

Teaching/Undergraduate and Graduate Education Symposium: Online Education for a Hands-On Career: The good, the bad and the ugly of online education in animal sciences

865 Making the world your stage through best practices in distance education. E. Sewell¹, B. Parr*¹, and D. Mulvaney², ¹College of Education, Auburn University, Auburn, AL, ²Animal Sciences, Auburn University, Auburn, AL.

Opportunities for students to participate in courses via distance education (DE) are becoming increasingly prominent in many tertiary education institutions. Those with enrollment of 10,000 or more students typically offer some distance delivered course work. Online graduate degree programs are slowly emerging in the agriculture sectors. What are some best practices for DE? Through DE classrooms, students can participate in valuable education experiences that fit around their schedule and location. Video cameras and computer technologies are employed to take students out of the normal classroom and put them in places such as active business and industry to give students a first-hand understanding of the concepts being covered. Class videos may be supplemented with PowerPoint presentations through course capture software. For example, Panopto allows instructors to have slides transition while a video is playing enabling students to simultaneously watch video and PowerPoints. Classroom capture can be used both as an off-line recorder for asynchronous videos as well as on-line for streaming classes in real time. Complimentary videos are posted via YouTube that help promote class discussions on web-based learning management systems. Communication can use text messages, social networks and video chat. Platforms are set up to enable communication with students, other instructors, and administrators using methods and tools that are already familiar and effective for them. The secret to simulating the face-to-face experience has been the frequent exposure of students to simply recorded videos of their classmates and the professor via CMS. Discussions through DE can virtually be face-to-face via video chat functions. Typewritten responses to discussion board topics may be completely replaced with the easy video capture available through CMS. Instructional videos in technical subject areas; for example, animal science can be recorded up-close and viewed and reviewed often by students, eliminating the need to “move in close” so everyone can see. Integrating sound teaching practices with technology serves as a foundation for best practices of developing a DE course and program.

Key Words: teaching and learning, distance education

866 Real and perceived barriers to distance education in animal sciences and other disciplines. K. Boland*¹, B. Parr¹, and D. Mulvaney², ¹College of Education, Auburn University, Auburn, AL, ²Animal Sciences, Auburn University, Auburn, AL.

Providing distance education (DE) courses, while not new, has become an increasingly popular approach to serve diverse populations of learners. Despite the movement toward more DE courses in tertiary institutions, many refrain from developing DE courses due to numerous barriers involved in developing these courses, curricula and programs. We test a hypothesis that DE has not received universal respect in the animal sciences community because of a diverse number and seriousness of perceived problems to be presented here. Using a rank analysis within a multi-component, qualitative/Delphi survey, animal science faculty and administrators were asked to identify which barriers were most likely impediments toward advancement of DE development in the discipline to gain insight into the perception of which barriers are most

problematic. Reasons that institutions presently did not offer courses via DE included: time constraints of faculty, costs or lack of funding; equipment and technology limitations, technical knowledge/technical support, demand for distance education, lack of recognition for faculty, pedagogical issues and concerns, administrative issues, lack of adequate compensation/ administrative appreciation for faculty's time and efforts, lack of faculty rewards or incentives, lack of ability to teach skills requiring “hands on” instruction, concerns about faculty workload, lack of time and support from administration to develop course and materials, lack of time and support from administration to learn technologies, lack of personal contact between instructor and student, concerns about course quality, equipment failures/costs of maintaining equipment, lack of faculty commitment to spend time to master the use of technologies, and lack of nonverbal communication between instructor and student. Analysis of the real and perceived barriers for developing DE options in animal sciences should enable faculty and administrators to overcome them and adapt to pedagogies, curricula, and learning systems that meet increasing expectation and demand for dynamic blended, mobile learning environments.

Key Words: distance education, barriers

867 Engaging the new biology: Integrating quantitative genetics and genomics in animal breeding graduate learning. R. M. Lewis* and B. B. Lockee, *Virginia Tech, Blacksburg.*

Over the past 25 years in land-grant institutions, focus on quantitative areas of genetics, particularly animal breeding, has reduced sharply as programs focused new hires in molecular genetics. Many faculty members with expertise in quantitative genetics are in the later stages of their careers. Thus, at a time when integrating genomic information with quantitative genetics is imperative, our capacity to train professionals with such expertise is at risk. One means to redress this situation is through across-institutional collaboration. Beginning in fall 2007, 4 universities joined efforts to develop a multi-state curriculum in animal breeding and quantitative genetics through distance-delivery. Thus far, 147 graduate students from 32 institutions have enrolled in 8 one-credit online courses, completing a total of 444 credit hours. Recently, an expanded consortium of 7 universities has formed to extend that curriculum further. Its aim is to train students with the skills to integrate advances in animal genomics with the agricultural systems emerging from our “New Biology for the 21st Century.” Courses are being offered using programmatic tools in distance-delivery complemented by on-site summer short courses. The curriculum will consider 5 areas: core (prerequisite) knowledge, applications, quantitative genetics, statistical methods, and interface with molecular genetics. Educational backgrounds and aims differ among students enrolled. Therefore, the program is designed to be comprehensive, offering both breadth and depth of coverage, and to combine theory with application to solve real-world problems. The curriculum will be integrated into AG*IDEA, a national consortium of universities offering programs and courses in agriculture disciplines online. Beyond providing an infrastructure, that partnership will increase the accessibility of the curriculum nationally. The outcome will be more students pursuing and completing a postsecondary degree in quantitative aspects of genetics, with advanced skills and knowledge directly applicable to the agricultural workplace.

Key Words: distance delivery, genetics, graduate education

868 Service learning: Hands-on opportunities for on-line courses. O. U. Bolden-Tiller*¹, L. G. Martin², and I. Everett¹, ¹Tuskegee University, Tuskegee Institute, AL, ²Auburn University, Auburn, AL.

Service learning can draw the most disengaged individuals into meaningful school experiences that deepen understanding and nurture practical effectiveness. We hypothesize that students enrolled in courses, including online courses, can gain skills and knowledge by participating in service learning. The objective of the current study was to ascertain knowledge gained through service learning in an introductory course in animal sciences. The service learning project (SLP) consisted of students selecting the animal species of their choice and developing an activity/fact sheet and interactive presentation geared toward 3- to 5-yr-olds. Following their participation in the SLP, 65 students enrolled in an introductory animal science class during fall 2011 completed a survey consisting of quantitative items, primarily on a Likert scale (0 = strongly disagree; 5 = strongly agree), aimed to gauge what and how these students learned, particularly in comparison to other teaching styles, such as lecture. Overall, students enjoyed the assignment, indicating that they learned more than in a lecture setting (3.57/5) and that they learned something new through the service learning project (4.24/5). Participants also indicated that they learned something beyond the assigned topic (3.35/5) and looked forward to participating in additional SLP (4.48/5). Interestingly, there was a significant difference ($P < 0.05$) in "what service learning meant" to each participant, ranging from teaching (43), learning and then teaching about what one has learned (14) and community service (7) to a class requirement (1). Our findings suggest that although students found service learning beneficial, consistent with previous findings, there were mixed results and inconsistent findings of student outcomes that seek to assess what and how service-learning students learned as well as how their learning compared with that within other pedagogical contexts, suggesting that a more rigorous assessment tool should be used to document and assess student learning in service-learning courses.

Key Words: animal sciences, service learning, distance education

869 Student learning in undergraduate animal breeding courses is improved through play of an online genetic simulation game. K. L. Kessler*¹, R. M. Lewis², J. P. Cassady³, and K. M. Cammack¹, ¹University of Wyoming, Laramie, ²Virginia Polytechnic Institute and State University, Blacksburg, ³North Carolina State University, Raleigh.

The need to develop genetic simulation tools that provide undergraduate students an opportunity to apply course concepts in practice has long been recognized by educators in animal breeding. CyberSheep is an online genetic simulation tool developed at Virginia Tech, in which students manage a flock of sheep within a cooperative breeding scheme. The aim of CyberSheep is to provide a virtual lab where students can observe the consequences of their culling and breeding decisions in real time, benefiting their understanding of animal breeding concepts. Undergraduate students at the University of Wyoming and North Carolina State University were anonymously evaluated before and after playing CyberSheep to determine its contribution to their learning. Students were asked to evaluate their level of understanding of fundamental concepts used in CyberSheep including inbreeding, estimated breeding values, evaluating genetic merit of breeding stock, management of a lethal recessive allele, and cooperative breeding generally. Survey scores were analyzed using the GLM procedure of SAS. Play of CyberSheep corresponded with clear improvement ($P < 0.05$) in student understanding of cooperative breeding schemes, recessive allele management, and evaluation of genetic merit. Based on a 5-point scale, students rated their initial understanding of these 3 concepts at 3.1, 3.6, and 3.6, respectively, coinciding with a moderate level of understanding. Their scores rose ($P \leq 0.007$) to 3.6, 4.0, and 3.9, respectively, in the final survey indicating an improvement in their understanding of these same concepts with the use of CyberSheep. In general, students were satisfied with what they learned from CyberSheep with a score of 3.8, and found the simulation to be "fun" and a "worthwhile experience" with an average score of 3.5 and 3.6 for each criterion, respectively. It was concluded that the use of CyberSheep benefited animal breeding students in their understanding of fundamental concepts taught in animal breeding courses.

Key Words: animal breeding, education, genetic simulation