

Preparing Undergraduate and Graduate Students to Meet Meat Industry Career Challenges

Gary C. Smith

Prelude

Suppose You Wanted To Start A New University

In 1963, serving as Faculty Advisor to the Washington State University, College of Agriculture Student Council, I accompanied our student representatives to Winnipeg, Manitoba, Canada, to attend an "International Conference On Teaching In Agriculture." The keynote speaker (J.R. Weir, Dean, Faculty of Agricultural & Food Sciences, University of Manitoba) said: (a) "If you wanted to start a college" (now, a university), "and had limited funds, for what would you initially spend money? First, you would *build a classroom*—so students could have a place to meet, to discuss things, and to learn to communicate." (b) "If additional money then became available, you would *buy a book*—with that, students could pursue scholarship, learning to think critically and, through verbal debate, discussing (communicating) interpretations of what the facts in the book were, what the author 'said' vs. 'meant,' and how the thoughts presented there could be made relevant." (c) "Third, and only if more funds were available, you would buy *pencils and paper* so the students could begin to synthesize their thinking, to mull over their logic and interpretations, to commit their thought processes to paper, and to communicate their ideas in written form." (d) "If, and only if, even more funding became available would a *teacher be hired*—and then, only, in the absence of a student leader grown up through the ranks—for surely, the propensity to lead would have surfaced from among those present in candid and open discussion sessions. A teacher's presence is functional, of course, to explain and interpret the book in the light and context of other books and of the professor's experience of things in and around and pertaining to the facts and ideas in the book and, secondly, to harness discourse so that not too much time is wasted on frivolous

debate."

My take on what Dean J.R. Weir was saying suggests this: Is that not the essence of the teaching/learning process—"Put 'em in a room, buy 'em a book and get 'em pencils and paper; what follows will astound you"—but it will come at a price and one we can ill afford—it takes too long and the targets are too obscure. And, so, in our wisdom, we seek more highly structured thinking and communication and we sacrifice the opportunity to allow the students to learn to lead.

It was from such thoughts, and from—by that time—28 years of university teaching experience, that I concluded (Smith, 1989) that "To meet employer expectations, to compete in the workplace and to be perceived as an 'educated' person, the animal science graduate must be able:

- (a) *to think critically,*
- (b) *to communicate effectively, and*
- (c) *to lead."*

By 2001, and—by that time—40 years of experience as a teacher of meat, animal and food sciences at three land-grant universities, I expanded my list of skills expected of graduates (Smith, 2001) to include:

- (a) *thinking critically,*
- (b) *comparing logically,*
- (c) *deciding independently,*
- (d) *solving problems rationally,*
- (e) *communicating effectively, and*
- (f) *leading decisively.*

I used many of those same thoughts, ideas and concepts from the 1989 and 2001 papers to write the "Introduction" for the Meat Evaluation Handbook (American Meat Science Association, 2001); this paper extends further the scope and horizon of coverage, to describe skill-sets needed by M.S., M. Agr. and Ph.D. graduates to meet the challenges of successful employment and careers in occupations within, or closely aligned to, the meat industry.

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Preparing Undergraduate Students To Meet Meat Industry Career Challenges

1. *Thinking Critically*

To “think” is to formulate in the mind, to reason about, to reflect on, to judge, and/or to decide. In the context intended here, “critically” means characterized by careful and exact evaluation and judgment. Critical thinking is acquired in formal courses that emphasize application of previously ingrained facts/knowledge, use of logic in problem solving, and implementation of principles involved in systems analyses. Careful structuring of practical laboratory exercises allows students to “learn by doing,” and of science-oriented laboratory exercises allows students to apply critical thinking to the solution of problems. Ability to think critically can also be achieved in formal courses and in extracurricular activities that involve animal/product selection, evaluation, grading and/or judging because comparative reasoning and application of memory standards are integrally involved in the decision-making processes.

2. *Comparing Logically*

To “compare” is to examine in order to note the similarities in, or differences between/among, things. “Logically” is defined as showing clarity and consistency of use of the principles of reasoning. Comparative reasoning is used, in opposition to memorization/regurgitation, in formal courses that require the weighing of options and/or the consideration of both the pro vs. con aspects in solving problems. The curriculum should include coursework involving computer-assisted, decision-making principles, like—for example—computerized breeding/selection analyses like those incorporated in the “Cow Game.” The ability to make logical comparisons can also be taught in meat judging exercises that involve the ranking of cuts or carcasses and the assignment of quality or yield grades to carcasses.

3. *Deciding Independently*

To “decide” is to make up one’s mind, to make or reach a decision, and/or to pronounce a judgment or verdict. “Independently” means free from the influence of another or others, autonomously, and/or by self-reliance. Success, in many aspects of life, depends in large part of independence of thought and action, and—of course—on thinking and acting appropriately. Ability to make up your mind and reach a decision based solely upon your own opinion is vitally important in making personal and business decisions and is taught in formal courses that involve independent research study or which emphasize use of logic and rationale for problem solving. Providing students access to audio-tutorial learning allows for unstructured and self-paced mastery of subject matter. Experience in independent decision making is accomplished in meat judging because each competitor—acting independently and using only his/her own opinion—makes judgments and decisions.

4. *Solving Problems Rationally*

To “solve” is to find a solution, an answer, or an explanation for a problem. “Rationally” means exercising the ability

to reason in a sound, sane and logical manner. Rational problem solving is taught in formal courses in the general curriculum involving mathematics, statistical inference, business administration and economics, as well as in formal courses in the agricultural sciences dealing with agricultural economics, animal nutrition, animal breeding and capstone animal production courses. Offering livestock marketing courses that require each student to manage a live-stock/grain portfolio by making strategic daily/weekly transactions in the futures/options markets provides real-world problem solving experience. Rational problem solving can also be taught in judging/evaluation courses because comparative reasoning, mathematical logic, sound judgments, conformity to an ideal, rank/order principles, memory standards and knowledge integration must be used.

5. *Communicating Effectively*

To “communicate” is to have an interchange of thoughts or ideas and to make known your thoughts or ideas. “Effectively” means having the intended or expected effect and/or serving the purpose. Communication skills are formally taught in speech, technical writing and seminar courses and are further developed through involvement of students in meat judging (written reasons), livestock or wool judging (oral reasons), academic quadrathlons and quiz-bowls (oral and written presentations), and student clubs (if speaking/writing opportunities occur). In meat judging, exhibits (carcasses or cuts) are ranked according to relative merit, notes are taken describing differences between and among exhibits and a “written argument” is made to justify the student judge’s ranking decision. Written reasons are assigned scores by an expert who emphasizes accuracy and precision—first and foremost—and syntax, penmanship, punctuation and grammar—secondarily. Oral reasons are assigned scores by an expert who emphasizes—most—accuracy and precision, and secondarily, grammar, poise, style and delivery. Having to write or present a set of reasons forces the competitor to make decisions and to justify thoughts and ideas in a manner that will have the intended effect—to prove to the expert reading or listening to the set of reasons that the differences and similarities were observed and that decisions (whether right or wrong) were made rationally and logically.

6. *Leading Decisively*

To “lead” is to be first, to be ahead, to steer, to guide, and/or to show the way by going in advance. “Decisively” means having the power to settle a dispute or doubt in a firm, conclusive, resolute and determined manner. Nothing is provided in the formal coursework setting to encourage students to develop skills in leadership. Among the extracurricular circumstances in which undergraduates can learn to lead and exert leadership skills are student government, student clubs, and internal or external competitions (livestock exhibition teams, quiz-bowl squads, academic quadrathlons and judging teams). Gerber (2003) said she was “a convert to the importance of the leadership lessons embedded in team participation,” that “team participation provides powerful and unique leadership training” and “par-

ticipation in team sports builds understanding of teamwork and loyalty”; she was discussing team sports from an athletics viewpoint but the principles apply to intercollegiate judging teams. Unique to student clubs, as contrasted with contests or competitions, are opportunities for officers and committee chairs to learn leadership skills in managing financial and human assets, developing and implementing organizational plans, orchestrating events and activities, and forming and sharing the vision, mission and goals of the unit or organization. In 1989, I had been a department head for nearly 8 years, and—from that vantage—felt comfortable in concluding that “Administrators must insist that student clubs and intercollegiate competitions are available to serve as an integral part of the process of developing student leadership among baccalaureate-level students in Animal Science” (Smith, 1989).

Preparing Graduate Students To Meet Meat Industry Career Challenges

1. *Thinking Critically*

To think critically means “to reason about, to judge and to decide by using careful and exact evaluation and judgment.” Graduate students learn to think critically by: (a) Being allowed—even encouraged—to doubt, to criticize, to question—rather than accepting as fact or truth whatever they read or hear. (b) Writing and reporting scientifically (improves clarity of thought and correct application of logic). (c) Reviewing the literature (there are good and bad studies; appropriate and inappropriate measures; right and wrong conclusions). (d) Editing and evaluating manuscripts (critiquing the work of others). (e) Debating, discussing, defending thoughts/ideas/opinions with subordinates, peers and superiors plus learning the art of graceful retreat and tactical concession.

2. *Comparing Logically*

To compare logically means “to note the similarities in, and differences between or among, things while clearly and consistently using the principles of reasoning.” Graduate students learn to compare logically by: (a) Applying the scientific method (observation, formulation of hypotheses and experimental testing—with controls and treatments) to detect differences between and among things. (b) Using tests of hypotheses, statistical inference and probabilities. (c) Grading papers and exams; scoring lab participation of individuals. (d) Auditing—because essentially all mistakes, in GMPs, HACCP plans and animal-welfare programs are logic-based errors. (e) Judging carcass/product shows, speeches, science fairs, posters, record books or position papers—learning to rate/rank without bias, prejudice or favoritism.

3. *Deciding Independently*

To decide independently means “to make up your mind and reach a decision or make a judgment based solely upon your own opinion.” Graduate students learn to decide independently by: (a) Realizing they will no longer be “spoon fed” but must read, debate, question and—ultimately—

synthesize an opinion of truth. (b) Setting priorities, yet still meeting critical milestones and deadlines. (c) Managing time and resources in a multiple-tasking work world. (d) Determining that—with pressure applied—they can push the envelope, doing more than they thought could be done. (e) Making decisions, when acting alone but as a representative, that reflect favorably on the group, section, department, college and university.

4. *Solving Problems Rationally*

To solve problems rationally means “to find a solution and answer for a problem by reasoning in a sound, sane and logical fashion.” Graduate students learn to solve problems rationally by: (a) Assessing the problem and accessing the information, to formulate and implement a solution. (b) Assisting with extension activities that deal with meat industry problem-solving scenarios. (c) Evaluating tests, procedures and protocols for use in performing a research assay or scientific determination. (d) Developing human-capital networks for present and future assistance in solving problems. (e) Understanding “tool and toolbox” methodologies as building blocks and practical ways/means to affect a solution.

5. *Communicating Effectively*

To communicate effectively means “to make known your thoughts and ideas in a manner that will serve the purpose and have the intended effect.” Graduate students learn to communicate effectively by: (a) Serving as a teaching assistant, extension assistant, or laboratory instructor for a meat science course. (b) Developing the skill of “speaking in different gears” to assure comprehension, irrespective of the education level of the listener. (c) Writing abstracts, reports and papers for audiences comprised of members of the lay-public, the industrial complex and the scientific community. (d) Preparing and presenting speeches and posters at industry and scientific meetings. (e) Interacting with those in attendance at teaching, research, industry and extension meetings (using “key word” conversational skills).

6. *Leading Decisively*

To lead decisively means “to steer, guide or show to (and, to be first and/or ahead of others) by making decisions in a firm, conclusive and resolute manner.” Graduate students learn to lead decisively by: (a) Being assigned responsibility for entire research projects and serving as project-leader from planning to completion. (b) Coaching intercollegiate judging, grading and evaluation teams. (c) Developing team-building skills while working on “company projects” in research and outreach endeavors. (d) Mentoring fellow graduate students on subject matter, lab techniques, manipulative skills, statistical analyses, etc. (e) Serving as a substitute lecturer, teaching assistant, extension assistant or laboratory instructor.

Conclusion

Knowledge, Yes, But Other Things Too.

Albert Einstein said (Gallagher, 2003) "A person who devotes all his strength to objective matters will develop into an extreme individualist who, at least in principle, has faith in nothing but his own judgment." A.W. Griswold said, (Campbell, 1972) "What is a college education? A college education is not a quantitative body of memorized knowledge...salted away in a card file. It is a taste for knowledge, a taste for philosophy, if you will...a capacity to explore, to question, to perceive relationships between fields of knowledge and experience."

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