Teaching/Undergraduate and Graduate Education: Teaching and Learning in the Animal Sciences: New Grounds for the 21st Century

1 How to incorporate high-impact practices in the animal sciences curriculum. N. Cockett*[1] and D. Buchanan[2], [1]*Utah State University, Logan,* [2]*North Dakota State University, Fargo.*

The animal sciences curriculum has remained fairly static in relation to changes in the student population, agricultural practice, scientific advances and the place of agriculture in the greater culture. Changes in the curriculum frequently arise by developing new classes or increasing the number of credits for existing classes while the method of teaching frequently remains as standard lecture or lab format. We propose that teaching must rapidly evolve to include high impact practices that are tailored to the demography of the students and the most effective means of conveying the various types of information that will be important for careers of the future. Practices such as first year seminars, learning communities, undergraduate research, global learning, service or community based learning, industry internships and capstone projects need to be ubiquitous in the curriculum instead of operating as isolated pieces. The presentation will include a review of research about the advantages associated with such practices, some examples of high impact practices already being used in animal science and a challenge to "deconstruct" the curriculum and attempt to rebuild it with content that will be relevant, intellectually stimulating and preparatory for careers that our student will likely have. The curriculum should also focus on the most appropriate practices for each component within the Animal Sciences degree.

Key Words: curriculum, undergraduate

2 Courses and high-impact practices to equip students with knowledge, skills, and experiences for the 21st century: Views of animal sciences faculty. M. A. Wattiaux* and P. Crump, *University of Wisconsin-Madison, Madison.*

Our objective was to identify types of courses and high impact practices (HIPs) that animal sciences faculty associated with important knowledge and skills that students should gain during a 4-yr degree program. Data were from a survey of 49 faculty from 33 institutions who attended a June 2012 national conference. Using a scale of 1 (not at all) to 5 (a great deal), participants scored the importance of 17 items describing knowledge and skills (KS) and 16 items describing courses and experiences (CE), seven of which were HIPs. The Kruskal-Wallis test was used to detect differences among professorial ranks and Spearman correlation was used to explore relationships among survey items. The top 8 KS items (scores ranging from 4.81 to 4.45) were in decreasing rank-order: Gain oral and written communication skills (KS1); Demonstrate an ability to apply, analyze, and evaluate (KS2); Gain interpersonal communication skills (KS3); Problem-solving skills as an individual (KS4); Problem-solving skills in team settings (KS5); In depth knowledge of disciplines in the major (KS6); Leadership development skills (KS7); Gain life-long learners' skills (KS8). The top 8 CE items (scores ranging from 4.78 to 4.20) were in decreasing rank-order: Practicum-based courses or courses with hands-on labs (CE1); Courses that include real-world, project-based activities (CE2); In-country internships (CE3); Capstone courses or projects (CE4); Courses that include collaborative assignments and projects (CE5); Undergraduate research experience (CE6); Using the Internet as a learning tool (CE7); Writing intensive courses (CE8). Full professors scored items KS1, KS2, and CE6 (all $P < 0.02$), and item KS4 ($P < 0.06$) lower compared with assistant or associate professors. Items CE2 and CE5 were correlated ($r > 0.4$ and all $P < 0.01$) with 10 and 12 of the 17 KS items, respectively, whereas PowerPoint lecture-based courses (CE15) were not correlated with any KS items. Among the HIPs, items CE3, CE4, CE6 and CE8 were correlated with 7, 10, 2, and 1 KS items, respectively, illustrating that not all HIPs were perceived as of equal relevance.

Key Words: undergraduate curriculum

3 How to incorporate active learning practices in animal sciences classrooms. D. K. Aaron* and C. A. Tilghman, *University of Kentucky, Lexington.*

Most educators agree students retain more knowledge if they are engaged in active learning. Dale's Cone of Experience (Edgar Dale, Audio-Visual Methods in Teaching, 1969) suggests students remember 70% of what they say and 90% of what they both say and do. Conversely, they remember only 20% of what they hear and 30% of what they see. The former is active involvement, the latter is passive. Traditional classroom lecture achieves active involvement by teachers but often restricts students to passive roles. While this may be comfortable for both, it does not maximize learning. Furthermore, changing demographics of students enrolled in animal sciences courses (more students from urban areas with little to no agricultural experience, greater diversity and an increase in nontraditional students) requires both lecture-based teaching and hands-on experiences. This presentation will discuss ways of engaging students in animal sciences courses, from classrooms to labs. It will begin with class attendance. This may seem obvious, but the first step in achieving active learning is making sure students show up to class. It will progress to note taking, which as old-fashioned as it may seem, is an integral part of the learning process because it keeps students engaged. Ways of asking questions and encouraging students to ask questions, thereby turning lectures into conversations, will also be discussed. Finally, some ideas for engaging students through real or simulated experiences and hands-on activities will be presented. Examples of experiential learning opportunities will include those used in an introductory animal sciences course (feeding trials with chicks and lambs, livestock handling and management situations, a livestock judging "contest") and an upper-level course in animal genetics (problem-solving lab exercises, an interactive genetic simulation program). These student-centered, experiential learning activities pave the way for retained knowledge in the subject matter and encourage students to look beyond the planned curriculum to explore continuous learning.

Key Words: teaching, learning, student engagement