

An approach to student farm employee orientation and training through experiential learning

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The student author, whose presentation of the scholarship herein was approved by the program of study committee, is solely responsible for the content of this creative component. The Graduate College will ensure this creative component is globally accessible and will not permit alterations after a degree is conferred.

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CHAPTER 1. BACKGROUND AND SETTING

“The mission of Iowa State University (ISU) Department of Animal Science (ANS) is to educate and develop students with life skills and knowledge and to engage and serve the public and the people who produce animals and animal products” (ANS, 2019). By operating livestock animal teaching farms, Iowa State University (ISU) offers a unique and valuable learning experience to students that goes beyond the classroom (ANS, 2019). With six teaching farms and multiple other research farms, the Department of Animal Science offers students additional experiential learning opportunities (ANS, 2019). Teaching farms have been around since the passing of the Morrill Act and their common goal has been based on teaching students life skills through applied experiences (Leis, 2011). These farms serve as demonstration farms for university students and the public. Students get some exposure to the farms through lab classes and club activities while other students are hired to help farm production operations. These student employees capitalize on the opportunity to gain hands-on learning experiences in addition to the opportunities they receive through their course work.

Students who typically apply to work for these farm positions are seeking degrees in Animal Science or other disciplines within the College of Agriculture and Life Sciences, but not always. Nearly seventy percent of students entering the Department of Animal Science do not have agriculture backgrounds, so the farms provide opportunity for many students to experience livestock production first hand (Beermann, 2019). Student farms offer many benefits to both the students and the University. Students gain hands-on experiences while the university benefits through student recruitment, student engagement, and student retention (Leis, 2011).

With as few as two and as many as thirty student employees on payroll at each farm every semester, new hire training is essential to the successful and safe operation of the Animal

Science Teaching Farms. Farm managers have a great responsibility and opportunity to ensure new employees are trained in safety, standard operating procedures, and are compliant with Iowa State University employment policies and state laws. How student training is approached and the methods selected play critical roles in how well the student comprehends and applies the training.

As the Swine Farms Manager in the Department of Animal Science at Iowa State University, I oversee the operations of the swine research farms as well as the Swine Teaching Farm. The Swine Teaching Farm is maintained and operated by student employees. One graduate student and four or five undergraduate students are employed each semester to operate the farm. Through my experiences in the role as Swine Farms Manager, and through broaden awareness gained from taking graduate level courses on agricultural education, I have identified a need to improve the orientation and training processes of student employees.

Chapter 1.1. Statement of the Problem

Currently, there is no single protocol or process to help ensure student employees are being adequately hired onto a university farm and trained properly, yet it is assumed and expected that it is happening. There also is not a single direction or intentional process helping to shape the students' work experience at the farms. There are university level hiring steps that must be completed. There are safety trainings that must be completed and documented by law. And then there are on-farm trainings that must be completed and documented to ensure employees are adequately trained to do their jobs.

With almost 70% of the students entering the Animal Science department with little or no prior agriculture background, the swine teaching farm and other teaching farms serve as great

resources to provide valuable hands-on experience for these students through lab courses and part-time employment.

There is opportunity to be more intentional with training at the farms to better account for the lack of prior agriculture experience students have. By creating and engaging in a process intentionally designed with the inexperienced students in mind, the Swine Teaching Farm and even the Animal Science Teaching Farms collectively could create additional benefit to the students and the farms themselves. Students with little prior experience have increase risks for injuries or mistakes on the farm that could be costly. Intentional and effective training could create necessary awareness to prevent these costly mistakes.

In addition to student safety benefits, the students with less prior experience would gain practical hands-on experience that could help them apply for industry internships and full time employment after graduation. There currently is not any requirements for students in the Department of Animal Science at Iowa State University to complete an internship, but students often complete one or more internships before graduation (Sterle, 2018). By intentionally designing a training program for students with less experience, the department and teaching farms can gain multiple benefits. Students would gain real world experience making them more marketable for internships and full-time employment, and the department benefits from the students' success through retention and post-graduation replacement rates and the department is able to advertise the great benefits of having hands-on learning farms.

Chapter 1.2. Purpose and Objectives

The purpose of this project has been to first create an orientation process and then a training plan for student employees that meets state laws and university policies, the Department

of Environmental Health and Safety (EH&S) recommended safety protocols, and standard operating procedures for the farm. Secondly, this project focused on a method to effectively train farm protocols so that students gain the experience in a guided environment.

The idea for this project has been based around student employment at the Swine Teaching Farm and ensuring all the university requirements are met, the students are trained to work safely, and they learn swine production through hands-on experiences at the farm.

Chapter 1.3 Significance

The creation and implementation of an orientation and training plan, as well as, tested examples of how to train farm procedures will have many benefits. This process will provide opportunities for students to gain practical experience to better prepare them for future careers. Iowa State University and the College of Agriculture and Life Sciences would benefit through the farms' success of recruiting students to enroll. The farm would benefit not only through lawful compliance, but adequately trained employees will help the farm operate more effectively. Heightened hazard awareness and training will help student employees avoid on-the-job injuries and avoid causing unintentional equipment or facility damage. These benefits to the farm offer opportunities to capture potential revenue through more efficient production or cost savings through mitigating unnecessary equipment and facilities repairs.

Limited budgets is a common challenge reported among university and college farms throughout the U.S. (Leis, 2011) and this is also the case for the ISU teaching farms. Effective orientation and training of employees takes time and preparation, but it doesn't necessarily have to take a lot of monetary investment. The awareness and technical skills acquired by the

employee to do things safely and correctly will help the farms operate efficiently and prevent injuries and broken equipment which can be costly to any budget.

CHAPTER 2. LITERATURE REVIEW

Student enrollment in the Department of Animal Science at Iowa State University, from 1991 to 2011, increased 67% from around 550 students to 926 (Youngs, 2012). In 2018 there were around 1100 students enrolled in Animal Science (Beermann, 2019). The origin and background of incoming students has made drastic shifts from 70% of students self-reporting some agricultural background in 2000 to nearly 70% of students reporting little or no agricultural background in 2018 (Youngs, 2012; Sterle 2018). Similar trends are cited elsewhere in reference to an increase of students enrolling into agricultural programs with non-agricultural backgrounds and a lack of practical knowledge in agriculture (Leis, A., 2011, Dyer et al, 1999; Mayer, 1980; Scofield, 1995)

With such an increase in students entering the Department of Animal Science with little or no agricultural background, it becomes more critical that the department identify, create, and invite existing or new opportunities for students to gain hands-on experiences to compliment the classroom curriculum. The Department of Animal Science is “globally recognized as being one of the best programs for students to receive experiential learning” (ANS, 2019). The Department of Animal Science has research and teaching farms used to ultimately help the department “enrich lives through animals” (ANS, 2019). The department makes good use of these farms through lab courses, but due to student numbers and time allowed for labs, more student interaction at the farm may be beneficial. Students are exposed to the environment and do gain hands-on experience through demonstration and some practice, but there is opportunity to provide students with more experience. According to a survey study of university farms across the United States, hands-on experience is an opportunity most commonly offered through internships but is a component lacking in most college courses (Leis, A. 2011). According to

Sterle and Bundy's (2018) Strategy for Undergraduate Student Development in Animal Science, internships are also an important aspect to a students' development, along with club activities, study abroad trips, and undergraduate research experiences.

The farms currently hire student employees each semester to help with the daily production at each farm. There is opportunity for the Department of Animal Science to create an orientation and training process for student farm employees that intentionally prepares students with little or no agricultural experience to confidently and safely work at the livestock farms to better prepare them for future internships and careers. An intentional and planned process that is well executed will be most beneficial to the students and the farms.

L.A. Mayer suggested five ways for university agriculture programs to provide agricultural experience to students (Mayer, L.A. (1980);

- 1: Maximize the use of existing university or college research farms and utilize them to provide practical skills training without interfering with the research activities
- 2: Designate a farm(s) specifically for teaching
- 3: Maximize employment of students and involve regular, non-academic farm staff in providing on-the-job instruction
- 4: Develop an agricultural internship program, and offer university or college credits to students placed for both farm and non-farm experience in the program
- 5: Present an award for students with outstanding performance in practical training, and recognize these students at an appropriate occasion where other awards are given for academic excellence.

The Department of Animal Science already has the designated teaching farms used for demonstrations, hands-on learning labs, and student employment. The opportunity for hands-on experiential learning exists, yet there is potential to maximize the experiences offered to students. Currently, the farms typically only hire based on minimum need to ensure the farm continues to operate due to the constant struggle of closely monitoring tight budgets. Iowa State University however does have several opportunities students are able to utilize to help offset their cost to the farms and to help them gain experience. The Department of Agricultural Education and Studies in the College of Agriculture and Life Sciences offers the Science With Practice (SWP) course which is intended to be an experiential learning opportunity where students receive work experience and compensation for their contributions. The Science With Practice program pays a portion of the participating students' hourly salary which helps offset some of the labor costs of that student. Another, but unpaid opportunity available to students is to complete an independent study course for credit.

Student employment at the farms is critical to the success of the department and the future successes of students. The investment by the Department of Animal Science to increase student experience and employment at the farms would likely prove beneficial. Students' desire and interest around the experiential learning that takes place at the farms is a big part of recruitment. The swine teaching farm gives tours to about 2500 visitors annually, many of which have little agriculture background yet show a lot of interest around the idea of hands-on learning through either viewing demonstrations or actually interacting with the pigs.

Experiential learning is learning by doing (Andreassen, 2004) and the ultimate goal of experiential education is to engage the students to "solve problems inductively. Actively use and explain knowledge through solving problems, and make connections and apply knowledge

beyond the classroom and school, based on real-life problems” (Knoblauch, 2003, p. 23). Dewey (1938) suggests all learning is experiential, but not all experiences are educational. Skill nor ability can be learned from a book or observation alone, as they both require active participation during the learning period (Stimson 1919, p.32). In Roberts’ article in the Journal of Agriculture Education (2006), he reports on multiple models displaying a cyclical nature to experiential learning which requires the initial focus of the learner, then interaction with the phenomenon being studied, a reflection of the experience, developed generalizations, and then testing those generalizations.

Many models exist for experiential learning theory yet for the idea of skills training on the farm the five-stage experiential learning model created by L. Joplin (Joplin, 1981) is one that could be easily applied for training skills at the farm.

Stage 1: Focus – Create Focus. The learner is first exposed to the subject being studied. This stage should get the learner’s attention possibly through lecture and/or demonstration.

Stage 2: Challenging Action – The learner directly interacts with the subject being studied. causing the learner to physically, emotionally, mentally, and/or spiritually experience the subject being studied.

Stage 3: Support- Provide support to the learner to allow them to be challenged and practice in a safe environment and provide assistance when needed. Support happens simultaneously with Stage 4: *Feedback* throughout the entire learning process.

Stage 4: Feedback- Providing feedback gives the learner immediate assessment to help them correct or gain confidence in their efforts. Feedback happens simultaneously with Stage 3: *Support* throughout the entire process.

Stage 5: Debrief – learner is able to recognize and articulate what they learned and then learners relate their observations to what they already know.

In relating the five-stage experiential learning model to skills training at the farm, the concept explained by Joplin that the scope or duration could occur on a continuum from “mini” to “maxi” is fitting due to the wide range knowledge and tasks that must be learned by farm employees. A “mini” level experiential learning experience could occur as a “flash or insight”; while a “maxi” level experience could be the entire curricula of a school. An experiential learning cycle can take a few seconds or years to complete (Roberts, 2006). This relates to the farms well because some tasks may take a few minutes to train, such as scraping pens or other small tasks. And at a maxi level, swine gestation takes months and making breeding herd improvements can take more than a year, so fully seeing and understanding these topics first hand would be a longer learning experience.

Another visual model Roberts studied was Dale’s Cone of Experience. Dale (1946) suggested a scale or cone of experience levels that differentiated on a gradient of concrete learning to more abstract learning. In this model, concrete experiences are more “real-life experiences” and the abstract learning experiences are non-realistic symbols. This model suggests that “doing” is the most concrete type of learning experience, followed by “observing”, and then “symbolizing” which is the most abstract type of learning experience. The Cone of Experience (Roberts, 2006, figure 5) supports experiential leaning at the farms by visually showing the effectiveness of “direct, purposeful experience” which is the most concrete type of learning experience according to the model.

The ADDIE training model’s original goal was to increase the effectiveness and efficiency of education and training by fitting instruction to jobs by taking out unnecessary

information from courses while ensuring learners gained necessary knowledge and expertise to do the job (Allen, 2006). The revised goal of the ADDIE model is “field-effective and efficient instruction that helps prepare individuals to meet their work-performance requirements” (Allen, 2006). The five phase process of the ADDIE model includes analysis of immediate work-system requirements; definition of educational and training requirements; development of objectives and tests; plan, develop, and validate instruction; and conduct and evaluate instruction (Allen, 2006).

CHAPTER 3.METHODS AND PROCEDURES

This project has focused on the orientation and training of new student employees at the Swine Teaching Farm to ensure the ISU Human Resources and State of Iowa employment regulations are met, employee safety standards are met, and the experiential learning environment of the farm is used to teach and train students about swine production. This project has several finished components including the ISU Swine Farms New Employee Checklist, the New Student Employee Orientation Presentation, the ISU Swine Farms New Student Employee Orientation Guide, The ISU Swine Farm Instructional Planning Guide, and the application of the ADDIE Training Model focusing on prioritized skills of daily swine care and animal movements.

The ISU Swine Farms New Hire Checklist was compiled by gaining understanding of employment requirements from ISU University Human Resources, ISU Environmental Health and Safety (EH&S), and Department of Animal Science (ANS). This involved researching policies and procedures on the ISU website, discussions with staff with EH&S, discussions with staff in ANS, and my personal experience in hiring and managing student employees at the farm for 5 years.

Through discussions of the topic of hiring new employees and onboarding them, EH&S staff offered an example that was based on a checklist used with employees in laboratories on campus. Not everything on the initial laboratory checklist pertained to student farm employees and there were other items that were more critical to be included for student farm employees. The current draft of the Animal Science Swine Farms: New Student Employee Checklist includes administrative compliances such as having tax forms and Identification submitted and approved by University Human Resources, online safety training for all farm employees, and farm specific training such as emergency action plans and standard operating procedures.

Although pieces of this checklist have been implemented on the farm in previous semesters, this version was implemented for the first time to start the fall 2019 semester. It was provided and reviewed in a lecture discussion on the farm with 4 undergraduate student employees and one graduate student employee.

The New Student Employee Orientation Power Point Presentation was created as a way to discuss many of the items that were included in the ISU Swine Farms New Employee Checklist that could be covered in one meeting. The presentation provides information in smaller amounts so that it is easily understood by new employees. By printing off the slides and including in a new employee packet, it provides a written reference for employees to review at other dates as needed. This information is safety and compliance based, much of it an employee would not understand or receive just by experiencing work at the farm. It is the responsibility of the supervisor to ensure employees are prepared for emergencies at work should they arise.

This presentation was used to orient new student employees at the Swine Teaching Farm at the start of the 2019 fall semester.

The ISU Swine Farms New Employee Orientation Guide was created as a tool to help facilitate the orientation of student employees at the farm. This was a way of incorporating all the documentation requirements with the physical actions of introducing employees to the farm, employee expectations, and the tasks they would be executing at the farm. This document along with the ISU Swine Farms New Employee Checklist and the ISU Swine Farms New Employee Orientation Presentation slides, help create the focus and plan to train employees at the swine farm.

The Instruction Planning Guide created for training new student employees was first created as a general outline for training all the tasks necessary to understand farrow to finish swine farm production through hands-on experience. This plan aided me in applying the ADDIE Training System in order to best identify priority tasks that should be taught first. The Instruction Training Guide is designed to describe instruction goals, objectives, methods, evaluation processes, timing, materials to be used, and facilities. ADDIE stands for analyze, design, develop, implement, and evaluate.

The ADDIE Training System was used to evaluate, develop, and plan a training plan for new student employees at the farm. This is best represented in Chapter 4.4 of this paper.

This project has focused on the Experiential learning environment offered by the Swine Teaching Farm and the use of the ADDIE training model for its usefulness in planning employee training. Additionally, through exposure in my graduate coursework, I identified the five stage learning model by Joplin as the instructional method to be used for the hands-on teaching. The training model offered in Chapter 4.4 to train student employees has been used for lab classes to teach students animal handling and basic animal husbandry. The overall review from these students has been positive. The ideal learners have been students with zero prior experience who approached the situation with a desire to learn and willingness to participate. These students gained valuable experiences.

By utilizing the ADDIE model to help guide the employee training efforts at the ISU Swine Teaching Farm, it has helped to create purpose in the training and in the role of student employees at the farm. The saying of “you get out of it what you put into it” is real for both the student and the farm. The ADDIE model directed me to first analyze the student employee role by creating and reviewing a job description for student employees and a task list for that role. By

doing so, I started down the path of creating a checklist of items that employees will need to learn and be aware of in order to be successful at the farm. This analysis also helped me to appropriately identify the most critical tasks that should be learned first.

CHAPTER 4. PRODUCT

The products created as part of this creative component are designed to be tools to help orient and document training of student employees at the ISU Swine Teaching Farm.

Chapter 4.1 is the ISU Swine Farms New Student Checklist which has been designed to ensure ISU hiring policies are met, students are training in workplace safety and emergency safety, and to document training of standard operating procedures at the farm.

Chapter 4.2 is the New Student Employee Orientation Presentation (Swine Teaching Farm) which is designed to help present important information through lecture but also serves as a hard copy for students to keep and reference if needed in the future.

Chapter 4.3 is the ISU Swine Teaching Farm New Student Employee Orientation Guide which is designed to be a facilitation guide for successfully completing the orientation process of a new employee. This helps tie in the checklist, presentation, and training into the complete orientation process.

Chapter 4.4 is the Instructional Planning Guide designed to identify instruction needs and the methods and resources available to teach learners.

Chapter 4.5 is the application the ADDIE Training Model for basic daily chores and safe swine handling at the ISU Swine Teaching Farm. This process helped analyze the student employees as the learner and the teaching farm as the learning environment in order to help identify priority tasks to learn and the best teaching methods available.

Chapter 4.1. ISU Swine Farms New Student Employee Checklist

Name of Employee _____ University ID# _____
 Farm _____ Date Initiated _____

This list is to be used to verify that new student employees have been informed of basic information needed to work at Animal Science facilities. Each trainer needs to initial & date the item as completed. Specific training such as standard operating procedures should be recorded on an employee training record document. Employee and Trainer must initial each to verify training and employee understanding.

Training	Date	Initials	Training	Date	Initials
ADMINISTRATIVE and ONLINE TRAININGS					
Job Description and Expectations		/	First Report of Injury		/
Forms Completed and approved by UHR		/	Safety Training – Learn@ISU		/
Work schedule		/	Workers Right to Know		/
Time sheets/cards – Workday		/	Personal Protective Equipment		/
Motor Vehicle Records approval		/	Fire Extinguisher and Safety Training		/
Trailer Driver Training		/	Workers Protection for Ag Workers		/
Complete & submit Hazard Inventory Form		/	Tractor Training		/
Occupational medicine		/	Alternative Vehicle Training		/
FARM SPECIFIC and EMERGENCY ACTION PLAN					
Biosecurity and Entry Procedures		/	Emergency Action Plan		/
Barn Walkthrough		/	Emergency phone numbers		/
Safety Data sheets location & how to use		/	Unauthorized personnel procedures		/
Safety/protective equipment& use		/	Equipment frequently used		/
Tornado response & shelter		/	Eyewash station location & use		/
		/	Fire extinguishers location & use		/
		/	Fire response & meeting location		/
		/	First aid kit location & use		/
ANIMAL and TASK SPECIFIC					
Animal use protocols & location		/	Task Trainings		/
IACUC awareness		/	SOPs Manual and Individual Training log		/
Zoonotic diseases & avoiding		/	Daily Chores – Ensuring Feed, Water, Air		/
Reporting animal welfare concerns		/	Boar Collection		/
Animal handling training – swine		/	Semen Extension, rotation and storage		/
Record keeping		/	A.I. Breeding		/
Treatment Protocol and providing treatment		/	Piglet Processing		/
		/	Boar Piglet Castration		/
		/	Sow/Piglet weaning		/
		/	Pig Champ Software – as needed		/

Date of Completion _____ Employee's signature _____

Supervisor's signature _____

Chapter 4.2. New Student Employee Orientation Presentation

ISU Swine Teaching Farm

- 3726 520th Ave
Ames, IA 50014
- Jeff Hartwig
515-290-3742
- Carson Stilwill
515-868-4440
- Emergency 9-1-1
- Storm Shelter in
maintenance closet in
Gestation barn
- First Aid kit in Gestation
Viewing room
- Fire Extinguishers in
truck, in Gestation view
room, and in pavilion

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Administrative

- Forms approved by
UHR
- Time
sheets/Workday
- Motor Vehicle Check
 - You must email Transport
Services to request and put
(hartwig@iastate) as
supervisor netID
- Online training
assigned on
Learn@ISU
 - Look up on ISU
website

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Overview

- Farm Overview
- Job Description
- Farm Processes
- Employee Expectations
- Farm SOPs
- Farm Safety

Farm Overview

- Student operated facility with Graduate and Undergraduate students
- 90 Sow Farrow-to-finish
- 28 day batch system
- 600 or more pigs in all phases from gestation to finishing

Farm Purpose

- The swine teaching farm serves as a demonstration farm to aid in teaching and outreach efforts.
- ISU Animal Science courses and Meat Sciences courses
- Provide undergraduate students practical learning experience
- Tours given to K-12 school groups, industry groups, international visitors, and other public visitors through out the year

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Farm Goals

- Employee and Student Safety
- Effectively and efficiently operate the farm in order to deliver a quality experience to visitors and students
- Maintain high level of welfare for all pigs
- To meet the requests of faculty by providing quality pigs for lab courses
- To provide student employees with valuable experiences that will benefit their future career
- Production Goal: Produce 100+ pigs per batch (budget)
 - Breed Target is 18 sows per batch

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Expectations of Employees

- Planning and Communication
 - Plan your time off (any schedule changes or time off need approved)
 - Work out the weekends schedule early in semester
 - Communicate in advance (plan ahead and schedules can adjust)
 - Let someone know if you have questions or if something is broken, we need to fix it
- Professionalism
 - Language, appearance, interactions, execution
- Ownership
 - Own your actions
 - Take responsibility to ensure quality work is completed
 - Take Pride in your role and in the appearance of the farm

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Job Duties

- Employees participate in the safe completion of all production tasks including
 - Daily Chores, breeding, heat detection, boar collection, farrowing and litter processing, animal movements, tractor operation, trailer hauling, power washing, lawn mowing, building repair and maintenance, and other tasks as assigned
 - Learn the daily routines, acquire an eye for additional things that need to be done and do it.

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Standard Operating Procedures (SOP)

- SOP's exist for most tasks and operations on the farm.
 - Supervisor is responsible for providing adequate awareness and training to complete assigned tasks. Completion of training should be documented
 - Employees should know where SOPs are located and should review them before being trained to complete a specific task. Employees and Supervisors should sign and date records of training

Safety Awareness and Training

- Courses assigned on Learn@ISU
 - Workers Right to Know
 - Personal Protective Equipment
 - Fire Safety and Extinguisher Training
 - Safety Awareness for Agricultural Workers
 - Tractor Training
 - Alternative Vehicle Training
- Other farm trainings as assigned – Document it all!

Safety and Awareness

- Emergency Action Plan
 - Posted on Farm
 - Provided in handbook
- First Report of Incident (FROI) - AccessPlus
 - Injury, near miss, vehicle accident, property damage

Specific Farm Hazards

- Animals
 - Behavior
 - Movements
- Equipment
 - Truck/trailer, tractor, hydraulic cart, power washer
 - Heaters, feed augers, electric tools and cords
- Chemicals
 - Storage, First Aid, PPE

Hazard Assessment

- Complete the Hazard Assessment
 - EH&S Website
 - See example provided in New Employee packet
 - Once completed, schedule visit with Occupational Medicine
 - G11 Technical and Administrative Services Facility (TASF), 2408 Pammel Drive, Ames, IA
 - (515) 294-2056

Chapter 4.3. ISU Swine Teaching Farm New Student Employee Orientation Guide

HR, Payroll Paperwork, and required Completions

- Manager hires student through Workday system
 - Employee Photo ID delivered to and approved by University Human Resources in Beardshear Hall, Room 3810, prior to start date
- Motor Vehicle Records check request - Transport Services webpage
- Trailer driver training needed to transport livestock - ask Transport Services for availability
- Hazard Inventory Assessment - EH&S website. Farm supervisor will provide farm hazards to record on individual assessment

Orientation Meeting with Manager

- Job Description and Duties (eventually a farm walkthrough)
- Orientation Presentation
 - Provide and present important information
 - Farm location/description
 - Contact information
 - Farm Processes overview on purpose and goals of farm
 - Farm/Manager Expectations of employees
 - Professionalism (leave, behavior, tardiness, communication, time sheet completion and submission)
 - Biosecurity policy and Farm Entry procedure
 - SOP presentation and awareness
 - SOPs described/trained and available for employees
 - Employees sign/date an orientation attendance sheet
 - Employees sign/date training documentation for site specific training
 - Supervisor should sign/date when employee is competent on trained task

Farm Walkthrough

- Demonstrate Entry Procedure and state expectations
- Tour farm -Gestation/Breeding/Farrowing barn, Nursery, Finisher barn, Hoop
 - Explain biosecurity processes
 - Explain role of each room
 - Explain expectations of daily chores in each room
 - Explain farm flow and animal movement processes
 - Things to also show in walkthrough
 - Emergency Action Plan and contact list
 - Emergency Exits
 - Storm Shelters
 - Fire Extinguishers
 - First Aid Kit
 - Sink to wash hands
 - Storage areas

Standard Operating Procedures - Training and Review

- Daily chores by room
 - Feed/Water/Air/Care

- Identifying pigs in need of additional care or treatment
 - Treatment protocols
 - Administering treatments, needle selection, record keeping
- Daily room data records
- Scraping pens
- Animal Handling and Movements
- Euthanasia
- Farm tasks as they arise
 - Piglet Processing, ear notching and tail docking
 - Piglet Castration
 - Power washing
 - Weaning, moving pigs to and from nursery
 - Loading sows into farrowing room
 - Artificial Insemination Breeding
 - Boar collection
 - Boar semen extension
 - Boar semen handling - rotate daily in cooler
 - Estrus Detection
 - Compost
 - Mowing and weed eating

Safety Awareness and Training

- Emergency Action Plan (farm specific)
 - Accidents and Injuries procedures and contacts
 - Storm Shelter location
 - Unknown/Suspicious guests
- FROI-First Report of Injury - Online reporting by EE or Supervisor within 24 hours of incident
- Fire extinguishers
 - Locations and use procedures (Pull, Aim, Squeeze, Sweep)
- Online Farm safety training assigned - Learn@ISU
 - Workers right to know
 - Safety for Agricultural Workers
 - Fire Extinguishers
 - Personal Protective Equipment
 - Tractor Training
 - Alternative Vehicle Training
- Present specific farm hazards and safety precautions and protocols
 - Tractor, chemicals, farm operations, animals
- Additional safety awareness
 - PPE expectations and availability
 - Others

Chapter 4.4. Instructional Planning Guide

- Goal
 - Provide learners with knowledge, understanding, and skills related to swine farrow to finish farm operations
- Objectives
 - Daily Chores: Teach students daily swine husbandry (feed, water, air and environment, and care).
 - Animal Movements: Teach students safe animal handling techniques.
 - Health: Teach Students about identifying unhealthy or unthrifty animals and provide proper care and treatment. Students will demonstrate knowledge and ability.
 - Reproduction: Teach students about the processes of artificial insemination, boar collection and semen extension, and proper breeding techniques. Students will demonstrate knowledge and ability
 - Farrowing and Pre-wean Production Processes: Teach students about farrowing, piglet processing processes, and pre-wean care. Students will demonstrate knowledge and ability.
 - Facility Function: Teach students about general swine barn function, maintenance, and required skills. Students will demonstrate knowledge and ability
- Methods
 - Explanation/Short lecture
 - Discussion
 - Demonstration
 - Demonstrations with practice
 - Simulations
 - Hands-on
 - Side-by-side with instructor
 - One-on-one participation
 - Group demonstrations
- Evaluation
 - Before employment interviews
 - On-the-spot coaching during activity
 - End of semester performance review
 - Weekly group discussions
- Timing
 - Total time will be one semester, experience will be longer for students who remain employed at the farm for additional semesters
 - Daily Chores, animal handling, animal health will be taught in the first 2 weeks, students will demonstrate knowledge by end of week 2 and demonstrate ability by week 4.
 - Assistance and guidance will be provided during first 4 weeks
 - Reproduction Processes, Pre-farrow production processes will be taught in the first 4 weeks as the event happens on the farm. This will take place during the

same time as demonstration and practice is taking place for daily chores. The first batch of farrowing and breeding will be demonstration and assisted practice. The second batch will be assisted and unassisted practice.

- General Swine barn function will be a short lecture and discussion in week 1 or 2. Starting in week 2 a specific skill will be taught such as water line repair, heater trouble shooting, or feedline troubleshooting. Each week a new skill will be explained, demonstrated, and students will be able to demonstrate understanding.
- Materials and Media
 - Farm Standard Operating Procedures
 - Pork Quality Assurance materials
 - Farm Manager and fulltime staff
 - Graduate Assistant farm staff
 - Experienced student staff
- Facilities
 - ISU Swine Teaching Farm

Reference:

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Chapter 4.5. Applying the ADDIE Training Model for basic daily chores and safe swine handling at the ISU Swine Teaching Farm

Analyze System Requirements

Job analysis of occupation and tasks have determined the ability to ensure animals have adequate feed, water, and air as the most critical responsibilities for the role of a student employee at the Swine Teaching Farm. The job description for this position, explanation of duties, and industry requirements of animal husbandry support these as priority tasks of an animal caretaker at the farm. After ensuring adequate feed, water, and air; the next critical task of the caretaker would be the general care of the animals which would include identifying a need for additional care of individual animals such as safe animal handling and administration of medications per communication and directive of a veterinarian and farm supervisor. Along with daily care of the pigs, safe animal handling is a top priority skills since animals must be moved often on the farm in all phases of production. Other tasks listed in the job description and position task list will be trained at different times as needed on the farm to ensure continuous operation of the farm.

Define Education Training

Every student employee has a unique background of education and experience which creates a unique challenge in hiring and training employees at the Swine Teaching Farm. Each student employee should expect to be provided adequate orientation to ensure they understand the full function of the farm and the requirements and expectations of their role at the farm.

The target population is Iowa State University students interested in gaining hands on production experience through employment at the Swine Teaching Farm in order to improve their knowledge and skills in swine and animal husbandry in preparation of securing future industry internships and full time employment after graduating from Iowa State University. Student employees range in their experience

from no experience and no related education to moderately knowledgeable from college courses or on farm experiences and a few students have grown up on a swine farm and are skilled in most or all tasks related to the production processes of the farm.

Because of the general assumption of the low experience levels of the student employees and the safety and financial risks that exist at the farm, the initial approach to a needs assessment is to explain and demonstrate each task at the farm to create a standard focus on the task and expectation of performance. From here, employees may quickly demonstrate their abilities and understanding or can practice and receive support and feedback from the trainer. The employees who can demonstrate their ability and understanding of the task are often allowed to perform that task independently after that and the employees who seek experience and practice will be assisted or provided support and feedback until they express and demonstrate the desired ability and understanding to complete the task independently. The needs assessment is based on demonstrated ability assessed by the farm manager or graduate assistant.

Instruction and training for the most critical tasks of ensuring every animal has feed, water, and air every day is a top priority of the farm followed by safe animal handling, and then the identification of unhealthy animals and the needed steps to care for them back to health. Other training that is important to the safe and efficient operation of the farm are biosecurity, production processes, and barn functions. These tasks must be trained and understood by the employees quickly upon employment to ensure that the farm functions at its best.

Development of Objectives and Tests

1. **Feed, water, and air availability:** Employee is able to check feed, water, and air availability for every animal every day. Employee understands general functions of feed, water, and air systems for each room and how much feed each animal should have daily. Employee should understand differences in feed types for each phase of production. Employee should also understand how to

trouble shoot and solve problems that could arise when ensuring every animal has feed, water, and air daily.

2. **Animal handling and movement:** Understand and demonstrate the ability to use the tools and techniques to safely and calmly move swine of all sizes around the farm.

What should the employee be able to do after instruction?

- Employee should be able to check feed and water availability for every animal on the farm and identify and address issues or abnormalities to ensure proper feeding and water availability every day.
- Employee should know to either contact someone with more experience for assistance or how to solve the problem on their own and to report the issue and their effort to their supervisor.
- Employee should understand differences in feed systems, feed phases and amounts for each phase of production and water systems available in each barn.
- Employee should be able to demonstrate ability to identify and use a pigs point of balance, blind spot, and flight zone to move pigs in desired direction
- Employee should be able to identify and use appropriate tools such as sort boards and rattle paddles as necessary to aid in moving pigs in desired direction.
- Employee should be able to properly handle small piglets by holding back legs above the hock or from under the ribs and place 2-3 feet on ground before releasing pig back in its pen.

Conditions under which employee may perform task:

- Employee should be able to successfully complete task independently and consistently, on a daily basis and be able to communicate issues either solved or unsolved in a timely manner.

Acceptable standards of performance

- Every pig has the appropriate feed and water availability every day and issues are solved and communicated timely. Employee works safely and the site remains clean and organized and employee is able to accomplish assigned tasks during their scheduled shift
- Employee demonstrates the use of appropriate tools and techniques based on the task and age of pigs to move them to desired location during normal production tasks such as weaning piglets, moving sows to different stalls, moving feeder pigs to different barns, and sorting and loading pigs for market.

Implement - Plan, Develop, and Validate Instruction

The Instruction Planning Guide created for swine farm employee training shows multiple important tasks each employee must learn to fully understand the farm and become a skilled employee. It also generally discusses teaching methods used, processes of evaluation, timing of training, and materials used. The instruction plan included in this application of the ADDIE model focuses only on the prioritized skills and lessons of daily chores and animal movement. Additional instruction plans should be created at a later date to fulfill the objectives of the Instruction Planning Guide.

This instruction is based on Laura Joplin's five-stage experiential learning model:

Ensuring Daily Feed, Water, and Air Availability.

- Create Focus:
 - Separate discussion into feed, water, and air.
 - Do not overwhelm learners and help them focus on learning one topic at a time
 - Explain the task and its importance to each animal and its importance to the operation
 - Provide a task sheet to help remind student employees of each step and important things to check in each room.
 - Complete a farm walk with employees explaining and demonstrating processes of each barn, and explaining real examples of issues that can arise in each room.

- Challenging Action:
 - After initial explanation and demonstration in each barn, allow student employees to attempt the task,
 - Students should be able to complete tasks in each barn and explain the function of the system and the steps they should take to complete the task.
 - Students should also be able to explain issues they are expected to identify and what steps should be taken to correct the issue.
 - If student needs more practice, the trainer will accompany them during their next attempt and repeat the process until the student employee can demonstrate and articulate their understanding.
- Provide Support and Feedback
 - The instructor will provide support and feedback during the process and provide assistance when needed, the environment will allow for mistakes and questions in the spirit of learning.
- Debrief
 - After the training and practice of the task in each room, the learner(s) and instructor will conduct a debrief where learners will be able to articulate the steps taken to complete the task as well as provide thoughts or questions regarding the task
 - Learners should be prepared to explain how to fix an issue described by the instructor. An example of a real life scenario would be presented and the learner should be able to explain how to fix the issue or steps they would need to take before moving on to their next task.

Try out instruction plan

- Try with new student hires or classes. New students may start at the farm each semester so there are at least 3 opportunities each year. Some lab courses and student groups may also request training on tasks at the farm to gain a better perspective of what they are learning in class.

Conduct and Evaluate Instruction

- Summer 2017 and 2018, Undergraduate Underrepresented Veterinary Interest Program
 - This group of undergraduate students had zero previous experience around swine or agriculture so they fit well into the planned audience. Typically they were timid at first but by providing support and feedback through the process they became more comfortable with trying to learn and making necessary attempts until they felt they understood and could accomplish the task. This group was eager to learn and I believe new students on the farm enter their roles the same way so I would expect similar reactions from new employees.

This instruction is based on Laura Joplin's five-stage experiential learning model:

Animal Movements: Swine

- Create Focus:
 - Explain the task, importance, and purposes of moving animals on farm
 - Demonstrate and explain moving pigs using correct techniques and tools. Explain flight zone, blind spot, and point of balance of pigs while also demonstrating what these are using correct technique and tools.
 - For small pigs, demonstrate and explain proper ways to pick up a pig and place back in correct pen.
 - Explain that the students will then attempt what they just viewed.
- Challenging Action:
 - Allow students to attempt the tasks and interact with the animals in the pen to gain the experience.
- Support
 - Create an environment that allows for questions from the students. This can be during their attempt or while they are observing another student's attempt.

- Create a safe environment for questions and mistakes
- Feedback
 - Guide and provide feedback during their attempts.
 - Provide encouragement and positive reinforcement.
 - Allow them to make immediate adjustments
- Debrief
 - Individually – provide final feedback on their attempt(s)
 - Group Discussion – talk about task and training process.
 - What worked? What didn't work?
 - Do they feel more capable of accomplishing task(s) after training

Try out instruction plan

- Try with new student hires or classes. New students may start at the farm each semester so there are at least 3 opportunities each year. Some lab courses and student groups may also request training on tasks at the farm to gain a better perspective of what they are learning in class.

Conduct and Evaluate Instruction

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- Animal Science 336 course in the fall of 2018 and fall of 2019.

- Split the groups in to about 7-8 students, students paired together each get an opportunity to attempt the task being taught.
- Overall involvement, engagement, and reaction of students was positive.

Evaluation of Instruction effectiveness

- Ongoing process through the identification of needs that may come up for the improvement or modification of the material as the farm or general characteristics of the learner evolve.
- This lesson is designed for a learner with little or no experience. So far, students that have gone through this training that meet that criteria have left with a positive impression and a better ability to accomplish the task(s) taught.
- These instruction plans have only formally be used for groups in class or group settings and the plans have been successful. More work is to be done to formally apply them to employees at the farm.
- Employees are taught these tasks at the farm but typically in a more informal and undocumented process that may not adequately involve all the steps of the five stage learning model. Notably, the debrief step may be missed or shortened as other tasks need to be done at the farm.

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CHAPTER 5. REFLECTION

I am grateful for the opportunity to create and design a project that I am able to apply the education and understanding that I have gained through my graduate studies. The pieces of the orientation and training of new student employees that I created are ones that I have identified as missing or not well represented in my current system at the Swine Teaching Farm. By creating a new student employee checklist, an orientation presentation, an instructional planning guide, and applying the ADDIE Training Model to create planned instruction for training farm tasks, I feel that I will be able to help students stay safe at the farm and gain valuable knowledge and understanding that will help them in the future. By implementing these items into the processes at the farm, I am confident students will enjoy their experiences even more and feel more motivated and connected to the bigger picture of the farm rather than just showing up to a job. My hope is that by improving the system and the perceptions of student employees that their excitement about the experience will trickle by word of mouth and help with recruiting new students to work at the farm each semester.

The ADDIE Training Model is an ongoing process of continuous improvement. By design, I intend to continue to analyze and evaluate the processes at the farm to best train the student employees. Adjustments will need to be considered as the backgrounds and experiences of each student are different so each semester could require alterations in approach in order to meet the needs of those student employees. Looking to the future of continuous improvement, I could apply some of the knowledge I gained from AGEDS 524 by creating and administering surveys to student employees in order to better understand how they view the program. This could also help gauge how well the program met their needs and expectations.

There have been several challenges along the way and some still exist. One challenge to implementing this process is that it is not just me as the farm's manager who trains employees. I also have other duties away from the Swine Teaching Farm so the graduate assistant at the farm as well as other experienced student employees help train incoming student employees. Moving forward, I believe I will have to address that challenge. This challenge could be mitigated by setting clear expectations, providing adequate materials and knowledge, and by training the trainers. I would also have to plan on dedicating weeks of time primarily to the orientation process of the new farm employees. By having guiding documents and a training plan, it provides accountability and verification that training has occurred. Another challenge at the farm is that students all work different shifts during the week due to each having different class schedules. This means that training events happen on different schedules for different employees based on what production process is happening during their shift and who is available to help train them during that shift. I planned a day before classes began this fall that I was able to meet with the whole group in order to go over the New Employee Checklist and Orientation Presentation slides. This was aimed at getting them the most important information first so that they could take action early to get some of the compliance things completed. This worked but the remaining training will have to happen one-on-one or in a small group of 2 or 3 depending on who needs the training and who is available. Many of the tasks get trained as they happen on the farm and are picked up very quickly. Daily chores are learned quickly through demonstration with practice and then daily repetition.

While preparing for the fall 2019 new employee orientation meeting, I attempted to gather all the information listed on the New Employee Checklist. In doing this, I became overwhelmed and decided that if I provided all this information in one large packet that it would

likely overwhelm the student employees as well. I narrowed the meeting materials to the biosecurity plan for the farm, the New Employee Checklist, The Orientation PowerPoint slides, and the job description and job tasks sheet. These documents all had very important information to share with students as well as important tasks employees needed to complete.

If I were to do this again, I would focus on one particular aspect. I found myself in situations during this project that I may have been too broad in my approach and a more focused effort might help create a better project. However, I still stand by the idea that each piece of my project has been created out of need and will improve current processes at the farm. In the spirit of “if I did it again”, looking back at some of my notes from AGEDS 533, I might compare the ADDIE model to the Backwards Design Model. The Backwards Design Model may also be fitting for farm employee training because the desired outcome is already known. In this same spirit of “if I were to do it over or again”, I would put more emphasis on biosecurity at the beginning. In gathering information for this semester, I handed out the biosecurity plan because it is important, but in all of my orientation planning and training planning, I have not put near enough emphasis on this as what should be. Biosecurity understanding and knowledge is critical in the swine industry and would be very impactful for students to fully grasp early. Also, I believe that if students with no prior experiences were taught the correct skills and expectations of biosecurity early that they would be more likely to execute because they would not know any different and would not have any predeveloped poor habits.

While taking graduate courses in adult learning theory and adult learning methods, I have come to believe that experiential learning theory is fitting for the farms because of the many hands-on and real-world experiences the farm has to offer, as well as the real world problem solving that adults find fulfilling which motivates them to be more willing to learn. In additional

to utilizing experiential learning theory through hands-on learning, I believe the ADDIE Training Model is an effective way of designing and a training process for student employees at the farm. By nature it is meant to be adjusted and reviewed continuously in order to best meet the needs of the learner and incorporate the current environment and resources available. As learners change, so must the approach.

This graduate program has taught me a lot about the importance and rewards of being well prepared and about the large amount of time needed to plan for good instruction. As I have applied things that I have learned to my professional role, I have taken more time than before to actually write out an action plan of the steps that will take place and any items I need to have available. Through this I have gained a better appreciation and an interest in teaching. I have now helped teaching swine handling and swine production labs at the farm, and because I had a plan and I have learned to focus on the learners' experience, I believe I have improved my ability to teach. I find great reward in brightening up a student's day through their experience at the swine farm. With so many students coming to the farm with no prior background, it is rewarding to help them leave with excitement about having learned and experienced something new. Whether it be from an in farm lab experience or through a farm tour experience, it is rewarding to experience an "Aww ha" moment with a learner.

There is a lot of reading required in the Agricultural Education Master of Science program. More than I was used to from undergraduate studies. However, in retrospect, I feel I approached this program correctly with the idea that I was going to do my best to read and learn everything I could. By doing this, I learned about more than I had ever known before in the area of education and the social science aspect of education. I have gained more interest and appreciation for social science and the science of educating others. Through the assigned

readings followed by application assignments, I feel that I was able to better comprehend the subject matter and identify ways that I could apply it to my experiences or preexisting knowledge. This was a very strong aspect to the Master of Agricultural Education program. I enjoyed the realization that the graduate level work was more about understanding and applying the subject matter rather than being focused only on a letter grade. In comparison, during my undergraduate studies, I feel that the system was designed to cause me to mostly focus on the grade and focus less on applying the content. I also think that being a professional and having those work experiences help connect the dots which may not have been there for me during my undergraduate studies.

Professionally, I started this graduate program with the idea of approaching it as professional development in my current role as the Swine Farms Manager in the Department of Animal Science at ISU. I likely would not have taken the steps to earning my Master of Science degree if I were not able to take advantage of the tuition reimbursement offered to me as a staff employee at Iowa State University. I chose the Agricultural Education program with an idea that it could be directly applied to my role as the Swine Farms Manager and that it would better connect my education to my career since my undergraduate program of study was Forest Ecosystems Management.

I believe I have already begun to approach situations in my role with thoughtfulness brought about through the knowledge I have gained through my graduate studies. My mindset has shifted to no help identify additional teaching opportunities and to improve current learning opportunities at the farm. I hope to continue this mindset into the future and see if I will be able to better assist teaching professors at the farm. My personal goals entering the program started with the idea of potentially growing my career into extension education and the self-pride of

obtaining a graduate level degree. After completing the coursework in the graduate program, my interests in extension education still exist, but I have also discovered interest in teaching. I currently get some exposure to this through helping certain lab classes at the farm, but with this graduate degree I believe other doors could potentially open that would either allow my role to evolve and include some teaching or my career path could change all together. Right now, I focus on my current role and enjoy what I am able to accomplish now.

This has been a long three and half years of working fulltime, having a young family, and taking graduate level courses. It became a normal routine for me to help put our kids to bed and then work on homework until late at night. I put the effort in and committed to the grind of completing the work assigned and I learned a lot about education that I never know before. I know I wouldn't have been able to do it without the support of my wife, family, and faculty in the Department of Agricultural Education and Studies. Thank you!

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