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Author(s): M. S. Honeyman and A. E. Christian

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## Learning and Teaching Swine Stockmanship to Undergraduates: A Laboratory Approach

**M. S. Honeyman<sup>1</sup> and A. E. Christian<sup>2</sup>**  
**Animal Science Department**  
**Iowa State University, Ames, Iowa**

### **Abstract**

Swine stockmanship is an area of animal science that is not often taught to undergraduate students, though a large number of these students take jobs that involve working with pigs or involve managing people that work with pigs. Recent research has shown the importance of positive swine stockmanship in production settings. For three semesters, a total of eight sections (118 junior and senior students) were given a 90-minute laboratory on swine stockmanship. The lab was organized with a brief introduction using quotes about stockmanship; a mini-lecture reviewing the applicable research; a series of activities on pig handling, pig restraint, injections, flight zone, etc., and a role-playing exercise where the students put themselves in the roles of producer and pig. Students evaluated the relevance and importance of the lab and the methods used. The students gave the lab a rating of 4.46 (on a 5-point scale) for relevance and importance and 4.35 (on a 5-point scale) for innovation in teaching methods. Ninety-four

percent of the students gave the lab a "4" or "5" score in these two areas. The mini-lecture and live-pig segments were ranked higher (about 4.4) than non-pig segments (about 3.6).

### **Introduction**

Stockmanship skills are important for successful pork producers. The importance of stockmanship or husbandry of livestock has historical connotations (Willham, 1985). At Iowa State University (ISU) about 500 baccalaureate degrees are granted annually in agriculture. Each year approximately 60 graduates embark on careers in swine production as independent producers or as employees of pig production companies. An additional 60 to 90 ISU graduates choose swine-related, agribusiness careers. Most of these students enroll in Animal Science 425 Swine Management, a senior-level course with lecture and laboratory sessions.

### **Stockmanship: Present but not emphasized**

Based on evaluation of the undergraduate animal science curriculum at ISU, stockmanship or husbandry are peripherally addressed. Knowledge of the optimum care of pigs is frequently assumed. The "science" of animals is emphasized. Historically there has been a shift from

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<sup>1</sup> Associate Professor

<sup>2</sup> Swine Teaching Farm Superintendent

husbandry to science at land grant universities. For example, the ISU department associated with livestock was called the Animal Husbandry Department from 1896 until 1962 and has been known as the Animal Science Department since. The major animal science disciplines--nutrition, breeding, reproduction, physiology, and meat science have expanded extensively in the last 50 years. The technological advances as a result of research in these disciplines have been extraordinary (Willham, 1996). Some faculty accurately predicted that too much science would be taught, at the expense of management and husbandry. ISU student contact with pigs occurs primarily in research settings, live animal evaluation and judging exercises, and occasional tours of operating farms. Livestock evaluation and judging are beneficial because these activities teach students to observe pigs closely, see differences between individual animals, and make decisions (Darlow, 1958). Also, some students take internships or jobs on farms, either university or private. Extracurricular activities such as intercollegiate judging and a student-managed, livestock showmanship contest, also are available to students. However, student contact with pigs is not widespread in the curriculum.

If stockmanship is important to successful swine production, why aren't these skills emphasized in the undergraduate education of animal science students at a major land-grant university? The reason may be related to the relatively recent (and probably not widespread) recognition of the importance of stockmanship in profitable livestock production systems. Work by Hemsworth et al. (1981, 1989, 1991, 1994) and English et al. (1988, 1991, 1992, 1994) have clearly shown that positive swine stockmanship results in improved gain and reproductive performance in pigs.

In the past, many students who studied animal science at ISU came from farm backgrounds and learned stockmanship at home. It may be a reasonable assumption that students in a state with five pigs for every person (Honeyman, 1991), would have experience with pigs. Statistics show however, that total numbers of farms, swine farms, and numbers of farm youth, continue to decline (Honeyman, 1991). The swine industry is changing rapidly so experiences acquired on a student's home farm may not be applicable to available jobs in swine production.

Stockmanship has been assumed, overlooked, minimized, or embedded in other topics at the land grant university. Even though many animal science graduates do not take production jobs, all would benefit from some specific training in stockmanship.

#### **Swine stockmanship in a swine management course**

In the senior-level swine management course, swine stockmanship-related topics are usually covered in

laboratories with live pigs. Students report they particularly like hands-on laboratories with live pigs with topics including artificial insemination, pregnancy diagnosis, selection of breeding gilts, farrowing management, processing of baby pigs, identification of stress genes, and evaluation of market hogs.

Because stockmanship seems to be more "technique" than science, it could be argued that it is not practical to teach it. However, students are successfully taught such "techniques" as writing skills, public speaking, decision-making, problem solving, and ethics. To equip students for their future, more focus on stockmanship is proposed, including basic knowledge and skills. We, therefore, should teach students swine stockmanship.

### **Methods**

A swine stockmanship laboratory at ISU was conducted for three semesters using eight sections of 10-25 students each. A total of 118 students participated in the laboratory; most were seniors in animal science or related agricultural majors. The stockmanship laboratory was held in the livestock pavilion at the ISU Swine Teaching Farm. The pavilion has a quasi-classroom area with bleachers and chalkboards. It also has several pens for pigs and a large, open area for livestock.

#### **Swine Stockmanship Laboratory Outline**

Swine stockmanship skills are developed through a combination of experiences with pigs. Patience, attention to detail, keen observation, and empathy for the animal are key traits of the successful stockman. The lab was designed to help the student develop these traits as follows:

**1. Introductory exercise focusing on quotes related to stockmanship.** This exercise was a brief opener to gain students' attention. Students read a one-page handout of quotations related to swine and stockmanship, reacted to them, and restated some of the quotes in their own words. Definitions of stockmanship were discussed (Hurnik, 1988; Mumford, 1917; Sanders, 1942). The class agreed on a definition of stockmanship. Time used was about 10 minutes.

**2. Mini-lecture on swine stockmanship.** Recent work by Hemsworth and coworkers (1981, 1989, 1991, 1994), Gonyou et al., (1986) and English and coworkers (1988, 1991, 1992, 1994), and Seabrook (1984) was reviewed to give the students comprehensive, up-to-date information. The lecture also included discussions on ethics, economics, animal care, and traits of a good stockman. Time used was about 20 minutes.

**3. Pig activities.** A series of stations was set up in which the students could learn and practice pig restraint, proper

injection techniques, pig flight zone, and pig handling (moving, sorting, and loading). Information on instruction in proper techniques was provided at each station. Time used was about 40 minutes.

**4. Think like a pig exercise.** This exercise emphasized using observation skills to identify various swine-production-related situations. The students were paired off and one student played the role of pig caretaker and the other student was the "pig". Time used was about 15 minutes.

### Think Like A Pig Exercise

#### Objective:

For students to practice stockmanship in a role-play setting. The students will role-play both the pork producer/manager and the pig. As a result of the exercise students will understand stockmanship and husbandry skills and their importance in swine production and will experience some of the process of stockmanship.

#### Instructions:

1) Pairs of students decide which student is the "pork producer/manager" and which student is the "pig". Later the students will reverse roles.

2) The "pig" decides what stage of production it is in - breeding, gestation, farrowing, nursery, grower finisher - and its approximate age and sex - adult or growing, male/boar, female/sow or gilt, castrate/barrow. The "pig" tells the producer/manager this information and any other pertinent production information - housing type, group size, etc.

3) Privately the pig chooses a situation that the producer/manager must diagnose. Example situations are on the attached page.

4) The "pig" writes the situation on paper and folds it.

5) The producer/manager must guess the situation of the pig by asking questions. The questions **must** be **observational**. For example:

Do I see pigs piled in the corner?  
**NOT** Are the pigs cold? **or**  
 Do I see feed in the feeder spaces?  
**NOT** Is there feed in the feeder? **or**  
 Do I see gaunt, empty pigs?  
**NOT** Are the pigs eating or sick?

6) The pig answers the questions with a yes or no **only**. The pig **cannot** change the situation.

7) When the producer/manager is ready to make a diagnosis, it is written on paper and compared to the pig's situation.

8) The process repeats with the students periodically changing roles.

#### Other options:

The students can keep track of the number of questions asked as is done in the game "20 Questions" or the number of correct guesses given the manager. Small competitions can be arranged. A champion stockman can be selected. Or, students can rate their performance on a "Stockmanship Scale" based on the number of questions required to diagnose a set series of situations. All students participating can be awarded a "Certificate" stating they have learned to "think like a pig" and are certified in swine stockmanship.

Also, students could "play" against the instructor and write a series of questions which would be answered in writing.

#### Example Situations

##### Nursery, grower, finisher pigs

The feeder is empty.  
 The waterer is not working.  
 The pen is too hot.  
 The pen is too cold.  
 The pig is frightened or injured.  
 One of the pigs in the pen is tail biting.  
 The pig is sick and is not eating or drinking.  
 There are manure pit gases at high levels.  
 The pen gate is unlatched but the pigs have not gotten out yet.  
 The ventilation fans are not working properly.  
 The pigs have internal or external parasites.  
 The waterer is electrically shocking the pigs so they won't drink.  
 The pig is dead.  
 The feed is moldy or contaminated.  
 The pigs are getting the wrong feed.  
 The pig is a stress gene carrier.

Sows, gestating. Most of the above examples will work, plus:

The sow is in heat (estrus).  
 The sow aborted.  
 The sow is lame.  
 The sow is "depressed" and won't eat.  
 In a group of sows, a boss sow is eating most of the feed and the timid sows are not getting enough feed.  
 The sow is about to farrow in the gestation area.

#### Sows, farrowing

The sow has farrowed but has retained a pig in the birth canal.

The sow is not milking or lactating properly, e.g. MMA.

The sow has sore feet and legs and does not want to stand.

The sow won't eat.

#### Pigs, farrowing

The pig is anemic.

The pig has scours.

The pig is not nursing because of \_\_\_\_\_.

The pig is too cold.

The pig is weak.

The pig is injured on one leg.

In all cases the pig may choose **NO PROBLEM** for the situation

An additional activity could be a trouble-shooting exercise with pens of pigs with deliberately "rigged" problems for students to observe or diagnose. For example, water shut off, a feeder empty or plugged, or an outsider pig could be put in a pen. Spray paint or chalk could be used to create mock injuries. This activity would be valuable but requires access to a series of pens in a production setting.

At the end of each laboratory section, the students were asked to complete a brief survey indicating their attitudes and reactions to the laboratory. Students were asked to evaluate the relevance and innovation of the various parts of the lab.

### **Results**

The laboratory sessions went well. Results of the student surveys, indicating relevance and importance of the lab topics to the swine industry, are summarized in Table 1. On a five-point scale, with 1 as not relevant or important and 5 as very relevant and important, the 118 students scored the session overall as 4.46. Ninety-four percent of the students scored the lab a "4" or "5" overall. Different segments of the lab session were evaluated separately. Segments with live animals received very high scores (4.59 and 4.62). The mini-lecture received a very high score for relevance and importance (4.46). All of these segments received scores of "4" or "5" from over 90% of the students. The opening segment with quotes and the "think like-a-pig exercise" received lower scores (3.41 and 3.53, respectively) but were ranked above the middle score of 3. Only about half of the students gave these segments a "4" or "5". All segments of the lab were required of the students.

Students were asked to give their opinions of the innovating and thought-provoking characteristics of the teaching methods used in the lab. Students ranked the lab as 4.35 (on a 5-point scale) for being innovative and thought provoking. Again, 94% of the students gave the overall lab a "4" or "5" in this area (Table 2). Students gave the animal segments and mini-lecture high scores in this area (4.34, 4.24, and 4.17) and over 84% of the students gave these segments a "4" or "5". Students gave the quotation segment and "think like-a-pig" exercises slightly lower scores (3.76 and 3.65) and only about 60% of the students gave these segments a "4" or "5".

Developing patience with pigs and improved handling were the most common responses given by students when asked to report on "the most important things you learned in this lab". Student comments included "patience is a virtue; pigs are smart; be gentle to pigs; pigs remember; and observe pigs no matter what is happening". One student summed up the lab by saying "pigs behave and perform so differently, according to the way they've been treated".

Student responses regarding the least important things learned usually indicated areas they already knew, such as handling, injections, or scoring sow condition. Students really enjoyed the lab, stating, "It was fun!" and "Very pig-person oriented". Several students asked for more hands-on activities with pigs.

### **Summary**

Based on this work, stockmanship should be included in undergraduate courses in animal science. Students respond particularly well to use of live animals and to mini-lectures citing research.

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Table 1. Summary of student survey responses on relevance and importance of an undergraduate swine stockmanship laboratory

	Mean score <sup>1</sup>	Responses "4" or "5" (%)
Overall lab	4.46	94
Stockmanship quotes	3.41	46
Mini-lecture	4.46	93
Market pig handling exercise	4.59	94
Think like a pig	3.53	55
Sow condition scoring, injections	4.62	94

<sup>1</sup>Calculated means of 118 student responses. Scale was 1 = not relevant or important, 5 = very relevant and important.

Table 2. Summary of student survey responses on the innovativeness and thought-provoking nature of the teaching methods used in an undergraduate swine stockmanship laboratory

	Mean score <sup>1</sup>	Responses "4" or "5" (%)
Overall	4.35	94
Stockmanship quotes	3.76	63
Mini-lecture	4.17	84
Market pig handling	4.34	86
Think like a pig	3.65	59
Sow condition scoring, injections	4.24	87

<sup>1</sup>Calculated means of 118 student responses. Scale was 1 = dull, did not provoke thought, 5 = very innovative, thought provoking.