

PRACTICAL LARGE ANIMAL HANDLING: EXPANDING
LEARNING OUTCOMES IN ANIMAL SCIENCE THROUGH
HANDS-ON EXPERIENCE

A Project Paper

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by

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ABSTRACT

The practical large animal handling course was designed to allow animal science undergraduates to learn not only in the classroom but to be able to have valuable hands- on experience with animals to develop their knowledge and confidence in the animal science field.

This course introduces students to the fundamental principles of animal handling, animal restraint, and common medical techniques pertaining to horses, beef and dairy cattle, swine, sheep, and poultry. These techniques further strengthen the student's confidence and success in a career in the animal science field.

Topics include basic animal anatomy and physiology, identifying breeds of various large animal species, breeding techniques, and general husbandry and management practices. This course is designed to enhance the large animal handling skills of animal science students.

Upon completion of the course the student will have acquired the following learning outcomes.

1. Explain the basics of large animal husbandry and management practices.

2. Understand how to implement large animal handling and restraint techniques safely with various species, including horses, sheep, dairy and beef cattle, chickens and pigs.
3. Apply material learned in class to hands-on experience working with and caring for large animals.

The large animal handling course allowed students to be in control of their own level of learning experience while providing a positive and knowledgeable learning atmosphere.

BIOGRAPHICAL SKETCH

Jessica R. Waltemyer was born December 9, 1987 and raised on a small family farm in Renfrew, Pennsylvania. She graduated from The University of Findlay with a Bachelor of Science degree in Animal Science in May 2010. She then became an Animal Technician in the Department of Animal Science at Cornell University in May 2010. She took on the role as Supervisor of Animal Care in the Department of Animal Science at Cornell University in the summer of 2013. She undertook her graduate work at Cornell University starting in August 2016 under the guidance of Dr. Michael Van Amburgh. She took on the work role of Ithaca Farm Manager in August 2017. Completing her Masters of Professional Studies in Animal Science May 2019.

I dedicate this paper to my Dad, Thank you for filling my heart full of love for
Agricultural Science.

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TABLE OF CONTENTS

Biographical Sketch	iii
Dedication	iv
Acknowledgements	v
Chapter 1	1
Chapter 2	4
Chapter 3	7
Chapter 4	10
Chapter 5	15
Chapter 6	17
References	21

CHAPTER 1

Why the decision was made to Teach Undergraduate students as a Final Project?

We as students learn at different paces, in different ways, and begin on different intellectual levels. Reading text books and lectures are a great way to start learning a new topic or subject, but people don't learn well when their major learning context is teacher centered—that is, when they passively listen to a teacher talk. Rather, they learn when they are actively engaged in an activity, a life experience. The human brain can't focus for long when it is in a passive state (Nilson, 2014, p.4). The large animal handling course allowed students to be in control of their own level of learning experience.

Working with animal science undergraduate students on a daily basis in an educational environment is extremely satisfying as an aspiring instructor. Facilitating with a variety of animal science courses throughout the year, allows us to see the excitement of the students when they get to work with agricultural animals. For some students it is their very first time working with large agricultural animals, others just enjoy to be in the agricultural setting of the barn. One of the goals of the Animal Science Department at Cornell University is to add invaluable educational experience to the undergraduate program.

It was decided that establishing a practical large animal handling course would be a great way to utilize my career experience in the animal science field, advance my knowledge of teaching undergraduate students, while adding valuable hands-on experience with animals to undergraduate students at Cornell University. Through this course the students would develop their knowledge and confidence for future careers in the animal science field.

Cornell animal science students come from a variety of backgrounds, including farm, suburban and urban environments. Cornell provides a strong academic foundation in preparation for future careers in animal science, whether that be industry, veterinary school, or graduate school. The practical experience they obtain in labs is just as crucial for their success in their future careers.

The practical large animal handling course was designed to introduce students to the fundamental principles of animal handling, animal restraint, and common medical techniques used as it pertains to horses, beef and dairy cattle, swine, sheep, and poultry. These techniques further strengthen the student's confidence and success in a career in the animal science field. Topics include basic animal anatomy and physiology, identifying breeds of various large animal species, breeding techniques, and general husbandry and management practices.

The teaching design for the course was to give the students clear lectures of material pertaining to specific large animal handling and reinforce the retention of those lectures with extensive hands-on experiences. Upon the completion of the

seven hours of lecture and twenty- four hours of lab the student will have acquired the following learning outcomes:

1. Explain the basics of large animal husbandry and management practices.
2. Understand how to implement large animal handling and restraint techniques safely with various species, including horses, sheep, dairy and beef cattle, chickens and pigs.
3. Apply material learned in class to hands-on experience working with and caring for large animals.

Attendance was crucial to the three main learning outcomes for the students. Each student was expected to actively participate in every class, both lecture and lab. As the instructor, enthusiasm was shown in all the classes, which gave the students the motivation to be active in the course.

Instruction of this course and working with the sixteen enrolled undergraduates on a one on one basis was a positive experience. Individuals are more likely to pay attention if a stimulus has an interesting feature (Huitt, W. 2003). A strong and passionate interest in animal science gave the students motivation to come to class ready to learn and participate so they could achieve the best experience and skills from this course.

CHAPTER 2

What Outcomes did we expect from teaching this course?

The expectations and outcomes of the practical large animal handling course was designed to be foundational. This course had a targeted audience of undergraduate freshman and sophomores, in their spring semester. Those two class levels of students would have already complete a few introductory animal science or biology courses, but not the higher level animal science courses that allow them to handle large animals on a one and one basis. It was decided to limit the course enrollment to just twenty students. This allowed the instructor and the students to have extensive one on one time learning the hands-on material.

The large animal handling course was designed to give those undergraduate students the opportunity to handle large animals early in their academic career at Cornell. We wanted to give them the opportunity to build confidence and experience that would benefit them in the rest of their academic courses at Cornell and in their future careers in the animal science field.

At the conclusion of the course we expected students to be able to explain the basics of large animal husbandry and management practices, understand how to implement large animal handling and restraint techniques safely with various species,

and apply material learned in class to hands-on experience working with and caring for large animals.

Knowing who your students are and how their minds learn is the starting point for teaching at its best (Nilson, 2014, p. 3). The very first class of the semester an initial questionnaire was given in order to gain an understanding of all the student's large animal handling background (See Appendix A). The following questions were asked of each student:

1. How much large animal experience do you have?
2. What large animal species have you worked with?
3. What do you want to learn in this class? Special expectations?
4. What class year are you?
5. What species are you most interested in?

The practical large animal handling course met once per week during a two and a half hour class period. The course was worth one credit and was a graded course. Sixteen students enrolled for the first semester of this course and enrollees were almost evenly split between freshman and sophomores. There were four undergraduate teaching assistants and one graduate teaching assistant to assist with teaching of the labs.

Once the data was collected from the initial student questionnaire we were able to adjust the presentation of the lectures and labs to the overall learning level of the

class. Based on the responses collected from the questionnaire the majority of the class had minimal to almost no previous large animal handling experience. Half of the class were freshman undergraduates that had no upper level animal science courses. Since the starting level of all the students in the class were similar it allowed for the lectures and labs to build in skill set difficulty as the course progressed.

It was unanimous of the questionnaires that the students expected hands-on experience in the course and they wanted to build a foundation for future courses at Cornell in the Animal Science field. Strides were taken throughout the course to meet the expectations of the overall course as well as the individual student expectations. The goal was to have a positive influence and provide positive experiences for every student that participated in the course. Therefore, supplying them with confidence and a strong foundation for their future endeavors.

CHAPTER 3

How did we plan on achieving the course Outcomes?

The practical large animal handling course consisted of a total of thirteen classes from January through May during the 2019 Spring Semester at Cornell University. The course was designed so that every two weeks a new large animal species was discussed in the lecture portion of the class. After the completion of every species lecture a short quiz was given allowing for documentation of the course information being retained and understood.

The safety of the students and animals was stressed during the very first class. In order to ensure a positive and influential experience for the student's safety, the need to remain safe and understand animal behavior in these situations was stressed during each newly learned skill set in the course. The students were given an orientation of the Undergraduate Teaching Barn where the majority of the classes would take place and they were introduced to the animals that we would be working with. A handful of the students in the class were transfer students so they had not be given the opportunity to work in the Undergraduate Teaching Barn prior. The orientation allowed the students to build excitement for the labs to come.

Every new species lecture began with basic identification of common breeds of large animals, basic terminology pertaining to the species, and basic handling and

restraint methods that are used. Every new species covered the same basic material, this gave the students the background information they needed since the majority of the students had little no experience with any of these species. It was a great way to establish a routine in providing new information. An established routine allowed them to become comfortable with my style of teaching and supplied a cognitive pattern to the material.

The goal was to keep the lecture material portion of the class short and to the point while providing all the imperative information for the course. It was decided to not be too specific or in depth on any one species. This course was designed to be an introductory level course for large animal handling.

Each lecture was restricted to one hour of lecture material, followed by one and a half hours of hands-on experience that reinforced the lecture material that was delivered that day. The second week of class, which was focused on the same species as the week prior, consisted of two and a half hours of hands-on experience and perfecting of handling skill sets covered in the week prior.

Limiting the lecture material allowed the students more time to have the hands-on experience that they all expected to get from the course. Each student was able to practice principles of animal handling, animal restraint, and common medical techniques used pertaining to all species covered. Those species included horses, beef and dairy cattle, swine, sheep, and poultry.

Attendance was made mandatory for the course to ensure that every student was present in order to gain the experience taught during class times. If the student was not present for the class the full benefit of the hands-on experience was not achieved. The application of the lecture material was very important to the success of the outcomes in the class and the student outcomes.

Students were encouraged to ask questions during lecture and lab times. It was stressed that if there is never any questions that are too naïve, that if they thought of the question someone else is likely thinking the same thing. If they were embarrassed to ask the question in front of the whole class they were encouraged to approach the instructor privately to obtain their answer. The small class size allowed the students to become more comfortable with one another and with their instructor.

CHAPTER 4

Did we achieve the outcomes set for the course?

The first step toward outcome goals is to design your courses wisely. Whether you are teaching an established course for the first time, developing a brand new course, or revising a course you currently teach, first ask yourself what you are trying to accomplish (Nilson, 2014, p. 17).

The goal for every instructor is to meet their course outcomes and expectations while providing the students with a positive and productive learning environment. The overall design of this course was to allow students to be comfortable with the instructors teaching style comfortable with the large animals. Allowing for a successful experience learning during hands on activities.

Every two weeks the students were given a quiz that documented that the students were learning the material that they were given during the lecture and lab portions of the class. This also allowed for changes to be made to the teaching technique in order to improve their overall learning experience. Attendance was graded and required, lack of attendance to class clearly reflected in the students' scores on the quizzes. The students were continuously encouraged to engage in each and every hands on activity. The students that actively participated scored better on the quizzes and were more

active in their questions during class. This enhanced their retention capabilities and effected their overall performance in the course.

Each lab followed the same routine of stressing safety around the animals, and understanding how to implement large animal handling and restraint techniques with various large animal species. Demonstrations were given on every new technique or skill that we were learning for that species on that day. The number of new skills we were learning for the day were limited so that each student would be able to experience repetition of the skill in order to perfect it. The class was then divided into smaller groups of four to five students in each group for more individualized instruction. There was a teaching assistant present in each small group so that the students had an individualized hands-on experience.

People learn best when they receive the new material multiple times but in different ways—that is, through multiple senses and modes that use different parts of their brain (Nilson, 2014, p. 4). The majority of the students in this course had limited to no knowledge of large animal handling prior to taking this course, this made it even more imperative to provide repetition of those skills in order to retain the new material. It was an advantage on the teaching side to have all the students on a similar learning field. It allowed us to begin at the basic level and move up to advanced techniques together as a group. Using the skills as a learning platform allowed the knowledge and skill to build in difficulty from lab to lab. Each student was given the opportunity to do each technique, whether it be collect blood, physical exams, hoof

care and evaluation, or neonatal care multiple times during the course on various different species. This formed a routine but in the same sense something new and different in every class.

All labs were designed to reinforce the material that was learned during the lecture portion of the course. In addition to the bi-weekly quizzes that were given, half way through the course at week eight a midterm was given. The midterm consisted of questions from all the species covered to that eight week point. Questions such as numerical dates, identifying animal anatomy, recalling specific traits of breeds, and terminology were asked in order to capture learning retention of the students. Scores on the midterm exam reflected that the material that was being provided was not only retained but also absorbed into a practical application. A final exam was also given at the conclusion of the course. The final exam was a cumulative exam, twenty-five percent of the exam was taken from the first-half of the course curriculum and the remaining seventy-five percent of the exam was taken from the material given during the second half of the course. The same style of questions were given on the final exam as the midterm. Questions that allowed the student to use application and not just factual information retention.

The scores on the final exam were lower than on the midterm, however, this was expected since it was a cumulative exam. They did well on the questions that were from the material that was given just prior to the final exam. The final scores overall were pleasing considering the amount of material that was given to them and for only

meeting once per week for class. This provided reassurance that the hands-on labs were doing their job reinforcing the lecture material for retention and application.

The outcomes for the course were that students would be able to explain the basics of large animal husbandry and management practices, understand how to implement large animal handling and restraint techniques safely with various species, including horses, sheep, dairy and beef cattle, chickens and pigs, and apply the material learned in class to hands-on experience working with and caring for large animals. Proof that these outcomes were met through were documented through a final student questionnaire. (See Appendix B) The following questions were asked to all sixteen of the enrolled students:

1. How much do you think this course helped with your experience and confidence to pursue your future career in animal science?
2. Did this class meet your initial expectations? More? How?
3. Was the content of this class too much, just enough, or too little to be useful?
4. Rate the instructors overall performance (1Bad-5Excellent)
5. What improvements or changes would you suggest for this class in the future?

The initial student questionnaire and the final questionnaire were highly valuable to gain insight into what the students truly were getting from their experience in the course.

Positive feedback was received from the final questionnaire, reassuring that the teaching outcomes were met for each student. All sixteen students said that their initial expectations were met and exceeded what they thought they would initially get from the course. The course was only a one credit course, and the students thought that there was a lot more information and hands-on experience than they originally expected.

It was unanimous that the content of the class was appropriate and applicable to what was being done in class. One of the students that already had extensive experience with large animals felt as if they were still learning something new in every class. They also felt that the topics covered in class were a great refresher of information they had learned in other Animal Science courses at Cornell such as Domestic Animal Biology, Equine Biology and Management, Sheep Management, and Beef Management. Research shows that people learn through elaborative rehearsal, which means connecting new knowledge to what they already know and believe (Nilson, 2014, p. 4). The students being able to relate the information from this introductory course to other more advanced animal science courses, reinforced the creditability of the practical large animal handling course.

CHAPTER 5

How did the Students respond to the instructor's Teaching Style?

The teaching style for this course was casual, the more relatable an instructor can be to a student the more comfortable the student is coming to you with questions or hesitations they may have pertaining to the course. There was concern that the students might not take me as serious as an instructor that has much more experience in lecturing and lab settings. As Nilson states in the book Teaching at its Best, make the material relevant to the students' lives, which for today's concrete learners means connecting your material to their day-to-day experience, future careers, or real-world problems (Nilson, 2014, p. 5). Making the material relevant and relatable was a personal goal as the instructor.

The class was actively engaged, even during the lectures, not just by calling on individual students, but by taking class votes, asking questions as a group, or having them voice answers out loud. Also, having students demonstrate in groups something that was being discussed (such as overcrowding of animals in a space) allowed them to relax, be comfortable, and be active. People learn socially by constructing knowledge in a group (Nilson, 2014, p. 4).

Due to the short amount of class time, some of the lecture PowerPoints became lengthy in order to fit all of the content into the small window of time. Several

students in the questionnaire confirm that concern of the lectures being long for one class time. Even in a lecture setting we made the atmosphere active and positive so that they students enjoyed what they were learning.

In the Final Student Questionnaire students were asked to rate the overall performance of the instructor. The number one being overall poor and number five being excellent. They were also asked to elaborate on the rating if they would like. The class rated the overall performance of the instructor as a five. Positive feedback was given stating that the instructor was helpful in answering questions, personable, knowledgeable, passionate, fun to learn from, patient with those that were new to the subjects/species, and approachable (See Appendix B).

As one of the first official times being rated for performance as instructor it was pleasing to receive all the positive feedback. It was reassurance that the teaching style that was being used was giving the students the positive and interactive learning environment that the course had been designed to do.

CHAPTER 6

What could be change in the future of this course?

Overall the practical large animal handling course was a success not only for the amount of knowledge that the students gained during their time in the class but the knowledge that the instructor gained during the course of the semester.

Thoroughly reading through all of the questionnaire surveys from all sixteen of the students confirmed that the overall consensus was that single student learned something new, increased confidence with a skill they had learned in a previous course, or enjoyed the experiences that each class had to offer.

The practical large animal handling course was limited to twenty students in order to allow for a positive and in depth individual experience in the course. Small group activities were used so that each student had extensive hands-on experience during each laboratory activity. However, a few of the labs seemed to limit the overall students' experiences due to a limited amount of time allotted for the activity. It was not verbalized by any of the students that they felt like they were not given the opportunity to participate in all of the activities, however, as an instructor's perspective some of the labs could be organized better to allow for a more complete experience.

This was the first course that the instructor wrote and facilitated in its entirety. Designing a course on paper and providing the course justice to students are two different things. There were challenges in organizing the course into applicable lecture material and formulating laboratory activities that facilitate a hands on learning environment.

The practical large animal course was designed to be an introductory course, meeting only once per week, and worth one credit hour. This proved to be challenging when trying to provide enough content to make the course a positive experience and giving the students the useful knowledge they needed to establish a foundation for future animal science courses. Though the course was designed to be introductory in order to provide enough background information for the students to be successful in the laboratory activities some lectures had to be long in the delivery.

Lecture times were limited to one hour in length, so that the remainder of the class time could be focused on hands on activities. There was a lot of information given in such a short allotment of time. The students performed well on the exams and on the quizzes that primarily were taken from the lecture material, however, the take away from the lecture portion of the class did not seem to be beneficial during the class time. The students likely performed well on the exams and quizzes due to time spent outside of classroom time. As the instructor I would like the students to retain more during class times rather than after class time.

In the future of this course lecture materials would be limited to fifty minutes rather than one hour durations. This is similar to other courses that have lectures that meet two times per week. This changes the overall design of the course to have lecture every week during the semester and to have the laboratory activities take place during the second half of the allotted time. This will allow the activities during the laboratory portion to be discussed during the lecture then performed. Limiting lecture time and allowing the students to immediately commit the lecture material to practical experiences.

Adding more lecture time to the course will be a benefit to both the students and the instructor. Allowing the students to absorb less material in one class time, but immediately being demonstrated the material learned in order to retain the information to visual memory. The pattern of the course was to have the students take a quiz after every lecture. Having more quizzes will add to the overall points of the class allowing students to recover from a bad score more easily. Also, the quizzes will be more specific then broad and will allow the students to focus on more specific material. Research has shown that people learn less by reviewing material and more from being tested or testing themselves on it, as the latter involves greater cognitive processing and practice retrieving (Nilson, 2014 p. 4). The achievement of better scored quizzes and less length between quizzes will give the students a greater sense of accomplishment in the course.

With small changes and more experience the practical large animal handling course can be a beneficial and positive foundation course for the animal science undergraduate students at Cornell University.

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