

# Student Assessment of Animal Science Instruction for the Future

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## Abstract

*Supplementary to the Midwestern Section American Society of Animal Science 1991 teaching symposium titled "Animal Science and Education - Are We Losing Our Identity?" a survey was conducted of the 20 registered Block and Bridle Clubs in the Midwestern Section. Results of the survey indicated that students do not perceive Departments of Animal Science to be losing their identity but students do believe that future curriculum will place greater emphasis on biological science courses. Overwhelmingly 66.1% of the students agreed that more computer skills should be integrated into Animal Science curricula and 79.1% of the students agreed that more hands-on experience should be included in animal production courses. From a student perspective, this survey suggested Animal Science departments should continue to offer courses in production and management while increasing science, business, and computer skills.*

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CHRISTENSEN continued.

- c. composition
- d. applied animal, dairy and veterinary science
- e. interpersonal relationships
9. Define the attributes of character relating to ethics, service and people that would seem to be of critical importance in a rapidly changing world.
10. Attempt to project what type of teaching/learning environment is needed to give graduates a competitive edge. What can we do to get them to continue learning throughout life?

Redesigning a curriculum is never easy. Changing the direction of curricular evolution is painful. However, the recent demise of a sister department at the University of Nevada Reno is a rather loud proclamation that revolutionary thinking is not only desirable, it is absolutely necessary. A curriculum for the Year 2000 and beyond will be different. Whether we prepare such will determine whether or not we will be a part of an educationally dynamic and vibrant 21st Century.

## Literature Cited

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## Introduction

We are in an era of rapid change. Fewer young people are needed in traditional animal science production jobs and fewer young people are choosing to major in Animal Science. At the same time, demands by employers for graduates with both technical training and animal experience exceed supply. Emphasis on research at our universities is very high. Increasingly more of our Animal Science graduate students come from Chemistry and Biology undergraduate majors. Fewer dollars are available, and funding education, research and service is more difficult. Our knowledge is expanding at an ever increasing rate. Indeed, education seems to be in crisis. The call is for more emphasis on the traditional skills of reading, writing, speaking, etc. at primary, secondary and post secondary levels. Consequently, more pressure is put on students, faculty and administrators to be more productive. On the one hand the animal industry wants students with more production skills. Agribusiness wants students with more business experience. Science needs graduates with greater basic science knowledge. To quote Andrew Barkley (1991), "Students enrolled in agriculture (animal science) often demand relevance to the real world."

Because of negative public perception of a weak agricultural economy, because of competition for students from other sciences and because of changes in emphasis, some institutions are considering name changes to replace agriculture science. Life science is a buzz word under consideration at the secondary level. Some universities out of necessity have combined traditionally separate Departments of Dairy, Poultry and Animal Husbandry into singular Departments of Animal Science. Even Colleges of Agriculture have had name changes reflecting a merging of disciplines, i.e. the University of Missouri College of Agriculture, Food and Natural Resources.

Consequently, the Teaching Program Committee of the Midwestern Section of the American Society of Animal Science chose the title "Animal Science and Education -- Are We Losing Our Identity?" for the 1991 Teaching Symposium. Invited speakers were Edward McMillan, CEO Purina Mills, who presented the industry perspective; Bud Harmon, chair of the Department of Animal Science Purdue University, who represented administrative concerns; and representing faculty, Robert Kaufman, Professor of Meat and Animal Science, University of Wisconsin. Some of the issues addressed during the symposium included "future needs of education", "compatibility of basic science and applied instruction", and "modernizing the curriculum is change needed"? Obviously missing from the symposium was the student perspective. Therefore, in an effort to ad-

dress student concerns, a questionnaire was designed by the Teaching Program Committee and was distributed by local advisors to members of the Block and Bridle Clubs in the Midwestern Section. Results of the survey were presented in the paper session immediately preceding the symposium.

The purpose of this survey was to provide student perceptions of the future curriculum needs in animal science. Specific objectives were to determine (1) whether the curriculum in Animal Science is up-to-date and (2) whether the Animal Science curricula contain the correct courses.

### Survey and Data

In the fall of 1990 packets of questionnaires were sent to advisors of the twenty student organizations which are registered with the National Block and Bridle Club and which are located at universities in the Midwestern Section of the American Society of Animal Science. Advisors received directions for distributing the questionnaires. Seventeen chapters returned questionnaires which resulted in a response rate of 85%. Usable survey instruments were received from 656 undergraduate students. Returned questionnaires were fairly evenly distributed between student organizations with each university returning an average of 5.9% (range = 1.9 - 11.2%) of the valid questionnaires. Most (72.5%) of the questionnaires were from students representing Land Grant institutions, while 27.5% of the questionnaires were from students enrolled in Non-Land Grant universities. Fifty-eight percent of the students were male and 42% were female. Fifty-five percent of the students were Animal Science majors while 45% of the students listed majors other than Animal Science. Distribution of respondents between classes was fairly even with 27.4% reporting Freshman status, 27.4% Sophomore status, 21.1% Junior

status and 24.1% Senior status.

Data were statistically analyzed according to procedures outlined by SPSSX, Statistical Package for Social Sciences, Version 10. Questions were evaluated for differences according to class, sex, major and type of institution in which enrolled. Students were asked to respond to 12 questions or statements according to a Likert Scale of 1-5 where 1 = strongly agree and 5 = strongly disagree.

### Current Curriculum Needs

Survey respondents were asked to react to two statements suggesting the inclusion of more math and science in the curriculum. Responses to the question, "Should you be required to take, or have the option to take, more math and science (biology, chemistry, etc.) courses to obtain an Animal Science degree?" were evenly distributed across the rating scale with 32.3% agreeing with the question, 28.9% not sure and 28.8% disagreeing. Responses to the question, "Should the courses offered in Animal Science at the undergraduate level include more basic science than they currently do?" were also evenly distributed with 34.3% in agreement, 33.2% not sure and 32.4% disagreeing with the question. Interestingly, significantly fewer students majoring in Animal Science compared to non-Animal Science majors agreed that more basic science should be included in Animal Science courses. It should be noted that there were no significant differences in responses to the questions listed between the comparison groups cited except in the three instances noted at the bottom of the table.

Students were asked to respond to two questions suggesting the inclusion of more business and economics into the curriculum. For each of these questions significantly more students agreed that more business and economic components should be incorporated into Animal Science curricu-

Table 1. Responses to Questions Concerning Current Curriculum Needs

Question	Response (%)					Mean	Standard Deviation
	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree		
Should the courses offered in Animal Science at the undergraduate level include more basic science than they currently do?	7.2	27.2	33.2	24.1	8.3	3.0 <sup>a</sup>	1.1
Should more computer skills be integrated into the Animal Science courses?	36.8	29.3	18.9	8.6	6.4	2.2	1.2
Should the animal production courses such as beef production/management, swine production/management, etc. include more business and economics?	21.2	36.8	26.1	11.1	4.9	2.4	1.1
Should the animal production courses such as beef production/management, swine production/management, etc. include more hands-on experience?	47.3	31.8	10.4	6.1	4.5	1.9	1.1
Should you be required to take, or have the option to take, more business and economics courses to obtain an Animal Science degree?	15.8	33.1	30.4	14.2	6.5	2.6 <sup>b</sup>	1.1
Should the courses offered in Animal Science at the undergraduate level be more applied than they are currently?	17.7	35.9	33.5	9.7	3.2	2.5 <sup>c</sup>	1.0
Should you be required to take, or have the option to take, more math and science (biology, chemistry, etc.) courses to obtain an Animal Science degree?	10.0	22.3	28.9	23.0	15.8	3.1	1.2

<sup>a</sup> The mean response for this question between students majoring in Animal Science and non-Animal Science majors was statistically different (P<.05) comparing a mean score of 3.1 vs 2.9, respectively.

<sup>b</sup> The mean response for this question between senior and freshman students was statistically different (P<.05) comparing a mean score of 2.4 vs 2.8, respectively.

<sup>c</sup> The mean response for this question between students majoring in Animal Science and non-Animal Science majors was statistically different (P<.01) comparing a mean score of 2.3 vs 2.6, respectively.

lum. Fifty-eight percent of the students agreed that more business and economics should be included in animal production and management courses compared to only 16.0% which disagreed. In addition, significantly more respondents agreed than disagreed (48.9% vs 20.7%, respectively) that students should be required to take, or have the option to take, more business and economics courses to obtain an Animal Science degree. While students in general, regardless of class, ranked the inclusion of more business and economic courses high, it is important to note that more seniors than freshmen, 58.2% compared to 48.1%, were in agreement with this question than were in disagreement. A possible explanation for this difference in response may be that as seniors begin to consider career options a strong business and economic background becomes relatively more important. The difference in response to this question between freshman and senior students may also suggest that students entering college do not really know what subject matter they need and their perceptions will change over the course of study.

Students overwhelmingly agreed that more computer skills should be integrated into the Animal Science courses. A recent article in the NACTA Journal (Barkley, 1991) implies the importance of computer and economic skills to alumni of the Kansas State University College of Agriculture. The data of this study supports the conclusions of the Kansas State University survey.

Should the courses offered in Animal Science at the undergraduate level be more applied than they are currently? In response to this question, significantly more students believed they should be (57.6%) than believed they should not (12.9%). However, 33.5% of the respondents were not sure and responded with a mid-scale rating of 3. More ( $P < .01$ ) students majoring in Animal Science believed animal science courses should be more applied than did non-Animal Science majors. Substantially more students regardless of class, sex, major or type of institution attended agreed

that animal production/management courses should include more hands-on experience.

#### Expectations For Future Curriculum

The results discussed in the previous section demonstrate student concerns regarding content needs of the current curriculum. However, that curriculum content deemed important by students today and that curriculum students perceive they will be offered in the future may not be synonymous. Accordingly, five statements were designed to evaluate students' perceptions of what future Animal Science curriculums may entail. Overall, students are divided in their response to the statement "In the year 2000 fewer departments of Animal Science in the U. S. will teach animal production and management courses (beef production, sheep production, dairy production, etc.)." Thirty-two percent of the students either agreed or strongly agreed with this statement, 27.4% were not sure of their opinion, while 40.7% either disagreed or strongly disagreed. However, in response to the statement "For Animal Science departments to survive in the year 2000 less emphasis must be placed on teaching livestock production and management" significantly more students disagreed (63.0%) with the statement than agreed (16.8%). Only 36.9% of the students were undecided. Certainly more students agreed (57.2%) than disagreed (17.2%) with the statement "In the year 2000 more Departments of Animal Science in the U. S. will teach biological science courses (Adipose Tissue Metabolism, Cell Membrane Structure and Function, etc.)." Interestingly, more ( $P < .05$ ) male respondents (31.5%) than female respondents (25.5%) either agreed or strongly agreed with this statement.

Significantly more students agreed (42.7%) than disagreed (19.9%) with the statement "For Animal Science departments to survive in the year 2000 more students in biological sciences must be recruited." However, the mean response for this statement was significantly different between students majoring in Animal Science (2.8) and non-

Table 2. Responses to Statements Regarding Future Curriculum Expectations.

Question	Response (%)					Mean	Standard Deviation
	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree		
For Animal Science departments to survive in the year 2000, less emphasis must be placed on teaching livestock production/management.	6.3	10.5	20.1	26.1	36.9	3.8	1.2
In the year 2000 fewer departments of Animal Science in the U.S. will teach animal production and management courses.	8.1	23.9	27.4	25.5	15.2	3.2	1.2
In the year 2000 more departments of Animal Science in the U.S. will teach biological science courses (adipose tissue metabolism, cell membrane structure and function, etc.)	19.7	37.4	25.6	12.0	5.2	2.5 <sup>a</sup>	1.1
For Animal Science departments to survive in the year 2000 more students in biological sciences must be recruited.	11.8	30.8	37.4	14.7	5.2	2.7 <sup>b,c</sup>	1.0
In the year 2000 most Animal Science departments in the U.S. will become departments of biological sciences.	5.7	15.6	34.2	28.5	16.1	3.3	1.1

<sup>a</sup> The mean response for this question between male and female students was statistically different ( $P < .05$ ) comparing a mean score of 2.4 and 2.7, respectively.

<sup>b</sup> The mean response for this question between students majoring in Animal Science and non-Animal Science majors was statistically different ( $P < .001$ ) comparing a mean score of 2.8 vs 2.6, respectively.

<sup>c</sup> The mean response for this question between students attending a Land Grant University and students attending a non-Land Grant institution was statistically different ( $P < .0001$ ) comparing a mean score of 2.8 vs 2.5, respectively.

Animal Science majors (2.6), suggesting that fewer Animal Science majors agreed with the statement than do non-Animal Science majors. In addition, the mean response for this question was also significantly different between respondents attending Land Grant Universities (2.8) and respondents attending Non-Land Grant institutions (2.5). One possible explanation for this latter difference in response could be a reflection of the fact that many Non-Land Grant institutions often have Departments of Agriculture where students from a wider variety of disciplines enroll in common classes contrasted to Land Grant Universities with Departments of Animal Science where students in Animal Science classes tend to be more homogeneous.

In response to the statement "In the year 2000 most Animal Science departments in the U. S. will become Departments of Biological sciences" significantly more students disagreed (44.6%) than agreed (21.3%) with the statement. It is important to note, however, that approximately one third (34.2%) of the respondents were not sure of their opinion.

### Conclusions and Implications

A major conclusion of this survey is that most of the responding students desired an Animal Science curricula which includes "hands-on" practical experience of an applied nature. It is apparent that the respondents of this survey have mixed emotions regarding the inclusion of more basic science in the Animal Science curriculum. It is ironic that while many of the students believe Departments of Animal Science will offer fewer production and management courses and will teach more courses in basic science, these same students do not believe this shift in emphasis is necessary for Departments of Animal Science to survive. Oddly enough, as revenues continue to dwindle, Departments of Animal Science often find themselves emphasizing basic science at the expense of applied instruction. The results of this survey implied a continuing need for Departments of Animal Science to maintain a viable "hands-on" applied component in their curricula.

Certainly, computer skills appeared to be important to students in this survey. Realizing curricula modification in the past several years has reflected the increasing use of computers (Wood et al. 1989) continuation of computer emphasis is warranted in Animal Science curricula.

While considerable diversity exists in the importance of skills across major fields of study, the results presented here suggested greater emphasis should be placed on business and economics in individual production and management courses and in Animal Science curriculum in general. From a student perspective, this survey suggested Departments of Animal Science and Departments of Agriculture offering an Animal Science component should continue to offer courses in production and management while increasing science, business and computer skills. Maintaining program balance will continue to be important as curriculum committees revitalize Animal Science curricula. This study supports the hypothesis that viable alternatives to canceling applied production and management courses in lieu of offering more

courses in basic science, business and economics should be found. Redesigning current production and management offerings to include business, economics and computer applications may best address the curriculum revitalization needs described by Erpelding in 1988.

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