GEORGIA MIDDLE SCHOOL
Instructional Resources
CAREER, TECHNICAL, & AGRICULTURAL EDUCATION

AGRICULTURE

COURSE: Middle School Agriculture

UNIT 4:   Animal Science

✍ INTRODUCTION

Annotation:

Students will explore the types of large, small and companion, and exotic animals and how each is relevant to the agricultural industry.

Grade(s):

X	6th
	7th
	8th

Time:

12-14 fifty minute periods

Author:

Rhonda Stone

Additional Author(s):

Kayla Calhoun

Students with Disabilities:

For students with disabilities, the instructor should refer to the student's IEP to be sure that the accommodations specified are being provided appropriately. Instructors should also familiarize themselves with the provisions of Behavior Intervention Plans that may be part of a student's IEP. Frequent consultation with a student's special education instructor will be beneficial in providing appropriate differentiation. Many students (both with and without disabilities) who struggle with reading may benefit from the use of text reading software or other technological aids to provide access to printed materials. Many of these are available at little or no cost on the internet.

✓ FOCUS STANDARDS

GPS Focus Standards:

MSAGED6-6: Demonstrate an understanding of the area of animal science.

> a) Identify and explain the role of large animals in agriculture.
>
> b) Identify and explain the species of small and companion animals.
>
> c) Identify and explain the function of exotic animal species.
>
> d) Specify and explain the importance and impact of animal health.

GPS Focus Standards:

> **M6P4.** Students will make connections among mathematical ideas and to other disciplines.
>
> **M6D1.** Students will pose questions, collect data, represent and analyze the data, and interpret results.

✓ UNDERSTANDING & GOALS

Enduring Understandings:

- Students will understand the role of large animals, small and companion animals, and exotic animals in agriculture and in human life.
- Students will understand the importance of animal health to agricultural production.

Essential Questions:

- What roles do animals play in your life?
- How and why did the first humans domesticate animals?
- How do animals help meet some of our basic needs?
- Why do we identify animals?
- What happens to the parts of animals that we do not eat?
- Why do animals eat different foods?
- Why do we need to read before we feed?
- What is the role of small and companion animals in our lives?
- Why are exotic animals relevant to human life?
- What is the importance and impact of animal health?

Knowledge from this Unit:

- Students will list major types of animals.
- Identify and explain the role of large animals in agriculture.
- Define vocabulary terms related to animal science.
- Explain the use of branding for animal identification.
- List examples of animal products and byproducts.
- Relate length of gestation/incubation period to number of animals in the wild.
- Compare and contrast monogastrics and ruminants.
- Explain how milk is produced.
- List the top ten dog breeds.
- List the top five cat breeds.
- Name and describe exotic animal species.

Skills from this Unit:

- Ear notches on animals for identification.
- Read and analyze a feed tag.

ASSESSMENTS

Assessment Method Type:

	Pre-test
X	Objective assessment - multiple-choice, true- false, etc.

    _X_ Quizzes/Tests
    __ Unit test

X	Group project
X	Individual project
X	Self-assessment - May include practice quizzes, games, simulations, checklists, etc.

    __ Self-check rubrics
    __ Self-check during writing/planning process
    __ Journal reflections on concepts, personal experiences and impact on one's life
    __ Reflect on evaluations of work from teachers, business partners, and competition judges
    _X_ Academic prompts
    __ Practice quizzes/tests

X	Subjective assessment/Informal observations

    __ Essay tests
    __ Observe students working with partners
    __ Observe students role playing

Peer-assessment

    __ Peer editing & commentary of products/projects/presentations using rubrics
    __ Peer editing and/or critiquing

X	Dialogue and Discussion

    __ Student/teacher conferences
    __ Partner and small group discussions
    _X_ Whole group discussions
    __ Interaction with/feedback from community members/speakers and business partners

Constructed Responses

    __ Chart good reading/writing/listening/speaking habits
    _ Application of skills to real-life situations/scenarios

Post-test

Assessment(s) Title:

> Taming the Wild Aurochs
> Animal Family Chart
> What's Your Brand? Activity
> What's Your Brand? Quiz
> PQA Ear Notch
> Feed Tag Games
> Cattleville worksheet
> Great Expectations Math Activity
> Gestation Incubation Periods
> Ruminant Digestion Diagram
> Monogastric vs. Ruminant Mini-Research
> Medication Mathematics
> Animal Antibiotics Report

Assessment(s) Description/Directions:

> Directions for each assessment can be found in the lesson plans.

Attachments for Assessment(s):

> **PQA Ear Notch**
> **Cattleville worksheet**
> **Gestation Incubation Periods**
> **Ruminant Digestion Diagram**
> **Medication Mathematics**

LESSON PLANS

• INTRODUCTION

1. **Identify the Standards. Standards should be posted in the classroom for each lesson.**

   MSAGED6-6: Demonstrate an understanding of the area of animal science.

   > a) Identify and explain the role of large animals in agriculture.

   > b) Identify and explain the species of small and companion animals.

   > c) Identify and explain the function of exotic animal species.

   > d) Specify and explain the importance and impact of animal health.

2. **Review Essential Questions.**

- What roles do animals play in your life?

- How and why did the first humans domesticate animals?

- How do animals help meet some of our basic needs?

- Why do we identify animals?

- What happens to the parts of animals that we do not eat?

- Why do animals eat different foods?

- Why do we need to read before we feed?

- What is the role of small and companion animals in our lives?

- Why are exotic animals relevant to human life?

- What is the importance and impact of animal health?

3. **Identify and review the unit vocabulary.**

Animal welfare	Lactation	Pleasure animal
Antibiotic	Livestock	Pork
Beef	Medicated feeds	Poultry
Brand	Mohair	Ration
Breed	Monogastric	Ruminant
Byproduct	Mutton	Selective breeding
Domesticate	Nutrient	Service animal
Farrowing	Palpation	Tattoo
Gestation	Parturition	Udder
Homogenized	Pasteurized	Withdrawal time
Incubation		

• LESSON 1: INTRODUCE STUDENTS TO ANIMAL SCIENCE

1. Class Starter:

    o Have you ever thought about what life would be like without animals?

    o Do any of you have pets?

    o What would your life be like without pets?

    o Do you depend on your pets for anything?

    (Some of the students may respond that pets provide them with affection or security.)

    o How do you think people first got the idea to use animals?

    People depend on animals for much more than affection or security. Let's take a look at how people first began to use animals.

2. Essential Questions:

    • How and why did the first humans domesticate animals?

- How do animals help meet some of our basic needs?

3. Terms:

Domesticate	Livestock	Pleasure Animal
Selective Breeding	Service Animal	

3. Discussion

Begin a discussion by asking the following questions:

1) What is the term used to indicate that animals which once were wild have been tamed by humans? (*domestication*)

2) What are some qualities of domestication? In other words, what must animals do to be considered domesticated?

   a. *Live with or near people*

   b. *Be controlled in a way which benefits people's needs*

   c. *Able to reproduce in captivity*

3) What are (and were) animals used for? What products, services, and benefits do we get from animals?

   a. **Food** – *During early history, people learned that animals were edible. Animals were and are a reliable source of protein.*

   b. **Clothing and shelter** (building materials) – *People learned that animal hides could be used to keep them warm in colder climates. For example – Native Americans used deer and bison not only as a food source, but also for clothing. Studies show that Ice Age people also used the bones of mammoths to build their houses. The bones served as frames and the mammoth hides were stretched across them*

   c. **Service** – *Animals have been used for services such as transportation, plowing fields, protection, hunting food, and companionship (pleasure animal). Dogs, cats, and some types of birds can also fall into the service category; for example – carrier pigeons were used for communication purposes. Animals used in other cultures include elephants, llamas, and camels.*

4) What types of animals are used on farms?

The common term for these animals is livestock.

- *Cattle (beef and dairy)*
- *Poultry*
- *Swine*
- *Sheep*
- *Horses*

Due to the growing diversity of animals being raised on farms, you may get different answers like:

- *Fish (through aquaculture)*
- *Rabbits*
- *Bison*
- *Ostriches*
- *Emu*

5) What other characteristics do animals have which allow producers to develop certain genetic qualities?

Selective breeding – Over time, livestock producers began to notice that certain individual animals possessed more desirable traits than other animals within their species. Examples of such characteristics are good milk or egg production, wool and meat production, size, muscle quality, and similar traits.

4. Assignment: Taming the Wild Aurochs from

http://www.clover.okstate.edu/fourh/aitc/lessons/intermed/aurochs.pdf

The student will read about the development of animal husbandry, outline the reading and arrange steps in sequence.

- **LESSON 2: ANIMAL TERMINOLOGY**

1. Class Starter: Family Tree

Have students create a rough draft of their family tree (mother, father, brother, sister, etc..).

After completion, discuss with the students that each person in a human family has a different title – mother, father, brother sister -- and so do the members of an animal family.

2. Depending on the animals you would like to cover (cattle, swine, poultry, horses, sheep, etc.) have the students create a chart to learn the correct terminology for "animal families."

Example below:

Family	Mature Male	Mature Female	Female has not had baby	Castrated male	Baby
Cattle	Bull	Cow	Heifer	Steer	Calf
Swine	Boar	Sow	Gilt	Barrow	Piglet

You can also include gestation period, number born at one time, group, act of giving birth, etc. These terms make great bingo cards for review.

A "family tree" can also be made for each family -- a good group work assignment. Encourage students to be artistic with this activity.

3. Optional: Play the attached **Who's the Daddy?** game as a class.
4. Extension: Research another animal (whale , cat, dog, elephant, etc.) and create a chart for them as well. This lesson could take 2 or 3 days, depending on how in-depth you want to get.
5. Vocabulary tests can be given as an evaluation. Vocabulary words may vary depending on which animal "families" you go over with the class.

• LESSON 3: ANIMAL IDENTIFICATION: BRANDING

1. Essential Question: Why do we identify animals?
2. Terms:

Brand	Tattoo

3. Print a copy for students to read about properly giving identification to animals from the website http://citnews.unl.edu/assuringquality/dailycare.html. You can print a worksheet for them to properly identify the animals or lead them to click and drag on a computer assignment.
4. "What's Your Brand?": Using the website http://www.clover.okstate.edu/fourh/aitc/lessons/intermed/brand.pdf, teach students about the history of branding and why we brand.
5. Activity: DIrections for students to make their own brands is also included in the "What's Your Brand?" lesson.
6. Assessment: There is a short quiz about branding at the end of the lesson in the "What's Your Brand?" lesson.

• LESSON 4: ANIMAL IDENTIFICATION: EAR NOTCHING

1. Class starter: Pig Personality Test

   Instruct students to take out a sheet of paper and draw a pig.

   After everyone has finished drawing, tell the class that the pig serves as a useful test of the personality traits of the drawer. Using the attached overhead, **Pig Personality Test**, allow students to discover their "pig" personality.

2. Essential Question: Why do we identify animals?

3. Discuss the pig ear notching system. Refer to and print or view via overhead:

   http://aces.nmsu.edu/pubs/_b/b-602.pdf

   http://animalscience.unl.edu/swine/nf93-113.htm

   http://www.pork.org/Producers/YouthPQAPlus/GPP4/4grp.pdf

   http://www.ansci.wsu.edu/facilities/swine/Documents/Ear_Notching.pdf

   http://www.ces.purdue.edu/montgomery/4hyouth/forms/SwineEarNotchSystem.pdf

   PowerPoint: http://www.*agsc.tamu.edu/lessonplan/file.asp?ID=1020&clm=3*

   http://groups.ucanr.org/Westside/files/65550.pdf

4. Assessment Activity: Give each student a pig face picture and numbers to notch out with scissors.

   Attachment: **PQA Ear Notch**

- **LESSON 5: READING A FEED TAG**

1. Essential Questions:
   - Why do animals eat different foods?
   - Why do we need to read before we feed?

2. Terms:

Medicated feeds	Nutrient	Ration	Withdrawal time

3. Website: http://citnews.unl.edu/assuringquality/dailycare2.html

   This website covers feeding and reading a feed label. Go to this website, print it/copy it for students. Review it. Allow students to complete 2 feed labels game on Pork and Sheep, and one game on water requirements for animals depending on the type of animal, weight, and time of year and certain temperatures and humidity.

• LESSON 6: PRODUCTS FROM ANIMALS

1. Class Starter: Ask students to name animal products. Share fun facts with students about the animal products they name. The **Animal Product Fun Facts** attachment contains some examples.

2. Essential Question: What happens to the parts of animals that we do not eat?

3. Terms:

Beef	Byproduct	Mohair
Mutton	Pork	Poultry

4. Show cuts of meat on cattle, pig, etc. Students can label handouts for parts of animals for notetaking/evaluations.

5. Discuss fibers from goats/sheep.

6. Math Activity: If I have a 1000 lb steer slaughtered, when I pick up my meat, I only have 400 lbs. What is the percentage taken away? (60%) Explain the math. Have a class discussion: Did I get "ripped off? Where's the rest of my meat? What are some parts of the steer that I cannot eat? Allow student to answer- hide, bones, internal organs, blood, etc. Did they dig a hole out back and put it in it? No! Everything is used but the MOOOO! Discuss byproducts with students.

7. Share interesting facts with students about byproducts:

    - Feathers and eggshells from the poultry industry are used to make some kinds of paper.
    - Ink in your textbooks could be made from fat of beef cows.
    - Crayons may be made from fat of a pig or cow.
    - Calk made from bones of cows or pigs.
    - Paint brushes made from hair of a pig or cow.
    - Glue made from parts of cows and pigs.
    - Chicken feathers can be used to make plastic.
    - Beef products are used in production of linoleum flooring.
    - # of per hide from Cow
        - 144 Baseballs
        - 20 Footballs
        - 18 Volleyballs
        - 18 Soccer Balls
        - 12 Baseball gloves
        - 12 Basketballs
        - 18 pairs of shoes

    Many more fun facts can be found all over the web.

8. Direct students to the website: http://sites.ext.vt.edu/virtualfarm/beef/beef.html#--- and click on the Beef Byproducts link to open an interactive learning tool.

9. Assessment: **Cattleville worksheet** attached.

10. Assessment: Make matching cards - animal to byproduct for students to match.

11. Activity: Make beef jerky.

• LESSON 7: GESTATION PERIODS

1. Class Starter: Ask class "How long was your mother pregnant with you?"

2. Terms:

Farrowing	Gestation	Incubation	Palpation	Parturition

3. Class Discussion: Explain to students what a gestation or incubation period is. Discuss why there may be fewer rhinos than chickens—due to the length of gestation periods, they can reproduce as quickly, and don't have as many babies at one time—and how this could lead to extinction if not managed properly.

4. Assessment: Distribute the handout **Gestation Incubation Periods**. Have students answer the questions based on the chart of gestation and incubation periods.

5. Extension: Refer to the "Great Expectations" activity from http://www.clover.okstate.edu/fourh/aitc/lessons/intermed/expect.pdf. Have students read about cattle gestation periods and complete the included math activity.

• LESSON 8: MONOGASTRICS VS. RUMINANTS

1. Class Starter: Are you a monogastric or a ruminant?

2. Essential Question: Why do animals eat different foods?

3. Terms:

Monogastric	Ruminant

4. Discuss with students the difference between monogastric and ruminants. Explain to students why cows can live on grass, but we cannot digest it.

5. Have students complete the **Ruminant Digestion Diagram**.
   Refer to http://www.clover.okstate.edu/fourh/aitc/lessons/primary/chew.pdf.

6. The interactive website http://www.swdairycenter.org/game_digestion.sstg further explains ruminant digestion.

7. Writing Extension: Have students write a story as if they were the food that the cow eats.

8. Research Extension: Students can research different animals to determine if they are monogastric or ruminant.

• LESSON 9: DAIRY

1. Class Starter: List 10 dairy products.

2. Terms:

Homogenized	Lactation	Pasteurized	Udder

3. Go over the steps in the milk production with students using the **Making Milk** handout.

4. Extension: Make ice cream.

5. Extension: Make butter in jars with heavy whipping cream.

• LESSON 10: SMALL AND COMPANION ANIMALS

1. Class Starter: How important are small and companion animals in your family?

2. Essential Question: What is the role of small and companion animals in our lives?

3. Terms:

Breed

3. What are small and companion animals?

   Examples: Dogs, cats, rabbits, fish, birds, reptiles

4. Which of the above are the most popular?

   According to the American Pet Products Manufacturers Association, *2007-2008 National Pet Owners Survey,* dogs and cats remain in the top spots. 44.8 million households own a total of 74.8 million dogs, and 38.4 million households own a total of 88.3 million cats.

5. Why are small and companion animals important?

   The pet industry is a large part of the agricultural industry as a whole, especially when considering the amount of money spent on pet food, which is largely made up of agricultural products. More money is spent on dog food than baby food in the U.S.

6. Identify the top ten dog breeds:
    1. Labrador Retriever
    2. German Shepherd
    3. Yorkshire Terrier
    4. Golden Retriever
    5. Beagle
    6. Boxer
    7. Bulldog
    8. Dachshund
    9. Poodle
    10. Shih Tzu
7. Identify the top five cat breeds:
    1. Persian
    2. Maine Coon
    3. Exotic
    4. Siamese
    5. Abyssinian
8. Summary: Why do we study small and companion animals?

• LESSON 11: EXOTIC ANIMALS

1. Class Starter: What do you know about exotic animals? Where do you find them?
2. Essential Question: Why are exotic animals relevant to agriculture human life?

3. What are exotic animals?

List examples of exotic animals. A few examples with interesting facts are provided below.

Bison: North America's largest land mammals; hunted for sport and food in defined areas.

Elk: Elk herds are dominated by one female.

Deer: A deer's large ears can rotate 180 degrees and pick up high-frequency sounds.

Ratites

Ostrich: Largest bird in the world; native to Africa; although frequently portrayed in movies and cartoons in this position, ostriches do not in fact bury their heads in the sand; they do, however, lie flat on the ground if scared.

Emu: Second largest bird; found only in Australia; their ancestors roamed the land with dinosaurs.

Rhea: Largest bird in South America; the male rhea mates with several females and incubates all of their eggs together

Kiwi: The kiwi is the only bird with nostrils at the end of its long beak; it is native to New Zealand and hasn't evolved much during its 8 million years in existence; kiwis were named after their distinctive shrill cry "kee-wee kee-wee."

Alpaca: Lives in the Andes mountains of South America; the Incas referred to the alpaca's soft fleece as the "fiber of the Gods."

Llama: native to South America; can be used to protect livestock herds from predators

8. Summary: Why do we study exotic animals?

• LESSON 12: ANIMAL HEALTH

1. Class Starter: Ask the class to name some things that make them sick. Next, ask them to name some things that make animals sick. Explain that animals get sick just like humans, due to bacteria, viruses, and parasites. Some of these diseases may be transferred to humans, which is one reason animal health is important.

2. Essential Question: What is the importance and impact of animal health?

3. Terms:

Animal welfare	Antibiotic

4. Discuss animal welfare with the class; ensure that they understand that happy and healthy animals yield better products.

5. Provide examples of ways to keep animal herds healthy:

- Provide adequate nutrition.

- Maintain adequate livestock facilities; avoid overcrowding.

- Keep facilities clean and disinfected.

- Use proper immunization.

- Develop procedure for parasite control.

- Isolate new or returning animals for 3-4 weeks before combining with bred.

- Rotate pastures.

- Keep animal stress to a minimum.

- Control possible disease spread by visiting humans.

- Work closely with veterinarian in developing prevention programs as well as treating diseases.

- Bring only clean animals into herd.

- Drain lots so that they will remain dry and free of stagnant water (paved lots are best).

- Isolate all animals known to have contagious infections.

- Treat open wounds and navels of newborn calves with reliable disinfectant.

- Provide plenty of exercise for breeding herd.

- If cows calve in places other than clean pastures, be sure area is well-bedded and disinfected.

- Provide plenty of clean, fresh water.

6. Assessment: Distribute the **Medication Mathematics** worksheet to the class.

7. Extension: Have students read about the animal antibiotics controversy on-line at
http://www.pbs.org/wgbh/pages/frontline/shows/meat/safe/overview.html. Students may then find
other sources on their own and prepare a one-page report in favor of or against the use of animal
antibiotics.

Attachments for Learning Experiences:

Animal Product Fun Facts

Gestation Incubation Periods

Making Milk

Medication Mathematics

Pig Personality Test

PQA Ear Notch

Ruminant Digestion Diagram

Who's the Daddy Animal Science Jeopardy Quiz Game

CULMINATING PERFORMANCE TASK

Culminating Unit Performance Task Title:

Culminating Unit Performance Task Description/Directions/Differentiated Instruction:

Attachments for Culminating Performance Task:

UNIT RESOURCES

Web Resources:

http://www.clover.okstate.edu/fourh/aitc/lessons/intermed/aurochs.pdf
http://citnews.unl.edu/assuringquality/dailycare.html
http://www.clover.okstate.edu/fourh/aitc/lessons/intermed/brand.pdf
http://aces.nmsu.edu/pubs/_b/b-602.pdf
http://animalscience.unl.edu/swine/nf93-113.htm
http://www.pork.org/Producers/YouthPQAPlus/GPP4/4grp.pdf
http://www.ansci.wsu.edu/facilities/swine/Documents/Ear_Notching.pdf
http://www.ces.purdue.edu/montgomery/4hyouth/forms/SwineEarNotchSystem.pdf
http://www.*agsc.tamu.edu/lessonplan/file.asp?ID=1020&clm=3*
http://groups.ucanr.org/Westside/files/65550.pdf
http://citnews.unl.edu/assuringquality/dailycare2.html
http://sites.ext.vt.edu/virtualfarm/beef/beef.html#---
http://www.clover.okstate.edu/fourh/aitc/lessons/intermed/expect.pdf
http://www.clover.okstate.edu/fourh/aitc/lessons/primary/chew.pdf
http://www.swdairycenter.org/game_digestion.sstg
http://www.pbs.org/wgbh/pages/frontline/shows/meat/safe/overview.html
Other Resources for animal science lessons:
http:www.agclassroom.org/ok-

- Don't fence me in
- Bill Pickett, Bull Doggin Cowboy
- Hit the Trail
- Get the Point

Movies/Videos:

1. The Rare Breed
2. Cow Palpatation on Dirty Jobs
3. Alpaca Shearer on Dirty Jobs
4. Excel Beef Plant from CEV
5. Grand Champion
6. Hoof Cleaner Dirty Job
7. Pig Farmer Dirty Job
8. Cheese Making Dirty Job
9. Excel Pork Plant- CEV

Materials & Equipment:

computer access, internet access, hand-out materials, projector

What 21st Century Technology was used in this unit?

	Slide Show Software		Graphing Software		Audio File(s)
X	Interactive Whiteboard	X	Calculator	X	Graphic Organizer
	Student Response System		Desktop Publishing		Image File(s)
	Web Design Software		Blog		Video
	Animation Software		Wiki		Electronic Game or Puzzle Maker
	Email	X	Website		