T531 Instructors' perceptions of the importance and adequacy of "high-impact educational practices" in the animal science undergraduate curriculum in the United States. Sanjeewa D. Ranathunga*[1], Michel A. Wattiaux[1], and Peter Crump[2], *[1]Department of Dairy Science, University of Wisconsin, Madison, WI, [2]Department of Computing and Biometry, University of Wisconsin, Madison, WI.*

High-impact educational practices (HIP) correlated positively with students' educational outcomes and can be an approach to address achievement gaps. A survey was conducted in 2012 and 2013 to evaluate the perception of animal sciences instructors on the importance (1 = not at all to 5 = a great deal) and adequacy (need more, good as it is, need less) of 16 educational practices which included 7 HIP: internships (INT), capstone courses or projects (CCP), collaborative assignments and projects (CAP), undergraduate research (URS), writing-intensive courses (WIC), diversity/global learning (DGL), and service learning, community-based learning (SCL). The analyzed data set included 148 instructors from 68 academic institutions. Rankings and scores (mean ± SD) for the 7 HIP were INT (3, 4.44 ± 0.64), CCP (4, 4.37 ± 0.79), CAP (5, 4.26 ± 0.68), URS (6, 4.25 ± 0.79), WIC (7, 4.21 ± 0.76), DGL (10, 3.88 ± 0.88), and SCL (15, 3.54 ± 0.86). Except for DGL, demographic factors affected HIP scores as follows: types of colleagues (animal scientists vs. others; INT, $P = 0.010$), academic position (assistant, associate, full professor, others; INT, $P = 0.008$; CAP, $P = 0.026$), graduate program completed in the US (yes or no; CAP, $P = 0.011$), teaching experience (no, limited, some experience, taught full-semester courses; CAP, $P = 0.031$), type of university (Carnegie basic classification, 2010; URS, $P = 0.034$), survey year (2012 vs. 2013; WIC, $P = 0.006$), first generation to attend college (yes or no; SCL, $P = 0.022$), and ethnicity (minority vs. Caucasian; SCL, $P = 0.040$). Percentage of respondents who indicated "need more" of the HIP in the curriculum in their institutions were: WIC:55, URS:53, CCP:53, SLC:53, CAP:48, INT:46, and DGL:46%; whereas the percentages for "good as it is" were 34, 38, 34, 37, 41, 43, and 47%, respectively. Multiple demographic factors influenced animal science instructors' perceptions of the importance of HIP. Furthermore, most instructors recognized the need to include more HIP in the curriculum.

Key Words: high-impact educational practices, survey, curriculum

T532 Effect of volunteer activities on the students' understanding of equine assisted therapy. Molly Nicodemus*, Toree Bova, and Jennifer Lockhart, *Mississippi State University, Mississippi State, MS.*

The Professional Association of Therapeutic Horsemanship International certification requires applicants not only to have a strong background in horsemanship activities, but also to have a history of volunteering at an equine-assisted therapy program. Nevertheless, the equine assisted therapy course, ADS 3233, at Mississippi State University has only consisted of a laboratory dedicated to developing horsemanship skills. This school year, volunteer hours performed at a local equine-assisted therapy program were required of students, and thus, the study objective was to evaluate whether volunteering assisted in the development of the students' understanding of equine-assisted therapy. Researcher-developed, 22 forced-choice question survey was given at the start (S) and end (E) of the semester to students taking ADS 3233 in 2013 (n = 15) and 2014 (n = 15). While in both years students participated in a riding laboratory, only students in 2014 were required to volunteer a minimum of 10 h with a local equine-assisted therapy program. Each question on the survey was a statement concerning activities associated with working in various aspects of equine-assisted therapy programs with students rating from 1 to 5 their agreement to the statements. Lower scores indicated a stronger disagreement with the statement given concerning the aspect of the equine-assisted therapy program covered in the statement, while a higher score indicated a stronger agreement. Differences between S and E answers were calculated for each year and these differences were compared between years using a 2-sample Student's *t*-test ($P = 0.05$). No question resulted in a score of 5. While both years demonstrated improvements on all 22 questions after completing the course, 5 of the questions demonstrated significant difference between years ($P < 0.05$). These questions focused on the ability of the students to work with various experts in the industry and setting up riding programs for specific groups. By volunteering, students were able to get a more thorough understanding of equine-assisted therapy programs by working firsthand with those participating in these programs.

Key Words: equine-assisted therapy, volunteering

T533 Students' perceptions of learning effectiveness in a capstone dairy management course. Lisa A. Holden*, *Pennsylvania State University, University Park, PA.*

Animal Science 410 is an advanced dairy management course in a capstone series for graduating seniors. The course is team-taught by a group of instructors, has an on-farm evaluation component, and integrates production information with financial and business management concepts. For the past 4 years, students were asked to provide course feedback and complete a short supplemental survey about "learning effectiveness." This survey was in addition to the regular online course evaluation data gathered for all courses. The objective of this supplemental survey was to better understand the impact of a team taught course with real world examples had on the quality of student learning. From 2011 to 2014, a total of 80 students completed the course and 76 responses were gathered in the short supplemental survey about 3 key areas of course structure: team taught format, farm evaluation experience and integration of production and financial data. Students were asked to rank the learning effectiveness of each area on a Likert scale of 1 to 5 where 1 = poor for learning and 5 = excellent for learning. Students were also asked to provide feedback about course structure, either verbally with an instructor or as written comments as part of the short supplemental survey. Average ratings for the team taught format were 3.8 (n = 74) with a range of 2 to 5, for farm evaluation 4.2 (n = 76) with a range of 2 to 5 and for integration of production and financial information 4.7 (n = 75) with a range from 3 to 5. Key areas for improvement from student comments included information about "linking" classroom concepts to the farm evaluation, "standardizing" information and testing across instructors, and the need for "real world" financial data. Key areas that appeared to positively affect student learning were the use of classroom examples to explain concepts, interactive classroom discussion, and the quality of data available from farm evaluations. Based on results of this data set, consistency of information among instructors in a team-taught course and the use of high quality data in classroom examples can have positive benefits on student learning.

Key Words: student, learning, effectiveness

T534 Ever wonder what they're thinking? Using a reflective academic journal to gauge learning in a content heavy classroom. Douglas Vincent*, *University of Hawaii at Manoa, Honolulu, HI.*

As instructors of content classes, we often lack real-time data on how our students are progressing in class. The objective is to present a teaching technique, Reflective Academic Journal, which provides for a 2-way conversation between student and instructor. The student uses the journal to summarize their learning in class; to ask questions they might not in the classroom. The instructor benefits because he/she receives real-time feedback on the content being presented. Learning involves 3 components: (1) the actual knowledge–what it is you know; (2) your skills or ability to apply the knowledge in a particular context; and (3) your feelings–what you think about (1) and (2). Students in junior/senior classes in animal physiology and reproduction are required to write weekly reflective journals beginning after the third week of the semester. A journal can include a description of what happened in class; a constructive criticism of the learning media; a summary of what the student learned that week; a personal response to a class discussion; a reflection on what the student enjoyed about the class and even an expression of fear about an upcoming exam. In practice, the students benefit because they can open up a conversation with the instructor in a non-threatening manner, ask questions, and clear up misconceptions. The instructor benefits because they can obtain real time data on the student learning in that particular week. Questions raised in the journal can be addressed in the next class period. If general misconceptions exist among students, the instructor can trace back and repeat critical information. Student feedback from final journals and end-of-semester course evaluations indicate that writing journals help student learning. Reflective academic journals are an effective tool to improve student learning.

Key Words: learning, academic journal, assessment

T535 Retention of concepts related to beef palatability from classroom experience of an informal consumer sensory panel in conjunction with discussion. Jay A. Daniel*[1], George R. Gallagher[1], and T. Dean Pringle[2], *[1]Berry College, Mount Berry, GA, [2]University of Georgia, Athens, GA.*

We have previously reported use of an informal consumer sensory panel in conjunction with discussion as an effective means of teaching concepts related to beef palatability. In this experience, students evaluate steak samples for tenderness, juiciness, beef flavor and overall desirability. The samples serve to demonstrate the impact of cut and degree of doneness on beef palatability. After sampling the steak, results of the students' evaluation and other factors affecting beef palatability are discussed. To evaluate retention of concepts related to beef palatability, students (n = 37) enrolled in ANS 422 Beef Systems were asked to complete a 10 question quiz on concepts related to beef palatability. Five questions on the quiz were related to the informal consumer sensory panel experience (experience), and 5 were related to only the discussion which followed (lecture). All students had completed the informal consumer sensory panel (steak lab) as part of ANS 120 Introduction to Animal Science. In addition to the 10-question quiz, students were asked when they had completed ANS 120 (year), who their instructor was for ANS 120 (instructor, n = 2), and if the steak lab affected their steak purchasing habits. Overall scores on the quiz were tested for effect of instructor, year and instructor × year interaction by ANOVA with JMP software (version 10, SAS Inst. Inc., Cary, NC). There was no effect of instructor ($P = 0.31$), year ($P = 0.60$) or instructor × year interaction ($P = 0.56$) on quiz score. Furthermore, student scores on experience questions were compared with scores on lecture questions using ANOVA. Student scores on experience questions were greater than scores on lecture questions ($81 \pm 2\%$ vs. $60 \pm 2\%$ respectively, $P < 0.0001$). Additionally, 65% of students agreed or strongly agreed that the steak lab influenced their choices in steak purchases. These results indicate use of an informal consumer panel is an effective means of teaching concepts related to beef palatability.

T536 Relationship between course performance and graduation rates of animal science majors. M. J. Anderson*, J. L. Leatherwood, M. M. Beverly, K. J. Stutts, and S. F. Kelley, *Sam Houston State University, Huntsville, TX.*

Student success in completing a degree and graduating is dependent on course performance. Additionally, courses in a student's major will not only affect graduation, but also determine the aptitude of that student for their chosen career path. The objective of this study was to investigate the relationship between graduation rates and the grade earned in specific animal science courses. To accomplish this, course grades and graduation rates of students receiving those specific grades were collected for animal science courses over a 10-year period at Sam Houston State University. The courses included Animal Science, Anatomy and Physiology of Domestic Animals, Animal Nutrition, Meat Science, Equine Science, Animal Breeding and Genetics, Range Management, Animal Reproduction, and Animal Feeds and Feeding. Animal Science is an introductory course for freshmen-level students and prerequisite for other courses evaluated. Anatomy and Physiology of Domestic Animals, Equine Science, and Animal Nutrition are commonly composed of sophomore-level students, while the remaining courses are generally composed of upperclassmen. When graduation rates are reviewed across courses, there is a steady decline in graduation rate of students in the Animal Science course as the final course grade moves from a B (74%), to a C (51%), to a D (30%), and, last, to an F (0%). This pattern does not continue with the sophomore- and upper-level courses. In those courses, over 77% of students graduate when earning a final course grade of C or better. This illustrates that the introductory Animal Science course at Sam Houston provides the necessary rigor to the program and adequately prepares students for the advanced courses in animal science. This also demonstrates that students who receive a lower grade in the introductory Animal Science course may be able to continue in the program, but their likelihood of graduating is significantly lower. Therefore, the introductory Animal Science course at Sam Houston provides an early indicator of student success in reaching graduation.

Key Words: graduation rate, education, animal science

T537 *Fine Focus*: A new international undergraduate microbiology research journal. John L. McKillip*, *Ball State University, Muncie, IN.*

Fine Focus is the first product-based course of its kind at Ball State University, and is poised to meet the AAAS recent call to action for transformative learning in biology. In utilizing the skill sets of 12 undergraduate students spanning 4 departments, *Fine Focus* has developed a peer-reviewed academic digital and print journal whose mission is to publish findings of undergraduate research internationally. We hypothesize that this "immersive learning" course provides participating students direct experience in double-blind peer-reviewed manuscript management, copy editing, and marketing/advertising available nowhere else. Participating students gain a multitude of experiences through collaborations with professionals from the American Society for Microbiology (ASM), National Institutes of Health (NIH), and the Council on Undergraduate Research (CUR). Such experiences include acquisition

of a working knowledge on scientific writing, editing, peer review, graphic design, and advertising, and professional correspondence with authors and reviewers, as they relate to dissemination of microbiological research data through an academic journal with an international scope. This multifaceted learning impact is assessed through student surveys, progress report notebooks, and self-evaluation exercises, which consistently indicated that *Fine Focus* offered exposure to techical aspects of manuscript review and data analyses not available in traditional content courses. After 4 semesters, *Fine Focus* has established an Editorial Board of more than four dozen experts in microbiology and is publishing the first issue in January 2015 that includes 6 published articles on original undergraduate research. Students leave the course having also established permanent career-relevant contacts in varied subdisciplines of microbiology worldwide, and the leadership development skills necessary to serve their profession in the realm of peer-reviewed research, a vital skill in today's community of scientists.

Key Words: undergraduate research, microbiology, journal