Enriching student learning: Enhancing animal science curriculum with LifeKnowledge e-Moments

Jamie Pudenz
IOWA STATE UNIVERSITY LIBRARY, jmpudenz@iastate.edu

Follow this and additional works at: https://lib.dr.iastate.edu/creativecomponents
Part of the Curriculum and Instruction Commons

Recommended Citation
https://lib.dr.iastate.edu/creativecomponents/235

This Creative Component is brought to you for free and open access by the Iowa State University Capstones, Theses and Dissertations at Iowa State University Digital Repository. It has been accepted for inclusion in Creative Components by an authorized administrator of Iowa State University Digital Repository. For more information, please contact digirep@iastate.edu.
Enriching student learning: Enhancing animal science curriculum with LifeKnowledge e-Moments

by

Jamie Pudenz

A creative component submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

Major: Agricultural Education

Program of Study Committee:
Scott Smalley, Major Professor
Greg Miller
Robert Martin

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.

Iowa State University
Ames, Iowa
2019

Copyright © Jamie Pudenz, 2019. All rights reserved.
# TABLE OF CONTENTS

ABSTRACT .................................................................................................................. iii

CHAPTER 1. INTRODUCTION .................................................................................. 1

CHAPTER 2. LITERATURE REVIEW ........................................................................ 4

CHAPTER 3. METHODS AND PROCEDURES ........................................................ 7

CHAPTER 4. PRODUCT ................................................................................................ 9

CHAPTER 5. REFLECTION ......................................................................................... 22

REFERENCES ............................................................................................................ 27

APPENDIX A INTEREST INVENTORY GRAPHIC ....................................................... 28

APPENDIX B E-MOMENTS USED .......................................................................... 30

APPENDIX C CASE LESSONS AND SUPPLEMENTAL MATERIAL ......................... 40

APPENDIX D MULTIPLE INTELLIGENCES SURVEY ............................................ 58
ABSTRACT

The purpose of this creative component was to look at the use of e-Moments in a secondary classroom that had a focus on animal science curriculum. Dr. Howard Gardner had developed a theory surrounding multiple intelligences that individuals possess. In this theory, it is stated that all individuals have eight multiple intelligences but may be pronounced in a few. Further work surrounding multiple intelligences had led to the development of various surveys and questionnaires designed to measure and point out a ranked order of these eight intelligences. E-Moments are tools that have the potential to help students learn in engaging ways. E-Moments have a connection to multiple intelligences in that they are short activities built from the various intelligences being visual-spatial, verbal-linguistic, interpersonal, musical-rhythmic, naturalistic, bodily-kinesthetic, intrapersonal, and logical-mathematical. Two secondary level classes were observed. The first was an advanced animal science course and the other was an Introduction to Agriculture, Foods, and Natural Resources course that was in an animal science unit. Students in both classes had taken a survey that measured the order of their multiple intelligences. When the results from the students were collected, e-Moments were then dropped in to supplement coursework. The e-Moments used were carefully selected to match the averaged top three intelligences of each class. Observations were recorded that explained the material or lessons being used, the e-Moment that was deemed appropriate for the material, and general notes on how the students interacted with the e-Moments. General observations had indicated that students had a positive reaction to the engaging moments and that the e-Moments were beneficial in supplementing student learning.
CHAPTER 1. INTRODUCTION

The purpose of the creative component is to look at the use of e-Moments in a central Iowan, primarily urban school district. The classes where this would be implemented include an animal science concurrent college credit course, and an introduction to agriculture, food, and natural resources course. Is there an opportunity for students who have minimal experience with livestock-related topics, or even agriculture in general, and enrich their learning using LifeKnowledge e-Moments?

The strategy is to take these e-moments and use them to the benefit of students at Boone Community High School in Boone, Iowa. The Boone Community School District covers a geographical area of seventy-four square miles located in the north-central portion of Boone County in central Iowa. The district has 2,017 students from pre-Kindergarten to twelfth grades. The high school sits in the city of Boone and is home to 681 students. The Boone Agricultural and Mechanical FFA Chapter (Boone A&M FFA) was established in the Spring of 1997 and has developed into a premier FFA chapter in the state of Iowa. Currently, there are over seventy students who are enrolled in an agriculture course during the 2018-2019 school year.

Although Boone is in a rural community, with ample farm and agricultural industries, businesses, and resources; the students come from primarily urban backgrounds\(^1\). That demographic affects the agricultural education classroom as well. It can be argued that awareness of agricultural industries, products, and general knowledge is lacking in students today. Students may never have an opportunity to connect a direct

\(^1\) Please refer to the Interest Inventory Survey results graphic of Boone H.S. Ag students in Appendix A.
link between agriculture and their everyday lives. It’s known that students without practical knowledge or firsthand experience may not grasp concepts. That is why there is value in using experiential learning inside classrooms and learning spaces today (Kolb, 1984).

An interest survey was collected from all students enrolled in ag classes at Boone High School at the beginning of the 2019 Spring semester. What was discovered was a high interest in animal science and/or livestock, but many of the students never had prior experience working with live animals. The Boone A&M Program utilizes a multitude of learning techniques, tools, guides, and materials. Among those learning resources is Curriculum for Agricultural Science Education, otherwise referred to as CASE. E-Moments are a tool that have been incorporated into many CASE lessons when their rigorous sets of curricula were designed. CASE considers e-Moments to be integral to their instruction, but not all lessons contain them. It was the combination of the interest survey, the materials available, and previous knowledge regarding e-Moments that an opportunity was discovered to explore further use of them in Boone’s agricultural education classes, specifically, classes that had connections to animal science instruction.

One goal of this creative component is to identify the multiple intelligences students possess, specifically those enrolled in animal science and introduction to agriculture courses at Boone High School. Secondly, can e-Moments be incorporated into the existing curriculum and be a useful tool that can help enhance learning using methods

---

2 Please refer to the CASE Lessons and Supplemental Materials in Appendix C.
that may otherwise be untapped? Lastly, what e-Moments can be identified for specific lessons and how can they be implemented?
CHAPTER 2. LITERATURE REVIEW

Educators today continuously look to improve instruction in the classroom. Methods by which information is differentiated has been useful, especially as research on student engagement has been improved (Reardon & Derner, 2009). This differentiation may include levels of thinking, modalities, or multiple intelligences. The theory of multiple intelligences was designed by Dr. Howard Gardner in 1983. At the time he was a professor at Harvard University, and he decided the benchmarks to measure intelligence was too rigid. During that time, I.Q. testing was the best known and widely used measuring tool. Rather than believing that was the most effective measuring tool, Gardner proposed eight different intelligences that could be measured. These eight are linguistic (words/writing smart), logical-mathematical (number/reasoning smart), spatial (picture-smart), bodily-kinesthetic (body smart), musical (musically smart), interpersonal (people smart), intrapersonal (self-smart), and naturalist (nature smart) intelligence (Gardner, 2000).

A few key points to recognize about the eight intelligences is that each person possesses all eight in some way, they can be developed over time, are all uniquely intertwined with each other, and there is more than one way to show proficiency in each category (Armstrong, 2009). It should not come as a surprise that teachers want their students to succeed and learn. Albert Einstein once said, “Everyone is a genius. But if you judge a fish on its ability to climb a tree, it will live its whole life believing it is stupid.” It is important to point out that this theory is referencing that there are other things that go into being, “smart”.
It is not a sound judgment to give out an assessment and assume the students will fall into place and do what is expected. There is great diversity, variability, and uniqueness in each student. A one size fits all teaching method does not work, therefore taking advantage of how we can retrofit learning through these intelligences is valuable. It’s important to take the frame away from educators teaching a class, and instead make it about teaching the student (Elliot & Nickels, 2008; Wolf & Elliot, 2006). Moving from that lens, educators start to see that lessons and assessments can be changed in class. Students who have similar intelligence styles can be matched and grouped together to complete assignments and projects. Teachers can become creative and make different lessons or create formative and summative assessments for different students, all while meeting the same course objectives at the end of the day. Perhaps the most important of all before arriving to those projects and assessments is simply ensuring that students and their various intelligences are being tended to (Williams, 2006).

Teachers sometimes have difficulty pointing out just what it is that makes students learn, but thankfully agricultural education has the tools already in place to address and fulfill all the multiple intelligences (Wolf & Elliot, 2006). The continued compilation of activities and assessments is substantial, and ideas are always being included to reach and support the eight different intelligences.

There was an effort to take Gardner’s work on multiple intelligences and create a framework for students to have and learn from. Although it was mainly set out for leadership purposes, a collaborative effort between LifeKnowledge and the National FFA Organization had designed lesson plans, coaching guides, and planning tools among other teaching materials. Within that list was a tool called engaging moments, otherwise known
as e-Moments\(^3\). These e-Moments are designed to enhance student learning. It takes Gardner’s multiple intelligences and builds teaching strategies on how content can connect to students’ various intelligences.

There has been evidence of e-Moments being implemented into nearly one hundred Oregon programs through pre-service student and established teachers. Results from Crawford (2006) had shown that e-Moments were a positive experience for their students as long as previous training and proper implementation were completed. E-Moments are flexible and can be used in a myriad of lessons, but there doesn't seem to be extensive evidence of their use documented for specific lessons in agricultural education (Crawford, 2006). It seems that the groundwork for the e-Moments is laid out well, but instructors are looking for more detailed ways to use them or applications where they have worked well.

Gardner’s multiple intelligences have been and will continue to be used by educators. It is a theory rooted in the foundation that students as individuals are the most important in any learning space. Developing a way to reach those students and aid in their learning through different learning strategies is valuable to a community, the educator, and especially the large breadth of diverse students. Agricultural education has a use for e-Moments that were developed out of multiple intelligences; however, more detailed lesson plans may need to be developed in quantity and quality to make e-Moments truly invaluable.

\(^3\) Please refer to the first graphic of all e-Moments available in Appendix B
CHAPTER 3. METHODS AND PROCEDURES

A commonly used technique that orders/ranks an individual’s intelligences is by taking a questionnaire or a survey. One that is language friendly towards secondary students is a website called Literacynet.org. Navigating the website, individuals can take the multiple intelligences assessment. This assessment is built from the original application created by Dr. Thomas Armstrong that aids in determining the intelligences a person has. Literacynet.org has taken Dr. Armstrong’s application and designed a digital 56 question survey that once taken will rank the intelligences from answers to the survey.

From that point, students marked down the order of their intelligences on a notecard and handed it into the instructor. The instructor will sort the intelligences and determine the three most common that existed in the classroom as a whole. Each class may be different. Once the e-Moments are ordered and ranked, the instructor must use the e-Moments guide the National FFA Organization has available. There are 30 different e-Moments available and there is a guide that points out what intelligences each moment addresses. It is up to the instructor to decide which e-Moments will be most useful for their students. In the work that Crawford (2006) had completed, results show that some of the e-Moments seemed to be below students or didn't match the level of rigor that Oregon teachers thought e-Moments should have had for secondary students. That should be taken into consideration as preparations and decisions are made. Factors such as age, maturity, attention levels, classroom schedules, and materials readily available should all be contemplated when choosing an appropriate e-Moment for each class.
E-Moments are designed to be used with any content or topic, not just agriculture like it is in this creative component. The strategy is to plan ahead in the coursework and decide where an e-Moment could be used to enhance learning. The engaging moments can be used to introduce, support, or even review content. At Boone High School, the e-Moments are implemented towards 10th and 11th-grade students who are taking an animal science concurrent college credit course. Their units deal with laying a foundation of knowledge to United States livestock production. Full units of swine, cattle, poultry, sheep and goats, and a meats/food safety unit are included in their semester-long class. Within each unit a variety of lessons and activities exist, but they mainly deal with nutrition, health, reproduction, selection characteristics, and general care of each mentioned species. Additionally, 9th and 10th-grade students taking an Intro to AFNR course were supplemented with e-Moments while in their animal unit. Their lessons dealt with body systems, nutrition, behavior, consumption, selection criteria, and ethics of production. The lessons from both classes informed what e-Moments would be dropped in and used to differentiate content.

Many of the e-Moments had notecards or other items to turn in. General notes were taken compiling the reactions and responses of students, but nothing that would attempt to create a framework to gauge effectiveness. General reactions were recorded in the product chapter with each e-Moment explanation.
CHAPTER 4. PRODUCT

All students enrolled in an agricultural class in the Spring of 2019 took the survey from Literacynet.org. Students recorded their results and handed them into the instructor. It was discovered nearly every class had either Naturalistic or Bodily-Kinesthetic intelligences present as their top three. Although there is potential for all classes to receive the e-Moments in greater consistency, the interest inventory guided the decision to look at the animal science instruction from two different courses. Those two courses were Animal Science 114 and Intro to AFNR. All materials are included within the Appendix B and C of this document.

Animal Science 114

There are eight students in the animal science concurrent college credit course. After collecting their results and generating a spreadsheet, it was discovered all eight students had either bodily-kinesthetic or naturalistic as their premier intelligences. From there the remaining intelligences were ordered in such a way to average which ones rose to the third spot from the entire group. The result was that naturalistic, kinesthetic, and intrapersonal intelligences were the three highest rated for the class. Using the e-Moments guide/graphic from the National FFA Organization, it was determined that there were seventeen potential e-Moments that could be used.

The set of students in the animal science course are typically quiet students who have the ability to stay on task for the entirety of class time. They are a mature group made up of primarily juniors with one sophomore in the class. They are usually hesitant

---

4 Please refer to the survey in Appendix D.
to try new things; However, once they are settled in with the required information they always become fully engaged. With those considerations in mind, the Party-Host, Marcel Marceau, Hole-in-One, Encyclopedia, Show What You Know, and Descartes e-Moments were deemed appropriate for the animal science class. After deciding which moments were appropriate, that’s when I dropped them into various lessons and content. These are described below:

Party Host Moment –

Cattle Breeds Infographic Activity. Students were given the activity to research various cattle breeds. The students had two days to complete all the required information laid out in the assignment. Once the students made an infographic on their breed, students had to present that infographic to the entire class. The breeds included Angus, Shorthorn, Simmental, Hereford, Limousin, Holstein, Brahman, and Charlois. At the end of the activity, the e-Moment came into play. To gauge their learning and have some fun, a student was selected to be a Party Host. Students were provided with a sketch clip from the former TV show Whose Line is it Anyway? The students needed to have an idea of what the end result of the e-Moment should look like. At random, a party host was selected and had to remain in the room. The other students were taken outside the classroom and assigned a breed of cattle. One item that was important was to ensure that the breed was different from the one they had researched. The students entered the room one at a time and the e-Moment unfolded.
This moment was difficult at first for this class of students. Since so many of them were quiet and shy, it took some convincing to get them behind the idea after the video was shown. It was very comical to watch the students come in with different accents or walk in with their arms out to their sides and chest puffed to represent a breed of cattle that is known for its muscle and terminal characteristics. Another student walked in carrying a large and heavy bag that represented the large udder on Holstein cows. A downfall was that some students couldn't come up with the right kind of accents where cattle originated from, which confused the party host. All in all, it was a good way to apply their learning from different breeds. The key that made this moment work best was that they did not receive the breed of cattle they already researched, so they had to use the presentations that they had seen minutes before the e-Moment started.

Marcel Marceau Moment –

Swine judging activity and video-class. In the process of informing students on the various factors and areas to look at while evaluating swine, the potential for an e-Moment arose. Students couldn’t quite connect the right terminology such as sickle-hocked or weak-pasterned to what was happening on a hog when it walked. The use of hand motions was the first attempt to give a visual of what was meant. Class ended, and the idea came to mind that students could act out what hogs were doing. The Marcel Marceau moment was an on the fly strategy that was put into place the next class day as the lesson continued. The students had to research exactly what the structural issue was, and then had to act out what it looked like if hogs were in stride.
This was the one e-Moment that didn't have more than a few days to sit and percolate on in planning. It matched the bodily-kinesthetic intelligence that most of the students in the class had in their top three from the survey, so it could be used for the guideline set in this creative component. Ultimately, the activity forced students to do something they typically wouldn't have. That wasn't part of the plan-as being transparent with their activities is important. It did give a great indicator of what this class was capable of doing and how they would react to something outside their comfort zone. They still did the e-Moment as it should have been done, the point was made obvious in regard to seeing what movements would seem similar between hogs and humans, and it did help students see in the video class of hogs when there were issues with soundness. This was the riskiest e-Moment completed for the creative component, and it may have been in part to the planning being the shortest of all the others. The outcome of learning was enhanced, but this served a good point that more strategizing can always improve the e-Moments.

Encyclopedia Moment –

PowerPoint and activity on behavior were provided. At the end of the PowerPoint, students completed this e-Moment. The students had to draw upon any general connection between the encyclopedia they were given and the buzz topic of "innate behavior". The school library had a set of encyclopedias that could be used. There was a textbook for the class that students could have used, but it wouldn't have provided the same kind of spontaneous thinking the encyclopedias offered. The students likely would
have just gone to the section that contained behavior. The encyclopedias were selected at random, so there was one for the letters A, B, D, G, P, S, and T. To make the e-Moment as authentic as possible, students were only provided with the information that they could choose any topic or defined word they wanted as long as it connected to innate behavior. They were provided three minutes to search, connect, and write their responses on a notecard.

After three minutes, students shared their findings with the whole class. Astronauts, ball bearings, grapes, poker, and even television were all responses made connecting innate behavior back to their selected word. The attempt to make the e-Moment broad and random backfired a little bit. Since the instructions were too open-ended, two of the students thought that they had to find something in their encyclopedia that would define the concept of innate behavior. This made the task more difficult and stifled some creativity. One student struggled to find an answer at all, while another found the word desensitization. The connection was there, but the idea was to find something randomly and provide an answer. Ultimately, the directions for this moment needed to be more thorough. However, the answers students provided were very insightful and really made for a genuine learning experience to concepts outside of animal science and innate behavior like it was supposed to. Students may someday think back to innate behavior and remember the silly yet well-connected topics they found.
Show What You Know Moment –

Students were provided with a PowerPoint and activity on body condition scoring in a two-day lesson. The interest approach and PowerPoint took up the full first day and the e-Moment and activity started the second day. The e-Moment was in place to help students remember what they had learned from the PowerPoint the day before. The PowerPoint was rather long, so there was quite a bit of information thrown at students. The e-Moment calls for students to complete the moment during the lesson and not necessarily a day in between. This was essentially treated as a bell-ringer rather than an in the moment check for understanding formative assessment like it should have been.

Students were asked to differentiate between body scores of 1-3, 4-6, and 7-9 in cattle. Each range has certain characteristics and it was up to the students to communicate the differences of each range. Originally, there was a worry that students may not remember near as much since a day had passed. The emphasis placed on the e-Moment having to happen during the lesson was not as important as it was stressed. Instead, it helped students get right back into the swing of things as their activity dealt with looking at pictures of cows and scoring them from the criteria they wrote down on their note cards. Overall, this e-Moment worked a lot better than speculated and really did help students on their next activity for the day.

Descartes Moment –

This e-Moment was used as a modified interest approach as students entered a unit on feedstuffs and feed in ruminants. A PowerPoint on feedstuffs and feed was given
to them a day prior. Students came in and started the e-Moment. Pictures were prepared of various feedstuffs and nothing else. There were thirteen feedstuffs and they ranged from cracked corn and urea to molasses and dried alfalfa. Students were instructed to mark down whether they knew what the feedstuff was for sure, what they thought it was, or another column where they could guess and take a shot in the dark at one they did not recognize. They had to provide a name with the feedstuff, so it was more than just marking down if they knew the ingredients or not. This was a great chance to prepare them for an activity to come that day. Really short and sweet e-Moment that went a long way for pointing out what feedstuffs we had to spend the most time covering later on.

Hole in One Moment –

Students were provided an activity on swine injections. They needed to follow all directions in order and notify the instructor when they were finished with their first “swing” at injections. A new clementine was provided to students, so they could make a second “swing” at the injections. They were also instructed on the second “swing” that it was the last opportunity they had to inject the clementine before they were provided with a final one to apply their skills and make a "swing" for a hole in one. The e-Moment was pretty easy to drop into this lesson. The activity only called for them to try the injections with one clementine. Instead, students had three. On the first try, they attempted the injection and opened it up right after to see what they were dealing with for the feel and location they placed the medication. The second clementine let them improve but take multiple tries before opening it up to see their results. The final attempt was factored in as
a grade that showed whether they could correctly administer intramuscular or subcutaneous injections. An extension to this activity could be the real deal of injecting baby piglets, but those capabilities were not available at the time. Students traditionally enjoy this lesson, but the e-Moment made it even better. By giving them practice swings prior to a final swing to get it correct, students' competitive sides were challenged. It was unplanned, but this ended up motivating the students to do well and praise each other in the process.

Introduction to AFNR

The group in the introduction to agriculture, foods, and natural resources consists of sixteen students. The same process of averaging top intelligences from the animal science class was applied the Intro to AFNR students. The top three results for them were kinesthetic, naturalistic, and interpersonal intelligences. Once again, the guide/graphic from the National FFA Organization was used to determine which e-Moments would be appropriate for those matching intelligences. There were thirteen potential moments that could have been used.

This is the last class of the day and the students usually walk in with high energy. It is rare this group comes in calm, so one factor taken into consideration was when the e-Moments are used for this group. Capturing that energy in the beginning and transferring it throughout the class with e-Moments became important. In contrast to the animal science class, the intro to AFNR students are always very willing to try new things. The class is made up of twelve freshmen and four sophomores. The freshman dominated class
has difficulty staying on task and has several side conversations that are difficult to manage from time to time. Directions for the e-Moments must be carefully presented in a way that captures attention quickly and is concise enough for them to follow along. With these considerations in mind, I dropped in e-Moments with various content. The directions, instructions, and observations of the e-Moments are detailed below.

Go Get It Moment –

A modified moment with Activity 5.4.3 Animal Anthropology. Students started the lesson by working in pairs to complete a drawing on a 11x16" whiteboard. Each whiteboard had a different species of livestock and they ranged from horses to chickens and hogs to fish. Each pair of students had something different, some had more than one. The students had to label anatomical structures of their various animals through outside research. Once this was completed, students posted the boards around the room. Students had fifteen minutes to break out and visit the various whiteboards with anatomical structures. They had to write five different structures that were not the same from their originally drawn species. For example, the chicken had features like claws, wattle, comb, and spurs. Cattle, on the other hand, had features like the loin, brisket, pastern, flank, and polls that chickens wouldn't. Students rotated nine times until they were finished. The e-Moment was designed for those with bodily-kinesthetic intelligences in mind and worked well. Although it didn't require critical thinking like other e-Moments ask for, it was simplistic and valuable in chunking large amounts of information each student needed so they could finish activities in future lessons.
After the original lesson, an extension of this activity came to mind. One method could be selecting a species of livestock that would later be talked about in greater detail. If it were a hog, for example, the instructor could post the features or functions of various anatomical structures of the hog around the room. The catch is that the teacher would hide the notecards in an organized fashion that would be a blown-up version of the animal. The question would be posed to students whether they caught on to the fact that the features of the anatomical structures were hidden and laid out to match a classroom-sized version of the animal.

Eye Witness News Moment –

Activity 5.5.3 Deception of Perception. Presented a PowerPoint to students that contained information regarding animal behavior. After the PowerPoint, students began to complete an activity that looked at various optical illusions. The thought process behind the activity is that livestock see very differently than humans do. If people can have difficulty seeing simple illusions, one could only imagine what various objects and sights look like to livestock. Students completed the activity, turned the assignment in, and were instructed to wait for directions on the e-Moment.

After explaining the e-Moment, students were told that they had to role play being an ethologist or expert who has been studying animal behavior for decades. Using the information from the PowerPoint and concepts from the activity, they would be interviewed by a news station. They had to report useful information that would be utilized by either a farmer, rancher, or even household pet owners. The students were
hesitant with this activity because they had to speak for a two-minute window (the time limit that was set for each team member to speak). Once they got started though, they had fun making up their scenario and dropping in the information. This had students communicating well with each other, and they had opportunities to correct each other along the way. We finished by having volunteer groups go to the front of the room and give their "report".

Since students had used critical thinking skills and teamwork to complete this activity, the effectiveness of the e-Moment seemed to enhance what they had learned. They essentially closed the chapter on what was a four-day lesson with the e-Moment. They enjoyed the moment and asked if they could do it again when we finished another lesson a week later. Overall, the use of this e-Moment through this lesson seemed very positive.

Descartes Moment –

Problem 5.5.5 Animals as Food had students participate in a debate that dealt with what they knew about various diets. This was used as an interest approach for students as they entered this lesson. A list of ten different diets was posted on the whiteboard at the front of the class. Students had to write down on a notecard if they knew what the diet was for sure, if they thought they knew what the diet was, or if they had no idea. The diets included meat-eater, vegan, vegetarian, fruitarian, paleo-diet, flexitarian, Atkins diet, Lacto-vegetarian, and locavore. The activity was short and sweet but set up a very valuable resource when they were posed with representing one side of a debate. Later on
in the class period, students were split into two groups. One was in favor of eating meat or would include it in their diet. The second group was against eating meat or would not include it in their diet for other reasons. In the process of researching during the class period the following day, the students pulled the information from this e-Moment to aid in their research. They found it interesting to discover the diets they marked down in the "did not know" section of their notecard which made the e-Moment worth the extra time since it helped further develop their debate topics.

Me, You, Us Moment –

Closed out the entire animal care lessons dealing with the consumption of meat products and ethics of livestock production. Students were instructed to develop a statement on animal ethics starting with themselves, then a partner, by table groups, and lastly the class as a whole. This e-Moment did not necessarily deal with any specific lesson; however, it did follow their final test on the unit. Students had to go back and look at previous assignments from the unit and develop a position statement on their reactions and knowledge from everything they learned while covering animals. Basic items included whether the students supported management practices, supported harvesting of livestock, and consumption of meat products.

Each student would complete their personal statement and share it with a partner. The partners would share with the other pair at their table. There were four tables in the room and each one would come up with a statement. Lastly, each table shared their statement out loud and the entire class developed a statement that represented Intro to Ag
as a whole. The personal statement they came up with was, "Raising livestock is a worthy cause so long as the caretakers and producers raise animals efficiently, humanely, and with the best interest of the animal in mind. Eating meat is okay as long as it is meant to supplement protein in balanced diets". This moment was neat to watch develop. The students had to be collaborative and everyone's opinion was accounted for in the end statement. This moment did exceed twenty-five minutes in time, which was the longest time needed to complete any e-Moment in this creative component. However, the time was well worth the outcome. Students had an opportunity to create a sort of identity or purpose behind all the work they completed during the unit.
CHAPTER 5. REFLECTION

The observations from the use of e-Moments being incorporated into CASE lessons and other supplemental materials will be continually improved upon as I journey further on in the profession of secondary agricultural education. Prior to beginning this creative component, I knew that there were e-Moments incorporated into some CASE lessons already, but I wanted to be creative on my own. I did not know I would be walking into a school with students who would have a large interest in knowing more about livestock and animal science. The interest inventory I had students complete discovered that, and it was out of luck that it was a content area I was more proficient in. That made the planning and strategizing of the e-Moments easier.

One complaint I have seen from students is that C.A.S.E. coursework is a monotonous process. A concept is introduced, there is a basic activity, and conclusion questions would finish the activity. Rinse and repeat. However, the fault is not the curriculum—because it is well developed in my opinion. The process of using it day after day can be the issue. As previously mentioned, there are e-Moments that are built into C.A.S.E lessons already. However, I think an increase in e-Moments or other supplemental material should continue to be looked at in greater detail. Anything that can further engage students, regardless of being an e-Moment or not, should prove beneficial.

From what I had found, there were both successes and failures in my attempts to incorporate e-Moments into an already existing curriculum. As much as I wish it could be said, not all of my techniques were outstanding. I did have hesitation to implement some e-Moments based on what was available when I recorded each classes' top three
intelligences. There were a few that felt like they were better designed for kids in later levels of elementary school or middle school. That is why the consideration of age, maturity, attention levels, typical class flow, and materials available was a smart move in the selection of various e-Moments. I do not think those considerations should end there though, and it will be something that needs to be further evaluated in the future.

Planning even further in advance would likely have made for better results. Moving into the profession, I will make certain of several items when implementing e-Moments. I will take an intelligences inventory of my classes as I believe that information, in general, is useful for semester to semester course planning. I will need to look at what kinds of measurement tools are the most effective in the attempt to discover what themes exist in individual classes. I decided to use the top three from each class out of convenience for this creative component. The literature review pointed out that students have all eight intelligences on some level or another. There were still activities available from the other five intelligences, yet untouched. With time, I believe I can better address all moments instead of averaging the top three for any given class.

I could have further extended the challenge of utilizing e-Moments by incorporating them into the Plant Science and Power and Tech classes I was teaching. I did after all have interest surveys and multiple intelligences surveys from the students in those two classes. Part of my journey as a graduate student and especially during the capstone of student teaching is to put myself as far outside of my comfort zone as I can handle. I could have learned alongside students as they were learning from me by simply making myself more vulnerable to potential failure. That was a missed opportunity to work e-Moments into areas I was unfamiliar with already. Lastly, about half of the e-
Moments I incorporated seemed to be out of place from the activity we were working on. In the end, students walked away with positives from the e-Moments, but fluency into the work seemed a tick off. However, that tradeoff between fluency and benefits from the e-Moments may not be as detrimental as originally thought since the goal was ultimately enhancing student learning.

Aside from some students being thrown off guard in the process of being introduced to something new, I wholly believe there was not an instance where student learning was negatively impacted. As the facilitator of the e-Moments, I knew areas that could have been fixed or improved, but the students would have been unaware of those when they were implemented. I was never at the mercy of time restrictions where the use of e-Moments caused a missed opportunity for something better elsewhere in my instruction. Overall, I confidently believe all the e-Moments used improved student learning. The fine line to that statement is that I knew there were better instructions or guiding cues I could have implemented that would have made student learning better.

The most rewarding part of this was seeing students make connections to content they wouldn’t have otherwise. The best example of this was during the Encyclopedia Moment. One student received the “B” encyclopedia from the school library. That student randomly opened the book to ball bearings and made a connection to the assigned prompt I gave them which was innate behavior. Her explanation was just as a ball bearing is created and has a purpose to make things move easier, a dog moving sheep because of their gregarious nature and flight zone works in a similar fashion. We shared everyone’s findings out loud and the “Aha” moment students had made the implementation worth the time and effort. The whole class verbally applauded that student for making a
connection which made a lot of sense. The responses went like that for the entire class and there wouldn’t have been a way to naturally facilitate that kind of connection without that e-Moment paying off.

In general, the use of e-Moments caused me to be more creative and manage time better while preparing weekly and daily plans. I also had to think the e-Moments through with as much certainty as possible. I didn’t want students to have a negative experience through e-Moments because of a lack of preparation on my part. I did recognize that the moments had to be modified far more than I expected. Ultimately, I can’t wait to enter the secondary classroom, take all these considerations in mind, and make them work for my future students.

Prior to entering the program, I liked elaborating on and answering "why" questions in undergraduate work. When I became a graduate student, those kinds of questions were plentiful in all the classes I took. Whether it was Foundations of Agricultural Education, Introduction to Research, Social Justice Issues, or Educational Psychology; they all challenged me in some way to ask and attempt to answer "why" questions more frequently and thoroughly. The opportunity to examine topics in depth and develop comprehensive thought was integral to developing my teaching philosophy.

As for the graduate program in its entirety, I have a lot to take away and be grateful for. The program has allowed me to become more knowledgeable about agricultural education from a holistic standpoint. The program forced me to be a responsible scholar by presenting ways to be efficient with research, collecting valid information, and educating me on how to properly disseminate results through
assignments and projects. The greatest takeaway from the College of Agricultural and Life Sciences Master of Science in Agricultural Education program is that being a lifelong learner is paramount to our discipline. As I enter a career in secondary agricultural education I will use the methods and tools from this program to educate the next generation of young agriculturalists.
REFERENCES


APPENDIX A INTEREST INVENTORY GRAPHIC

Figure A1 Gender of students enrolled in Ag Sciences courses at Boone High School.

Figure A2 Ethnicity of students enrolled in Ag Sciences courses at Boone High School.
Figure A3 Grade level of students enrolled in Ag Sciences courses at Boone High School.

Figure A4 Responses provided by students that describes their relationship to Ag.
## APPENDIX B E-MOMENTS USED

### Labeling the e-Moments

<table>
<thead>
<tr>
<th>E-moments</th>
<th>Higher Order Thinking Skills</th>
<th>Multiple Intelligences</th>
<th>Modalities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Comprehension</td>
<td></td>
<td>Visual</td>
</tr>
<tr>
<td></td>
<td>Application</td>
<td></td>
<td>Auditory</td>
</tr>
<tr>
<td></td>
<td>Analysis</td>
<td></td>
<td>Kinesthetic</td>
</tr>
<tr>
<td></td>
<td>Evaluation</td>
<td></td>
<td>Spatial</td>
</tr>
<tr>
<td></td>
<td>Synthesis</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Logical</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mathematical</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bodily-Aesthetic</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Naturalistic</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Interpersonal</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Linguistic</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Almanac Encyclopedia: × ×
- Cartographer: × × ×
- Choral Response: ×
- Crayon: × ×
- Descartes: × × ×
- Dickens: × ×
- Einstein: × ×
- Eye Witness News: × ×
- Fred Astaire: × ×
- Go Get It: ×
- Go With the Flow: × × ×
- Graphic Artist: × ×
- Hieroglyphic: × ×
- Hole In One: × ×
- Jeopardy: × ×
- Karaoke: × ×
- Little Professor: × ×
- Marceau: × ×
- Me You Us: × ×
- Meteorologist: × ×
- Michelangelo: × ×
- Mother Goose: × ×
- Motion: ×
- Newton: × × ×
- Party Host: × ×
- Picasso: × × ×
- Show What You Know: × ×
- Sound Track: × ×
- $10000 Pyramid: × ×
- Voice Modulator: ×
BRIEF DESCRIPTION:

With an almanac or encyclopedia in hand, students make connections between what they just learned and topics found in their reference book.

THE PROCESS:

1. **Take notes.** Have students take notes from a lecture or textbook.

2. **Distribute almanacs and/or encyclopedias randomly to students.** Ideally, each student would have his or her own reference book, either an almanac or an encyclopedia. Note: It is not important that the letters on the encyclopedia relate specifically to the information just learned. The idea here is for students to make their own connections to unrelated topics. Doing so strengthens the students’ understanding by relating something they are interested in to what they just learned. For example, if the lecture focused on cell division, the students might find in the encyclopedia “automobiles” and make the connection that cells divide in a given order and cars are built in a specific order. If the student had an almanac, he or she might find “tornadoes” and make the connection that like cells, tornadoes break apart.

3. **Time them.** Give students 60 to 90 seconds (or whatever amount of time you deem appropriate) to locate a topic and make a connection.

4. **Have them share.** Students can share their connections verbally in pairs, trios, or to the whole class, or write a quick paragraph describing the connection they made and turn it in.

**Tap in to students’ natural ability to make meaningful connections with new information.**
**BRIEF DESCRIPTION:**

The Descartes Moment poses three questions prior to introducing a new concept, idea, or process: What do you know about this topic? What do you think you know? What don’t you know? Students respond in writing and then share. Here’s one way to use the Descartes Moment.

**THE PROCESS:**

1. **Pose the three questions.** As you begin the unit or lesson, pose the following three questions to your students: What do you know about this topic? What do you think you understand? What don’t you understand? Note: You may want to introduce students to the questions one at a time to focus their thinking.

2. **Students write letters to themselves.** Students compose a letter to themselves (Descartes was a writer as well as a philosopher) explaining what they know, what they think they know, and what they don’t understand about the topic. Allow about one to three minutes for thinking and writing on each question. You may want to have students share aloud after the first two questions to stimulate other students’ thinking.

3. **Collect the letters.** The information is valuable for your lesson planning and assessment.

---

Accessing prior knowledge and experience allows students to build bridges into the new content.
Eye Witness News Moment

BRIEF DESCRIPTION:
According to Eric Jensen, a leading translator of brain research for educators, students who talk about what they learn and do what they learn, learn it. This activity maximizes student conversations about the content. Here’s how you can use an Eye Witness News Moment.

THE PROCESS:

1. Establish the two roles each student will play. Explain that when the students are the expert, they stand tall and take on the air of an expert (a know-it-all with a pleasant personality). When they are the interviewer, students address an imaginary camera, with microphone (pen) in hand, and welcome the viewing audience to “Moments with [Dr. fill in the student’s name].” Then they pose questions to the expert about the content just learned in class. For example: Facing the camera: Welcome to our show. Today we are interviewing the world renowned expert in plate tectonics, Dr. Seth Dement. Turning to the expert: Please tell us, Dr. Seth, what is so important about plate tectonics? Point the microphone in the direction of the expert. Note: This activity works best when students generate appropriate questions prior to the interview.

2. Establish the process. Explain that this activity is to aid in understanding and rehearsing today’s topic. Share that the power lies in how well students can play the roles and use the information they just learned. It is a timed event and they will switch roles midway through the event. Note: The time allocated is dependent upon the amount of content students will be rehearsing. An average time limit is three to five minutes, switching roles midway through.

3. Begin Eye Witness Moment. Have students stand, pair up, and get ready to go “live” at your signal.

4. Switch roles. Midway through, get everyone’s attention. Students now switch roles. Note: The new expert usually picks up from where the other left off. If the first expert covered all the information, then the new expert simply starts at the beginning.

5. Conclude the activity. After everyone has played both roles at least once, students acknowledge each other with “Thank you!” You can now randomly select individuals to tell what their expert said as a way to check for understanding and increasing individual accountability to the content.

Capturing the news as it breaks helps your students review what they learn.
Go Get It Moment

BRIEF DESCRIPTION:
Sometimes students just need to get up and move. So how can we have movement and keep the content flowing at the same time? Here’s a suggestion: students go and get the information they need. It works like this: place sentences or paragraphs of information in conspicuous and inconspicuous locations throughout the room. Students retrieve the information and share it with the class or in small groups. This strategy is particularly useful when there is a significant amount of information that must be covered.

THE PROCESS:
1. **Chunk the information.** Determine the portions of information you want students to retrieve and the locations in the room. The information could be reproduced paragraphs from the textbook or encyclopedia, primary or secondary source documents, key sentences from stories, poems, or texts, or key points of the lecture. These can be written on slips of paper or note cards. Ideally, there would be one note card for each student, but most likely there would be 10 to 15 cards.

2. **Place cards strategically throughout the classroom.** Feel free to place them under desks, chairs, tables, on the overhead, board, or door, slip them between books on the shelf, or staple them to the wall. Note: You could add activities or questions for students to answer at each location when they locate the information.

3. **Students go and get the information.** On your command (signal), all students will stand and move throughout the room locating the cards. Students can move independently, in pairs, or in small groups. By the way, this is a timed event so let them know how much time is available. Those who find the information remain standing as others return to their seats. Or if in pairs and small groups, everyone remains standing and reads the information in unison to the class.
**Hole-in-One Moment**

**BRIEF DESCRIPTION:**
The Hole-In-One Moment couples mental imaging with a few practice “swings” to increase student success. Students mentally prepare to perform a new skill. First, they visualize how they will perform the step or process. Next, they take a few “practice swings.” Finally, they take a shot. This moment is especially useful when students learn a physical skill (welding, drawing) or a social skill (meeting someone new).

**THE PROCESS:**

1. **Teach the skill.**
2. **Imagine.** Lead students in a few moments of silence as they mentally walk step-by-step through the skill. Note: Do not let students just sit in silence. To increase their focus, pace them through the steps.
3. **Take practice “swings.”** For maximum benefit, make the practice as authentic as possible. If they stand to perform the skill, have them stand. If they will usually sit for this particular skill, have them remain seated. Note: Provide multiple practice “swings” to ensure success.
4. **Take the shot.** Students now demonstrate the skill.

---

*Students perform at their peak when given this formula for success.*
BRIEF DESCRIPTION:
The Marcel Marceau Moment capitalizes on the silence of mime and the brain's associative capabilities. By employing this strategy you'll cement your content into students' minds. It works like this: Students create mime motions for the content. Others guess the answer and explain how the motion helps to remember the content. This is similar to a Motion Moment in that students connect content to a motion. The Marcel Marceau Moment lets students create their own motion, whereas the Motion Moment is usually teacher generated. Here's how you can guide your students through this activity.

THE PROCESS:

1. **Teach the lesson.**

2. **Summarize.** Restate the important information while you capture it on the board and students highlight it in their notes.

3. **Create the mime.** Individually, in pairs, or in trios, students create mime motions for the summarized information. Encourage them to use facial expression, body movements, and invisible props. This is a timed event. Note: The amount and complexity of information determines the time allotment. Also, some information would lend itself to a mime drama (mimodrama) because of its story-like nature and would require more time to develop.

4. **Mime Time!** Students share their mime or mimodrama. Classmates guess the information and explain how the mime helps them understand and remember it.

Silence is golden.
**BRIEF DESCRIPTION:**

The Me-You-Us Moment helps you foster an atmosphere where each student feels comfortable to contribute his or her ideas. In addition, this strategy creates the time students need to thoughtfully consider the information presented and personally access their own thinking. It works like this: First, each student thinks about the question or direction statement and writes down his or her answer—that's the Me. Next, students share with one or two others as they compare and modify their answers—that's the You. Finally, small groups or individuals share their answers with the entire class—that's the Us. Here's a way to set up a Me-You-Us Moment.

**THE PROCESS:**

1. **Locate the place.** At what point during the lesson would it be appropriate to use a Me-You-Us Moment? Places to consider: (a) after steps in a process like solving an equation; (b) between major items in a lecture like the Causes of the Civil War, or (c) after you've posed a provocative statement like the cloning of humans.

2. **Consider the question or direction statement.** What question will you ask to stimulate students' thinking? Predetermining the question makes the transition to the Me-You-Us Moment smoother. Sample questions for the examples presented in step 1: (a) Explain the first step in the FOIL method. (b) What was the first cause of the Civil War and what was its direct impact? (c) How does cloning impact the development of the human race? Agree?

3. **Inform students.** As you begin, tell students that they will have moments throughout the lesson to reflect and share what they think or know. Briefly describe the process.

**Notes:** Provide just enough time for most students to write a response to the question. Likewise, be sure to transition to the "Us" part before the pairs have completed sharing. This will quicken the pace and reduce the chance that students' conversations drift from the topic. Also, elicit multiple responses during "Us." One of the advantages of the Me-You-Us Moment is as a tool for checking understanding. Feel free to call on three to five students, even if the first few share the identical information.

---

Empower your students to contribute their ideas.
**Party Host Moment**

**BRIEF DESCRIPTION:**
At this party, identities of the guests are understood only through their words and actions; the host does not know who is in attendance. Here’s how it works: Selected students or volunteers are guests at a party. Each guest acts out his or her unique character taken from the unit or today’s lesson as the host of the party deciphers the guest's identity. The guest's character is a fact, vocabulary word, concept, or step in a process. For example, students are learning the caste system of India or the feudal system of the Middle Ages. For each class of people, a student portrays their characteristics through words and actions. One student is selected to be the host of the party. The host greets each guest at the door, welcomes him or her to the party, briefly interacts with him or her, and then greets the next guest. As the party grows, and the last guest arrives, the host and guests interact in a cacophony of conversation. At the end of the party, the host guesses each guest’s identity.

**THE PROCESS:**

1. **Complete the lesson or unit of study.**
   (Optional) **Show a video clip.** If you have the time and access, tape the Party Host segment of “Who’s Line is it Anyway?” so students understand the flow.

2. **Explain Party Host Moment.** Use the description above to explain what will take place in the activity. If this is the students’ first time with this activity, walk them through a mock party using content from a previous lesson or unit.

3. **Run the party.** Enjoy the action as it unfolds! This can be quite entertaining as guests diligently act out their parts. Note: Send the host out of class as you explain to the guests about their characters. Do not tell the host the topic or give any clues. If needed, allow the class to give clues when the host is stuck.

---

*Acting the part can deepen students’ comprehension of the material.*
Show What You Know Moment

BRIEF DESCRIPTION:
Using this engaging moment, students show what they know in a brief mini-quiz during a lesson. “During” is the key component. It's in this moment of learning that students demonstrate their level of understanding. This is not about mastery, but about clarifying their emerging understanding. Here's how it works.

THE PROCESS:

1. **Announce the moment.** Inform students that it’s time to “show what you know.” Note: This proclamation may be met with surprise and hesitation, but stay the course. Explain that its purpose is to check their understanding of the information so far.

2. **Provide questions.** Students are given a question or two on scratch paper or on the back of their notes or handout. The question(s) may require them to draw a rough sketch of a recently presented diagram, give an example, provide an explanation or definition, or solve a story-type problem.

3. **Check answers.** Students, independently and silently check their answers to their notes. Answers can be compared to the teacher’s. Note: Scoring the work is optional. Remember, the purpose of this activity is to quickly review and clarify students’ emerging understanding.

4. **Review the results.** Use the results to determine if re-teaching or reinforcing is necessary before you continue with the lesson.

With this spontaneous quiz-type moment, students can prove to you and themselves that they are learning what is being taught.
APPENDIX C CASE LESSONS AND SUPPLEMENTAL MATERIAL

Cattle Breeds Infographic. Used with the Party Host Moment.

NAME: ________________________________  DATE: ______________

Activity: Cattle Breeds Infographic

Purpose

The cattle industry of the United States is one of the largest economic players in the agricultural industry of our country with beef being the most popular meat choice.

Specific breeds of cattle have been developed throughout history focusing on either meat production as beef cattle or milk production as dairy cattle. A variety of different cattle breeds are still used today throughout the United States. What are the common breeds of beef and dairy cattle?

Procedure

For this activity, you will be researching a common breed of beef or dairy cattle and create an infographic summarizing your breed.

Part One – Gathering Information

1. Select a breed of cattle from the list below.
2. Using the Internet and the Agriscience Library in your classroom, research the following information about your breed.
   a. Breed Name
   b. Origin and History
   c. Characteristics (Color, color pattern, polled, size, muscle)
   d. Maternal/ Paternal Breed and Uses
   e. Advantages of breed
   f. Disadvantages of breed
Part Two – Creating an Infographic

1. Once you have completed your research, create an infographic to summarize the key information about your breed. Include a representative picture of your cattle breed on the infographic.

2. Recommended websites for creating an infographic include Pikochart, Canva, and LucidPress.

3. Submit your infographic according to the instructor and be prepared to share it with the class.

Conclusion

1. What breed of beef cattle is the most common in the United States?

2. Which breed of dairy cattle is the most in the United States? Why?

3. Why do you think different breeds were developed for beef and dairy?
Swine Judging Activity, PowerPoint provided, and videos shown. Used Marcel Marceau Moment to act out what poor structural movements in hogs would look like in humans.
Market Hogs
- Balance and eye appeal
- Proportionate
- Level design
- Youthful appearing
- Hair coat and appearance

Breeding Gilts
- Priorities
  - Structural Soundness
  - Rib shape, body depth, base width
  - Adequate conditioned
  - Structurally correct
  - Growth performance
  - Genetics need to be fast growing and efficient
  - Adequate maturity
  - Adequate muscled

Breeding Gilts
- Priorities
  - Maternal characteristics
    - Uplift
    - Upheld and adequate size
    - Underline
    - Tails should be right size and shape (no pin ripples)
    - At least 6 on each size and they should be uniform

Note Taking
General Livestock Behavior PowerPoint, Handout View of Slides. Used Encyclopedia Moment after the PowerPoint was presented.
Understanding Flight Zone and Point of Balance

- Flight Zone and Point of Balance
  - What are they? What defines them?

Flight Zone and Point of Balance

- Application is...

‘Working’ (the) Livestock

The goal is for the animal to move itself with no force and minimal stress

Consider

- distractions
- design
- restraint

Common “Distractions”

- Puddle reflections
- Chain noise
- Shadows
- High pitch noises
- Air drafts blowing in face
- Fan blade movement
- Objects on the floor
- Drain grates
- Misplaced light
- Dead–end wall
- Disagreeable odors
Body Condition Scoring Activity. Used with the Show What You Know Moment to determine what they remembered from the PowerPoint and sample pictures.

**Activity: Body Condition Scoring**

**Purpose**

One of the biggest management aspects of beef cattle is keeping cows at an ideal weight and body condition. This body condition is essential for animal health, reproduction, and profitability for beef producers.

The Body Condition Scoring System rates cows on a 1 – 9 scale. One is extremely thin and 9 is obese. The ideal BCS score is ranges from 6 – 7 depending on the age of the animal and other factors. Once the BCS is determined for a cow, a nutrition plan can be developed to get the animal back to healthy state that is good for both the animal and the producer.

**Procedure**

In this activity, you assess beef animals and determine their body condition score. Rank each animal with a BCS rating of 1 – 9 and list what you observe about each animal to give it the placing you chose. Use the images provided in the *Evaluating Body Condition Score Presentation Notes*.

**Part One – BCS Ratings**

Use the following websites as references:

https://pubs.ext.vt.edu/400/400-795/400-795.html

<table>
<thead>
<tr>
<th>Animal</th>
<th>Body Condition Score</th>
<th>Observations and Reasoning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Your teacher will review the correct BCS ratings for each animal while you review how you did.

**Conclusion**

1. How accurate were your BCS ratings that you gave the animals? Why?

2. What are the concerns with having beef cows that are BCS 1 – 5?

3. What are the concerns with having cows that are obese and overweight?

4. How can beef producers use the BCS system improvement their production and profitability?
Administering Swine Injections Activity, used with the Hole in One Moment to have a couple test runs before the “final” injection to a clementine.

Activity: Administering Swine Injections

Purpose
To keep swine healthy and growing, from time to time, medications and vaccinations need to be administered to the animal. A direct injection to each animal ensures the each pig receives the proper dosage of the active drug or vaccination. Pork producers must follow proper procedures and techniques to both keep the pigs healthy and to ensure there is no contamination of the pork when the pig is harvested. In today’s lab activity, you will be learning and demonstrating the techniques for two common injection procedures.

Materials
(per pair of students)
Syringe
Medication (Colored Water)
Needle with cover
Orange

Procedure
Working with a partner, you will be demonstrating the procedure for a subcutaneous injection and an intramuscular injection. The information below explains the basics of each:

Subcutaneous (SQ): Deposits the Drug Under the Skin
- Inject only into clean, dry areas.
- Use the loose flaps of skin in the flank and elbow of small pigs.
- Use the loose skin behind the ear of sows.
- Slide needle under the skin away from the site of skin puncture before depositing the compound.

Intramuscular (IM): Deposits the Drug Into the Muscle
- Use a spot on the neck just behind and below the ear.
- The neck area should be used for IM injections. (See area outlined in figure to the right.)
- Damage to the ham or loin can result in condemnation of the meat cut.
- Use proper needle size to ensure medication is deposited in the muscle.
Part 1: IM Injection

1. Place the needle with cover on to the end of the syringe by pushing it on with a twisting motion. Leave the cover on the needle until you are ready to give in the injection.
2. Remove the needle cover and save for further use. Load the syringe with the color water by placing the end of the needle in the container and pulling back on the end of the syringe. Load 2 cc of medication into the syringe.
3. Purge any air from the needle and syringe. To do so, point the needle up in the air and check for air pockets. Push the plunger of the syringe to discharge any air in the needle.
4. Using an orange as your pig, you will be injecting 1cc of medication into the orange. Pick a specific location on the orange for the injection. For IM injections, insert the needle perpendicular to the surface of the orange pushing the entire needle in. Once the needle is fully inserted, push on the end of the syringe plunger to inject 1 cc of medication.
5. When done, quickly and carefully remove the needle being sure not to twist or bend the needle sideways. Place the needle cover over the end of the needle when done.
6. Now your partner will repeat the above steps for an IM injection.

Part 2: SQ Injection

1. Follow the same procedures from Part 1 except instead of inserting the needle perpendicular, you will slide the needle at an angle to place the end of the needle just below the skin or peel of the orange (away from the puncture site).
2. Have your lab partner now complete the steps for a SQ injection.
3. To check the results, remove the peel of the orange. The color of the medication should be present at the injection site.
4. Clean up your lab materials and remove the needle from the syringe after you have rinsed it in clean water. Be sure to keep the needle cover on the needle when done.

Conclusions

1. What are the differences and reasons for having multiple types of injections for swine?
2. Which injection was more difficult for you to make? Why?
3. Using the textbook or internet to find three common swine illness or diseases that a producer would administer an injection to prevent or treat. List the illness, name of medication, and injection type:
Animal Anthropology Activity. Used with the Go Get It Moment.

**Project 5.4.3 Animal Anthropology**

**Purpose**
As a child, you quickly learned your external body parts, such as eyes, ears, nose, knees, and toes. Just as your features distinguish you from others, the basic external anatomy of humans distinguishes them from other animals.

The anatomy of each species of animal is slightly different. Which animal has a comb, dewlap, gaskin, or jowl? Investigate the specific features of one species and identify other species as you begin to dive into the anatomical features of animals.

**Materials**

**Per pair of students:**
- Animal Anatomy Card
- Poster board
- Card stock paper
- Sealable bag
- Scissors
- Assorted markers
- Computer station with internet access

**Per student:**
- Project 5.4.3 Evaluation Rubric

**Procedure**
You will work with your partner using the characteristics listed on the Animal Anatomy Card to determine what species of animal has been assigned to you. Once you have correctly identified the species, make a poster used for matching the part names with the corresponding location on the body of the animal.

**Part One – Identification Investigation**
Use the Agriscience Library and internet to investigate different animal species to determine the animal represented by the parts listed on the Animal Anatomy Card provided to you by your teacher. When you think you know the species on the card, check with your teacher. If instructed to do so, proceed to Part Two.

**Part Two – Preparing the Poster**
1. Working with your partner, draw an outline of the animal on your poster board. Try to make the outline as large as possible in the space provided.

2. Add detail and definition so that your drawing looks like the animal you are identifying.

3. Draw a second outline with detail on the cardstock paper. This will be your key. Label the parts listed on the Animal Anatomy Card in the appropriate location.

4. Using the key you developed to guide you, adhere one side of the Velcro dots to the parts on the poster that will be identified.

5. Cut out the parts listed on the Animal Anatomy Card, these will serve as the labels for your poster.

6. Adhere the other portion of the Velcro dots to each label. Place the labels in the sealable bag.

7. Upon completion of your poster and key, submit your work to the teacher.

**Part Three – Learning Animal Anatomy**

When each pair of students has completed their poster, your teacher will instruct you to rotate from poster to poster. Use the labels provided to identify the parts of the animal on the poster. Your teacher will use the key to assess your work at each station. If your teacher identifies mistakes, correct them.

At each station, record three to five distinguishing parts for that animal on Project 5.4.3 Anatomy Guide.

**Conclusion**

1. How will knowledge of animal parts help you when raising animals?

2. What major differences did you notice among the livestock species?
Deception of Perception Activity. Used with the Eye Witness News Moment.

Activity 5.5.3 Deception of Perception

Purpose

Have you seen a western movie where the cattle stampede in reaction to gunshots? Or observed a horse jump and balk at a little plastic bag? People can typically find logic in items they see that are illusions. On the other hand, animals can be frightened by everyday objects like a plastic bag blowing in the breeze or a sweatshirt hanging on a fencepost. The ability of animals to rationalize noises and sights around them is limited. They react instinctively rather than rationally. Their instincts kick in and their fight or flight response is triggered. In frightening situations, it is a natural instinct for animals to move away from the unknown.

When working around animals, you may expect them to behave or act in a certain manner. However, their perceptions of the surroundings may be very different from yours. Can your eyes and perception be fooled? How does understanding perceptions and animal behavior help you when working with animals?

Materials

Per pair of students:
- 4 pennies
- 2 index cards
- Paper cup
- Ruler

Per student:
- Pencil
- Agriscience Notebook

Procedure

In this activity, you will observe common optical illusions. An optical illusion occurs when an object in your sight is perceived differently than reality. As you complete each part of this activity, consider how you can explain the illusion and the perceptions animals may have when faced with visually confusing sights.

Part One – Seeing is Believing

1. Take two pennies and place them between your thumb and forefinger.
2. Rapidly, rub the pennies back and forth in opposite directions.
3. Observe the pennies closely. You will see three pennies. Answer the analysis question on the student worksheet.
4. Complete the visual observation for the arrows on the student worksheet and answer the corresponding questions.

5. Determine your dominant eye by holding your pencil up facing a corner of the room. With both eyes open, center the pencil in the corner of the wall. Close your left eye and look at the pencil. Realign the pencil with both eyes open, and close your right eye to view the pencil.
   - Did the pencil remain stationary when you closed your left eye? If so, you are right eye dominant.
   - Did the pencil remain stationary when you closed your right eye? If so, you are left eye dominant.

6. Take an index card and fold it in half lengthwise.

7. Place the card on the table in front of you.

8. Select a spot in the center of the fold of the index card and stare at it with your dominant eye. Close your other eye and cover it with your hand.

9. Continue staring at the folded index card until you see it standing on end rather than lying face down. **NOTE:** The card will appear shorter when the view changes.

10. When the card changes position, move your head from side to side slightly. Answer the analysis questions on the student worksheet.

**Part Two – Depth Perception**

With your partner, take turns completing the following steps to determine how your dominant eye influences your depth perception.

1. Place the paper cup on the table in front of you.

2. Position your chair approximately two feet back from the cup.

3. Close and cover your dominant eye.

4. Your partner will hold a penny approximately 18 inches above the table.

5. When you believe the penny is directly over the cup, instruct your partner to drop the penny.

6. Repeat for a total of five trials and record your results in Table 1 on the student worksheet.

7. Open your dominant eye, and close and cover the other eye.

8. Repeat Steps 4 – 6 with your dominant eye open.


10. Position your chair approximately 5 feet away from the table.

11. Repeat Steps 3-9 with your chair further away from the table and record your results in Table 1.
12. Switch positions with your partner and repeat Steps 2 – 11.
13. If time permits, attempt each trial from a position further away from the table.

**Conclusion**

1. When you see an illusion, how do you know it is an illusion?

2. Once you realize that you have seen an illusion, what do you think and how do you explain it to yourself?

3. How do you think an animal would react differently to a startling situation than you?

4. Based on your observations, how might the perceptions of animals influence their reactions?
Animals as Food Problem Activity. Used with the Descartes Moment.

Problem 5.5.5 Animals as Food

Purpose
Take a look at a lunch menu. You might see items like hamburgers, chicken strips, sausage pizza, turkey sandwiches, and fish tacos. Meat products are available nearly everywhere, whether you choose to eat meat or not. What type of impact does meat consumption have on the food supply and the environment?

You may have heard the terms vegan, vegetarian, flexitarian, meat-eater and others when it comes to types of diets. There are many opinions about meat consumption. People choose to avoid or include meat in their diet for many reasons including taste preferences, religious beliefs, beliefs about animal rights, health reasons, or to promote sustainability. What are the advantages and disadvantages of each ideology?

Materials

Per student:
- Computer with internet access
- Guide to Assessing Problems

Procedure
The production of meat for human consumption requires huge amounts of energy. As you learned in Lesson 4.4 Living in Harmony, only 10% of energy is passed from producer to consumer and so on. The loss of energy is cause for debate among many proponents of sustainability. If you are unfamiliar with the different types of diets related to meat and meatless choices, your teacher will suggest different viewpoints or ideologies related to the use of animals for human food. What type of diet do you propose will use energy resources most efficiently?

Prepare a one-page informational flyer to justify or oppose the use of meat in the human diet, include the level or quantity of meat to be consumed. Be prepared to present and defend your argument in a class debate. Find at least three facts you can use to support your argument. Your argument does not have to represent your own diet or beliefs.
Potential points to consider

- Agricultural land used to raise crops for animal consumption could raise human food crops
- Cost of life of meat-producing animals
- Energy loss from producers to consumers
- High quality protein that humans gain from meat sources
- Meat animals convert indigestible plants, such as grass, into digestible forms of meat
- Meat animals eat grain products that are not high enough quality for human consumption
- Environmental impacts of crop and meat production

Review your notes from the PowerPoint® Parliamentory Procedures to review the proper methods of debate. Your teacher will facilitate a class debate. Share your argument and opinions as appropriate. Your teacher will evaluate your ideas and justifications using the Guide to Assessing Problems.

Conclusion

1. How can feeding plant crops to animals be considered an efficient use of those crops?

2. Do you believe that plant-only or vegan diets would reduce the number of people without food? Why or why not?

3. How might people reduce the energy needed to produce meat for human consumption?

4. What ethical dilemmas are associated with the production or consumption of meat?
APPENDIX D MULTIPLE INTELLIGENCES SURVEY

Assessment: Find Your Strengths!

This form can help you determine which intelligences are strongest for you. If you’re a teacher or tutor, you can also use it to find out which intelligences your learner uses most often. Many thanks to Dr. Terry Armstrong for graciously allowing us to use his questionnaire.

Instructions: Read each statement carefully. Choose one of the five buttons for each statement indicating how well that statement describes you.

1 = Statement does not describe you at all
2 = Statement describes you very little
3 = Statement describes you somewhat
4 = Statement describes you pretty well
5 = Statement describes you exactly

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I pride myself on having a large vocabulary.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Using numbers and numerical symbols is easy for me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Music is very important to me in daily life.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. I always know where I am in relation to my home.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. I consider myself an athlete.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. I feel like people of all ages like me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. I often look for weaknesses in myself that I see in others.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. The world of plants and animals is important to me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. I enjoy learning new words and do so easily.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. I often develop equations to describe relationships and/or to explain my observations.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. I have wide and varied musical interests including both classical and contemporary.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>I do not get lost easily and can orient myself with either maps or landmarks.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>I feel really good about being physically fit.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>I like to be with all different types of people.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>I often think about the influence I have on others.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>I enjoy my pets.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>I love to read and do so daily.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>I often see mathematical ratios in the world around me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19.</td>
<td>I have a very good sense of pitch, tempo, and rhythm.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20.</td>
<td>Knowing directions is easy for me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21.</td>
<td>I have good balance and eye-hand coordination and enjoy sports which use a ball.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>I respond to all people enthusiastically, free of bias or prejudice.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23.</td>
<td>I believe that I am responsible for my actions and who I am.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24.</td>
<td>I like learning about nature.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25.</td>
<td>I enjoy hearing challenging lectures.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26.</td>
<td>Math has always been one of my favorite classes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27.</td>
<td>My music education began when I was younger and still continues today.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28.</td>
<td>I have the ability to represent what I see by drawing or painting.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29.</td>
<td>My outstanding coordination and balance let me excel in high-speed activities.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30.</td>
<td>I enjoy new or unique social situations.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>31.</td>
<td>I try not to waste my time on trivial pursuits.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32.</td>
<td>I enjoy caring for my house plants.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33.</td>
<td>I like to keep a daily journal of my daily experiences.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>34.</td>
<td>I like to think about numerical issues and examine statistics.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35.</td>
<td>I am good at playing an instrument and singing.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36.</td>
<td>My ability to draw is recognized and complimented by others.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>37.</td>
<td>I like being outdoors, enjoy the change in seasons, and look forward to different physical activities each season.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>38.</td>
<td>I enjoy complimenting others when they have done well.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39.</td>
<td>I often think about the problems in my community, state, and/or world and what I can do to help rectify any of them.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40.</td>
<td>I enjoy hunting and fishing.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>41.</td>
<td>I read and enjoy poetry and occasionally write my own.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>42.</td>
<td>I seem to understand things around me through a mathematical sense.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>43.</td>
<td>I can remember the tune of a song when asked.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>44.</td>
<td>I can easily duplicate color, form, shading, and texture in my work.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45.</td>
<td>I like the excitement of personal and team competition.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>46.</td>
<td>I am quick to sense in others dishonesty and desire to control me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>47.</td>
<td>I am always totally honest with myself.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>48.</td>
<td>I enjoy hiking in natural places.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>49.</td>
<td>I talk a lot and enjoy telling stories.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50. I enjoy doing puzzles.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>51. I take pride in my musical accomplishments.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>52. Seeing things in three dimensions is easy for me, and I like to make things in three dimensions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>53. I like to move around a lot.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>54. I feel safe when I am with strangers.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>55. I enjoy being alone and thinking about my life and myself.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>56. I look forward to visiting the zoo.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>