 5 wk students had lower exam 1 grades (P < 0.01), participation points, quiz and final grades (P < 0.05; 82% ± 2.2 vs. 87% ± 2.3). The total number of times logged into the course (65.2 vs. 100.3) and total amount of time (47 h vs. 65 h) were lower (P < 0.001) for the 5 wk course. When the 5 wk courses were compared with the 10 wk ones without the outliers, participation points (88% ± 1.0 vs. 91% ± 1.1) and exam 1 grades (81% ± 1.8 vs. 86% ± 1.8) tended to be lower (P < 0.10) for the 5 wk course and times logged in (69 vs. 101) and total time online (50 vs. 66 h) were higher (P < 0.001) for the 10 wk courses. Five wk students only had 11 d before exam 1 while 10 wk students had 22 d. Final grades were 88.5% for 10 wk and 86.9 for 5 wk, indicating students can be successful regardless of course duration. However, the greater number of late withdrawals in the 5 wk course, less time online and lower scores indicates that

learning large amounts of material in the shorter course length is more overwhelming than some students anticipate.

Key words: distance education, course duration, nutrition

T428   Effectiveness of a university introductory course in developing student confidence in horse handling and riding. M. Nicodemus*, *Mississippi State University, Mississippi State.*

Horsemanship is the art of riding and managing horses. These skills are fundamental to those college students wanting a career in the equine industry and so Mississippi State University (MSU) equine students are required to take one horsemanship elective for their degree, which may include ADS 1132 Introduction to Horsemanship. While introductory courses are designed to cover the basics of a subject matter, covering the necessary horsemanship skills for those students going into the equine industry is difficult to accomplish in one semester; and thus, study objectives were to determine the effectiveness of an introductory course in developing student confidence in performing various horsemanship activities. Researcher-developed, 19 question survey instrument focused on horse riding and handling was given both at the start and end of the semester to 42 students taking ADS 1132 at MSU. Each question described a horsemanship activity that students gave a score ranging from 1 to 5 indicating their confidence in performing the activity with 5 reflecting *extreme confidence*. Means (SD) were determined for each question and one-way ANOVA was performed to determine the effect of the course on student confidence in their horsemanship skills (P < 0.05). While all questions showed improvement in confidence, only 7 questions demonstrated a significant increase in scores with only 2 of the improved scores focused on riding activities (Table 1; P < 0.05). Although most improvements were made in ground handling activities, these skills lay the foundation to more advanced horsemanship activities and are vital to those students going into the field of veterinary sciences in which 50% of the students were applying to veterinary school. Survey results assist in suggesting course development areas and indicate additional horsemanship courses may need to be required for equine students focusing on a career requiring advanced riding skills.

Table 1. Initial and final survey means (SD) of confidence levels on questions with significant score improvements (P < 0.05)

Question	Initial	Final
Adv Groundwork: Trained Horse	2±1	4±1
Riding: Trained Horse	3±1	5±1
Riding: Trained Horse w/Behavior Problems	2±1	5±1
Groundwork: Society-Type Breeds	2±1	4±1
Groundwork: European Breeds	2±1	4±1
Handling/Utilizing Tack	2±1	5±1
Mgt/Health Care Activities	3±1	5±1

Key words: horsemanship, introductory equine courses

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