Teaching has a long and varied history in the life of departments of animal science and the American Society of Animal Science. Some of the earliest reports from meetings of the society have strong indication that planning the curriculum was a prominent feature of the meetings. Teaching symposia were also included almost from the beginning. The society went through a lengthy period from the 1940s through most of the 1960s when teaching was not a prominent focus, but a symposium in 1968 appeared to be a catalyst for change, and, since that date, teaching has again been an important part of the meetings. In recent years, outstanding symposia and contributed papers have made the teaching section a vibrant entry. Departments of animal science have changed considerably since the early days in which “men taught boys” and the primary goal was to produce farmers. More female students, more urban students, interest in a wide variety of animals, and greatly diversified career goals have been emerging during the last few decades. Departments of animal science and the American Society of Animal Science are positioning to be able to respond to change and face the challenge of providing excellence in teaching during the next century.

Key words: animal science, curriculum, education, teaching

INTRODUCTION

The foundations of the American Society of Animal Science (ASAS) lay in the land-grant universities of the United States. As such, the 3-prong mission of teaching, research, and extension has been at the forefront of ASAS activities. Since its founding in 1908, ASAS has greatly diversified its membership to include many individuals from industry, other countries, and other research or education units. Nonetheless, or perhaps partially because of this diversity, ASAS is still interested in these 3 functions.

This paper, as part of the Centennial series, is about teaching, departments of animal science, and ASAS. Examination of the published information about some of the earliest meetings reveals that teaching was on the mind of at least some of the members from the very beginning. The Committee on Instruction in Animal Husbandry reported an ambitious agenda on teaching for the society at the 1914 meeting (Coffey, 1915). Ever since, with varying degrees of intensity, ASAS has paid attention to teaching.

Previous summaries of teaching in ASAS were provided at the 50th (Washburn, 1958) and 75th (Taylor and Kauffman, 1983) meetings. Readers are strongly urged to examine both of those papers. They were different from each other, reflecting, one assumes, differing philosophies in the authors. The latter paper is recommended especially for its identification of numerous entertaining and provocative quotes about teaching by various animal scientists.

The objective here is to review some of the history, with extra detail for the last 25 yr, to examine the current status of teaching in departments of animal science and ASAS and to look to the future challenges for teaching and how ASAS can be a facilitator of excellence in teaching. One assumes that all of the other Centennial authors are, as I am, grateful for the recent addition of the entire contents of the Journal of Animal Science, including Proceedings of the American Society of Animal Production, to the ASAS Web site. Searching papers by simply placing the word “teach” and a few other pertinent words into the search engine made this assignment much easier.

Early History

The American Society of Animal Science was initially formed, in 1908, as the American Society of Animal Nutrition to facilitate research efforts concerning the feeding of livestock. Other disciplines entered the picture quickly and the organization became the American
Society of Animal Production. By 1914, a Committee on Instruction in Animal Husbandry was formed, and an ambitious agenda was outlined for future meetings (Coffey, 1915). This agenda included the following:

1. Where to draw the line on the number and variety of collegiate courses in animal husbandry to most efficiently serve the needs of the student and economize energy of the instructor.
2. The emphasis, in credit hours, which should be placed on each of the various lines in animal husbandry, such as judging, breeds and breeding, nutrition, preparation and marketing, flock and herd management, economic phases of live stock management, et cetera, in the course.
3. The value of such subjects as economics and the fundamental sciences to students specializing in animal husbandry.
4. The efficiency of different methods of instruction, such as lecture, laboratory, and quiz, in various lines of animal husbandry.
5. What opportunity is there to combine the scientific with the empirical in such courses as herd and flock management.
6. In what order should the various lines of animal husbandry appear in the 4-year college course?
7. The lines of animal husbandry most needed and best suited to the extension work which colleges are called upon to do.
8. The line of cleavage between the animal husbandry courses which should be offered in colleges and in secondary schools.
9. The possibility of standardizing the work in animal husbandry so that the courses offered by the various colleges will be more nearly uniform than at present (Coffey, 1915).

Much of the agenda concerned the curriculum and how to standardize it across colleges. There were, in subsequent years, several papers and presentations that addressed some of these questions. The first outline of a recommended curriculum was in the same year (Savage, 1915). It includes 145 semester credits including more than 40 credits of basic science; 20 credits of more advanced science; courses in feeding, breeding, physiology, meats, and dairy products; and specialized courses in each of the various types of farm animals. In addition, there were more than 20 credits of business and other social sciences. It was laid out in 8 semesters with at least 18 credits each semester. One suspects that anybody who has recently advised undergraduates would find this curriculum to be extremely daunting and one that would probably discourage many students from an animal science major.

Some of the challenges of the early years were similar to those found in 2008. Savage and Maynard (1917) observed: “it is believed that frequently the criticism is justified that in college teaching fundamental courses are presented as a collection of disconnected abstract principles.” McCampbell (1925) suggested that “Animal Husbandry instructors as a whole are poor teachers. There are several reasons why this is true. Some of the more important are: (1) They have had little or no training in the fundamentals underlying the science of teaching, and therefore do not know how to teach even though they may know well the subject matter they are called upon to present in the classroom. (2) Very often the young instructor without training or experience as a teacher has been thrust into a classroom to assume the responsibility of effective presentation of a subject without any supervision or assistance. (3) Too often it is assumed that the popular instructor is an effective teacher. (4) Too many animal husbandry teachers are not well enough trained in the biological sciences to enable them to understand properly and explain the fundamentals upon which many animal husbandry subjects are based. (5) The demands made upon the time of the average animal husbandry instructor for work outside the classroom and away from the institution tends to lessen his interest, enthusiasm, and effectiveness as a teacher.”

The purpose of teaching agriculture was outlined by Coffey (1917): “I believe it is the first business of the agricultural college to make farmers.” Trowbridge (1923) asked “Is it not possible for animal husbandry to be so taught as to serve even a greater purpose in a course in agriculture—to create agricultural ideals; to acquaint men with science, economics, and the humanities; to develop far-seeing, logical thinkers, end citizens whose lives are most satisfactory to them and most useful to the rest of the world when lived on the land and in the prosecution of farming as a business.” Howell (1932) further asked, “Why should not the fundamental objective of undergraduate education in animal husbandry be the development of an animal husbandman.” and stated that, “It is our duty to glorify the profession of farming, to teach students that farming and the handling of livestock is one of God’s greatest callings; that it is economically sound; that on the farm is a delightful place to live.”

Teaching methodology was also discussed. Hultz (1930) offered the view that “It has been held by educators that the lecturing system is not only out of date but inefficient as well, and that the ‘direct question’ examination is not only unfair but inadequate as a test of knowledge. An uninteresting lecture is certainly the last word in undesirability, but it is possible that lectures can be made not only informational but inspiring as well, and for that reason may have a place among useful presentation methods.” Williams (1931) also had an opinion regarding the lecture method: “The method to use is the one that develops interest for more knowledge among the students. All methods will be used at times. The easiest and poorest method is the lecture.”

The tradition of having teaching symposia at the annual meeting began in 1931 and 1932 (Taylor and
Kauffman (1983). The titles were “Needs of undergradu-ate and graduate students” and “Approaches to teaching Animal Husbandry.”

The Committee on Methods of Instruction reported on the results of a survey on course requirements in 1936 (Anonymous, 1936). Average percentages of types of courses among institutions reporting were as follows: animal husbandry—16.0, agronomy—6.6, veterinary science—4.4, other agriculture—8.9, required nonagri-culture—40.2, and supervised electives—27.6.

The 1940s to 1970s

The actual Journal of Animal Science began in 1942. There were relatively few teaching contributions to the journal during the first 2 decades. There were a few submissions such as Rice (1963) who observed that “But too many colleges and students still seem to believe that one goes to college to learn what to think rather than how to think.” Whiteman (1964) made the following suggestions: “1. Develop highly flexible curricula and permit course substitutions—not easy courses for hard ones, but courses that will help each individual student meet his needs. This requires that we break down the growing tendency to make everyone fit the same mold. 2. Develop an advisory system such that some staff member knows each student well enough to properly advise him. The first recommendation will not succeed unless this one is followed. 3. Teach courses in such a way that students get and apply the principles from supporting sciences that are necessary for an understanding of the material. 4. Present subject matter in such a way that students will be encouraged to continue learning after they have graduated. 5. Maintain high standards of accomplishment but do not eliminate the poorer students.” Acker (1964) reported the follow-ing view concerning the teaching of beginning students: “The beginning student in animal science deserves top quality instruction and academic advising. There are two reasons. The first is that a real university exists to “seek the truth” and to “teach the truth”; the Animal Science Department wants to be a credible part of the real university. The second reason is that if the beginning student doesn’t get top quality instruction and academic advising, his younger brother and his hometown friend won’t be choosing animal science as a major, or even the same university.

A symposium in 1968 appears to have been a catalyst for change in teaching interest in the organization (Anonymous, 1968; Bentley, 1968; Cameron, 1968; Castle, 1968; Dreyfus, 1968; First et al., 1968; Glazener, 1968; Hess, 1968; Hoefer, 1968; Livingston, 1968; Neumann, 1968; Plimpton, 1968; Postlethwait, 1968; Tyznik, 1968; Visek, 1968; Willham, 1968; Young, 1968). The symposium apparently had many different goals, because some of the presentations concerned new topics for teaching in a variety of disciplines, whereas others examined modern uses of technology in teaching. In subsequent years, there appeared to be an increased interest in publications and presentations concerning teaching.

Many papers and presentations had discussed ways to improve teaching, but in 1971, two papers recommended ways to formalize teacher preparation (Acker, 1971; Riley, 1971). The former recommended a doctorate teaching degree to “prepare the student to teach animal science subjects at the collegiate and professional level,” whereas the latter recommended an apprenticeship program for aspiring teacher.

Two master teachers offered their views on motivating students and how to have success in teaching (Campbell, 1977; Lasley, 1979): “If we are going to see our agricultural enrollments continue to increase and if we are going to properly train our graduates, we must give high priority to students and to their interests and needs. But putting students first will eventually put teachers first. It is what master teachers do that is not expected of them - things they are not required to do - that sets them apart from the average, so-so, teachers!” (Campbell, 1977). Lasley (1979) stated that “Instructors must be enthusiastic about the subject matter taught. The instructor must know his subject. Students should be encouraged to ask questions either during the lecture, at the end or the beginning of the next lecture, or outside the classroom.”

Taylor and Kauffman (1983) closed out the first 75 yr of ASAS with their paper on teaching. They did an excellent job of mining the papers that had been published for interesting and provocative quotes, outlining the existing condition relative to teaching, and examining the future for teaching. Their paper is still highly readable, informative, and challenging and is strongly recommended.

Teaching in the Journal of Animal Science and the ASAS National Meeting During the Most Recent 25 Years

Kauffman, Shrode, Sutherland, and Taylor, all winners of the ASAS Distinguished Teacher Award, kicked off the last quarter century of teaching in animal science with their paper (based on presentations at the annual meeting, on philosophies, and approaches to teaching; Kauffman et al., 1984). “The eight approaches to teaching that they considered important were: encouragement of oral and written communications by students; use of various techniques to excite the students’ senses through sound, sight, feel, taste and smell; organize carefully because it is impossible to overemphasize the course objectives and how they will be met; provide facts in writing and reserve lectures for explaining ideas; important points and concepts not easily conveyed in writing; use subjective examinations whenever possible; teachers should be available for students requiring extra guidance; use competitive events to stimulate learning; and vary techniques of presenting subjects such as field trips, laboratories, seminars, internships and special projects.”
Harmon (1992) in discussion about basic and applied science instruction offered the view that “I found it interesting to view new employees. It was very clear that students with the best command of basic sciences as analytical tools advanced most rapidly and contributed most changes in the companies.”

The curriculum was the focus of Kauffman (1992). His recommendations were very ambitious. He stated that “the Animal Science curricula not only should change but they must change.” He stressed the importance of preparation, broad emphasis on science, considerable flexibility to adapt to changing industry needs, internships or other real-world experiences, and a comprehensive qualifying examination. He suggested that such an exam should be developed as a national effort.

Early papers made frequent reference to “men teaching boys.” This was a reflection of the reality that animal science was a male-dominated field. By the time of Taylor and Kauffman (1983), that situation had begun to change in the undergraduate student population. Pell (1996) addressed the fact that although the number of female students had increased, the number of women in university faculties had not yet achieved parity. Difficulty in combining career with family responsibilities was mentioned as a problem. She pointed out the importance of keeping adolescent girls involved in math and science and in having effective networking and mentoring opportunities for female faculty.

A symposium on writing-intensive courses was held at the 1994 annual meeting (Aaron, 1996; Haug, 1996; Orr, 1996). The presenters focused on the need for writing in the context of the discipline as part of a comprehensive need for a variety of enhanced communication skills. Contemporary issues was the topic of a symposium in 1998 (Schillo, 1999; Swanson, 1999; William et al., 1999). Many departments were, by this time, featuring contemporary issues in their curriculum in a variety of ways.

Animal science teaching

Annual meetings in most recent years have included some outstanding symposia. In 2005, Scholarship of Teaching as Related to Promotion and Tenure was featured. Teaching Animal Ethics Within Today’s Animal Science Curriculum and Student Engagement: The Classroom and Beyond were presented at the 2006 annual meeting. Visual Learning in Animal Science, Enhancing the Undergraduate Learning Experience in Animal Agriculture Through the Integration of Teaching and Research, and Shaping Animal Sciences Curricula for 2020 were all presented in 2007. In addition to these symposia, submitted papers have resulted in vibrant teaching sessions at recent annual meetings.

Current Situation in Departments of Animal Science

A survey was sent, via the listserv of animal science administrators, to department heads and chairs to evaluate the current teaching situation and changes in the last 25 yr. The response was not large, but the responses were uniform and suggest some trends. Many departments have enjoyed growth in the number of undergraduates. The demography has, however, changed dramatically. Many of the recent changes were continuations of those reported by Taylor and Kauffman (1983). The proportions of urban students and females have increased. Fewer students intend to return to a family farming operation, and more have the intention of applying to a college of veterinary medicine. The numbers of students who transfer from a 2-yr college or who are older than 23 yr of age have also increased. All of these changes are dramatic when compared with the early thoughts that the purpose of a curriculum in animal husbandry was to teach boys to become farmers (Coffey, 1917). Technology use has expanded dramatically since that symposium in 1968. The majority of courses now use PowerPoint (Microsoft Corp., Redmond, WA) in delivery of lectures. A presenter at the 2008 Symposium – The Changing Student and the Role of Technology in Learning (Wattiaux, 2008) challenged the notion that PowerPoint should be as ubiquitous as it has become. One is also reminded of comments early in the life of ASAS that challenged the utility of the lecture: “The lecture method of handling a course of study is the greatest obstacle to be overcome in truly educating our students.” (Kildee, 1930) and “The lecture method is a failure because it discourages student activity; it does not make permanent impressions; it does not provide for a contact between the pupil and the teacher; it emphasizes great masses of facts, but no mode of thought; it makes for a mental attitude that is fatal to courageous thought.” (Williams, 1931).

The use of online course management software and instructional Web sites has grown rapidly in recent years. Such tools have helped to rapidly expand the quantity of information made available to students. It remains an open question as to whether students are actually absorbing the expanded information base.

We are at the beginning of the availability of truly online courses that can be taken by students without consideration to whether they are available, either through location or schedule constraints, to take formal face-to-face classes. Several departments have a small number of online course offerings, and it is reasonable to assume that entire degree programs will be available in the future.

There is considerable interest in a wider diversity of animals. Again, the idea that the purpose of a degree in agriculture is to prepare farmers has been turned on its head. Interest in horses or companion animals has been growing for several years such that many universities have a distinct equine sciences program or have developed courses pertaining to companion animals, or both. A somewhat newer phenomenon is the recruitment of students with a primary interest in exotic animals. This is consistent with the newest ASAS Strategic Plan, which attempts to position the organization for interests in any type of animal that requires management, including zoo animals.
An examination of animal science curricula reveals courses which were rare or nonexistent a generation ago. Examples include behavior, animal ethics, contemporary issues, biotechnology, and molecular biology.

Challenges for Departments of Animal Science in the Future

Departments of Animal Science have to respond to several issues that have to do with teaching. The students are changing, because there are more students from urban backgrounds and with interests in horses, companion animals, and exotic animals. Recruitment programs must reach out to new populations of students without ignoring the traditional base of students from farms and ranches. The curriculum must be adapted to attend to these students with new interests who also have different career aspirations. There is a need to incorporate more course work pertaining to issues facing animal agriculture. Programs need to be fostered that will provide more students with an opportunity for a meaningful international experience.

A generation of faculty with heavy teaching appointments is nearing retirement, and replacing this cadre will be difficult. The training for future faculty with a major emphasis on teaching may not be the same as the appropriate training for faculty with heavy research or extension appointments. Ways for teaching faculty to express themselves in scholarship must be facilitated and recognized as important by fellow faculty and administration. Ways to assess learning must be developed, which can contribute to improvement of teaching without being onerous to perform.

Tools for use of technology in teaching are developing rapidly. These new tools must be evaluated properly and put to use appropriately to enhance learning. Techno-savvy students will expect such tools to be used but do not want technology to take the place of personal interaction.

Animal science departments are beginning to offer courses at a distance. The success of distance education at many institutions suggests that there is a market for such classes. Classes at a distance also provide an opportunity for departments to include classes in their curriculum for which they do not have internal expertise. One example of such an opportunity is currently under development, with the swine curriculum being developed through the efforts of the US Pork Center of Excellence (Ames, IA).

Alumni relations also constitute a challenge for departments. Alumni represent a crucial asset in terms of support for the department, contributions to teaching, research and extension programs, and financial support. Departments of animal science have, historically, experienced strong alumni support. Since student populations have changed dramatically over the last several decades, older alumni frequently have a very different view of the nature of animal science education than the view of current students or recent alumni. This presents challenges in outreach to more recent alumni and, as a result, presents problems in how to maintain alumni support into the future.

Challenges for ASAS as It Considers Teaching

The history of ASAS indicates that teaching was featured at its annual meeting, and some of its most prominent members were at the forefront of those discussions. It is interesting to note that names like Lush and Bolstedt, which are strongly associated with research excellence, also contributed to the discussions about teaching. The American Society of Animal Science endured somewhat of a dry spell in evidence of interest in teaching approximately from World War II until the late 1960s when a large symposium appears to have rekindled interest. During those years, there were relatively few papers in the Journal of Animal Science or presentations at meetings that pertained to teaching. The reasons for the low interest are not obvious. Certainly teaching was an important activity in departments during those years, especially during the postwar influx of students. Perhaps there was so much time being devoted to teaching there was less time devoted to talking or writing about teaching. It is also possible, with the beginning of the Journal of Animal Science in 1942, that there was a desire to impose high standards for research publications, which may have inhibited submission of articles pertaining to teaching. Whatever the reasons for the lull, interest in teaching in the journal and at the annual meeting increased markedly after the 1968 symposium. During most years of the career of the author, the teaching section at the annual meeting has been vibrant and has featured some highly stimulating symposia. Teaching submissions to the Journal of Animal Science have been, for the most part, attempts to get symposium presentations into permanent print. This begs the question as to whether articles and a presence at the annual meeting are sufficient roles for ASAS to play in the advancement of animal science teaching.

Boyer (1990) helped to catalyze a rethinking of the ideas about scholarship in the academy. In his model, discovery, engagement, integration, learning, and application were all considered valid scholarly domains, and he strongly encouraged the academy to move away from the tired debate about teaching vs. research. It is tempting to look at those terms and superimpose the 3-fold mission of teaching, research, and extension directly on to learning, discovery, and engagement. However, if one digs a bit deeper, it can be seen that all of the scholarly domains of Boyer actually contribute to each of the mission areas. The American Society of Animal Science is well positioned to serve the scholar whose primary focus is research. The research scholar can engage in all of the scholarly domains of Boyer through the journal, meetings, and various other programs sponsored by ASAS. Can the teaching scholar or
the extension scholar garner the same benefits? Indeed, the same question could be asked for the professional working in industry. I will focus here on the member benefits, which could be provided to the individual who wishes to teach in a scholarly manner or to contribute to the scholarship of teaching and learning using ASAS as a venue.

Scholarly teaching requires integration of knowledge from a variety of sources. The American Society of Animal Science has always had, as a primary focus, the presentation of new knowledge in animal science and the opportunities for the developers and users of that knowledge to get together to explore what it actually means in practice and in the need for additional knowledge. Scholarly teaching also requires new ideas about the best ways to teach. The American Society of Animal Science has also provided a venue for that through the teaching section at annual meetings. It can be said that, especially in the last 40 yr, ASAS has provided tools to enhance scholarly teaching. Is it enough? Members who wish to contribute to the scholarship of teaching and learning also have the chance to contribute by presentation at the annual meeting and through publication in the journal. Again, is it enough? The same could likely be said about the role of ASAS with researchers or extenders, but we will leave that discussion to others. Relative to teaching, ASAS can do much more. Scholars of teaching and learning in animal science need and deserve much more. The American Society of Animal Science should be a venue for more publication of ideas about teaching and tools to be used in teaching. The ASAS Image Gallery is a good example and should be expanded to be a venue for other tools that could be used in the classroom. Web sites, PowerPoint slides, lecture notes, and class handouts are all candidates for inclusion in a diverse gallery of tools for teaching. The proposed “ASAS Letters” has teaching as one of its initial focus areas. Teachers of animal science could submit ideas or philosophies, or both, about teaching to be subjected to peer commentary with the goal of developing approaches that could be used by others in teaching. The organizers of the annual meeting should consider the inclusion of a teaching academy, in which graduate students and new instructors could interact with, and learn from, more experienced teachers. Of course, the transfer of knowledge would, in that type of venue, also move from the less experienced to the more experienced. There is much that more senior teachers have to learn from those who are closer to the students in age or experience. As departments enter into increased distance education opportunities, ASAS could consider serving as a clearing house so that the learner with an interest in courses in animal science could go to ASAS as a “one-stop shopping” location for courses at various universities that can be taken at a distance.

An oft-stated goal of some of the early discussions about curriculum was to have a national standard curriculum. With the diversity among universities and the diversity of students within each university, such a goal is no longer appropriate. There are, however, many courses that would be common across many campuses. The American Society of Animal Science could play a role in developing learning outcomes and help to develop tools to be used in student assessment programs. Additionally, the annual meeting could serve as a venue for teachers of like courses to gather together for sharing of ideas and teaching tools in an informal setting much like USDA multistate projects provide a venue for scientists of similar interests to join together to share results and ideas. These types of ideas, if implemented, could also attract the interests of teachers of animal science at 2- and 4-yr colleges. Such individuals are in special need of assistance with teaching tools, because they are, so frequently, teaching outside of their direct area of expertise.

All of these goals for enhancing the visibility of teaching within ASAS are consistent with the 2008 ASAS Strategic Plan. At least 4 of the strategic directions are consistent with the goals outlined here.

**Summary**

Teaching is important to virtually all of the members of ASAS. All members have been the recipients of teaching, many are directly involved in teaching, and many are highly interested in being able to hire well-trained professionals. The ASAS must continue to look for ways to enhance the teaching of animal science.

**LITERATURE CITED**


