

TEACHING

554 Students' expectations entering and leaving the Department of Animal Science at Texas A&M University. B. A. Miller*, M. W. Murphey, T. R. Greathouse, J. H. Hesby, C. L. Skaggs, and W. S. Ramsey, *Texas A&M University, College Station.*

An opinion survey was conducted of 60 graduating seniors at Texas A&M University in December 1996 to investigate students expectations upon entering and leaving college, job status, internships value, field trips, and opinions on curriculum change. The survey consisted of 6 multiple part yes/no questions, three multiple choice, and two Likert-type questions. Respondents were 40% female and 60% male, with 60% from a rural background, 30% urban, and 10% suburban. Career goals entering A&M were: 8% production, 25% business/industry, 50% veterinary school, 5% family operation, and 12% other. Career goals leaving were markedly changed: 15% production, 40% business/industry, 2% veterinary college, 5% family operation, and 25% other. Employment upon graduation was 51%, with 81% finding jobs in their respective career areas. Internship participation was low(15%). Of these students(n=9), 67% were employed leaving A&M and 44% felt the internship led to employment. Field trip attendance was 67%. Most(90%) felt the trips enhanced achievement of their career goals. When asked opinions of 5 possible curriculum changes results were: 27% felt more field trips were needed, 52% thought classes should be more computer skills oriented, 43% felt advisors should stress internships, 43% supported issues discussion, 83% wanted exposure to more hands-on opportunities, and 2% felt the curriculum needed no changes. In the Likert-type questions satisfaction was ranked 1(poor) to 10(excellent). Average responses were 7.9 ± 1.8 and 7.8 ± 1.6 indicating satisfaction with the Department of Animal Science and career preparation by the University, respectively. The graduating seniors were satisfied overall with their education but indicated the need for curriculum changes in the area of hands-on training and more field trips. The majority of the students changed their career goals shifting mainly from veterinary college to business/industry.

Key Words: Curriculum, Education, Career

555 Student evaluation of teaching innovations: take home messages, and computer presentations. J. E. Moore, *University of Florida, Gainesville.*

Animal Nutrition is an intermediate course taken by beginning graduate students and senior undergraduates. It is the first nutrition course for graduate nutrition students in animal, dairy and poultry sciences, and a terminal course for graduate students in other animal disciplines, graduate students in agronomy, and post-baccalaureate pre-veterinary medicine students. Most students are seeking Ph.D. or D.V.M. degrees. To decrease the time students spent studying old exams and quizzes, weekly quizzes were replaced by daily take home messages (Senger, et al. 1994. *J. Animal Sci.* 72(Supp. 1):305). Students wrote a one-page, double-spaced synopsis of one concept presented during each lecture. Overheads were prepared using presentation software, and presented using either an LCD panel or a projector. At the end of each semester, students completed questionnaires on both innovations by responding to positive or negative comments with "5, agree strongly; 4, agree; 3, no comment; 2, disagree; or 1, disagree strongly." The following are mean scores (and standard deviations) for several comments: Take Home Messages (three semesters, 67 students): 4.5 (0.6): should be continued in future 4.5 (0.7): helped to keep current with class material 4.1 (0.8): helped to understand major concepts and principles 2.3 (1.1): took too much time relative to their value 3.7 (1.1): helped to improve writing skills 3.5 (1.0): helped to prepare for hour exams (there were 4) Computer Overheads (two semesters, 47 students): 4.6 (0.5): should be continued in future 4.5 (0.5): was an effective way to present overheads 4.4 (0.8): made it easy to take notes 4.3 (0.8): helped to keep track of the flow of course material 1.8 (0.6): made lectures seem too structured and inflexible 4.0 (0.8): helped to understand concepts Highly positive student evaluations of the techniques support the desire of the instructor to continue using them. Students were less positive, however, about their role in effective teaching.

Key Words: Teaching Innovations, Take Home Messages, Computer Overheads

556 Attitudes and perceptions of introductory animal science students on animal production practices. M. W. Murphey*, C. L. Skaggs, D. W. Pierce, T. H. Friend, W. S. Ramsey, and T. R. Greathouse, *Texas A&M University, College Station.*

The urbanization and limited livestock experience of students entering introductory animal science courses provides a unique educational opportunity for animal agriculture instruction. A survey questionnaire was developed to determine students attitudes toward 19 production practices. It was administered to the same students both at the onset (n=306) and at the end (n=284) of the semester to determine initial and changes in the student attitudes. The survey instrument used a five point Likert-type scale for measurement of perceptions and attitudes. The scale ranged from 1 (very acceptable) to 5 (very unacceptable) with 3 depicting a neutral response and option 6 available for those unfamiliar with the production practice. The initial survey found students most unfamiliar with battery cages for hens (41.5%), farrowing crates for sows (40.2%), debeaking of poultry (34.0%), and individual crates for veal calves (30.1%). The production practices identified initially as most acceptable were shearing of sheep, vaccination of farm animals, and artificial insemination as 94.8%, 94.4%, 90.5% considered them acceptable (A) or very acceptable (VA). Initial acceptability (A or VA) was lowest for battery cages for hens (28.8%), individual crates for veal calves (30.0%), debeaking of poultry (30.4%), and farrowing crates in swine operations (37.3%). Student perceptions of acceptability improved, demonstrated by an increase in percentage of students rating a practice as A or VA, increased for each of the production practices at the end of the semester. Mean values of the final survey for the practices ranged from 1.34±0.64 (vaccination of farm animals) to 2.37±1.20 (individual crates for veal calves). In summary, student attitudes and perceptions of animal production practices improved with completion of an introductory animal science lecture and laboratory.

Key Words: Student Perceptions, Production Practices, Animal Science Teaching

557 Animal Science Sales. W. W. Ellis, *Southeast Missouri State University.*

The objective was to develop an Animal Science course that would serve the changing world of animal agribusiness. The poultry industry has been integrated for several years. Swine producers have or soon will experience early stages of industrialization. It can certainly be documented that swine herds are increasing in size and decreasing in numbers. The beef, sheep and equine industries do not seem to be changing as rapidly but contract production is being discussed or implemented. Food animal industry industrialization has changed the career options for Animal Science graduates. Higher percentages of the Animal Science graduates enter the agribusiness of Animal Science as compared to production or returning to the family farm. In order to better serve the needs of present and future students a course was developed in Animal Science Sales. Sales is a very frequent initial employment opportunity for graduates. It is expected this sales career trend will continue to expand. The course objectives are to characterize the value based relationship building model of agribusiness sales and to help students overcome the stigma of being a salesperson. Sales is a career of those who wish to help others. Animal Science students do not know what a sales career encompasses. The course content includes; history of sales, value added sales techniques, relationship building techniques, social styles, listening, feature and benefit sales presentations, prospecting, and demonstration of true caring for the client. Students are required to spend a day with a salesperson, present to a professional salesperson (not the instructor) a feature and benefit type sales story and present a grower or customer appreciation type meeting exposition. Teaching methods will be shared that enhance a student's understanding of a sales career. In conclusion, an animal sales course may soon be of great value to students.

Key Words: Teaching, Sales

558 Development of a specialized undergraduate course in DNA technology applied to livestock. R. D. Green*, J. Berg-Ramsey, S. P. Doyle, and L. R. Hyde, *Colorado State University, Fort Collins.*

Undergraduate curricula in the animal sciences have been increasingly challenged in recent years to cover all the bases. As new technologies and fields of study have developed, finding a place within already over-stuffed curricula has been difficult. One of these areas is the broad field of biotechnology as related to animal agriculture, and even more specifically the applications of various DNA technologies to animal production. While a cursory coverage of this topic is possible within several traditional courses, primarily undergraduate animal breeding and genetics, the approach lacks necessary depth in this area as well as detracts from ability to offer complete coverage of traditional animal breeding theory and applications. After seven years of attempting to "mesh" these two areas into one course, a new course was developed to provide a working knowledge of all currently existing and developing DNA technologies being applied to livestock. This course is offered as one of a series of modular courses taught in specialized areas for an eight week period for two junior level semester credits. The course is taught for two hours, two days per week; and has been designed so that technical material and techniques are presented by the instructor in the first hour followed by classroom led discussion of landmark scientific papers by students in the second hour. The papers are pre-selected by the instructor to match the current day's lecture topic. Topics have included DNA manipulation and amplification, methods of DNA genotyping, recombinant DNA techniques, gene mapping, cross-species homology, detection of quantitative trait loci, marker-assisted selection, DNA fingerprinting, transgenics, semen-sexing, and bioethics as related to this field. Course evaluations have indicated success in reaching students with very technical information, yet in an applied perspective that is useful to research-oriented or production-oriented students in the animal and equine sciences. This approach of utilizing "short-course", modular elective classes appears to allow a curriculum to fill some needed gaps in specialized areas.

Key Words: Teaching, Genetics, Biotechnology, Curricula

559 Animal science multimedia backgrounder computer aided instruction modules. J. W. Riesen* and M. J. Darre, *University of Connecticut, Storrs.*

Instructors must deal with the disparity between the level at which they wish to teach and the level of the least-well-prepared students. This is most difficult in introductory courses, to which freshmen come from very different backgrounds. It is further aggravated in animal science where some students come from a farm background or vocational agricultural high schools and know agricultural vocabulary and concepts, while others have had little or no exposure. A Computer Aided Learning (CAL) module has been developed and will be demonstrated which was designed to improve the quality of education in introductory animal science courses by addressing this problem. Students are told that specific concepts and information are assumed and that this prerequisite information was available to them on a CAL "Backgrounder" program in the college microcomputer laboratory. The CAL module includes presentation of concepts, feedback reinforcement and self-testing sequences to allow students to determine their progress and mastery. This approach has its most direct impact on students with deficient backgrounds. However, the whole class will proceed at a higher level and the interest of the advanced students was more easily maintained. The module allows skipping areas already mastered, thus saving time for the student who knows some or much of the material. The module was used in an introductory animal science course. Students received a standard 20 question pre-test and given the same 20 questions at the end of the course for a post-test. Analysis of variance of post-test scores with use of CAL as a treatment effect showed p=0.09. Pre-test and post-test scores for students that used the CAL module (11) and those that did not (31) were 49.5%, 70.5%, 46.3% and 63.1% respectively.

Key Words: Computer, CAL, Teaching

560 The use of a website homepage in teaching, advising and placing animal science students. J. H. Hesby*, T. R. Greathouse, C. L. Skaggs, M. W. Murphey, B. A. Miller, and M. G. Cowley, *Texas A&M University, College Station.*

The use of a homepage has greatly increased the efficiency of communication between students and professors in our large Animal Science classes and for advising our 750 majors. A homepage was developed at <http://agweb.tamu.edu/ansc/hesby.htm> with nine click on image map boxes as follows: Links allow a student to easily reach other homepages; Announcements can be for current general announcements; Individual course boxes provide the syllabus, schedule, quizzes and announcements on each course plus interactive study quizzes that students can use to prepare for their next quiz or examination; Job listings allow students to get current interview listings; Internship listings give names, addresses and application deadlines; Senior students have a color picture and resume of graduating seniors so prospective senior information can be downloaded by interested employers; Internship students also have pictures and resumes of students wanting internships. This has enabled us to become much better organized in our teaching and placement functions. Students that are aggressive find it beneficial because they can be kept up to date. Students from other universities can also search our career opportunities. The job list has links to several employment lists throughout the nation for our students to view which makes them more current on national job opportunities. Other Animal Science Departments have already downloaded our career opportunities listing just as we have theirs. In summary, this homepage makes our seniors and recent graduates more current on what employment opportunities are available. It also allows our current course students to be more proficient and successful.

Key Words: Teacher Homepage, Website Teaching, Advising

561 Integrating into existing courses the need for responsiveness to policy-makers and the public on agricultural issues. D. H. Kinkel, *Texas A&M University, Kingsville.*

Policy-makers and the public are increasingly insistent on accountability and responsible action from those involved in agriculture. Issues may be complex and viewed from multiple, often conflicting, perspectives. Students must appreciate and respect perspectives at odds with their training and experience. They must respond to public demands with balanced, concise, easily understood interpretations of information available about an issue. Students in a senior level nutrition class are assigned to act as legislative assistants to a state legislator. They are given a letter similar to those received from constituents about current issues. Letters reflect the lack of knowledge and misinformation characteristic of a non-agricultural public. Students, assigned to groups of 4-6 in size, determine responsibilities for researching and writing the 2 page report to the legislator in response to the concerns raised by the constituent. The report must include the most recent information available and be balanced in regard to any position taken about the issues raised. Following submission of reports, groups meet with a legislator in a simulated 10 minute staff meeting to explore their recommendations of how to respond to constituents concerns. Grades, approximately 10% of the overall course grade, are given for the group effort. Students indicate struggling to restrict reports to 2 pages. They report getting excellent responses to requests for information from corporations, government agencies, and producer groups. Students are enthusiastic about transforming academic knowledge into information that can be understood by and influence the public and policy-makers. The scenario, experiential, and cooperative learning strategies used in this project are effective strategies relating to "real world" situations and the increasingly non-agricultural public to which students must be responsive.

Key Words: Teaching, Issues, Group Projects

562 Outcomes defined curriculum renewal: process and product. B. R. Skaar* and M. D. Kenealy, *Iowa State University, Ames.*

Renewal of Iowa State's undergraduate Animal Science program stemmed from increasingly diverse student needs as identified by surveys, observation and employer comment. Each year typical students have less animal experience, and interest in production careers, and stronger interests in science and business. More instruction on companion animals and horses is needed to meet student requests. Employers require more effective interpersonal skills in new graduates. This paper presents a multi-step "action planning" process that was adapted so that a large number of diverse faculty and students could contribute cooperatively, and with sense of ownership. The needs of 7 clientele groups led to definition of 10 major educational outcomes for the program, and over 300 learning experiences that would serve to meet student needs. By grouping learning experiences, course titles and objectives were defined for a renewed curriculum. Courses were sequenced into a four-year plan, and credits were restricted to increase elective opportunities. Next, courses were defined by specific learner competencies which were edited for proper sequencing. Cognitive learning skills were examined to ensure that upper level skills were represented throughout the curriculum. As a result, 53 classes are to be offered: including 12 new courses and 15 with major restructuring to match program outcomes. A course sequence to develop life-skills in the context of contemporary issues study was added. New courses emphasizing "working with animals", and animal management courses at entry levels were created to benefit increasing numbers of students with limited animal experience. Discipline expansion courses offer more case study or increased training in the sciences. Changes to production courses, including companion animal and equine courses, will have greater emphasis upon resource management.

Key Words: Curriculum, Teaching, Students

563 Cooperative venture between land grant universities and community colleges for swine educational programs in North Carolina. W. L. Flowers^{1*}, J. D. Armstrong¹, and S. Mathis², *¹North Carolina State University, Raleigh and ²Sampson Community College, Clinton.*

Growth within the swine industry in the southeastern United States has created a tremendous demand for a well trained work force. Land grant universities typically maintain excellent farm and laboratory resources for educational purposes, whereas community colleges often have easy and immediate access to prospective workers at the local level or individuals currently employed by the swine industry but in need of additional education. A cooperative effort was initiated between the Department of Animal Science at North Carolina State University and Sampson Community College that was designed to draw upon the strengths of both institutions in an attempt to address the educational needs of the swine industry in North Carolina. A series of 15 video tapes were produced by North Carolina State University. Each tape discussed and illustrated fundamental concepts involved with swine production such as anatomy and physiology of the sow, etc. Special emphasis was placed on demonstrations of animal behavior and other educational experiences normally encountered by students in laboratory settings. Tapes were used by Sampson Community College instructors as an introduction to a particular area of swine production. Approximately, every other week during the semester, the Sampson Community College class traveled to Raleigh to participate in laboratory exercises. These laboratory exercises were conducted jointly by instructors from both institutions and either allowed students to participate in the similar demonstrations or extend their understanding of topics covered in the videos. Each laboratory session ended with a short problem solving exercise in which students were required to work in teams. Tests, homework assignments and grades were developed and assigned by instructors at Sampson Community College.

Key Words: University, Swine, Distance Education

564 Cooperative learning: Pigs and people. L. G. Griffiths, *University of Delaware, Newark.*

Cooperative learning has been defined by Brody as a system of team learning that structures group work in such a way that it promotes both academic and social outcomes. Cooperative learning methods differ from traditional group learning in several ways including positive interdependence, individual accountability, and shared leadership and responsibility. Reasons to incorporate cooperative learning into a course include higher academic achievement, higher self-esteem, greater collaborative skills, and greater intrinsic motivation. Students realize academic, social and individual success. Cooperative learning works because all members of a group invest in the answer and share in the ultimate success. Each member of the group is responsible to all others. In the animal sciences, management courses are an excellent setting for cooperative learning. Ranging from the day-to-day dilemmas encountered in managing livestock, to the broader issues facing livestock industries, the problems for cooperative learning groups are limitless. In my swine management course, heterogeneous groupings formed on the basis of academic ability, gender, motivation, location, and previous farm/animal experience work well. Group assignments range from complete responsibility for the care of a group of animals to the production of a group newsletter. When asked to identify the strengths of the course in their evaluations, students commented just as much about the people skills as they did about the animal skills: "working together with other students" and "the close interaction with other students and the instructor". Other comments included "the teamwork demonstrated by our group members and our classmates as well as our instructors made the entire course motivating and exciting" and "our instructors added to our learning experience by allowing us to make decisions on our own, while still remaining available for help and support". In cooperative learning, students generate a momentum that transforms the classroom environment to one that is interactive and exciting.

Key Words: Instruction, Cooperative Learning, Livestock