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YOUTH DEVELOPMENT THROUGH VETERINARY SCIENCE 1

Behaving Like Animals!

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Subject Overview and Background Information

Animals play important roles in the lives of humans. Animals have been used for centuries for work, such as in helping to plow fields, providing a means of transportation and aiding in search and rescue, and as a source of food and other products for humans. Many people have companion animals—dogs and cats are among the most popular—in their homes. Because we depend upon animals in so many ways, it is important that we, as their caretakers, understand their biology and their **behavior** in order to assess their health and well-being.

While a normal part of responsible animal care involves preventative veterinary care, including annual exams with vaccinations and blood tests, many common injuries and illnesses can be detected just by noticing a change in the behavior of an animal. Because behavior is a primary means of communication, a change in an animal's activity level, eating habits, **posture**, or **gait** can often "tell" us something important and be a clue to detect or prevent an illness or injury.

By making careful observations and developing an **ethogram** (a description of an animal's behavior), we can learn to recognize the range of behaviors performed by different kinds of animals as well as by different individuals of the same animal type. Through this process, we will come to understand how animals react or respond to different conditions (e.g., changes in weather) or stimuli (e.g., loud noises), and what types of behaviors might indicate that something is wrong with our animals. Sometimes symptoms of diseases or injuries are not always obvious, and detection depends on how closely we observe our animals and how well we understand their behaviors.

◆ Activity Concepts and Vocabulary

- **Animal behavior**: A branch of biology that studies the behavior of animals.
- **Ethogram (ee-thuh-gram)**: A description of the types of behaviors performed by the species you are studying.
- **Gait**: The manner or style of walking.
- **Posture**: The way someone holds up his or her body, especially in a standing position.

◆ Life Skills

- **Head**: Keeping records
- **Heart**: Cooperation, social skills, communication, sharing
- **Hands**: Teamwork, contribution to group effort

◆ Subject Links

Science and Language Arts

◆ State Content Standards

Science

- Grade 4
  - *Investigation and Experimentation: 6a*
- Grade 5
  - *Investigation and Experimentation: 6g, 6h*

Language Arts

- Grade 3
  - *Writing Applications: 2.2*
  - *Speaking Applications: 2.3*
- Grade 4
  - *Listening and Speaking Strategies: 1.7, 1.8*
- Grade 5
  - *Listening and Speaking Strategies: 1.1, 1.5, 1.6*
- Grade 6
  - *Listening and Speaking Strategies: 1.5*

◆ Purpose of Activity

To introduce youth to the art and science of observing animal behaviors.

ACTIVITY

Behaving Like Animals!

Overview of the Activity

One group of youth will act out a scenario that includes examples of a variety of types of behavior. At the same time, another group of youth will observe the behavior of their peers as if they were observing a group of animals. These youth will record their observations in a table (ethogram) and make inferences about the types of behavior they observed. The groups will then switch roles so everyone has a chance to act and observe.

◆ Time Required

40 to 60 minutes

◆ Suggested Grouping

Small groups

◆ Materials Needed

*(*Materials provided in the curriculum)*

- *Ethograms: Feeding time ethogram, playtime ethogram, general ethogram
- *Behavior scenario cards
- One small box (e.g., a shoe box)
- Small scraps of paper (enough to fill a shoe box)
- One tennis ball, whiffle ball, or other plastic or cloth ball of similar size
- Flip chart paper
- Markers

◆ Getting Ready

- Make a copy of the behavior scenario cards for both scenarios; cut them into individual cards.
- Make copies of the ethograms and provide one set of ethograms per youth.
- Divide youth into small groups of 4, 6, or 8.
- Provide each group with flip chart paper and markers.
- Cut up paper or find scraps of paper to be used as "food" for the feeding behavior scenario. Place the scraps in a shoe box or other small container that will serve as a food trough.

Opening Questions

Ask the youth to respond to each question below by sharing their ideas verbally and/or by recording them on the flip chart paper provided.

1. What does the term "behavior" mean to you?
2. Using the flip chart paper provided, make a list of 4 to 5 behaviors that humans typically demonstrate.
3. Why do you think animals exhibit different behaviors? What do you think the purposes of these behaviors might be?
4. What are some different behaviors you have seen in animals? Generate a list of 4 to 5 behaviors that you have seen animals demonstrate.

- ***Volunteer Tip:*** *Encourage youth to make lists of behaviors of different animals and compare the lists.*

5. Explain how you think some animal behaviors are similar to human behaviors. How are some behaviors different?
6. If you have an animal at home, can you describe a situation where your animal has behaved in a way that was not typical? What do you think might have caused this behavior? What did you do when you noticed the behavior?.

Procedure (Experiencing)

1. Form two groups. The first group will be the performers and the second group will be the observers.
2. Give each performer a behavior scenario card from Scenario A and have them read it carefully to themselves. The behavior cards provide the youth with specific directions for the behaviors of their animal.
   - ***Volunteer Tip:*** *Make sure that everyone in the group understands the behaviors they are to perform and feels comfortable enough to do so.*
3. The youth who are not performing will be the observers. Provide all of the observers with a copy of the ethogram for Scenario A. Assign each observer one performer to observe.
4. Explain to the youth who are the observers that they are to concentrate on the behaviors of their assigned "animal" only and record their observations on the ethogram.
   - **Volunteer Tip:** *Make certain that the youth who are the observers know which performer they are to observe.*
5. Set up the "food trough" needed for the feeding time scenario (Scenario A) and allow the youth to perform for a maximum of 3 minutes.
6. Switch the groups so that the performers are now the observers and repeat the procedure using Scenario B. Scenario B is a Playtime Scenario, so you will need to provide the youth with a ball to use. Again, allow the youth to perform up to 3 minutes.

Sharing, Processing, and Generalizing

Have each group of youth review their ethograms and come up with some general statements about the group of animals they observed. Follow the lines of thinking developed by the youth as they share and compare their thoughts, ideas, and observations. If necessary, use more targeted questions as prompts to get to particular points, such as:

1. What common behaviors did they observe?
2. What unique or unusual behaviors did they observe?
3. Have each group describe the process that led them to their ideas and inferences or conclusions regarding their observations.

Concept and Term Introduction

Volunteers need to ensure that the concepts and terms **animal behavior, ethogram, gait,** and **posture** have been introduced.

- **Note:** The goal is to have the youth develop these concepts through their exploration and define the terms using their own words.

Concept Application

1. Using the general ethogram, observe an animal (pet, project animal, wild animal, or zoo animal) for 3 to 5 days. If you choose to observe a pet or project animal, make observations at different times of each day (e.g., morning, noon, and evening).
2. At the end of the 3- to 5-day time period, use the data recorded on the ethograms to identify common behaviors of that animal. What can you learn about this animal from these behaviors? How might these behaviors help you understand the health and well-being of the animal?

References

Alcock, J. 2005. Animal behavior: An evolutionary approach. 8th ed. Sunderland, MA: Sinauer Associates.

Bolhuis, J., and L. Giraldeu, eds. 2005. The behavior of animals: Mechanisms, function and evolution. Malden, MA: Blackwell.

Keeling, L. A., and H. Gonyou, eds. 2001. Social behavior in farm animals. New York: CABI.

BEHAVIOR SCENARIO CARDS

Scenario A: Feeding Time

It's time to eat! There will be a "food trough" (shoe box) in the middle of the room for the "animals" in this scenario.

Everyone in the Feeding Time animal group will begin by standing at one end of the room. Once the skit starts, each participant is to act out the behavior(s) specified on the card they were given.

- **Volunteer Tip:** To pretend they are eating, the youth should remove one piece of "food" from the trough at a time, bring it to their mouth, and act as if they chew it before they remove another piece.

Feeding Time Behavior Cards

Behavior 1: *Aggressive:* You are very hungry. Once the skit begins, run to the food trough and begin eating very fast! If there are too many others at the food trough, try to scare them away by shouting (do not use any words, just noises) or making menacing movements toward them.

Volunteer Tip: *No more than one "Aggressive" animal per group.*

Behavior 2: *Timid:* You are hungry but very timid. Begin by walking very slowly toward the food trough, looking left and right to make certain you aren't too close to the others. Once you reach the trough, eat very slowly, examining each piece of food before consuming it. If you decide that the food is good to eat, eat very slowly while looking around you. If another animal tries to scare you away, run away to a corner of the room.

Volunteer Tip: *No more than two "Timid" animals per group.*

Behavior 3: *Hungry, but injured:* You are hungry, but you have an injured leg. Begin by walking toward the food trough slowly but with a noticeable limp. When you get about halfway to the trough, stop, moan, and rub a spot on your leg. Continue to moan and rub your leg every once in a while, even when you reach the food trough and start eating. If someone tries to scare you away, attempt to flee, but keep limping.

Volunteer Tip: *No more than one "Hungry, but injured" animal per group.*

Behavior 4: *Skin Irritation:* You are hungry, but something is making your skin or coat itchy. You move toward the food trough, but every two to three steps, you have to stop and scratch your skin. Once you get to the food trough, this continues. You have to scratch yourself between each piece of food.

Volunteer Tip: *No more than one "Skin Irritation" animal per group.*

Behavior 5: *Typical:* You are hungry but not overly aggressive or timid. Walk toward the food trough. Once you get there, examine the food and then eat slowly. After you are done, move away from the food trough and sit down.

Volunteer Tip: *The remaining youth represent animals in the "Typical" group.*

Scenario B: Playtime

It's playtime! The "animals" in the playtime scenario will play catch with one another. However, not every animal has the same interest or ability. Each youth in the skit will receive one behavior card, will read it carefully, and will demonstrate the behaviors of that animal. All of the youth who are not in the skit will be provided with an ethogram and assigned one "animal" to observe. Observers are to concentrate on the behaviors of that animal only and record their observations on the ethogram.

Everyone in the playtime skit animal group will begin by standing in a circle. Once the skit starts, they are to act out the behavior(s) of the animal they were given.

- **Volunteer Tip:** Have the "Interested" animal start the game of catch.

Playtime Behavior Cards

Behavior 1: *Uninterested:* You have a stomach ache and a headache and aren't feeling very playful today. You should spend most of your time trying to rest or find a spot to lie down and keep away from the noise of the game.

Volunteer Tip: *No more than one "Uninterested" animal per group.*

Behavior 2: *Very Interested:* You are feeling very eager to play. When the ball comes near, you should take it and eagerly try to continue the game. You should also run and jump around and try to get others to play with you.

Volunteer Tip: *No more than one "Very Interested" animal per group.*

Behavior 3: *Somewhat Interested:* You are feeling very hot, making you feel lazy and not very interested in playing the game. You will catch the ball and throw it others a little bit, but don't run around or move too much. Try to keep cool by resting.

Volunteer Tip: *No more than one "Somewhat Interested" animal per group.*

Behavior 4: *Interested, but Injured:* You want to play in the game and are having a good time, but you have an arm injury that makes it hard for you to catch and throw. When the ball is thrown to you, you may only use your weak arm (left arm if you are a right-handed, right arm if you are a left-handed) to catch and throw. When you move your injured arm it is painful. Never use your injured arm to catch or throw.

Volunteer Tip: *No more than one "Interested, but Injured" animal per group.*

Behavior 5: *Interested:* You want to play in the game. You will catch the ball when thrown to you and then toss it to someone else after you catch it. When someone else has the ball, you should hold out your hands (do not speak) to encourage them to throw the ball to you.

Volunteer Tip: *The remaining youth represent animals in the "Interested" group.*

SCENARIO A: FEEDING TIME ETHOGRAM

Behavior	Describe your observations of each type of behavior
Feeding: *Behaviors related to food, such as looking for food; sniffing food; eating food; holding food; approaching feeding area.*	
Aggressiveness: *Behaviors related to aggression, such as chasing; attacking; growling.*	
Vocalization: *Sounds the animals make.*	
Movement: *Motions the animals make, such as walking; running; limping; jumping; hopping; flying; stalking.*	
Other: *Other behaviors you observe, such as scratching; grooming; sitting; sleeping; playing.*	

SCENARIO B: PLAYTIME ETHOGRAM

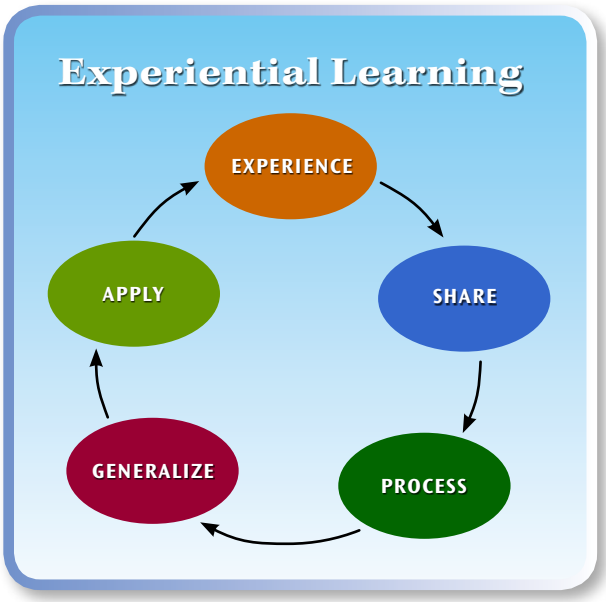
Behavior	Describe your observations of each type of behavior
Movement: *Motions the animals make, such as walking; running; limping; jumping; hopping; flying; stalking.*	
Playfulness: *Describe how your animal plays.*	
Vocalization: *Sounds the animals make.*	
Social Interactions: *Chasing; grooming; playing; fighting; communicating.*	
Other: *Other behaviors you observe, such as scratching; grooming; sitting; sleeping; playing.*	

GENERAL ETHOGRAM

Fill in the behaviors you are going to observe below:	Describe your observations of each type of behavior

APPENDIX

The activity in this curriculum was designed around inquiry and experiential learning. Inquiry is a learner-centered approach in which individuals are problem solvers investigating questions through active engagement, observing and manipulating objects and phenomena, and acquiring or discovering knowledge. Experiential learning (EL) is a foundational educational strategy used in 4-H. In it, the learner has an experience phase of engagement in an activity, a reflection phase in which observations and reactions are shared and discussed, and an application phase in which new knowledge and skills are applied to a real-life setting. In 4-H, an EL model that uses a 5-step learning cycle is most commonly used. These five steps—Exploration, Sharing, Processing, Generalizing, and Application—are part of a recurring process that helps build learner understanding over time.



For more information on inquiry, EL and the 5-step learning cycle, please visit the University of California's Science, Technology, Environmental Literacy Workgroup's Experiential Learning Web site, http://www.experientiallearning.ucdavis.edu/default.shtml.

For Further Information

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YOUTH DEVELOPMENT THROUGH VETERINARY SCIENCE 2

Fur, Feathers, Skin, and Scales

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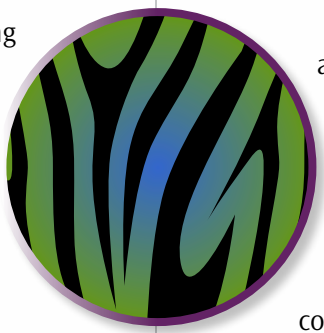
Subject Overview and Background Information

All animals, including humans, are affected by their environment and require some type of outer protective layer. This outer covering, regardless of whether it is **skin**, **fur**, **scales**, or **feathers**, serves as a means of **physical protection** against injury, germs that may cause a disease, and changes in temperature from morning to night or from one season to the next. In some cases, the outer covering of an animal has specific markings or colors that may attract a mate, defend its territory against others, or serve as a type of **camouflage** to help it hide from other animals.



More specialized functions of skins or coats are seen in some animals. Frogs, for example, must live near lakes, streams, or ponds in order to keep their skin moist. The function of a frog's skin is to regulate the transfer of moisture and fluids, and frogs are also able to take in some oxygen across the moist skin in a process called cutaneous gas exchange (frogs also have lungs with which to breathe).

The scales of **fish** and **reptiles** serve as a type of "armored coat" that is very strong. The scales overlap and protect the skin that lies underneath. Fish scales serve mainly as a protection against physical harm; in snakes, the scales also help prevent water loss. When fish grow, they add new material to existing scales; "age rings" can be counted on individual scales to determine how old a fish is. When snakes grow, they develop a new layer of scales beneath their old one, which they then shed. This process is called **molting**.

Birds and mammals are warm-blooded animals and use their coats (feather for birds and fur for mammals) to insulate their bodies. Fur and feathers also help keep the animals dry, and in birds, the light weight and special shape of the feathers helps them fly. Many birds and mammals live all year in environments that are cold and snowy in the winter but warm and colorful in the summer. As a form of protection, these animals have one type of coat for the winter (generally thick and white) and another type of coat for the summer (thinner and more varied in color). Both types of coats help camouflage the animals, and the process of shedding part or all of the fur and feathers and replacing them with a new coat is called molting, just like in reptiles.

Many health problems can be detected by observing changes in an animal's skin or coat. Parasites (small

organisms that live on animals) such as fleas or mites can cause fur or feathers to fall out or skin to become reddened, patchy, or irritated. In snakes, living in an unsanitary environment can lead blisters to form on the skin of the underbelly, which can be life-threatening if not treated properly. Parrots and other birds may lose their feathers if they are infected with a virus or are overstressed. In goats, bacterial infection of the skin can cause lesions and loss of fur. In many species, an allergic reaction is characterized by itchy skin, loss of fur or feathers, and swelling. Whenever a caretaker notices these or other changes associated with an animal's skin or coat, it is important to consider consulting a veterinarian.

Activity Concepts and Vocabulary

- **Camouflage (kam-uh-flahzh)**: Methods animals use that allow them to blend into the environment to avoid being seen by predators or prey.
- **Molting**: The process of shedding and replacing parts or all of one's coat or outer covering (i.e., feathers, cuticle, skin).
- **Physical protection**: Preserving the body from injury or harm.

Life Skills

- **Head**: critical thinking, learning to learn, wise used of resources
- **Heart**: cooperation, communication
- **Hands**: teamwork, self-motivation

Subject Links

Science and Language Arts

State Content Standards

Science

- Grade 4
  - *Investigation and Experimentation: 6a, 6c, 6f*
- Grade 5
  - *Investigation and Experimentation: 6h*
- Grade 6
  - *Investigation and Experimentation: 7c*

Language Arts

- Grade 3
  - *Listening and Speaking Strategies: 1.8*
- Grade 4
  - *Listening and Speaking Strategies: 1.7, 1.8*
- Grade 5
  - *Listening and Speaking Strategies: 1.5*
- Grade 6
  - *Listening and Speaking Strategies: 1.5*

Purpose of Activity

The purpose of this activity is to have the youth explore different coverings that animals have and the reasons why they have them (e.g., human: skin and clothing; birds: feathers; bear: fur; reptiles: scales).

ACTIVITY

Fur, Feathers, Skin, and Scales

Overview of the Activity

This activity is divided into Part A and Part B. In Part A youth will observe the skin on different parts of their body, comparing the similarities and differences between skin in different areas. They will also have a chance to observe different types of fabric and record the similarities and differences they find.

In Part B youth will be given several pictures of different animals and will make observations about them. Based on their observations, they will make inferences regarding the environment in which each animal lives and how it is able to survive in that environment.

Time Required

Approximately 75 minutes

Suggested Groupings

Pairs or small groups

◆ Materials Needed for Each Pair

*(*Materials provided in the curriculum)*

- Magnifying glass
- Fabric samples: Different colors, patterns, materials, and textures
  - **Volunteer Tip**: *Free samples can be obtained from many fabric stores.*
- Flip chart paper
- Markers or other writing utensils
- *Animal coat photographs
- *Molting animal photographs

◆ Getting Ready

- Divide youth into pairs or small groups.
- Make one color copy of the animal coat photographs and molting animal photographs per group.
- Provide one magnifying glass per group.
- Provide each group with a piece of flip chart paper and colored markers.
  - **Volunteer Tip:** *On the day of the activity, ask the youth to dress for "Wacky Clothes Day." Encourage them to wear different colors, patterns, textures, and seasonal clothing.*

Opening Questions

Ask the youth to respond to each question below by sharing their ideas verbally and/or by recording them on the flip chart paper provided.

1. What do you know about your skin? What purposes do you think skin has?
2. Describe what you know about different types of clothing. What purposes do you think clothing serves for humans?
3. What do you know about animal coats or coverings? What do you think some of the functions of coats or coverings are?
4. What are some things that skin, clothes, and animal coats or coverings have in common? What are some things about them that are different?

Procedure (Experiencing) A

1. Ask the youth to examine the skin on the outer and inner sides of their arms. Ask the youth to record their observations and make comparisons between these two locations.
2. Next, have the youth compare the skin on their palms and the backs of their hands. Ask the youth to record their observations and make comparisons with their observations from Step 1.
3. If available, provide the youth with magnifying glasses to observe their hands and arms in greater detail. Have them make comparisons with the observations they made in Step 2. Ask the youth to record their observations and comparisons on the flip chart paper provided.
4. Have the youth look at their clothing or fabric swatches. Encourage them to look for similarities and differences (e.g., colors, textures, and thickness). For each type of fabric, ask the youth to make an inference regarding the purpose an article of clothing made from that fabric might serve. Ask the youth to record their observations, comparisons, and inferences on the flip chart paper provided.

Procedure (Experiencing) B

1. Have the youth view the animal coat photographs provided. Using the flip chart paper and markers, ask them to record their observations and comparisons on the paper provided.
2. Based on their observations, ask the youth to predict where they think the animals might live based on the animals' coverings, as well as how their coverings might help them survive. Ask them to record their thoughts and the reasons behind their predictions.

Sharing, Processing, and Generalizing

Follow the lines of thinking developed by the youth as they share and compare their thoughts and observations. If necessary, use more targeted questions as prompts to get to particular points, such as:

1. What are some reasons you think we have more hair on the outside of our arms and hands than on the inside? What do you think the purpose(s) of this hair might be? Please explain your thoughts and ideas.
2. How do you think animals' coverings—bear's fur, bird feathers, fish scales, humans' skin and clothing—might help them survive where they live? Please explain and provide examples.

Concept and Term Discovery/ Introduction

Volunteers need to ensure that the concepts of **physical protection, molting,** and **camouflage** have been introduced or discovered by the youth.

- **Note**: The goal is to have the youth discover the concepts and terms on their own. It helps if they can define terms and concepts using their own words.

Concept Application

1. Some animals live in environments that have very distinct seasons. It might become very hot in the summer and very cold in the winter. Look at the pictures of the cardinal (bird) and reindeer in the molting animal photographs. Notice the differences in their coats and explain why these animals might need to change their coats (a process known as molting).
2. Ask the youth to explore their neighborhood or local park. Ask them to look at the animals in that environment and notice the different animal coverings.
3. If the youth have pets of their own, ask them to look closely at their pet's coat or outer covering. Ask them to notice details, such as color and texture.

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Hislop, T., J. Cook, and E. Morgan. 2002. Animal coverings. Utah Education Network Web site, http://www.uen.org/Lessonplan/preview.cgi?LPid=629.

MSN Encarta. Snake (reptile). MSN Encarta Web site, http://encarta.msn.com/encyclopedia_761578341/Snake_(reptile).html.

Reptile Scales

Andre Magill
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Reptile Scales

Jenny Downing
http://www.flickr.com/photos/jenny-pics/2715258785/

Reptile Scales

Scot Campbell
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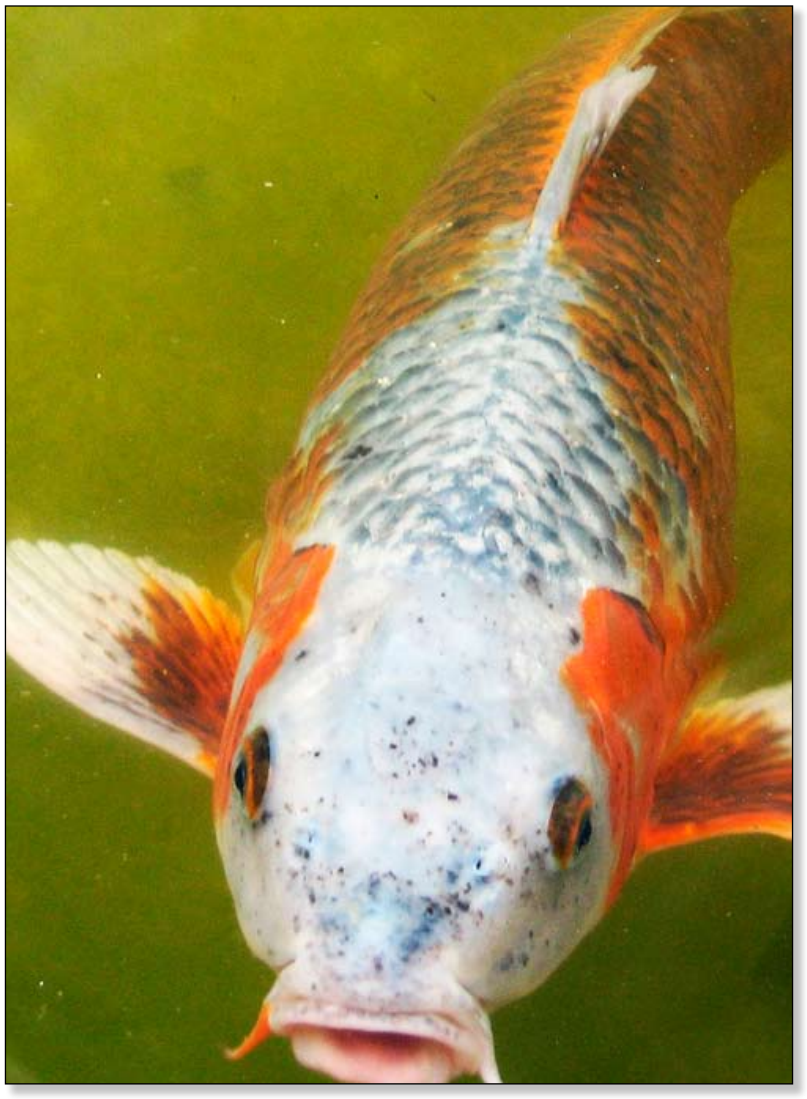
Fish Scales



Corrie Barklimore
http://www.flickr.com/photos/corrieb/2855396217/

Fish Scales

Alexandra Lee
http://www.flickr.com/photos/alexandralee/163379800/

Bird Feathers

Rita Ballantyne

http://www.publicdomainpictures.net/view-image.php?image=1037&large=1

Bird Feathers

Sherri Hogue

http://www.publicdomainpictures.net/view-image.php?image=823

Bird Feathers

Nisheedhi Adukuri
http://www.publicdomainpictures.net/view-image.php?image=761v

Bird Feathers

Petr Kratochvil
http://www.publicdomainpictures.net/view-image.php?image=84

Mammal Fur

Petr Kratochvil
http://www.publicdomainpictures.net/view-image.php?image=1184

Mammal Fur

Geoff Doggett

http://www.publicdomainpictures.net/view-image.php?image=536

Mammal Fur

Petr Kratochvil

http://www.publicdomainpictures.net/view-image.php?image=124&large=1

Mammal Fur

Petr Kratochvil
http://www.publicdomainpictures.net/view-image.php?image=208

Molting Lizard

Melvin Baker
http://www.flickr.com/photos/i_level_news/456755318/

Molting Cardinal

Ellen Davis
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Molting Reindeer

Mats Lindh
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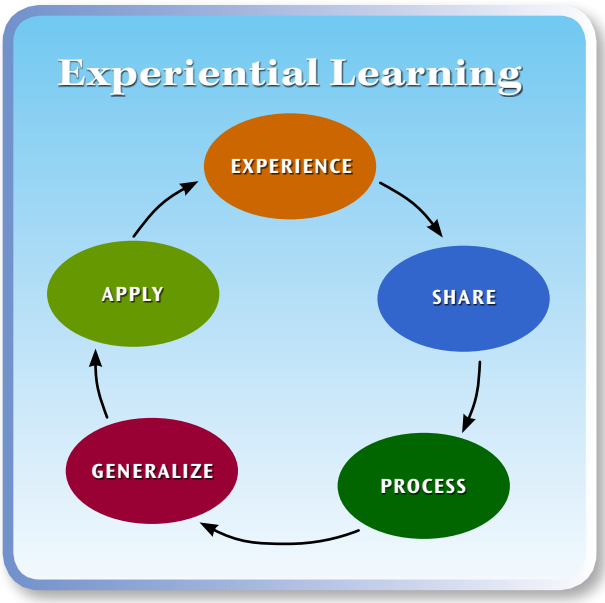
APPENDIX

The activity in this curriculum is designed around inquiry and experiential learning. Inquiry is a learner-centered approach in which individuals are problem solvers investigating questions through active engagement, observing and manipulating objects and phenomena, and acquiring or discovering knowledge. Experiential learning (EL) is a foundational educational strategy used in 4-H. In it, the learner has an experience phase of engagement in an activity, a reflection phase in which observations and reactions are shared and discussed, and an application phase in which new knowledge and skills are applied to a real-life setting. In 4-H, an EL model that uses a 5-step learning cycle is most commonly used. These five steps—Exploration, Sharing, Processing, Generalizing, and Application—are part of a recurring process that helps build learner understanding over time.



For more information on inquiry, EL and the 5-step learning cycle, please visit the University of California's Science, Technology, Environmental Literacy Workgroup's Experiential Learning Web site, http://www.experientiallearning.ucdavis.edu/default.shtml.

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YOUTH DEVELOPMENT THROUGH VETERINARY SCIENCE 3

The Eyes Have It!

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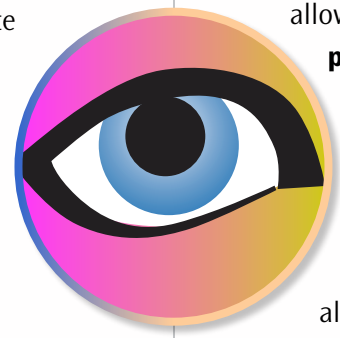
Subject Overview and Background Information

The five senses—**sight**, **hearing**, **taste**, **smell**, and **touch**—help animals collect information from their environments that aids in their survival. For example, sight helps animals locate food and avoid danger; hearing helps animals communicate with other animals; smell and taste are used to locate and choose foods; and touch helps animals detect different textures and temperatures in their environment. These senses are part of the **sensory system,** which receives and processes information from the environment.



An important part of a routine medical checkup of any animal includes an examination of the organs associated with the sensory system. Veterinarians look for discharges (color; consistency; texture) from the eyes and nose; check eyes for color, clarity, and the responsiveness of the pupils; examine ears for odor, discharge, inflammation, and scabs; inspect animal coats and skin for cuts, abrasions, scratches, and sensitivity to touch; and check an animal's mouth and tongue for odor, cuts, and sores. If the organs of the sensory system are not working properly, the animal will not be able to assess its environment accurately.

The **eye**, an animal's organ of vision, functions by allowing light to enter through an opening called the **pupil**. Not only does the pupil allow light to enter the eye, it also regulates the amount of light that passes through the opening. Under bright light conditions, the pupil **constricts** (becomes smaller) and allows less light to enter; under dim light conditions it **dilates** (becomes larger) and allows more light to enter.

The appearance and symmetry of the pupils can be important in determining an animal's general health. Veterinary practitioners routinely check an animal's pupils for symptoms of underlying eye disease or other health problems such as head or eye injury, nervous system disorders, glaucoma, and diabetes.

◆ Activity Concepts and Vocabulary

- **Constriction (kuh n-strik-shuh n)**: Making something narrower.
- **Dilation (dieley-shuhn)**: Making something bigger or wider or stretching it.
- **Eye**: An organ in the body that allows an animal to see.
- **Pupil**: The dark part in the center of the eye where light enters.
- **Sensory system**: A part of an animal's nervous system that includes the senses of sight, smell, hearing, taste, and touch.

◆ Life Skills

- **Head**: Keeping records, critical thinking
- **Heart**: Cooperation, communication, sharing
- **Hands**: Teamwork
- **Health**: Disease prevention

◆ Subject Links

Science and Language Arts

◆ State Content Standards

Science

- Grade 4
  - *Investigation and Experimentation: 6c*
- Grade 5
  - *Investigation and Experimentation: 6h*
- Grade 6
  - *Investigation and Experimentation: 7d, 7e*

Language Arts

- Grade 3
  - *Listening and Speaking Strategies: 1.8*
- Grade 4
  - *Listening and Speaking Strategies: 1.7, 1.8*
- Grade 5
  - *Listening and Speaking Strategies: 1.5*
- Grade 6
  - *Listening and Speaking Strategies: 1.5*

◆ Purpose of Activity

The purpose of this activity is to have youth make observations on changes to their eyes and eyesight when exposed to different types of stimuli.

ACTIVITY
The Eyes Have It!

Overview of the Activity

The youth will participate in activities in which they will be exposed to different environments and will make observations on what happens to their sense of vision. Youth will also be able to examine each other's eyes with a penlight and make observations on changes in the appearance of their eyes.

◆ Time Required

40 to 60 minutes

◆ Suggested Groupings

Pairs

◆ Materials Needed for Each pair

*(*Materials provided in the curriculum)*

- Flip chart paper
- Colored markers
- Penlight
- *Picture of a human eye
- *Pictures of animal eyes

◆ Getting Ready

- Organize the materials.
- Make enough copies of the human eye and animal eye pictures for each pair.
- Divide the youth into pairs.

Opening Questions

Ask the youth to respond to each question below by sharing their ideas verbally and/or by recording them on the flip chart paper provided.

1. What are our senses, and why do you think they are important?
2. What do you know about your eyes and how they work? What do you think the purpose of our eyes is?
3. What do you know about animals' senses, and why do you think they are important?

Procedure 1 (Experiencing)

1. Have one member of each pair stand outside on a bright day (or inside in a brightly lit room) for 2 minutes. After this time, have them step quickly into a darkened room and observe their surroundings. (**Note:** The room must be very dark for this activity to work effectively.) How did their surroundings appear when they first stepped into the darkened room? How, if at all, did their vision change after 2 minutes? Ask the youth to record their observations on the paper provided.
2. Have the second member of each pair stand in a darkened room for 2 minutes. After this time, have them step quickly into a brightly lit room (or step outside on a bright, sunny day) and observe their surroundings. How did their surroundings appear when they first stepped into the bright room or outside on a sunny day? How, if at all, did their vision change after 2 minutes? Ask the youth to record their observations on the paper provided.
3. Ask the youth in each pair to compare their observations. Ask the youth in the different groups to compare and discuss their results.

Procedure 2 (Experiencing)

1. Have one member of each pair stand facing the second partner while staring straight ahead.
2. Have the second individual take the penlight and point it to the outside of the right eye toward the right ear. Then, slowly move the light to the left so that it eventually passes over the right eye. Ask the youth to observe the eye as the light gets closer and reaction of the pupil as the light passes over it and record their observations on the paper provided. (**Note:** The eye must be kept open. Also, do not leave the beam of light on the eye for more than a few seconds.)
3. Repeat Step 2 with the left eye.
4. Switch partners.

Sharing, Processing, and Generalizing

Follow the lines of thinking developed through general thoughts, observations, and questions raised by the youth as they share and compare their thoughts and observations from Procedures 1 and 2; if necessary, use more targeted questions as prompts to get to particular points, such as:

1. Describe what happened to the eye as the penlight came toward the eye. Ask the youth to share their ideas verbally and/or record them on the flip chart paper provided.
2. In your opinion, explain the purposes of the eye's response as the light passed over it. Ask the youth to share their ideas verbally and/or record them on the flip chart paper provided.
3. How might the results from Procedure 2 be helpful in explaining the results from Procedure 1? Ask the youth to share their ideas verbally and/or record them on the flip chart paper provided.

Concept and Term Discovery/ Introduction

Volunteers need to ensure that the term **pupil** and the concepts of eye **dilation** and **constriction** have been introduced or discovered by the youth. This is a good time to provide the youth with a copy of the human eye picture.

- **Note**: The goal is to have the youth discover the concepts and terms on their own. It helps if they can define terms and concepts using their own words.
- **Volunteer Tip:** Introduce reasons for checking an animal's pupils as part of a regular veterinary exam (see "Subject Overview and Background Information," above).

Concept Application

1. Have the youth look at the "Human Eye" handout and compare it with their partner's eyes. Can they identify the parts shown?
2. Have youth look at the pictures of animal eyes and make observations and comparisons. Ask them to record their thoughts and ideas on the paper provided, and then share their observations and comparisons.
3. If the youth own their own animals, have them observe their eyes and make observations and comparisons with the eyes of other animals. Ask them to record their thoughts and ideas and then share their observations and comparisons.

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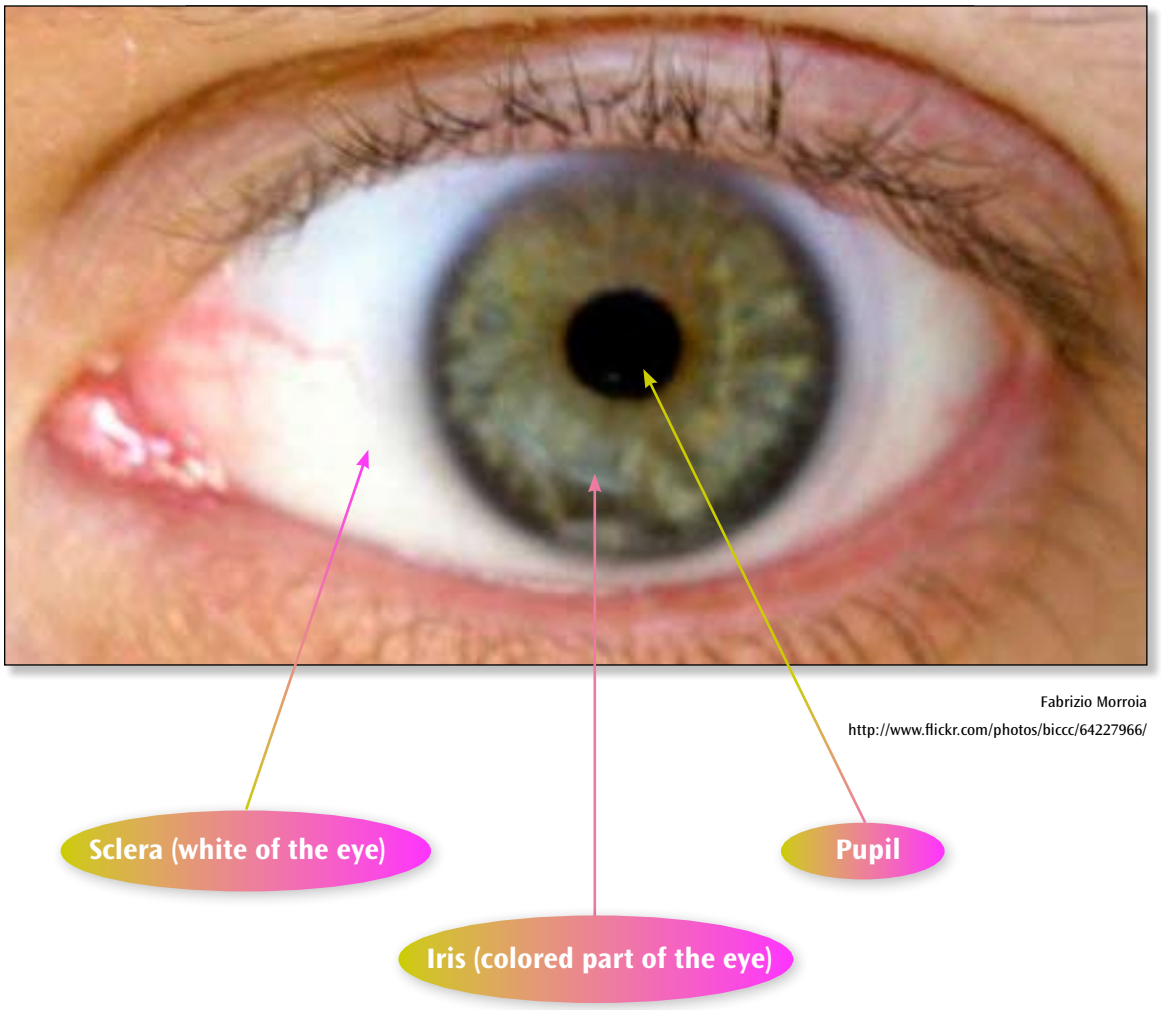
Human Eye



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Mark Robinson
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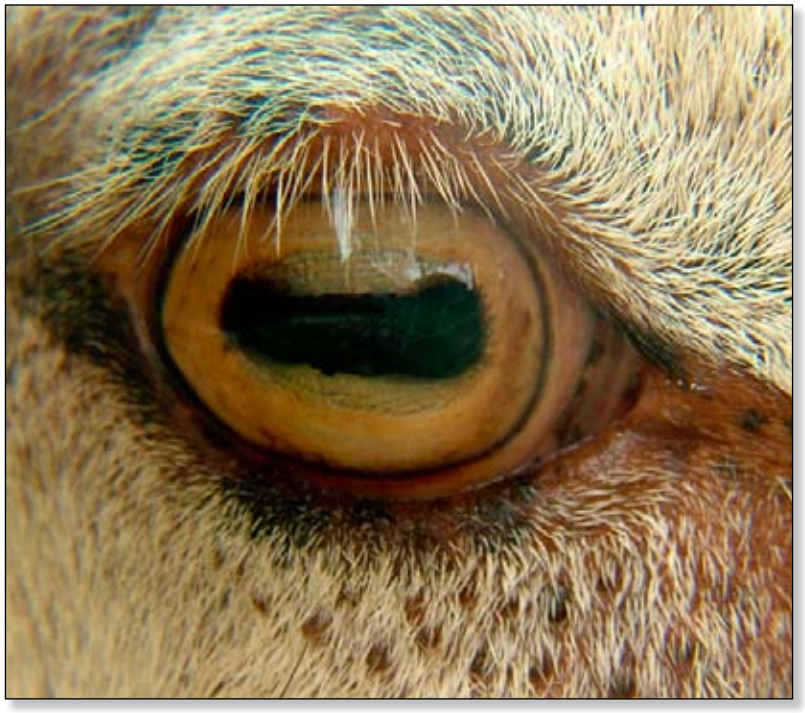
Sheep



Jannes Pockele
http://www.flickr.com/photos/jpockele/160702444/

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audi_inspiration

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Frog

Robert Kraft

http://www.publicdomainpictures.net/view-image.php?image=1041&large=1

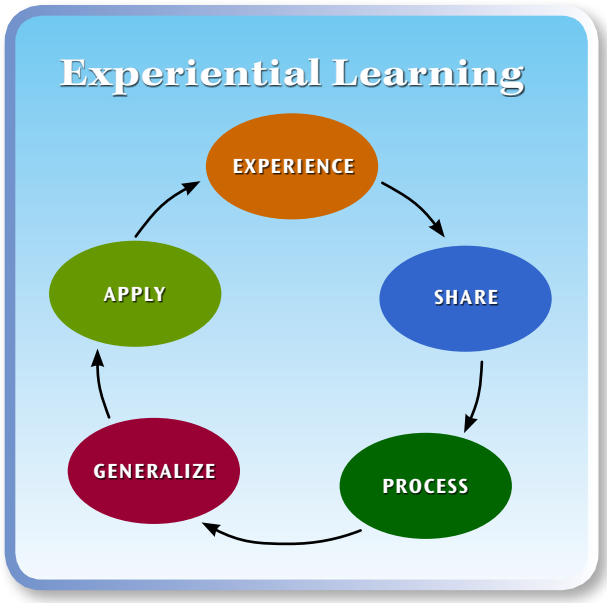
Lizard

Anna Cervova

http://www.publicdomainpictures.net/view-image.php?image=807

APPENDIX

The activity in this curriculum is designed around inquiry and experiential learning. Inquiry is a learner-centered approach in which individuals are problem solvers investigating questions through active engagement, observing and manipulating objects and phenomena, and acquiring or discovering knowledge. Experiential learning (EL) is a foundational educational strategy used in 4-H. In it, the learner has an experience phase of engagement in an activity, a reflection phase in which observations and reactions are shared and discussed, and an application phase in which new knowledge and skills are applied to a real-life setting. In 4-H, an EL model that uses a 5-step learning cycle is most commonly used. These five steps—Exploration, Sharing, Processing, Generalizing, and Application—are part of a recurring process that helps build learner understanding over time.



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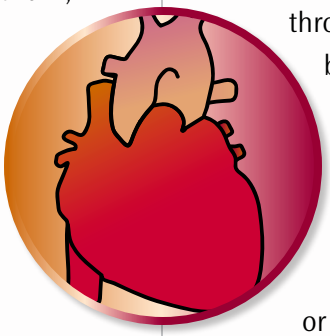
YOUTH DEVELOPMENT THROUGH VETERINARY SCIENCE 4

You've Got To Have Heart

MARTIN H. SMITH, Cooperative Extension Youth Curriculum Development Specialist, University of California, Davis; **CHERYL L. MEEHAN**, Staff Research Associate, University of California, Davis; **JUSTINE MA,** Program Representative, University of California, Davis; **H. STEVE DASHER**, 4-H Youth and Community Development Advisor, University of California Cooperative Extension, San Diego County; **JOE D. CAMARILLO**, 4-H Youth and Community Development Advisor, University of California Cooperative Extension, Madera County; **ELEANOR I. PRACHT-SMITH**, Science Teacher, Tremont Elementary School, Dixon; **CARLIN ENG** and **REBEKKA HAUERT,** University of California, Davis, Undergraduate Student Curriculum Design Team Members.

Subject Overview and Background Information

The **cardiovascular system** includes the **heart**, **lungs**, **blood,** and **blood vessels**. The heart serves as the "engine" of the system by rhythmically contracting to pump blood through vessels to the lungs and the rest of the body. The heart in birds and mammals (reptiles, amphibians, and fish differ) has four discrete chambers: the right atrium, the right ventricle, the left atrium, and the left ventricle. The **right atrium** receives blood from the body. The blood then flows into the **right ventricle,** where it is pumped to the lungs. The blood enters the **left atrium** when it returns from the lungs. The blood then flows into the **left ventricle,** where it is pumped to the rest of the body.



The purpose of the blood is to carry **oxygen** and nutrients to all parts of the body. Oxygen is needed to break down nutrients for energy. The waste product of this process is **carbon dioxide**, which must be removed from the body through the lungs.

Blood flows through pathways called blood vessels. Vessels going toward the heart are called **veins**, and vessels going away from the heart are called **arteries**. Oxygen leaves the blood and goes into the cells through very small blood vessels called **capillaries**. At the same time, carbon dioxide must leave the cells through the capillaries and enter the blood stream.

Oxygen enters the blood in the lungs. When an animal **inhales**, the chest expands and the lungs fill up with air. The oxygen-rich air in the lungs enters into the blood through the capillaries. Carbon dioxide also leaves the blood through the capillaries in the lungs. When the animal **exhales**, carbon-dioxide-rich air is expelled.

The **respiration rate** is the number of breaths taken in 1 minute. It can be determined by watching the rise and fall of an animal's chest or by moistening one's finger and holding it in front of the animal's nose to feel the exhaled air from each breath. The **heart rate** is the number of heartbeats per minute. One can count heartbeats by listening to the heart with a **stethoscope**. Another way is to find the **pulse**, the rhythmic throbbing of the arteries caused by the heartbeat. In humans, one can feel the pulse on the palm side of the wrist or on either side of the neck.

Variations in an animal's normal heart rate or respiration rate can be signs of health problems. For example, an animal who is panting (breathing heavily and rapidly) may be overheated, stressed, or suffering from a disease that affects the heart or lungs. On the other hand, a weak pulse or slow heart rate may be caused by illness as well. Whenever a caretaker notices these or other changes associated with an animal's cardiovascular system, it is important to consider consulting a veterinarian.

Activity Concepts and Vocabulary

- **Blood**: The fluid that is pumped from the heart through vessels and moves throughout the body.
- **Carbon dioxide (kahr-buhn dahy-ok-sahyd)**: A colorless, odorless gas that is breathed out of the body.
- **Exhalation (eks-huh-ley-shuhn)**: The act of breathing air out of the lungs.
- **Heart rate**: The number of times the heart beats in a certain amount of time.
- **Heart**: An organ that pumps blood throughout the body.
- **Inhalation (in-huh-ley-shuhn)**: An intake of air through the nose or mouth into the lungs.
- **Left atrium**: The upper left chamber of the heart.
- **Left ventricle**: The lower left chamber of the heart that receives blood from the left atrium.
- **Lungs**: The organ that transfers oxygen and removes carbon dioxide from the blood, allowing animals to breathe and function properly.
- **Oxygen (ok-si-juhn)**: A colorless, odorless gas that is essential for animals to stay alive.
- **Pulse**: The regular expansion and contraction of the artery (vessel carrying blood) caused by the heart pumping blood throughout the body.
- **Respiration rate (res-puh-rey-shuhn)**: The frequency of breathing, expressed as the number of breaths per minute.
- **Right atrium (ay-tree-uhm)**: The upper right chamber of the heart.
- **Right ventricle (ven-tri-kul)**: The lower right chamber of the heart that receives blood from the right atrium.
- **Stethoscope (steth-uh-skohp)**: An instrument that is used to listen to breathing, heartbeats, and other sounds made by the body.

Life Skills

- **Head**: Learning to learn, problem solving, critical thinking, keeping records
- **Heart**: Communication, cooperation, social skills, sharing
- **Hands**: Contributions to group effort, teamwork

Subject Links

Science, Language Arts, and Math

State Science Standards Supported

Science

- Grade 5
  - *Life Sciences: 2a, 2b*

Language Arts

- Grade 3
  - *Listening and Speaking Strategies: 1.5, 1.8*
- Grade 4
  - *Listening and Speaking Strategies: 1.7, 1.8*
- Grade 5
  - *Listening and Speaking Strategies: 1.5*
- Grade 6
  - *Listening and Speaking Strategies: 1.5*

Math

- Grade 3
  - *Statistics, Data Analysis, and Probability: 1.3*

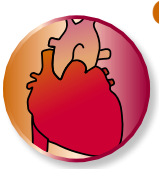
Purpose of Activities

The purpose of the activity is to learn about and understand the cardiovascular system and the important components of this system.

ACTIVITY 1

You've Got to Have Heart

Overview of the Activity



In this activity, youth will try to figure out how the cardiovascular system works, with particular attention to the heart. Youth will learn the important components of this system, the function of the heart, and how to take a pulse and determine the rate of respiration.

◆ Time Required

60 to 70 minutes

◆ Suggested Groupings

Small groups of 3 to 4

◆ Materials Needed for Each Group

*(*Materials provided in curriculum)*

- Flip chart paper
- Markers or writing utensils
- Watch with a second hand
- Scissors (enough for each group)
- Blue and red markers (enough for each group)
- Stethoscope
- *Body/heart cards
- *Blood pathway diagram
- *Heart diagram

◆ Getting Ready

- Make one copy of the body/heart cards, blood pathway diagram, and heart diagram for each group.
- Provide each group a sheet of flip chart paper and markers to answer questions.
- Divide youth into small groups for opening questions.

Opening Questions

Ask the youth to respond to each question below by sharing their ideas verbally and/or by recording them on the flip chart paper provided.

1. What do you know about the heart? What do you know about how a heart works?
2. What do you know about different ways you can detect (find) your heartbeat?
   - **Volunteer Tip**: *A pulse can be detected by holding your hand over your heart, by placing two fingers lightly on the inside of your left wrist just to the left of the arm's midline, or by placing two fingers lightly on the left side of your neck just below the angle of your jaw.*

Procedure (Experiencing)

1. Provide each group with a set of body/heart cards.
2. Have the youth cut out the body/heart cards. Allow the youth to organize the cards on a sheet of flip chart paper in the order they think blood flows through them.
3. Ask the youth to indicate the movement of blood with a marker, drawing the blood with a lot of oxygen in red and the blood with little oxygen in blue.
   - **Volunteer Tip**: *To help the youth start this process, have them think about what happens when they breathe in through their nose.*

Sharing, Processing, and Generalizing

1. Have the groups share their diagrams.
2. Follow the lines of thinking developed through general thoughts, observations, and questions raised by the youth as they share and compare their thoughts and ideas relative to the flow of blood through the heart, lungs, and body. If necessary, use more targeted questions as prompts to get to particular points, such as:
   - *What do you know about blood and the purpose it serves? Please explain.*
   - *What do you know about how blood is pumped through the body? Please explain.*
3. Give each group a copy of the blood pathway diagram and the heart diagram. Using the blood pathway diagram as a guide, have the youth trace the pathway of the blood into, through, and out of the heart on the heart diagram.
4. Ask the following questions and have groups write their ideas on flip chart paper.
   - *What do you think your heart rate tells you? Please explain. If you wanted to find out what your heart rate is, how would you go about finding it?*
   - *What do you think your breathing rate tells you? Please explain. If you wanted to find out what your breathing rate is, how would you go about finding it?*
5. Have the groups share their thoughts and ideas relative to these two questions.
6. Go over the terms **heart rate** and **breathing rate**. Introduce the stethoscope (if available) and allow each group to spend some time listening to their own and each other's hearts.

7. Ask the youth to try to find their pulse. Note that the youth may need help. Have the youth count their heartbeats for 6 seconds. Tell the youth when to start and stop counting. Add a 0 to the end of the number they counted to get their heart rate per minute. (For example, if they count 7 beats in 6 seconds, their heart rate will be 70 beats per minute.) Normal heart rates for humans are
   - *Newborn infants: 100 to 160 beats per minute*
   - *Children 1 to 10 years: 70 to 120 beats per minute*
   - *Children over 10 and adults (including seniors): 60 to 100 beats per minute*
   - *Well-trained athletes: 40 to 60 beats per minute*
8. Ask the youth to determine their breathing rate at rest while seated. Have them count the number of breaths they take for 6 seconds. Tell them when to start and stop counting. Add a 0 to the end of the number they counted to get their breathing rate per minute. (For example, if they count 3 breaths in 6 seconds, their breathing rate will be 30 breaths per minute.) Normal breathing rates for humans are
   - *Normal range for newborn infants: 30 to 60 breaths per minute*
   - *Normal range for young children: 20 to 40 breaths per minute*
   - *Normal range for older children: 15 to 25 breaths per minute*
   - *Normal range for adults at rest: 15 to 20 breaths per minute*

Concept and Term Discovery/ Introduction

Volunteers need to ensure that youth understand the **basic heart anatomy** (ventricles and atria), that **gas exchange** occurs between the blood and lungs and the blood and the body (which way oxygen and carbon dioxide are going), and what **heart** and **respiration rates** are and how to record them. Additionally, make certain that the key vocabulary terms—**heart, right atrium, right ventricle, left atrium, left ventricle, lungs, blood, oxygen, carbon dioxide, inhalation, exhalation, respiration rate, heart rate, pulse, and stethoscope**—have either been discovered by the youth or introduced by the volunteer volunteer.

- **Note**: The goal is to have the youth develop these concepts through their exploration and define the terms using their own words.

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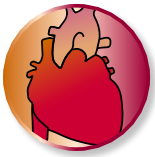
ACTIVITY 2
Map the Heart!

Overview of the Activity



This is an interactive activity in which the youth will physically model how blood is moved from the heart to the lungs and from the heart to the body.

Time Required

45 to 60 minutes

Materials Needed

*(*Materials provided in curriculum)*

- Large open space outside (blacktop with a four-square court is ideal) or inside (gymnasium or multipurpose room)
- Grocery-size paper bags
- Watch with a second hand
- Four shoe boxes or similar small containers
- *Heart rate and breathing rate charts
- *Heart rate and breathing rate graphs
- *Oxygen and carbon dioxide templates
- *Map the heart activity diagram
- *Daily heart rate chart

Getting Ready

- Make a copy of the heart rate and breathing rate charts and the heart rate and breathing rate graphs for each youth.

- Make two copies of the oxygen template and two copies of the carbon dioxide template for each youth.
  - **Volunteer Tip:** *Red and blue paper or plastic plates may be substituted for the copies of the Oxygen and Carbon Dioxide Templates.*
- Make a copy of the daily heart rate chart for each group (concept application).
- See the "Map the Heart Activity Diagram." Use a "four-square" court on a playground or paper bags to set up the boundaries of the heart chambers.
- Label the chambers. A good way to do this is to write the names of the heart chambers on the paper bags and place them in the corresponding chambers with small rocks to hold them down. You can also map out the different areas with chalk if permitted.
- Mark a separate space and label it as the lungs.
- Mark another space for the body.
- Set up two shoe boxes in the body area and two shoe boxes in the lung area. In each area, label one shoe box "Carbon Dioxide" and the other "Oxygen."
- Cut out the templates of oxygen and carbon dioxide and place them in the appropriate shoe boxes.

Opening Questions

Ask the youth to respond to each question below by sharing their ideas verbally and/or by recording them on the flip chart paper provided.

(**Note**: If you are doing this activity and Activity 1 on the same day, you can skip these opening questions).

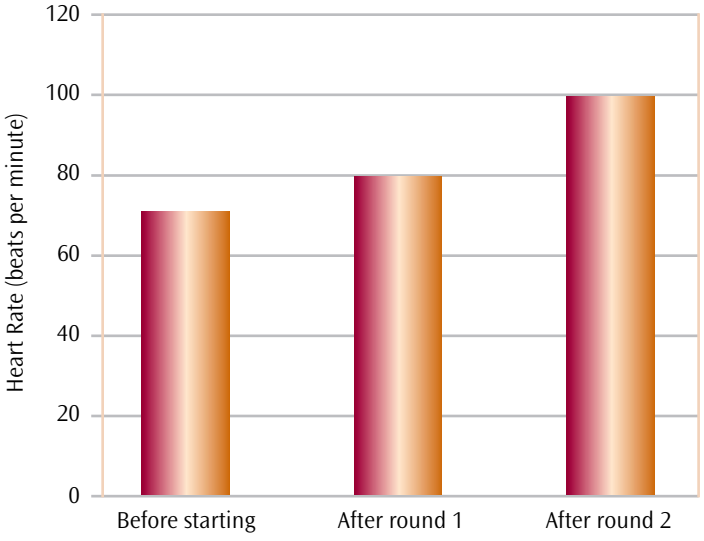
1. What do you know about why animals need to breathe?
2. What do you know about the heart? What do you know about how a heart works?
3. What do you know about different ways you can detect your heartbeat?
   - **Volunteer Tip:** *A pulse can be detected by holding your hand over your heart, by placing two fingers lightly on the inside of your left wrist just to the left of the arm's midline, or by placing two fingers lightly on the left side of your neck just below the angle of your jaw.*

Procedure (Experiencing)

The purpose of this exercise is to allow youth to simulate blood flow as detailed in the worksheets "Blood Pathway Diagram" and "Map the Heart Activity Diagram." Youth will pick up oxygen from the shoe box in the lungs and move to the heart. From there, carrying their oxygen, they will move out to the body, where they will exchange oxygen for carbon dioxide and then move back to the heart. They will end back at the lungs, dropping off the carbon dioxide in the shoe box. Have the youth do the activity at a walk the first time and at a run the second time. They will compare their heart rates between walking and running using the heart rate and breathing rate charts to further develop an understanding of heart rates.

1. Explain the following rules to the youth.
   - *The object of the game is to get the oxygen into the body and to get the carbon dioxide out of the body.*
   - *The youth will be blood cells. They will start in the lungs since this is where blood cells pick up oxygen when a person inhales. The game ends in the lungs when the person exhales, releasing carbon dioxide.*
   - *Using what they learned in the Activity 1, the youth will move 2 to 3 at a time through the blood pathways, exchanging oxygen and carbon dioxide when appropriate.*
   - *Each youth may hold only one oxygen or one carbon dioxide at a time.*
   - *Each time the youth leave the heart they may exchange either oxygen or carbon dioxide only once.*
   - *As each group of youth moves through the blood pathway, they may not pass each other.*
2. Before starting, provide each youth with the heart rate and breathing rate charts and have them record their own heart and breathing rates.
3. Round 1.
   - *Volunteers place* **one oxygen** *for each youth in the oxygen shoe box in the lungs.*
   - *Volunteers place* **one carbon dioxide** *for each youth in the carbon dioxide shoe box in the body.*
   - *Tell youth they must walk (not run) through the pathway.*
   - *Let youth begin, with a small interval of time between when each group starts.*
   - *The round ends when all oxygen is in the body and all carbon dioxide is in the lungs.*

4. As soon as each youth completes the pathway they should immediately determine their own heart rate and breathing rate and record these on their heart rate and breathing rate charts.
5. Round 2.
   - *Volunteers place* **two oxygen** *for each youth in oxygen shoe box in the lungs.*
   - *Volunteers place* **two carbon dioxide** *for each youth in the carbon dioxide shoe box in the body.*
   - *Tell the youth they may jog through the pathway.*
   - *Use the same rules as round 1 and let round 2 begin.*
   - *The activity ends when all oxygen is in the body and all carbon dioxide is in the lungs.*
6. As soon as each youth completes the pathway they should immediately determine their own heart rate and breathing rate and record these on their heart rate and breathing rate charts.
7. Once inside, have youth take the data from their heart rate and breathing rate charts and create bar graphs of their data on the heart rate and breathing rate graphs (see example below).



Sharing, Processing, and Generalizing

Follow the lines of thinking developed through general thoughts, observations, and questions raised by the youth as they share and compare their thoughts and observations. If necessary, use more targeted questions as prompts to get to particular points, such as:

1. Why do you think the blood cells have to switch oxygen and carbon dioxide in the lungs? In the body? Please explain.
2. How many times did the blood cells (youth) have to go through the heart in one complete circulation? Why do you think this was necessary? Please explain.
3. Why do you think the rate of blood flow is faster at some times and slower at others? Please explain.
4. What observations and comparisons can you make about your heart rate and your breathing rate before the activity, during round 1 and during round 2?
5. How can you explain the similarities or differences between the three measurements of heart rate? How can you explain the similarities or differences between the three measurements of breathing rate?

Concept and Term Discovery/ Introduction

Volunteers need to ensure that youth understand the **basic heart anatomy** (ventricles and atria), that **gas exchange** occurs between the blood and lungs and between the blood and the body (which way oxygen and carbon dioxide are going), and what **heart** and **respiration rates** are and how to record them.

- **Note:** The goal is to have the youth develop these concepts through their exploration and define the terms using their own words.

Concept Application

1. Using the daily heart rate chart, request that the youth record their heart rates at different times during the day. For example:
   - *morning before rising from bed*
   - *midday prior to lunch*
   - *afternoon after completing some type of activity (running; riding a bicycle; climbing a set of stairs)*
   - *after dinner*
   - *before bed*
2. Ask the youth to compare their heart rates at different times of the day. What similarities or differences do they notice? Ask them to explain their thoughts and ideas.

References

Microsoft Encarta Encyclopedia Deluxe. 2001. Circulatory system. CD-ROM. Seattle: Microsoft.

Sherwood, L. 2004. Human physiology: From cells to systems. 5th ed. Belmont, CA: Brooks/Cole.

BODY & HEART CARDS

Lungs

Take carbon dioxide from the blood and give it oxygen

Body

Takes oxygen from the blood and gives it carbon dioxide

Right Atrium of Heart

Receives blood with a lot of carbon dioxide

Blood from here needs to go to a pump

Right Ventricle of Heart

Pumps blood with a lot of carbon dioxide to the lungs.

Left Atrium of Heart

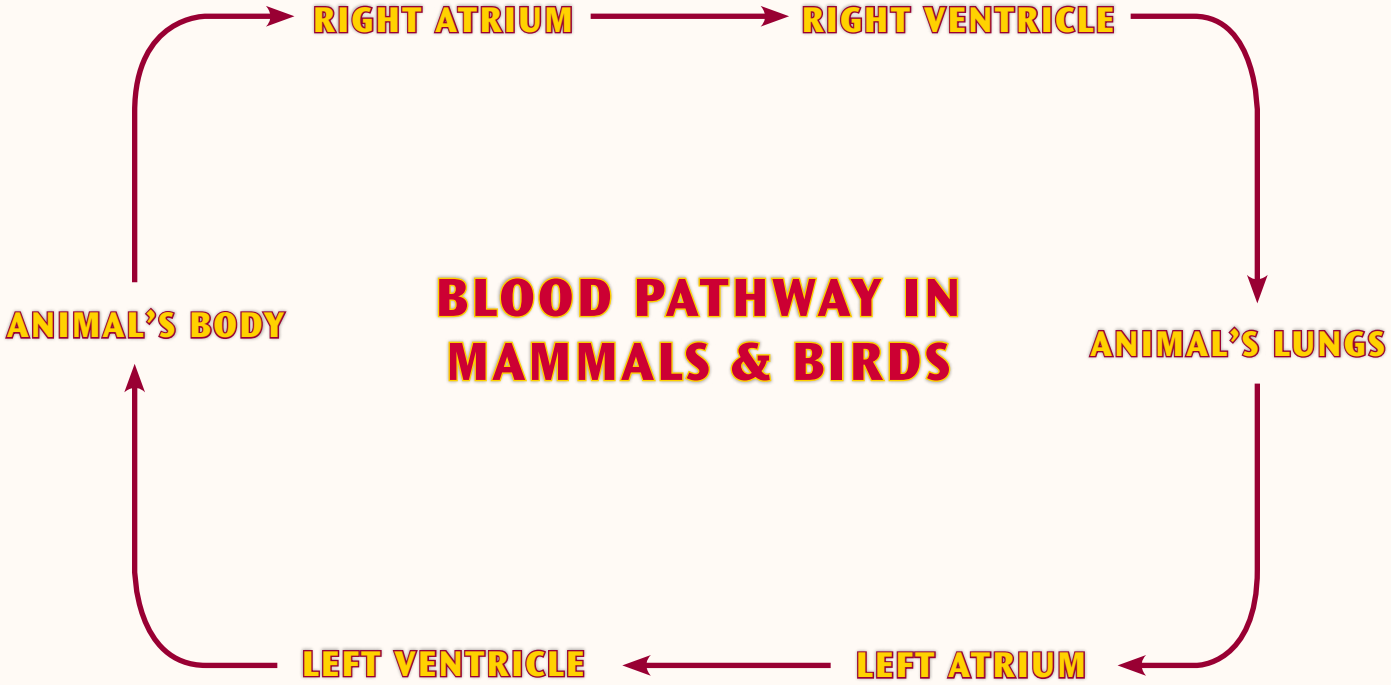
Receives blood with a lot of oxygen.

Blood from here needs to go to a pump

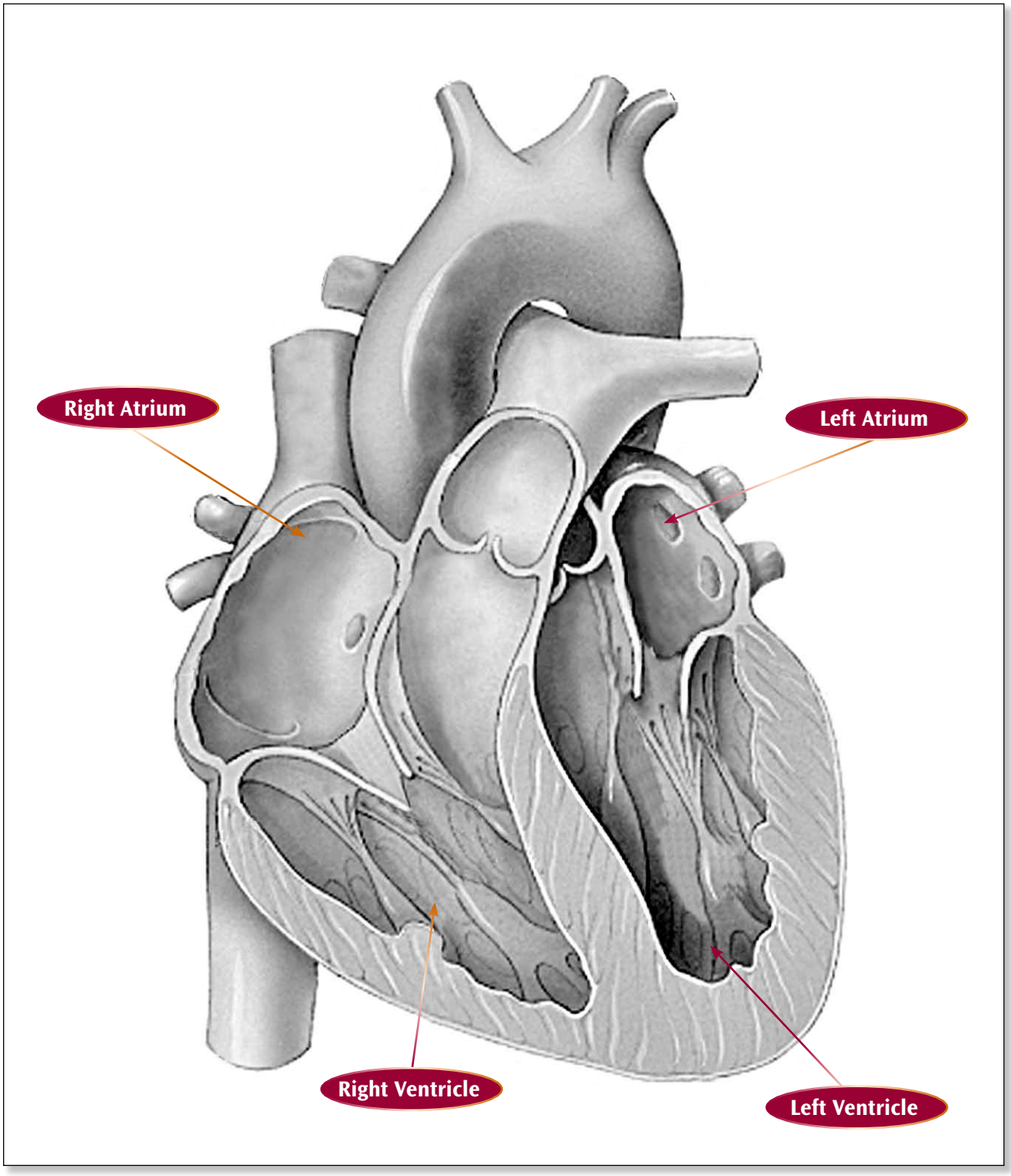
Left Ventricle of Heart

Pumps blood with a lot of oxygen to the parts of the body, such as the muscles, organs, and brain

BLOOD PATHWAY DIAGRAM



Interior View of the Human Heart



Adapted from http://www.biol.sc.edu/courses/bio102/Image9.gif

Heart Rate and Breathing Rate Charts

Heart Rate Chart

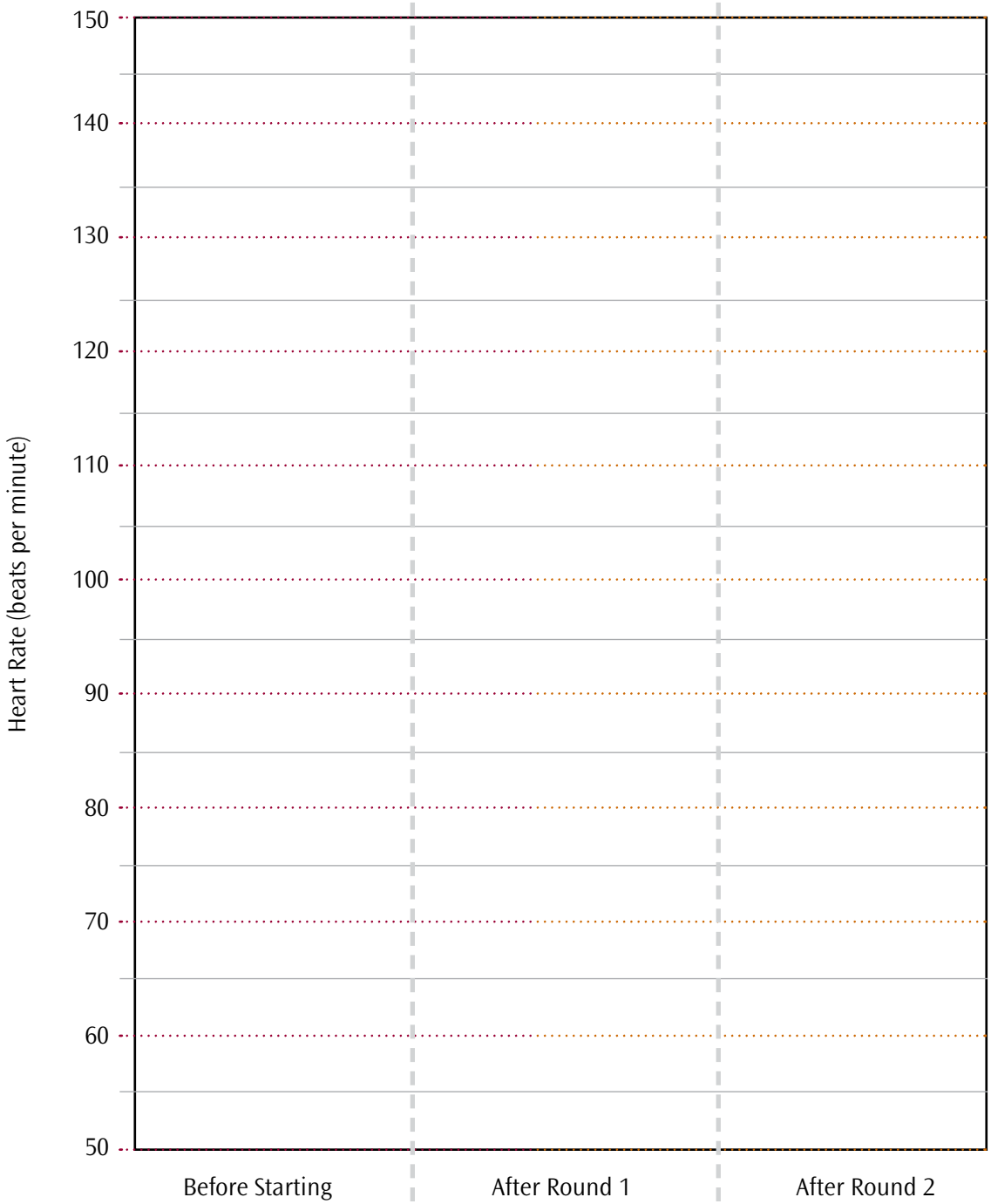
Time	Heart Rate
Before Round 1	
After Round 1	
After Round 2	

Respiration (Breathing) Rate Chart

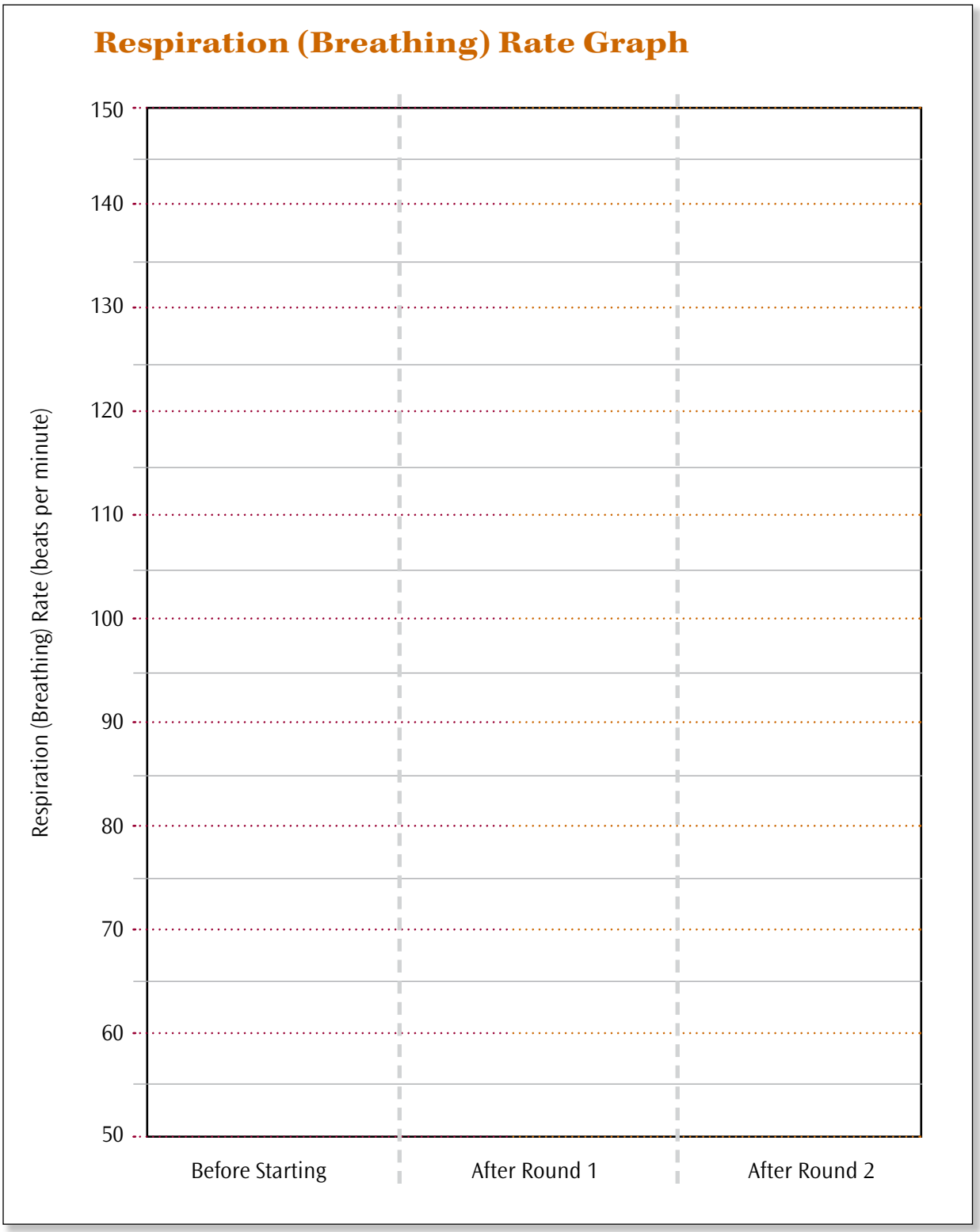
Time	Respiration (Breathing) Rate
Before Round 1	
After Round 1	
After Round 2	

Heart Rate and Breathing Rate Graphs

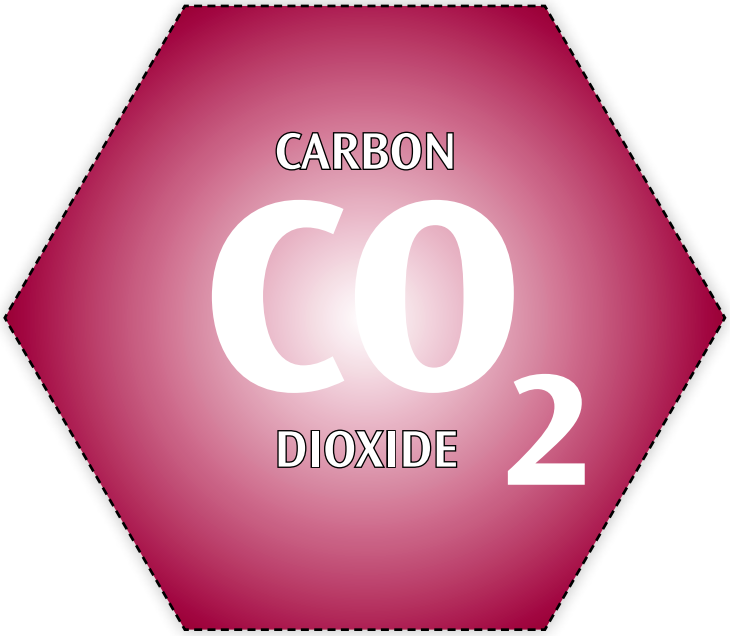
Heart Rate Graph

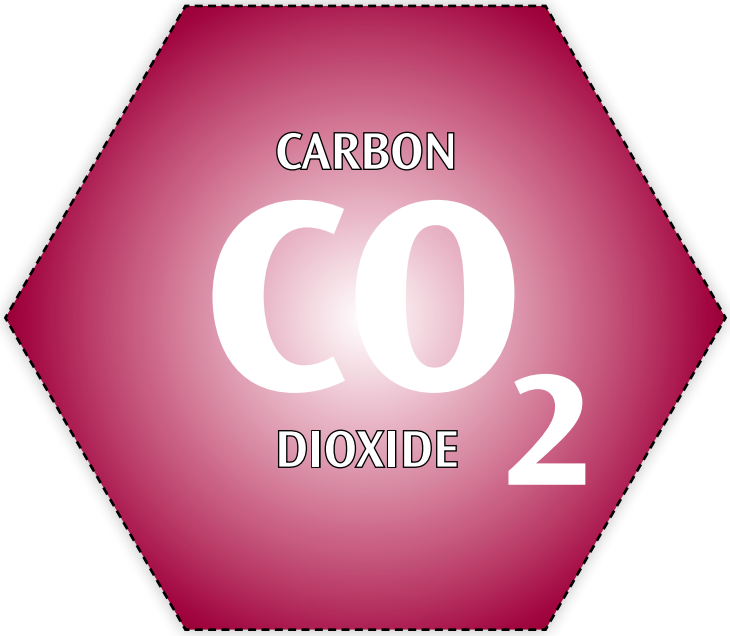


Respiration (Breathing) Rate Graph



Oxygen and Carbon Dioxide Templates





Map the Heart Activity Diagram

DIRECTIONS

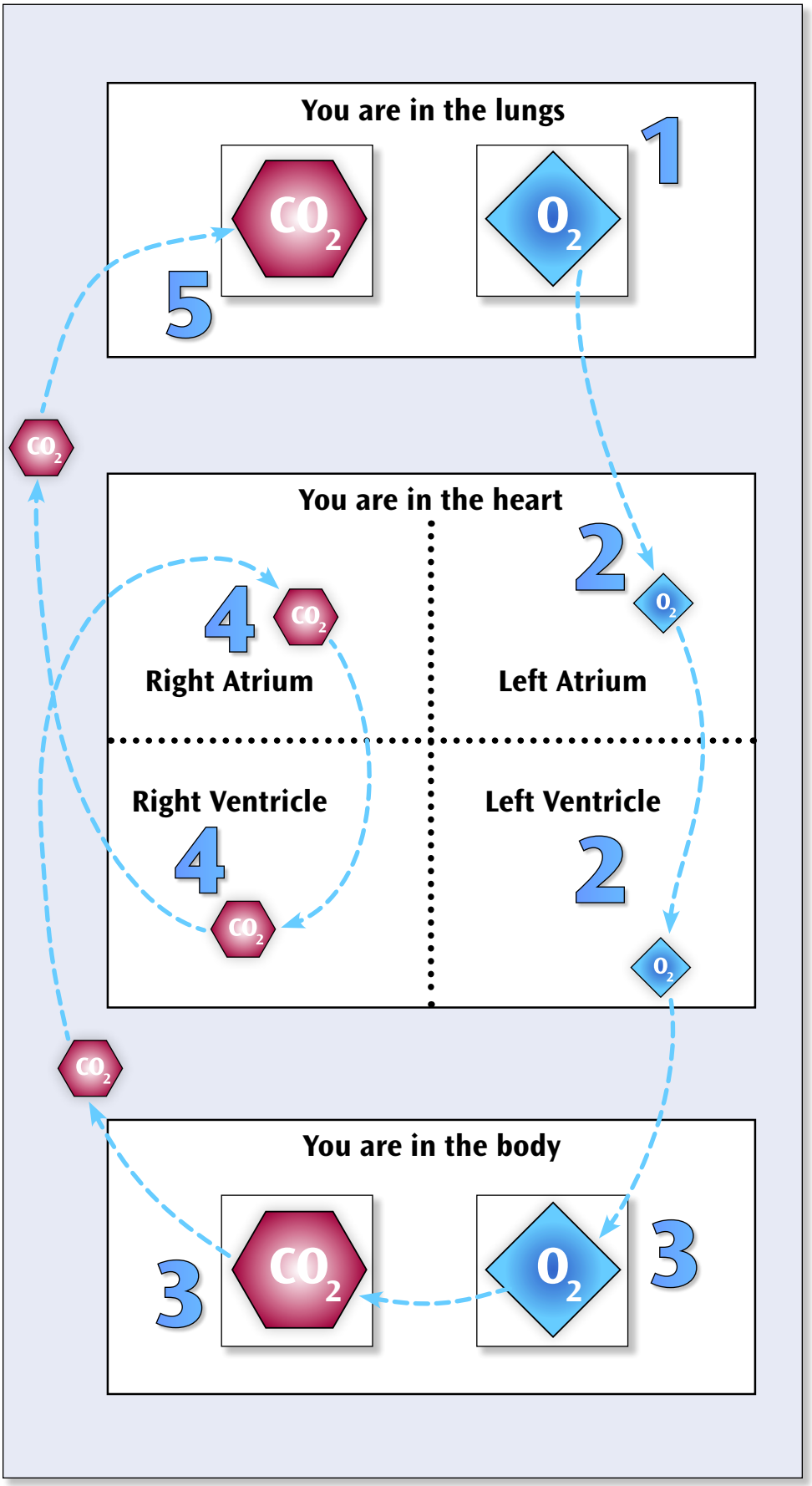
1 Start at the O_2 box. Pick up O_2 and head towards the **left atrium** of the **heart**.

2 Go through the **left atrium** and then the **left ventricle** out to the **body**.

3 Drop off O_2 and pick up CO_2. Head towards the **right atrium** of the **heart**.

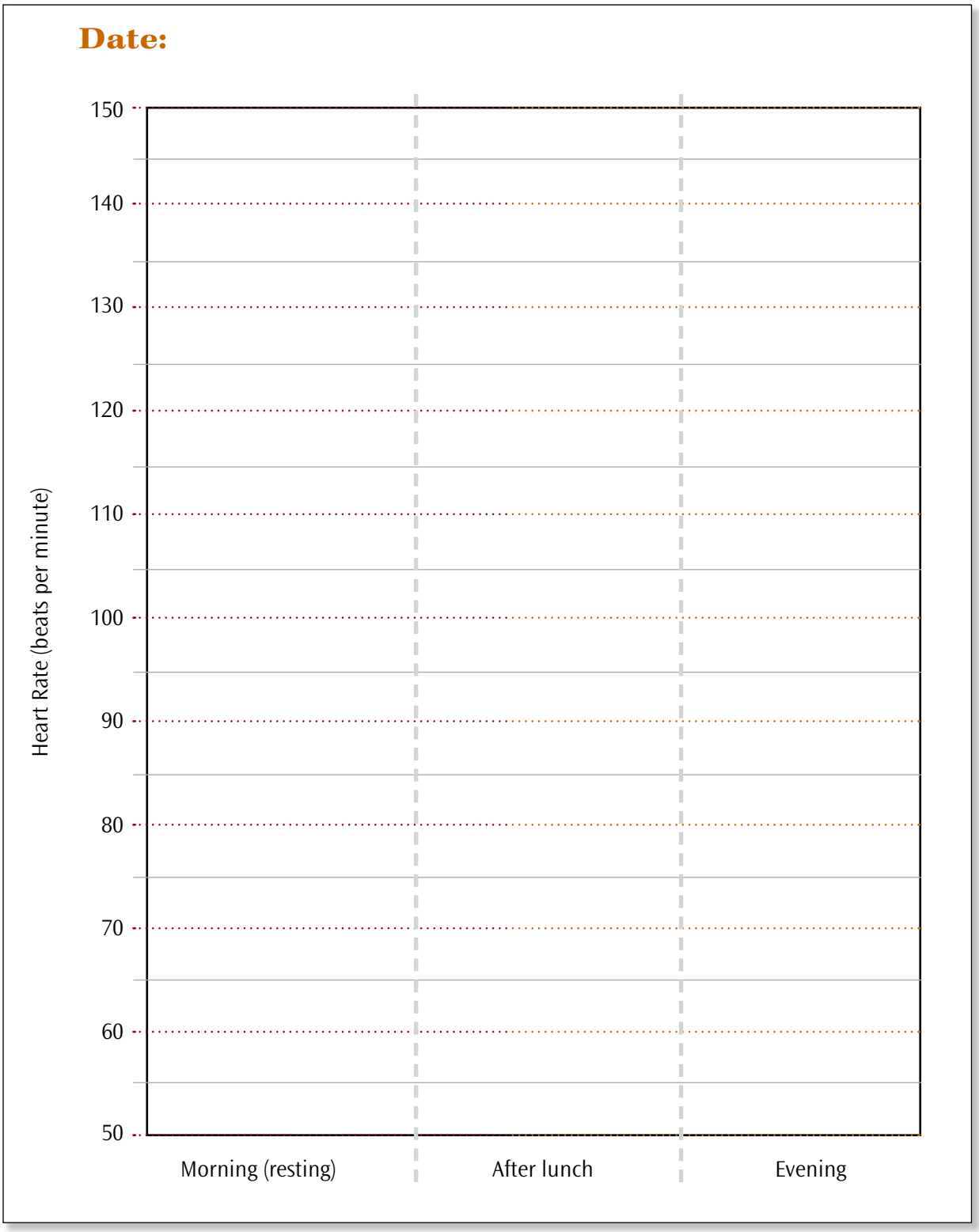
4 Enter through the **right atrium** and then the **right ventricle** out to the **lungs**.

5 Drop off CO_2 and repeat the cycle.



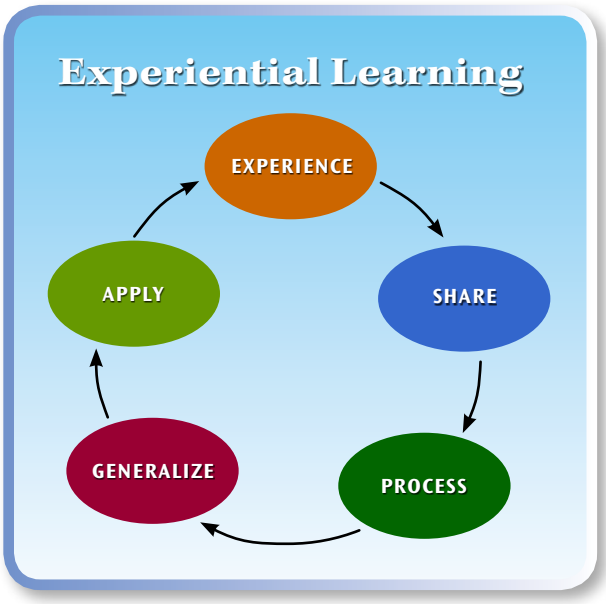
Daily Heart Rate Chart

Date:



APPENDIX

The activities in this curriculum are designed around inquiry and experiential learning. Inquiry is a learner-centered approach in which individuals are problem solvers investigating questions through active engagement, observing and manipulating objects and phenomena, and acquiring or discovering knowledge. Experiential learning (EL) is a foundational educational strategy used in 4-H. In it, the learner has an experience phase of engagement in an activity, a reflection phase in which observations and reactions are shared and discussed, and an application phase in which new knowledge and skills are applied to a real-life setting. In 4-H, an EL model that uses a 5-step learning cycle is most commonly used. These five steps—Exploration, Sharing, Processing, Generalizing, and Application—are part of a recurring process that helps build learner understanding over time.



For more information on inquiry, EL and the 5-step learning cycle, please visit the University of California's Science, Technology, Environmental Literacy Workgroup's Experiential Learning Web site, http://www.experientiallearning.ucdavis.edu/default.shtml.

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YOUTH DEVELOPMENT THROUGH VETERINARY SCIENCE 5

Dem Bones, Dem Bones

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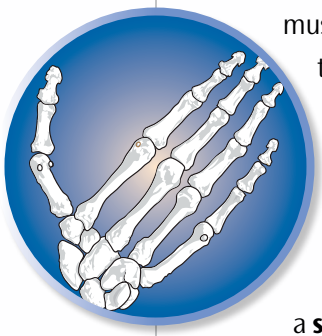
Subject Overview and Background Information:

Movement is essential to animals, and almost all of an animal's daily activities are dependant on the movement of muscles and bones. Animals need muscles and bones to find and eat food, to move from one place to another, and to interact with each other and the environment.

Animals' bodies are configured for a wide range of movements, from simple to complex. To accomplish these actions, muscles move bones by **contracting**, or shortening. When muscles move, they pull bones in specific directions, and it is this simple concept that allows the limbs and bodies of animals to move in precise ways. Without muscles, bones would not be able to move, and without bones, muscles would have little shape and have nothing to pull.



Where muscles are located on an animal's body and where movement occurs is not necessarily obvious. In humans, for example, the muscles that allow us to move our lower arm upward, bending at the elbow, are located in the upper arm, and the muscles that provide for the movement of the upper arm are located in the shoulder. A **flexor muscle** is a muscle of the skeleton that decreases the angle of a limb (e.g., bending the knee or the elbow). This action is called **flexion**. An **extensor muscle** has the opposite effect on a limb. Extensor muscles **extend** a limb (e.g., straightening a leg or arm), thus increasing the angle. This movement is called **extension.**

Other animals' muscles are configured in ways that are similar to humans, but unlike humans, most other animals have different means of locomotion. For example, strong breast muscles and hollow, lightweight bones allow most birds to **fly**. Horses, dogs, cats, and many other animals are **quadrupedal**, meaning they move on four legs (humans are **bipedal**, moving on two legs), and their muscles and bones must be configured accordingly. Furthermore, snakes and fish have no legs or wings but are able to wriggle their bodies in a **serpentine** fashion to provide locomotion in their environments.

Observing an animal for changes in its normal patterns of movement is important and may provide veterinarians with critical information relative to the animal's health. Abnormal movements (e.g., limping), or lack of movement (e.g., inability to move a limb), may be a symptom or an injury or disease. Whenever a caretaker notices these or other changes associated with an animal's muscles or bones, it is important to consider consulting a veterinarian.

Activity Concepts and Vocabulary

- **Bipedal locomotion (bi-ped-l)**: A form of land animal locomotion using two legs.
- **Flexion (flek-shuhn)**: The act of bending a joint or limb in the body by the action of flexor muscles.
- **Flight**: A form of locomotion above the ground.
- **Limb movement**: Changing the location or position of body parts.
- **Muscle contraction (kuhn-trak-shuhn)**: The shortening of muscle tissue that allows movement of body parts.
- **Muscle extension (ik-sten-shuhn)**: The straightening or extending of a limb in the body by the action of extensor muscles.
- **Quadrupedal locomotion (kwod-row-ped-l)**: A form of land animal locomotion using four legs.
- **Serpentine locomotion (sur-puhn-teen)**: A form of movement that is typical of a snake, curving in an S shape.

Life Skills

- **Head**: Critical thinking, learning to learn, keeping records, problem solving
- **Heart**: Cooperation, communication, sharing
- **Hands**: Teamwork, self-motivation

Subject Links

Science and Language Arts

State Content Standards Supported

Science

- Grade 4
  - *Investigation and Experimentation: 6c, 6d*
- Grade 5
  - *Investigation and Experimentation: 6h*
- Grade 6:
  - *Investigation and Experimentation: 7e*

Language Arts

- Grade 3
  - *Listening and Speaking Strategies: 1.5, 1.8*
- Grade 4
  - *Listening and Speaking Strategies: 1.7, 1.8*
- Grade 5
  - *Listening and Speaking Strategies: 1.5*
- Grade 6
  - *Listening and Speaking Strategies: 1.5*

Purpose of Activities

In Activity 1, "Dem Bones, Dem Bones," youth will discover which muscles and bones are involved in particular movements. In Activity 2, "Animal Actions," youth will discover which muscles and bones are involved in the movement of different animals.

ACTIVITY 1

Dem Bones, Dem Bones

Overview of the Activity

There are two parts to this activity. In Part A youth will have a chance to lift a can and determine which muscles and bones are required to achieve this task. They will first predict the muscles that are used to lift the can, then lift the can, and finally determine if their prediction was correct. Part B is similar to Part A, but this time, youth will lift their leg and determine the bones and muscles used in this action.

Time Required

25 to 40 minutes

Suggested Groupings

Pairs or small groups

Materials Needed for Each Pair or Small Group

*(*Materials provided in curriculum)*

- *Human Diagrams: bones of human arm, bones of human leg, and muscles of human body
- One large, unopened can of soup (or other object of similar weight and size)
- One piece of flip chart paper
- Colored markers or other writing utensils (shared materials)

◆ Getting Ready

- Form pairs or small groups.
- Make copies of the three human diagrams and provide each pair or small group with one copy of each diagram.
- Provide each pair or small group with one unopened can of soup or other object of similar weight and size.
- Provide each pair or small group with one piece of flip chart paper and writing utensils.

Opening Questions

Ask the youth to respond to each question below by sharing their ideas verbally and/or by recording them on the flip chart paper provided.

1. What do you know or wonder about muscles? What do you know or wonder about bones?
2. What daily activities do you do that require the use of muscles and bones? Think of examples that require very simple movements. Think of other examples that require complex movements.
3. Describe different ways you can move your arms and legs. How do these movements relate to your answers to question 2?

Procedure Part A (Experiencing)

1. As a pair or group, have the youth review the handouts "Bones of Human Arm" and "Muscles of Human Body" and identify the matching areas on their arms.
2. Taking turns, have each member of the pair or group sit at a table with their elbows resting on the table's edge, their palms turned up, and their forearms flat on the table. Have each member hold a can of soup in their palms. Before making any movements, ask the youth to predict the location of the muscles in their arms that will be needed to lift the can of soup. Ask them to record their predictions on the paper provided.
3. With their elbows still on the table, have the members of each pair or group take turns lifting the can of soup slowly to an approximate 45-degree angle (about halfway to the shoulder by bending at the elbow) and then lowering it slowly back to the table. Each youth should repeat this exercise 10 times without resting.
4. After all group members have completed the activity, ask them to decide which muscles in their arms did the work to lift the can and which muscles they used to lower the can. Ask the youth to record their observations on the paper provided. How did their observations match their predictions? Ask them to make comparisons between their predictions and their observations.
5. Using a colored marker, have each group draw the areas on the "Bones of Human Arm" diagram where they felt their muscles working for both of these movements.

Procedure Part B (Experiencing)

1. As a pair or group, have the youth review the handouts "Bones of Human Leg" and "Muscles of Human Body" and identify the matching areas on their legs.
2. Taking turns, have each member of the group stand with their feet together. Before making any movements, ask the youth to predict the location of the muscles in their legs that will be needed to bend their knee slowly and lift one foot off of the ground until their lower leg is parallel to the floor. Ask them to record their predictions on the paper provided.
3. Taking turns, ask each youth to raise their foot slowly until their lower leg is parallel to the floor, hold this position for approximately 2 seconds, and then lower their foot back to the floor slowly. Each youth should repeat this exercise 10 times without resting.
   - **Volunteer Tip:** *The youth may hold onto the wall or the back of a chair for support.*
4. After all group members have completed the activity, ask them to decide which muscles in their legs they used to raise their foot and which muscles they used to lower their foot back to the floor. Ask the youth to record their observations on the paper provided. How did their observations match their predictions? Ask them to make comparisons between their predictions and their observations.

5. Using a colored marker, have each group draw the area on the "Bones of Human Leg" diagram where they felt their muscles working for both of these movements.

Sharing, Processing, and Generalizing

Follow the lines of thinking developed through general thoughts, observations, and questions raised by the youth as they share and compare their thoughts and observations. If necessary, use more targeted question as prompts to get to particular points, such as:

1. What body movements (arm, leg) did you experience? How did your muscles work in order to make your body move the way it did? Please explain.
2. What did you notice about the locations of the muscles relative to where the movement occurred? Please explain.

Concept and Term Discovery/ Introduction

Volunteers need to ensure that the concept of **limb movement** and the terms and concepts **muscle contraction**, **muscle flexion,** and **muscle extension** have been introduced or discovered by the youth.

- **Note**: The goal is to have the youth discover the concepts and terms on their own. It helps if they can define terms and concepts using their own words.

References

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Ritchison, G. Biology 301, Human physiology lecture notes. 3: Muscle. Eastern Kentucky University Department of Biological Sciences Web site, http://people.eku.edu/ritchisong/301notes3.htm.

Sherwood, L. 2004. Human physiology: From cells to systems. 5th ed. Belmont, CA: Brooks/Cole.

ACTIVITY 2
Animal Actions

Overview of the Activity

In this activity, youth will observe different animal pictures and predict how these animals move. They will try to determine the muscles and bones used by these animals. Then they will compare the movements of these different animals and determine what is similar, what is different, and why these movements are important to these animals.

Time Required

20 to 30 minutes

Suggested Groupings

Pairs or small groups

Materials Needed for Each Pair or Small Group

*(*Materials provided in curriculum)*

- *Animal illustrations: snake, dog, bird, and fish
- Flip chart paper
- Colored markers

Getting Ready

- Form pairs or small groups.
- Make copies of the animal diagrams and provide each pair or small group with one copy.
- Provide each pair or small group with one piece of flip chart paper and writing utensils.

Opening Questions

Ask the youth to respond to each question below by sharing their ideas verbally and/or by recording them on the flip chart paper provided.

1. What do you know about how animals move?
2. How do you think the ways animals move similar to how humans move? How are they different?

Procedure (Experiencing)

1. Provide each group with a copy of the animal diagrams. Ask each group to try to explain the way these animals move. Have the groups share their ideas verbally and/or record their thoughts and ideas on the paper provided.
   - **Volunteer Tip:** *Encourage the youth to "act out" the movement of these animals. What muscles are involved? How can this help explain these different types of movement?*
2. Have the groups compare the different types of locomotion. How are they similar? How are they different? Have the groups share their ideas verbally and/or write their responses on the flip chart paper provided.
3. Ask each group write down five reasons why movement is important for each of these animals. What similarities exist? What differences? How do these reasons compare to reasons why movement is important to humans? Have the groups share their ideas verbally and/or record their thoughts and ideas on the paper provided.

Sharing, Processing, and Generalizing

Follow the lines of thinking developed through general thoughts, observations, and questions raised by the youth as they share and compare their thoughts and observations. If necessary, use more targeted question as prompts to get to particular points, such as:

1. How do you think movement is important to the different animals in this activity? Please explain.
2. How do you think the shape of an animal or its body structures (e.g., fins, wings) is important to its movement? How does this relate to the environment in which it lives? Please explain.

Concept and Term Discovery/ Introduction

Volunteers need to ensure that the concepts of **bipedal** (humans)**, quadrupedal** (dog)**,** and **serpentine** locomotion (fish and snake), and **flight** (birds) have been introduced or discovered by the youth.

- **Note**: The goal is to have the youth discover the concepts and terms on their own. It helps if they can define terms and concepts using their own words.

Concept Application

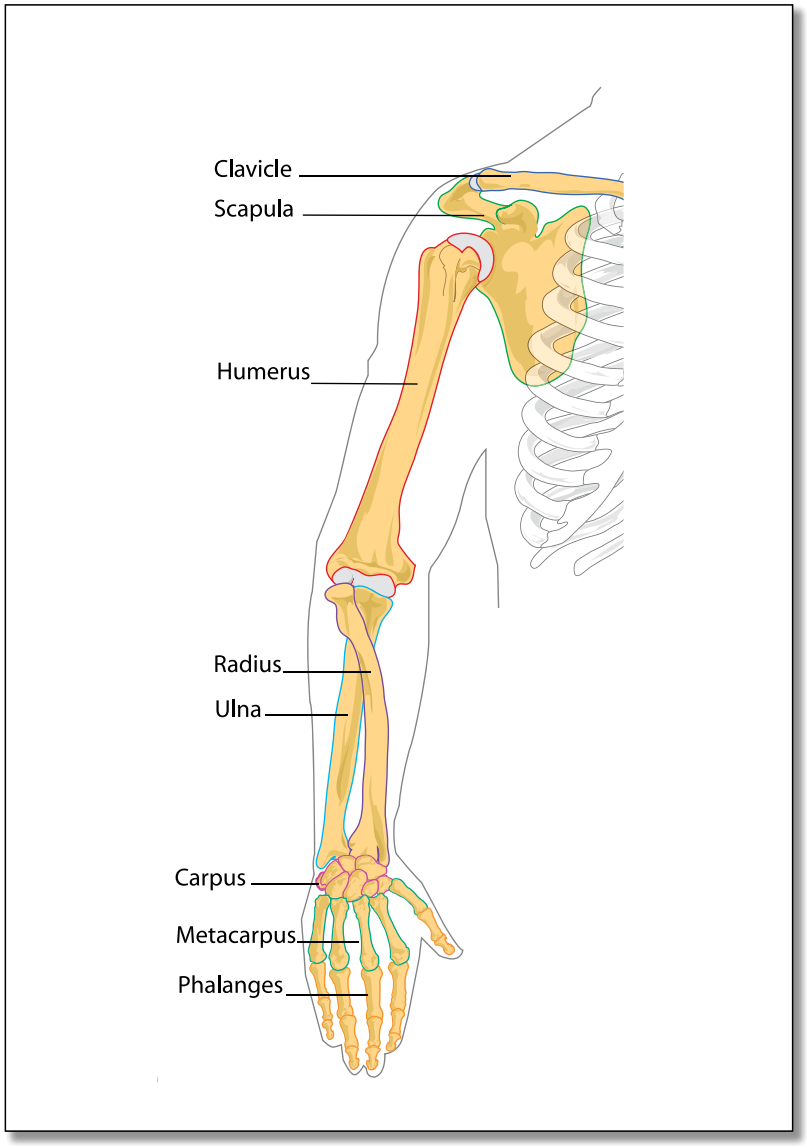
1. Take a field trip or make a family outing to a zoo, wildlife park, or nature center. Observe the different types of animals. Compare their movements. How are they similar? How are they different? What unique types of movements do some have that others do not? What do you think are the purposes of these unique movements?
2. Have the youth make a chart and compare the different types of movements that they make throughout the day (e.g., running, walking, lifting, throwing, bicycling) and identify parts of their body (bones and muscles) involved in each activity. What similarities are there? What differences? Please explain.

References

Biewener, A. A. 2003. Animal locomotion. New York: Oxford University Press.

Ramel, G. Locomotion. Earth-Life Web site, http://www.earthlife.net/mammals/locomotion.html.

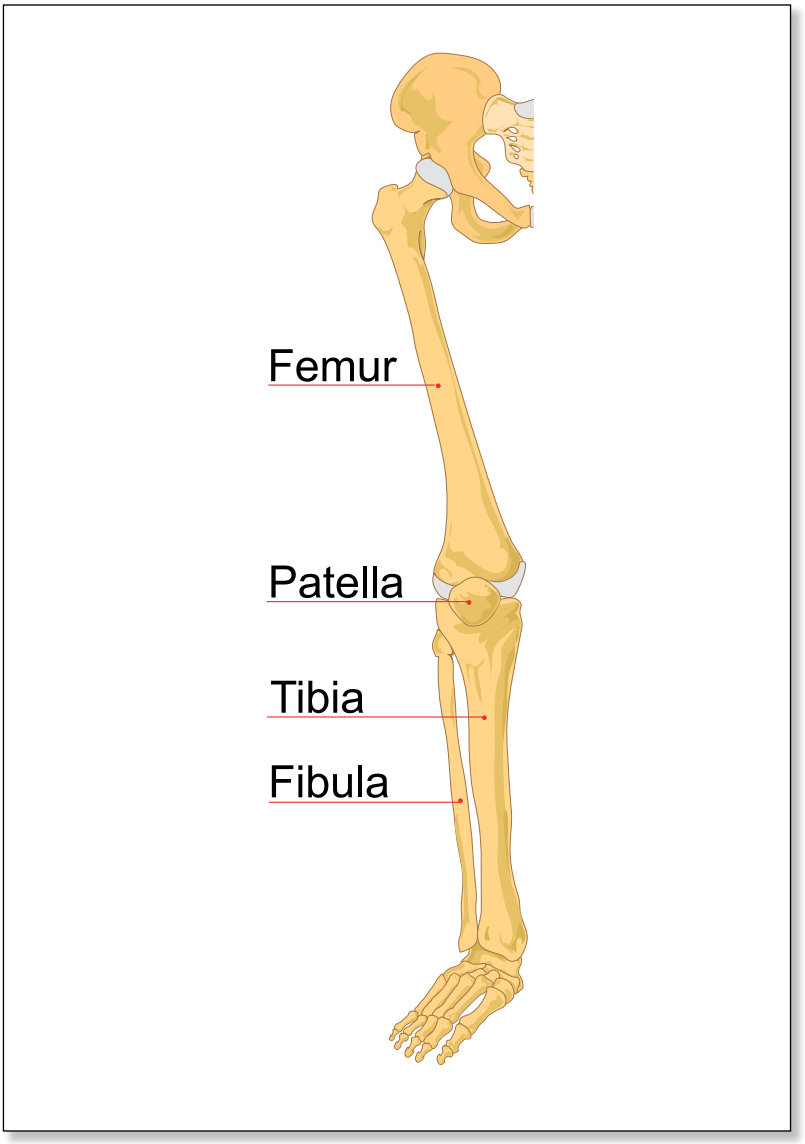
Bones of the Arm



Mariana Ruiz Villarreal

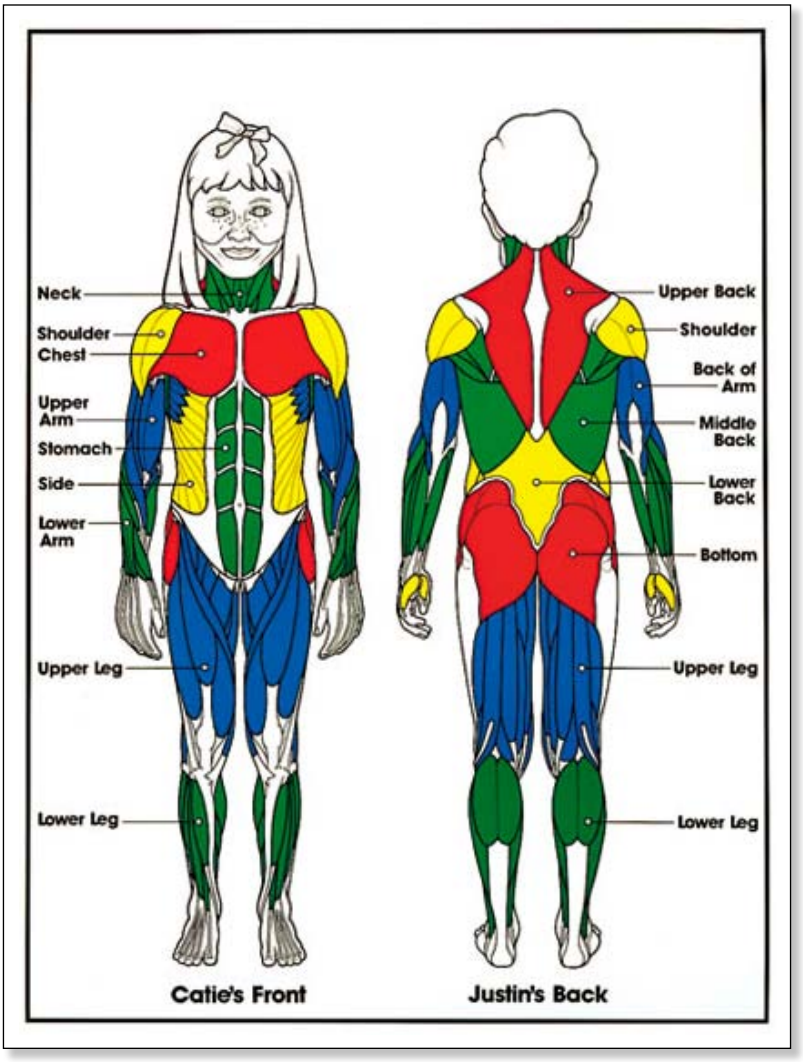
http://commons.wikimedia.org/wiki/Image:Human_arm_bones_diagram.svg

Bones of the Human Leg



Mariana Ruiz Villarreal
http://en.wikipedia.org/wiki/Image:Human_leg_bones_labeled.svg

Muscles of the Human Body



www.schoolkidshealthcare.com

Snake

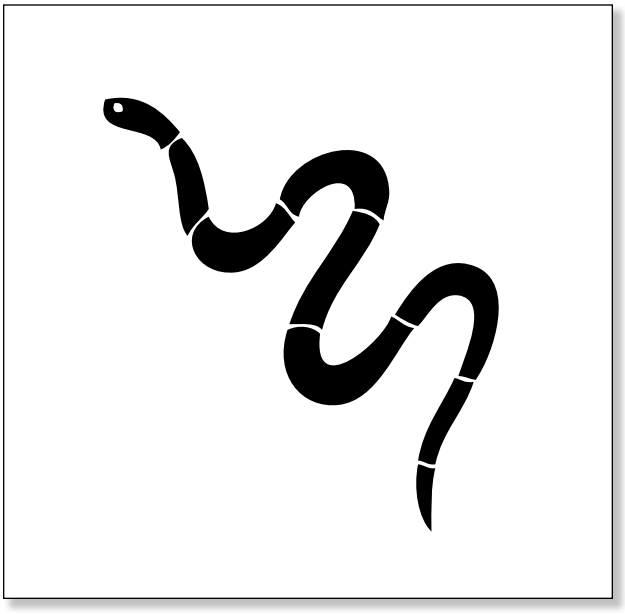


Photo of a Snake

Benny Mazur
http://www.flickr.com/photos/benimoto/2913108831/

Dog

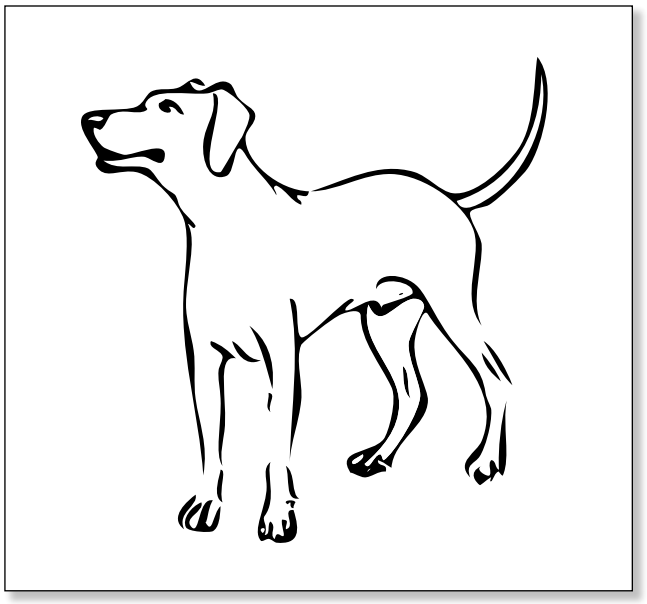


Photo of a Dog

Petr Kratochvil
http://www.publicdomainpictures.net/view-image.php?image=208

Bird

Photo of Birds

Jude

http://www.flickr.com/photos/jude_the_obscure/2637263377/

Fish

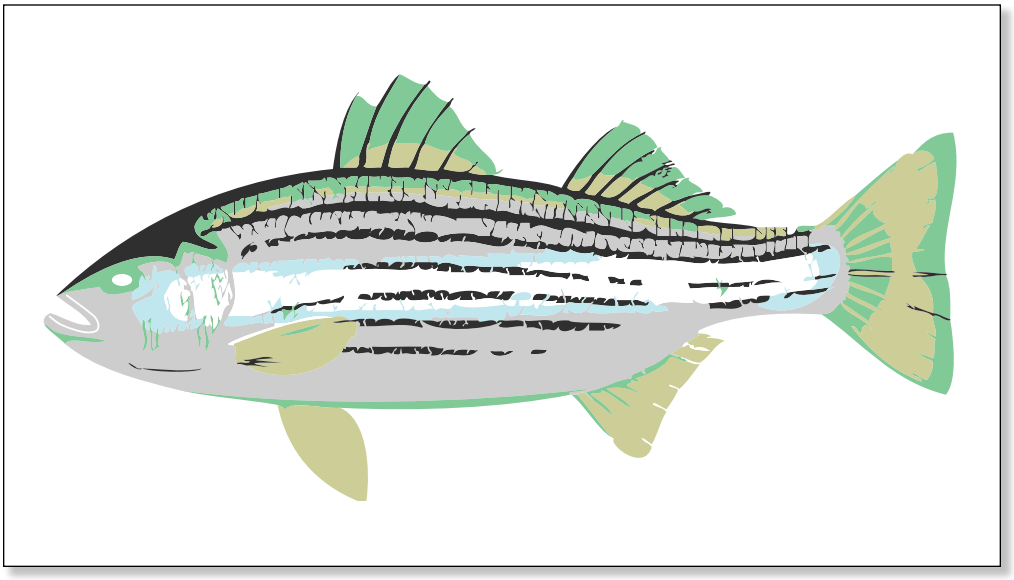
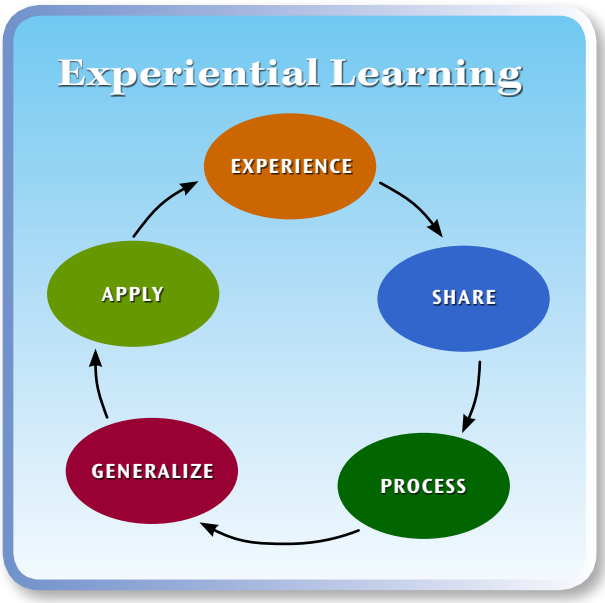


Photo of a Fish

Petr Kratochvil
http://www.publicdomainpictures.net/view-image.php?image=261

Appendix

The activities in this curriculum are designed around inquiry and experiential learning. Inquiry is a learner-centered approach in which individuals are problem solvers investigating questions through active engagement, observing and manipulating objects and phenomena, and acquiring or discovering knowledge. Experiential learning (EL) is a foundational educational strategy used in 4-H. In it, the learner has an experience phase of engagement in an activity, a reflection phase in which observations and reactions are shared and discussed, and an application phase in which new knowledge and skills are applied to a real-life setting. In 4-H, an EL model that uses a 5-step learning cycle is most commonly used. These five steps—Exploration, Sharing, Processing, Generalizing, and Application—are part of a recurring process that helps build learner understanding over time.



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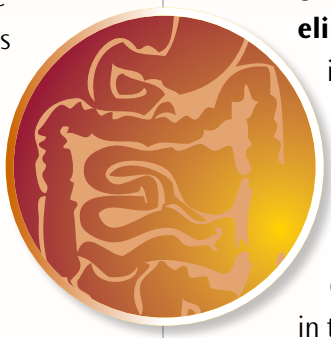
YOUTH DEVELOPMENT THROUGH VETERINARY SCIENCE 6

Food In, Waste Out

MARTIN H. SMITH, Cooperative Extension Youth Curriculum Development Specialist, University of California, Davis; **CHERYL L. MEEHAN**, Staff Research Associate, University of California, Davis; **JUSTINE MA**, Program Representative, University of California, Davis; **KELLY LISTER SIMOES**, University of California, Davis, Undergraduate Student Curriculum Design Team Member.

Subject Overview and Background Information

Animals consume food for energy and the nutrients necessary to grow, fight disease, and reproduce. Major nutrients—proteins, carbohydrates, and fats—are found in the foods that animals eat through the process of **ingestion**, and through the process of **digestion** foods are broken down into particles small enough to be absorbed and used by the animal. Major structures of animals' digestive systems include mouth and teeth (chewing food breaks it into pieces that are more easily digested); esophagus (a "tube" that receives food from the mouth and transfers it to the stomach); stomach (a "container" that holds and mixes food as chemicals from the stomach help break down the food further); small intestine (receives food from the stomach, continues to break down food into smaller particles, and is the site of most nutrient **absorption** into the blood stream for **transport** throughout the body); and the large intestine (the site where food wastes are processed for removal from the body).



Not everything that animals consume in their diets can be used by the body; some becomes waste and must be removed from the body through a process called **excretion**. Two major ways that wastes are removed are in the form of solids (**stool** or **feces**) and liquids (**urine**).

Solid waste is made up of materials left over from digestion. In order to exit the body, solid waste is passed through the large intestine into the rectum and then **eliminated** by passing through the anus. The stool is comprised mostly of food debris and water.

Wastes that are found in an animal's blood are removed through the urinary system. The blood is filtered through the kidneys, where wastes from activities in cells are removed, dissolved in water, and eliminated from the body in the form of urine.

The processes of digestion and excretion are important in helping veterinarians assess the health of animals. Changes in appetite, vomiting, loose stools, constipation, and problems associated with urination may provide veterinarians with critical information when diagnosing an illness. Whenever a caretaker notices these or other changes in their animal's digestion or waste removal processes, it is important to consider consulting a veterinarian.

Activity Concepts and Vocabulary

- **Absorption**: The uptake of substances by tissues within the body.
- **Digestion**: The process in which ingested food is broken down in the body and converted to substances that the body can then absorb.
- **Elimination**: The removal of substances from the body.
- **Excretion**: The discharging of waste matter from the body.
- **Ingestion**: The taking of food into the body.
- **Liquid waste (urine)**: Waste matter from the blood that leaves the kidneys.
- **Solid waste (feces or stool)**: Waste matter from digestion that leaves the intestines through the anus.
- **Transport**: To move substances from one place to another via the blood.

Life Skills

- **Head**: Critical thinking, record keeping, problem solving
- **Heart**: Communication, Sharing
- **Hands**: Teamwork
- **Health**: Disease prevention

Subject Links

Science and Language Arts

State Science Content Standards Supported

Science

- Fourth Grade
  - *Investigation and Experimentation: 6d, 6f*
- Fifth Grade
  - *Life Sciences: 2c*
- Sixth Grade
  - *Investigation and Experimentation: 7e*

Language Arts

- Grade 3
  - *Listening and Speaking Strategies: 1.5, 1.8*
- Grade 4
  - *Listening and Speaking Strategies: 1.7, 1.8*
- Grade 5
  - *Listening and Speaking Strategies: 1.5*
- Grade 6
  - *Listening and Speaking Strategies: 1.5*

Purpose of Activity

The purpose of this activity is to explore and understand what happens to the food we eat when it enters our body.

ACTIVITY

Food In, Waste Out

Overview of the Activity

In this activity, youth will simulate what happens in the body when we eat food. The activity consists of two trials. For both trials, youth are given a piece of Hot Tamale candy, a food container, a receiving container, and a waste container. In the first trial, youth are given a set of instructions to follow to simulate the process of digestion with the Hot Tamale. Then the youth will try to come up with ways to "digest" the Hot Tamale more effectively. They will test their ideas in the second trial.

Time Required

45 to 60 minutes

Suggested Grouping

Pairs or small groups of 3 to 4 individuals

Materials Needed for Each Group

*(*Materials provided in curriculum)*

- 2 plastic vials or jars with lids
- 4 clear plastic drinking cups
- 2 pieces of Hot Tamale candy
- 1 drinking straw
- 2 paper towels to be used as filters
- Water
- One piece of flip chart paper
- Assorted colored markers
- *Human digestive system diagram
- *Animal food intake and waste elimination chart
- *Diagram of Kidey and Urinary System

◆ Getting Ready

- Make sure you have enough materials for each group.
- Make one copy of the Human Digestive System handout for each pair or group.
- Make enough copies of the animal food intake and waste elimination chart so each youth can have at least one copy (concept application).
- Divide the youth into pairs or small groups.
- Make one copy of the "Kidney and Urinary System" handout for each pair or group.

Opening Questions

Ask the youth to respond to each question below by sharing their ideas verbally and/or by recording them on the flip chart paper provided.

1. What do you know about the different types of foods humans or other animals eat?
2. Why do you think humans and other animals need to eat?
3. What do you know or wonder about the types of waste products humans or other animals produce and remove from their bodies?
4. What do you know about how an animal's feeding habits might change if it is unhealthy?
5. What do you know about how an animal's waste products (solid and liquid) might change if it is unhealthy?

Procedure (Experiencing)

1. Provide each group with the necessary materials.
2. Explain to the youth that they are going to be doing this activity two times: Trial 1 and Trial 2.
3. Ask them to label the following with a marker:
   - *2 vials or jars with lids: Food Container 1 and Food Container 2.*
   - *2 clear plastic cups: Receiving Container 1 and Receiving Container 2.*
   - *2 clear plastic cups: Waste Container 1 and Waste Container 2.*
   - *(**Note**: Once the youth have finished labeling their containers, have them place all the "2" containers in an area away from the "1" containers.)*
4. Explain the following procedure to the youth. (**Note**: Do not have them begin yet!)
   - *Have each group fill Food Container 1 approximately three-quarters full with water.*
   - *The youth will add one piece of the Hot Tamales candy to the water in Food Container 1. (**Note**: Have all the groups add the candy at the same time and start the timer).*
   - *At this point, the clock will begin. The goal is to dissolve as much of the candy as possible during the **90 seconds** provided.*
   - *After the 90-second duration, tell the youth that they have only **30 seconds** to transfer as much of the fluid into Receiving Container 1 using a straw. Start the timer when everyone is ready. (**Note**: Use a finger tip over one end of the straw. No pouring is allowed!)*
   - *After transferring fluid to Receiving Container 1, the groups will filter the remaining materials from Food Container 1 into Waste Container 1 using the paper towel filter.*
5. Before starting, clarify the activity guidelines:
   - *No eating the candy.*
   - *No sucking on the straws with mouths.*
   - *No pouring of liquid from the food containers to the receiving containers.*
6. Explain to the youth that they are going to have a total of **2 minutes** to complete Trial 1.
7. **Volunteer**: Make certain that all groups are ready. Once everyone is ready, begin! After **90 seconds**, tell them to stop. Provide an additional **30 seconds** to transfer fluid to the receiving container. After the 30 seconds, have them begin the filtering process.
8. At the end of the activity, ask them to observe (e.g., color; quantity) the liquid they transferred into Receiving Container 1, the liquid they filtered into Waste Container 1 (e.g., color; quantity), and what remains of the candy (e.g., color; size; shape). Have them record their observations and comparisons on the flip chart paper.
9. Ask the groups to discuss how they might modify their procedures so they are able to dissolve more of the candy during the 90 seconds. They will try their modifications in Trial 2.

- **Volunteer Tip**: *If the youth do not have any ideas about modifying the procedures, ask them to think about how they eat. Do they swallow their food whole? What happens when we chew our food?*

10. When the groups are ready, repeat steps 4 through 9 (Trial 2). Explain that this time they may modify the procedures to dissolve more candy during the 90 seconds.
    - **Volunteer Tip**: *The water becomes a darker shade of red.*
11. Compare the results from Trials 1 and 2. What happened? How did Trial 2 differ from Trial 1? Discuss your observations with the other groups.

Sharing, Processing, and Generalizing

Follow the lines of thinking developed by youth as they share and compare their thoughts and observations. If necessary, use more targeted questions as prompts to get to particular points, such as:

1. How, if at all, might this activity relate to animals and the food that they eat? Ask them to explain their thoughts verbally and/or record them on the flip chart paper.
2. The candy represents an animal's food. What parts or processes in this activity might be related to animals eating food? Have them explain their thoughts using what they have already written on the flip chart paper as an aid.
3. What are the waste products produced in this activity? How does it relate to the waste products humans produce? Have them explain their thoughts using what they have already written on the flip chart paper as an aid.
    - **Volunteer Tip**: *Breaking the candy up into smaller pieces represents chewing; dissolving the candy in the water represents digestion; transferring the dissolved food to the receiving container simulates the transport of digested food via the bloodstream; filtering liquid waste represents the function of kidneys; and the remaining solid waste imitates the formation of solid waste, or feces.*
5. Looking at the handout "Human Digestive System," what parts of an animal's digestive system might represent the food containers and receiving containers? The straw?
    - **Volunteer Tip**: *Stomach; blood vessel. Ask them to explain their ideas and/or record their thoughts on the flip chart paper.*
6. How, if at all, were the activity's processes changed from Trial 1 to Trial 2 in order to dissolve more of the candy? How might this relate to animal digestion? Have them explain their thoughts using the flip chart paper.
    - **Volunteer Tip**: *It is important to encourage the youth to explain the reasons behind their thoughts. Have them present their evidence (lines of thinking) and make clear their reasoning.*

Concept and Term Discovery/ Introduction

Volunteers need to ensure that the concepts **ingestion**, **digestion**, **absorption**, **transport**, **elimination**, and **solid** and **liquid waste** have been introduced. Specific terms associated with these concepts may need to be introduced.

- **Note**: The goal is to have the youth develop these concepts through their exploration and define the terms using their own words.

Concept Application

If the youth have pets or agricultural animals at home, have them record the digestive and waste removal behavior of one or more animals over a 3- to 5-day period on the chart "Animal Food Intake and Waste Elimination."

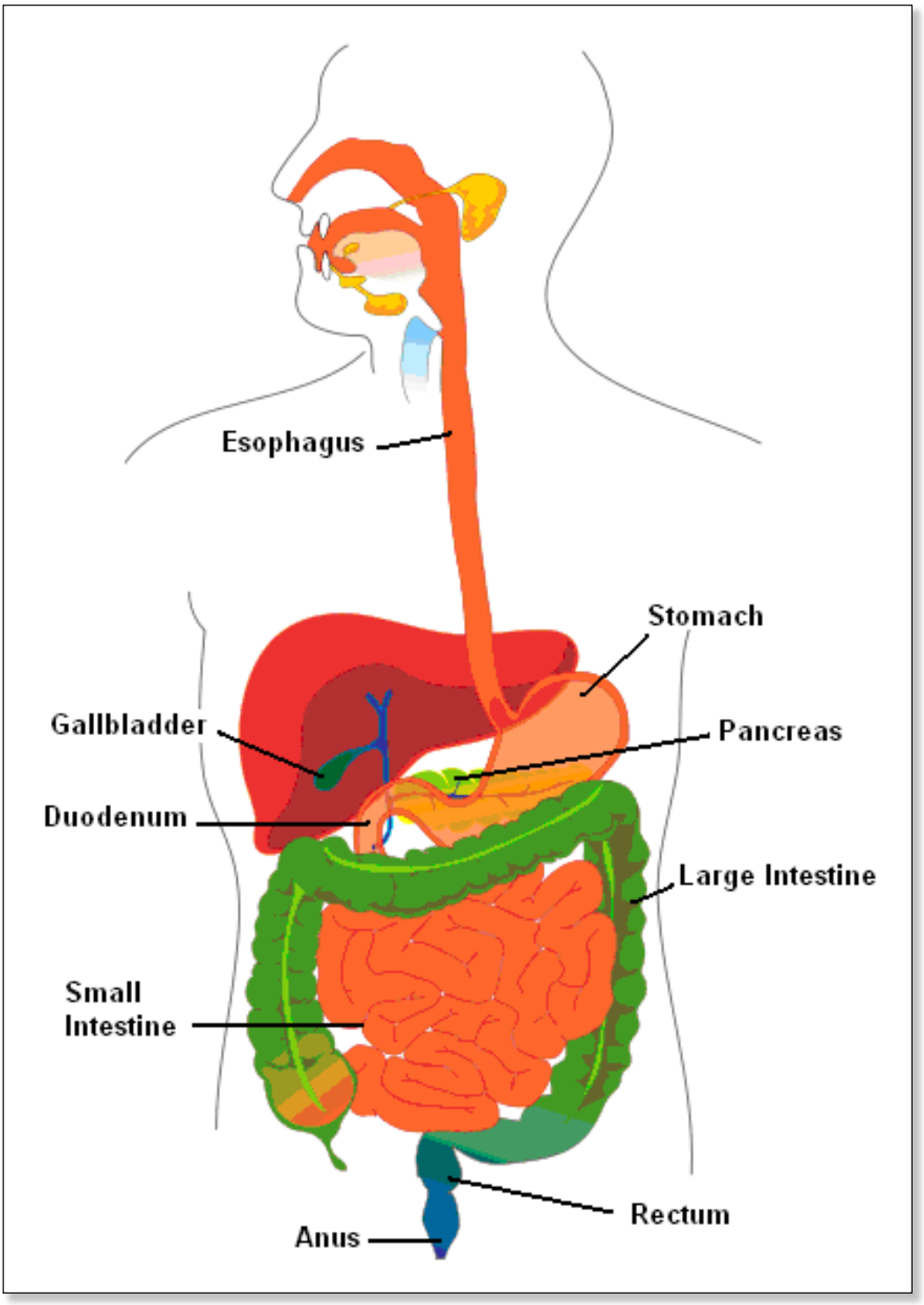
References

Colorado State University Hypertexts for Biomedical Sciences. Pathophysiology of the digestive system. CSU Web site, http://www.vivo.colostate.edu/hbooks/pathphys/digestion/index.html.

KidsHealth. Your digestive system. KidsHealth Web site, http://www.kidshealth.org/kid/body/digest_noSW.html.

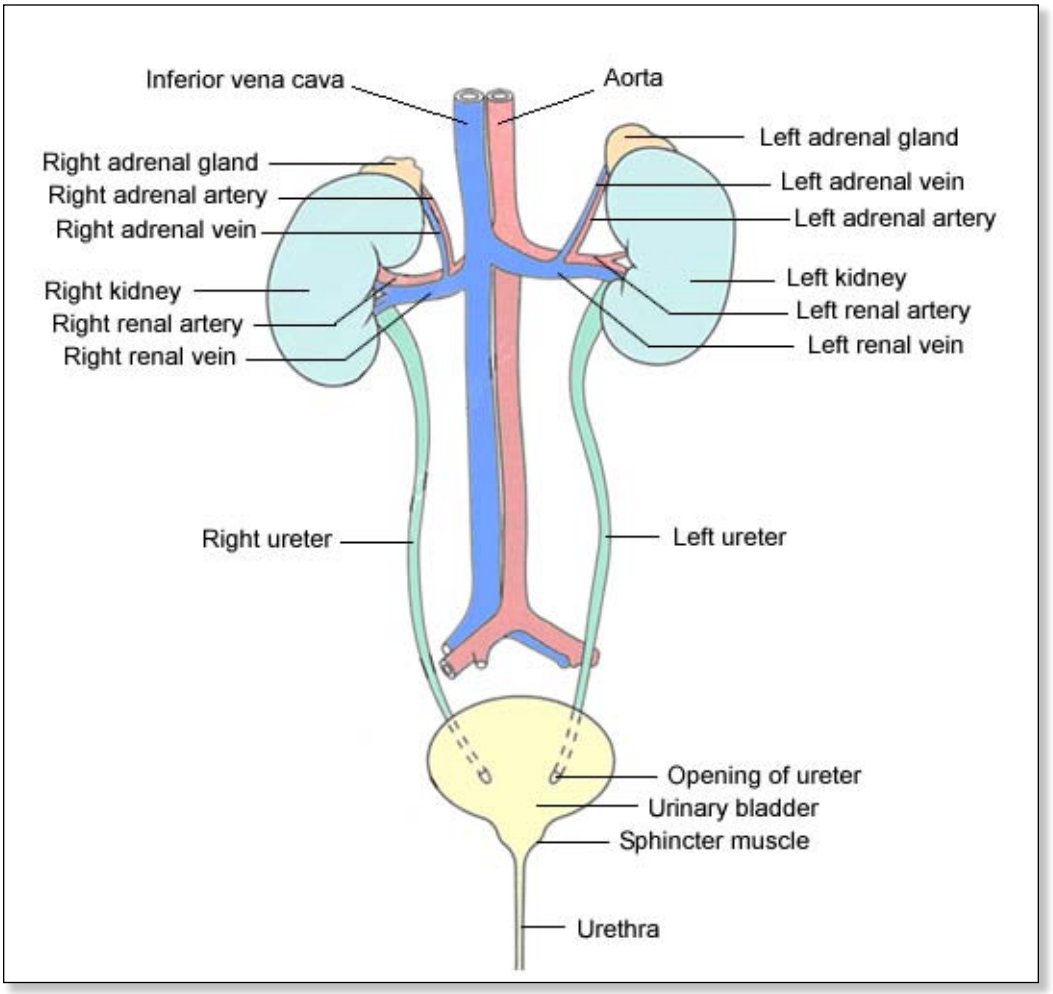
National Digestive Diseases Information Clearinghouse. Your digestive system and how it works. NDDIC Web site, http://digestive.niddk.nih.gov/ddiseases/pubs/yrdd/.

Human Digestive System



Source: National Digestive Diseases Information Clearinghouse.

Kidney and Urinary System



einavdogan

http://www.flickr.com/photos/29119102@N05/2729335314/

Animal Food Intake and Waste Elimination

Animal: _____

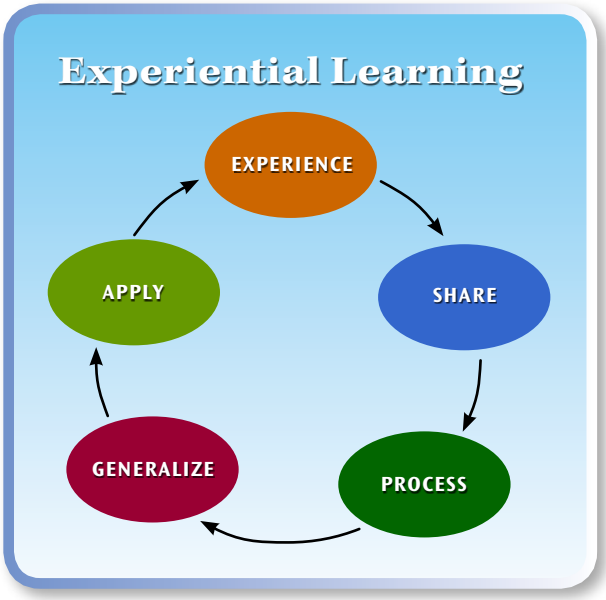
Day	Appetite description	Stool frequency	Stool description	Urination frequency	Comments

KEY

- **Day**: Day of week and date.
- **Appetite**: Did your pet eat the food provided; eat some of the food provided; or show little or no interest in food provided?
- **Stool Frequency**: How often and when during the day did your pet eliminate solid waste?
- **Stool Description**: Was your pet's stool solid, semisolid, soft, or more liquid?
- **Urination Frequency**: How often and when during the day did your pet urinate?
- **Comments**: Include any additional comments relative to your pet's digestive and waste removal behavior? *For example:* Difficulties eliminating solid waste (constipation); apparent pain or discomfort; vomiting.

APPENDIX

The activity in this curriculum is designed around inquiry and experiential learning. Inquiry is a learner-centered approach in which individuals are problem solvers investigating questions through active engagement, observing and manipulating objects and phenomena, and acquiring or discovering knowledge. Experiential learning (EL) is a foundational educational strategy used in 4-H. In it, the learner has an experience phase of engagement in an activity, a reflection phase in which observations and reactions are shared and discussed, and an application phase in which new knowledge and skills are applied to a real-life setting. In 4-H, an EL model that uses a 5-step learning cycle is most commonly used. These five steps—Exploration, Sharing, Processing, Generalizing, and Application—are part of a recurring process that helps build learner understanding over time.



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YOUTH DEVELOPMENT THROUGH VETERINARY SCIENCE 7

Is Your Bird Feeling Blue?

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Subject Overview and Background Information

Birds are a very diverse group of animals that are commonly kept as companions and farm animals. The most common types of birds owned in the United States are **psittacines** (sit-uh-seens), finches, pigeons, ducks, and chickens. Birds are known for their ability to fly, which is facilitated by their hollow, lightweight bones and feathers. Caring for birds requires knowledge of the housing, dietary, and veterinary needs of the individual species as well as an understanding of their biology and behavior.

Psittacines, which include parakeets, parrots, macaws, and cockatiels, are the most common household birds. Keeping a psittacine in good health requires an appropriate diet, suitable caging, and regular veterinary care. The dietary requirements vary from species to species, but in general **psittacines** eat a wide variety of foods, including seeds, grain, fruits, vegetables, and nectar. Care must be taken to select the proper diet for each individual bird and to avoid feeding too many seeds, which can lead to fatty liver disease. When it comes to caging, **psittacines** should be housed in cages that provide plenty of room to fly and climb and should include several places to comfortably perch. Psittacine cages should not be made of galvanized metal, because birds can develop heavy metal toxicity if they chew on the cage bars. **Psittacines** should be also be misted daily with water or given a bowl in which to bathe. This, along with the proper temperature and humidity in their environment, will help keep their skin and feathers healthy and clean. **Psittacines** need regular nail trims to avoid overgrown toenails, which can get caught on cage bars or toys and cause injury. All **psittacines** should be provided with a variety of objects in their cages to encourage activity and exercise. **Psittacines** are social animals by nature and should be housed in compatible pairs or social groups whenever possible.

Poultry, which includes chickens, turkeys, and ducks, are typically livestock animals, although they are sometimes kept as pets. Like **psittacines**, poultry require an appropriate diet, suitable caging, and regular veterinary care. Poultry may be housed indoors or outdoors, depending on the climate. In either case, wire mesh flooring should be avoided

as it can lead to **bumblefoot**, a painful inflammation on the balls of their feet. Roosting birds should be given adequate roosting space. Poultry should also have sufficient nest boxes for the number of animals and their breed in order to prevent some of the birds from becoming egg-bound. For ducks, the nest boxes should be low to the ground or have sloped ramps leading to the entrance. Poultry should also have access to foraging substrates such as straw or shavings to reduce the chance of feather plucking and cannibalism. In addition, chickens and turkeys use a dust bath to help keep their feathers in good condition, so an area of sand, shavings, or dust should be provided. Ducks do not dust bathe but will require access to a large container of water (at least large enough for them to put their heads and necks in the water) to keep their feathers in good condition. Poultry require carbohydrates, protein, fats, vitamins, and minerals in their feed. The specific nutritional requirements depend on the age, size, and breed of the birds. All poultry require constant access to fresh water. Several health problems, including weak or brittle bones, laying eggs with soft shells, and increased risk of infection, can result from improper nutrition.

No matter what species of bird you own, you should be sure to keep them in a room, coop, or cage with proper ventilation. Improper ventilation leads to a buildup of dust and other particles in the air, which your bird will then inhale. The air may contain the virus that causes Marek's disease, which will quickly infect them; they also run the risk of contracting an upper respiratory infection. In addition, be sure to clean the bird's environment regularly in order to prevent bacterial overgrowth in stagnant water and from droppings. When a bird lives in an unsanitary environment, it has an increased risk of developing a **bacterial infection**. If your bird has a nest box or resting area with wood shavings, it is important to keep those shavings clean. **Fungus** can grow on wet or soiled shavings, which can cause severe illness.

If your avian friend should become ill, it is important to seek veterinary care. It can be hard to tell whether a bird is ill. Since birds are prey animals, they tend to hide their illness so a predator does not target them as an easy meal. Careful and frequent observation of birds is extremely important in order to detect a disease early. Seek veterinary care immediately when you think something is wrong with your avian friend. Additionally, it is sometimes difficult to locate an avian **veterinarian**, so be sure to know where the nearest one is before you need them. Special attention must be given to caring for poultry that will become part of the food supply. Make sure that you consult a **veterinarian** for proper medicines to be used on livestock poultry.

Since some of the diseases birds can catch are **zoonotic diseases**, (illnesses that can be passed to humans), it is important to try to isolate a sick bird until it can be taken to a **veterinarian**. Be sure to change your clothes and thoroughly wash your hands after contacting a sick bird. Since there is currently a growing concern over the transmission of avian flu to humans, it is especially important to practice good hygiene and cleanliness in order to protect yourself and your avian friend(s). Additionally, you should be careful when purchasing new birds in order not to introduce a new disease, such as parrot fever, into an otherwise healthy population of birds. You should follow proper quarantine, or isolation, procedures as determined by your **veterinarian**, before introducing a new bird into your household or aviary. If you have any concerns about your avian friend's health, please see a **veterinarian** as soon as possible.

◆ Activity Concepts and Vocabulary

- **Bacterial infection**: A disease caused by bacteria.
- **Bacterium (bak-teer-ee-um)**, pl. **bacteria**: An organism that cannot be seen with a naked eye. Some bacteria (germs) can cause diseases. Pneumonia, a disease that affects animals' lungs, is caused by a bacterium.
- **Fungus (fuhng-guhs)**: An organism (e.g., mold or yeast) that lives and feeds on organic material, such as bread, wood, and other animals. A common **fungus** that affects animals is ringworm.
- **Inflammation (in-fluh-mey-shuhn)**: A local reaction of a tissue to irritation that causes pain and swelling.
- **Parasite (pair-uh-site)**: An organism (e.g., bacterium, worm, tick) that receives food and energy from another organism. A common parasite that affects animals is tapeworm.
- **Psittacines (sit-uh-seens)**: A family of birds that includes parakeets, parrots, macaws, and cockatiels.

- **Veterinarian (vet-er-uh-nair-ee-uhn)**: A doctor who takes care of animals.
- **Virus**: A type of germ that causes diseases. Rabies is a disease caused by a virus.
- **Zoonotic diseases (zoe-oh-nah-tick)**: A disease that affects an animal that can also be passed to humans.

Life Skills

- **Head**: Keeping records, planning and organizing, problem solving, decision making, critical thinking
- **Heart**: Sharing, communication, concern for others, empathy
- **Hands**: Self-motivation, teamwork
- **Health**: Disease prevention, self responsibility, personal safety

Subject Links

Science and Language Arts

State Content Standards

Science

- Third Grade
  - *Investigation and Experimentation: 5e*
- Fourth Grade
  - *Investigation and Experimentation: 6c*
- Fifth Grade
  - *Investigation and Experimentation: 6h, 6i*
- Sixth Grade
  - *Investigation and Experimentation: 7d*

Language Arts

- Third Grade
  - *Reading Comprehension: 2.2, 2.6*
- Fourth Grade
  - *Reading Comprehension: 2.3*
  - *Listening and Speaking Strategies—1.7*
- Fifth Grade
  - *Reading Comprehension: 2.3, 2.4*
  - *Listening and Speaking Strategies: 1.5*
- Sixth Grade
  - *Listening and Speaking Strategies: 1.5*
  - *Speaking Applications: 2.5b*

Purpose of Activities

To help youth learn about the proper maintenance and care of birds. Youth will also investigate the causes and symptoms of several avian diseases.

ACTIVITY 1

Monitoring Bird Health Day by Day

Overview of the activity

The main goal of this activity is for youth to learn to make good physical and behavioral observations of birds by reading and analyzing descriptive journal entries. The youth will then use these observations to make inferences regarding the health of their bird.

Time Required

Approximately 90 minutes

Suggested Grouping

Pairs or smalls groups of 3 to 4

Materials Needed for Each Pair or Group

*(*Materials provided in curriculum)*

- Writing utensils
- Flip chart paper (one piece per group)
- *Health assessment journals
- *Avian disease information sheet
- *Health assessment checklist

Getting Ready

- Photocopy enough health assessment journals, avian disease information sheets, and health assessment checklists for the groups.

Opening Questions

Ask the youth to respond to each question below by sharing their ideas verbally and/or by recording them on the flip chart paper provided.

1. What are some ways you can tell you are sick?
2. What signs might your parents, teacher, friends, or doctor use to recognize that you are sick?
3. What are some things you can do to avoid getting sick?
4. If your animal is sick, what are some changes you might notice about him or her?
5. What are some of the responsibilities you have to help keep your pet or project animal healthy?

Procedure (Experiencing)

- **Volunteer Tip**: Set up the following scenario for the youth: The youth in each group will be playing the role of a bird owner. Each group will receive one of the health assessment journals, one day at a time. As a group, the youth will go through the journal entry of each specific day and record important facts onto the health assessment checklist they have been given. At the end, using the checklists they have made, they will compare their findings with the avian disease information and draw a conclusion regarding what disease, if any, their bird has.

1. Give each group of bird owners Journal Entry 1 from their health assessment journal. The group should read the entry and record important findings on their health assessment checklist.
2. When the groups have completed the Journal Entry 1, take away that journal entry and give them Journal Entry 2. Then have them read the entry and record important findings on their checklist.
3. Continue this pattern for the remaining days until each journal entry has been assessed.
4. When the group is done with the last day, remove this entry and pass out the avian disease information sheet. Have the groups review the data they recorded on their health assessment checklist and record their diagnosis of their bird's symptoms along with the reasons why they chose that diagnosis.

Sharing, Processing, and Generalizing

Have each group share their diagnosis and indicate which parts of their checklist helped them make that determination. Follow the lines of thinking developed through the general thoughts, observations, and questions raised by the youth. If necessary, use more targeted questions as prompts to get to particular points, such as the following. Ask the youth to respond to each question below by sharing their ideas verbally and/or by recording them on the flip chart paper provided.

1. What might be some advantages to keeping a daily health assessment journal for your bird?
2. What are some examples of the symptoms you used to tell when to be concerned with your bird's health?
3. What do you think might happen if you ignored those symptoms and didn't seek veterinary care for your bird?
4. Check the groups' diagnosis of their bird with the answer key. If there are any discrepancies, have the youth discuss what lead them to their conclusion.

Avian Disease Diagnosis Key

- Chrissy: Marek's disease
- Heather: upper respiratory infection
- Amber: parrot fever
- Pinocchio: normal, no disease
- Corey: feather plucking

Concept and Term Introduction

Volunteers need to ensure that the concepts and terms **bacterium, bacterial infection, fungus, inflammation, parasite, veterinarian, virus,** and **zoonotic diseases** have been introduced.

- **Note:** The goal is to have the youth develop these concepts through their exploration and define the terms using their own words.

Concept Application

An application for these skills is presented in Activity 2 of this unit. Youth who own a bird may apply Activity 2 to their own pet, while youth who do not own a bird may seek permission from a friend or family member to use their bird for this exercise.

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HEALTH ASSESSMENT JOURNALS

Journal 1

Bird Name: Chrissy
Type: Chicken
Gender: Female
Age: 18 weeks

Petr Kratochvil
http://www.publicdomainpictures.net/view-image.php?image=281

Journal Entry 1

Today I went to visit Chrissy in her pen to see how she was getting along with the new chickens Daddy brought home yesterday. Chrissy lives inside the barn with the other chickens to protect them from the cold outdoors; it is winter after all. Chrissy enthusiastically chirped and flapped her growing wings at the sight of me. When I took her out of her pen to feed her, she jumped up and down in my hands. She pecked at all the pellets in her clean bowl and drank the clean water. Her round eyes were open wide. Her ears and nares (nose) were clean, without any hint of discharge. After petting her beautiful feathers, I put her back in her pen. I was supposed to clean the cage today, but I ran out of time. I said goodbye to Chrissy before I left. She chirped back at me and joined the other playful chickens, dustbathing her nice clean feathers.

Journal 1

Bird Name: Chrissy
Type: Chicken
Gender: Female
Age: 18 weeks

Petr Kratochvil
http://www.publicdomainpictures.net/view-image.php?image=281

Journal Entry 2

I remembered to clean the pen today. I made sure to sweep out all the dust, remove the bird poop, and replace yesterday's water. Afterward, I took Chrissy out of her cage and to let her roam around. She rolled her body around in some nearby dirt and jumped up and down to shake off any excess dust after her dustbath. I made sure her eyes were round and clear and that her ears and nares were free of secretions. I also gave her something to eat, but she didn't touch any of the feed in her bowl. I ran around the farm with Chrissy energetically following me. I tried to get the other chickens to run around with Chrissy, but they sat lazily in their newly cleaned cage. I put Chrissy back in the pen with the others and happily went home.

Journal 1

Bird Name: Chrissy
Type: Chicken
Gender: Female
Age: 11 weeks

Petr Kratochvil
http://www.publicdomainpictures.net/view-image.php?image=281

Journal Entry 3

Daddy said that some of the chickens were sick and that he had to take them to the veterinarian. I was so worried Chrissy was sick that I ran to the pen. I found her eating some feed Daddy put out for her. She didn't eat as much as usual since the bowl was half full by the time she was done. I walked into the cage to make sure it was clean. I guess Daddy did the same thing this morning since everything was perfect. As usual, she ran after me around the farm as if we were playing tag. However, this time I noticed she had a little limp while running. She also didn't seem to run as fast as she usually does. But she still flapped her wings up and down to show her enthusiasm as I chased her around. She was exhausted after playing with me, plopping down on her bedding when she got back to her pen. I put some extra food in her bowl before heading back to the house.

Journal 1

Bird Name: Chrissy
Type: Chicken
Gender: Female
Age: 11 weeks

Petr Kratochvil
http://www.publicdomainpictures.net/view-image.php?image=281

Journal Entry 4

I went to see the chickens this morning and found half of them gone. I was sure Daddy would bring the sick chickens home from the veterinarian today. I found Chrissy crouched in a corner of the cage, apart from the other chickens. When she saw me, she tried getting up but fell down. It took her two attempts before she got up. When I went to play with her, she didn't want to chase me around. She preferred to sit on the green grass. One of her wings also seemed to droop a little. As I was petting her in my hands, I checked her ears and nares which were also clean and free of discharge. I was starting to get concerned so I cleaned the cage, filling it with fresh beddings. She felt thin, and I noticed she barely touched her food, so I fed her some extra pellets. I left her in the cage, hoping nothing was wrong.

Journal 1

Bird Name: Chrissy
Type: Chicken
Gender: Female
Age: 11 weeks

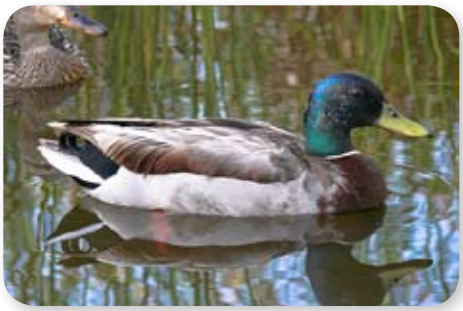
Petr Kratochvil
http://www.publicdomainpictures.net/view-image.php?image=281

Journal Entry 5

I went to visit Chrissy this morning to see how she is doing. I found her sitting in the corner of her cage. I observed her for about a minute and noticed that she didn't move at all. I encouraged her to get up but she didn't even try getting up. Her ears and nares were clean as usual and clear of any debris. She still felt thin and her feathers looked ruffled and her head was down. I was really worried about Chrissy so I immediately called Daddy over to have him take a look at her.

Journal 2

Name: Pinocchio
Type: Mallard Duck
Gender: Male
Age: 1 year



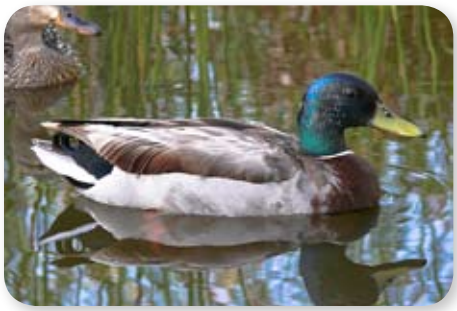
Mike Baird
http://www.flickr.com/photos/mikebaird/499089461/

Journal Entry 1

I'm so glad it is summer. My brother and I are spending a week at Uncle Dave's cabin. He has so many animals. I especially like the ducks, so I went to the pond today to play with them. My favorite duck is Pinocchio. He has beautiful grayish feathers on his body and green feathers to cover his head. His belly and chest are covered with dark brown feathers. He likes to stick his yellow bill between his feathers to make sure they are clean. His body has such perfect form as he floats across the water. I see his webbed feet paddle under water to steer him in different directions. His head is also held up high by his tall and straight neck, as if looking around for predators or anything interesting in the environment. I ran to the edge of the pond to greet him hello. As soon as he saw me, he paddled his way up to the edge of the shallow pond and then ran toward me. I looked at his black eyes and clean nostril holes, which were in normal condition. I fed him some of the special duck pelleted mash Uncle Dave gave me for the ducks. Pinocchio was very active today, following me around as I biked round and round the pond. When it was getting late, I waved good bye to Pinocchio who flapped his large wings as if he were waving back. He then flew back to the pond to preen his feathers.

Journal 2

Name: Pinocchio
Type: Mallard Duck
Gender: Male
Age: 1 year



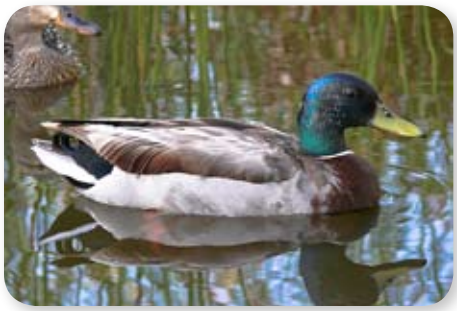
Mike Baird
http://www.flickr.com/photos/mikebaird/499089461/

Journal Entry 2

On my way to visit Pinocchio, I decided to check on his pen. I looked around the pen and knew it was about time to clean it. I replaced his water bowl with new and clean water. I made sure the floors were cleaned and covered with new dry beddings. I made sure his pen got enough air and lighting. Most of the time, the ducks prefer to be outside, soaking in the rays of the sun. However, today I found Pinocchio resting in a neighboring pen with another duck. They were sitting next to each other, as still as a rock. When I went to greet him, he only raised his neck straight up and looked into my eyes. His black eyes were large and clear and his nostril holes on his beak were clean of any debris. He continued sitting down until I approached him with food pellets. At the sight of food, he jumped up and waddled his straight webbed feet toward me. His feathers were clean and felt soft as I stroked his head. His body was the same as always, except his stomach looked slightly larger. I wonder if he's gaining weight. As I left home on my bike, I saw him sit back down next to his friend, returning to the same position I first found him in.

Journal 2

Name: Pinocchio
Type: Mallard Duck
Gender: Male
Age: 1 year



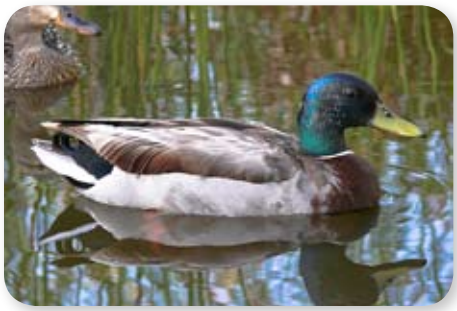
Mike Baird
http://www.flickr.com/photos/mikebaird/499089461/

Journal Entry 3

Today was a weird day. It rained in the middle of summer! I was so excited, I wanted to run in the rain and jump in puddles! My older brother also wanted to take part in the fun, so we raced to the lake. When we arrived at the foot of the duck pens, we noticed all ducks were swimming in the lake, having fun in the rain too. I saw Pinocchio chasing after one of the other ducks. He raised his large wings in the air when I went to greet him. My brother and I started to get cold so we took shelter in the ducks' pens. I persuaded Pinocchio into following us with some pellets. Once inside his pen, Pinocchio began to preen his wet feathers. Occasionally he would shake his body and waggle his tail to remove excess water from his feathers. I found an unusual amount of duck feathers covering his pen. I examined his eyes and nose holes which were both clean and clear, other than some dirt on his bill from the mud around the lake. His legs and neck stood up straight and his body as a whole looked healthy. He ate all the pelleted mash set in his bowl today. I asked my brother to play with him in an empty pen while I cleaned out Pinocchio's stall. The beddings were a little wet from the rain so I replaced them. I also set out clean water in his water bowl. Pinocchio and my brother were having fun in the neighboring stall. Pinocchio was running after my brother, who was holding the ducks' favorite toy, a rubber ball. When I was done, I put Pinocchio in his clean pen and gave him back his ball. He was happy to get his ball back, playing with the toy as we left the pens.

Journal 2

Name: Pinocchio
Type: Mallard Duck
Gender: Male
Age: 1 year



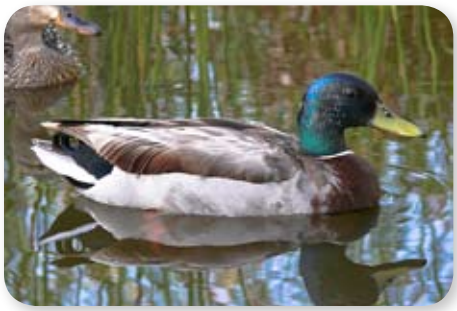
Mike Baird
http://www.flickr.com/photos/mikebaird/499089461/

Journal Entry 4

Today was a warm day. I wanted to check up on Pinocchio and give him a treat, some green lettuce. First I went to the duck pens to see if he was there and to make sure they were clean. Pinocchio wasn't there and all the pens were being cleaned by Uncle Dave. I saw the piles of feathers shed by Pinocchio and the other ducks. I started to wonder why they shed so much. I went to the pond and found Pinocchio soaking in the sun. Today his feathers were clean and shiny. The colors of his feathers were vibrant, not dull like yesterday. He was swimming around the pond with his legs and webbed feet. When he saw me, he spread his wings, trying to fly toward me. As he landed next to me, I threw his favorite ball toward him. He bucked it back at me with his yellow beak. As a reward, I gave him some of the green lettuce while petting his slick feathers. His large round eyes were clear and bright as always. His nostrils were clean of any dirt or mucous. I went home when the sun started to set. Pinocchio returned to the pond, chasing after some of the other ducks.

Journal 2

Name: Pinocchio
Type: Mallard Duck
Gender: Male
Age: 1 year



Mike Baird
http://www.flickr.com/photos/mikebaird/499089461/

Journal Entry 5

Summer is almost over and school is about to start. I wanted to visit Pinocchio one more time before I went home. I found him sitting on the grass next by the pond. I sat next to him, stroking his shiny feathers. I looked at his face, remembering his clear round eyes that I saw each day. I also looked at his bright yellow bill with its two clean nostril holes. As I walked around the garden surrounding the pond, Pinocchio followed me, our feet moving in perfect unison. He opened his wings a couple of times, hoping to fly toward me, but he couldn't. I looked at his wings and found tiny red spots at the tips of his wings. I ran to Uncle Dave and asked him what was wrong. He said that Pinocchio's wings were just clipped by the veterinarian. He said that Pinocchio liked to fly into the neighbor's garden and step on the crops. He said that Pinocchio bled a little when his wings were clipped, but that it stopped afterward. He assured me that Pinocchio would be okay. As the sun began to set, I said goodbye to Pinocchio for the last time.

Journal 3

Bird Name: Heather
Breed: Cockatiel
Gender: Female
Age: 2 years

John "cygnus921"
http://www.flickr.com/photos/cygnus921/2338108116/

Journal Entry 1

Today, when I came home from school, I heard Heather calling from the living room. The thermostat read 69ºF. She likes to sit and look outside from the big window in there. I dropped my backpack in the hall and said hello to Heather. She seemed to be doing well, her feathers appeared shiny and smooth and her eyes were bright and alert. She fluffed her feathers and looked at me. I tried whistling to her, but I still don't have the hang of it yet. She whistled back. Her respiratory rate was about 65 breaths per minute. I checked to make sure she still had enough food and water and that her cage was not too dirty. Heather paced back and forth on one of the branches in the cage and watched me. I noticed that she ate the millet spray I had given her as a treat. I think I might get her some more later as a treat since she likes it so much.

Journal 3

Bird Name: Heather
Breed: Cockatiel
Gender: Female
Age: 2 years

John "cygnus921"
http://www.flickr.com/photos/cygnus921/2338108116/

Journal Entry 2

When I woke up today, I gave Heather some fresh food and water, because she had pooped in her water bowl. It was 70ºF in the house and Heather's respiratory rate was about 67 breaths per minute. I also cleaned the shells from the millet spray that she had dropped around the cage. She had made quite a mess! Heather watched the whole time I was cleaning from her favorite branch, although her eyes seemed a bit duller today. I was supposed to clean her cage, but the bottom of her cage did not look too dirty and her bathing bowl only had a little bit of debris in it, so I decided not to clean it. Since her wings are clipped, I took Heather out of her cage, put her on my shoulder, and walked around the house. I tried to whistle to her, and she encouraged me by whistling back. I think I might be getting a little bit better. My mom called me to come eat breakfast and I put Heather back in her cage and opened the blinds of her favorite window for the day. Her feathers really look shiny and beautiful in the light.

Journal 3

Bird Name: Heather
Breed: Cockatiel
Gender: Female
Age: 2 years

John "cygnus921"
http://www.flickr.com/photos/cygnus921/2338108116/

Journal Entry 3

Today, I took Heather out, but she did not want to try whistling to me. I let her sit on my shoulder while I was doing my homework. She paced back and forth a lot and started to nibble on my ear, so I put her back in her cage. Later, when I closed the blinds, she was not on her favorite perch. Heather sneezed once, so I went over and looked at her. She seemed fine and did not do it again. Her respiratory rate was 64 breaths per minute and the living room's temperature was 69ºF. I took a good look at her, but her eyes seemed to be bright and her feathers still look shiny and clean. She still has plenty of food and water, but the bottom of her cage is getting dirty, so I will have to clean it soon.

Journal 3

Bird Name: Heather
Breed: Cockatiel
Gender: Female
Age: 2 years

John "cygnus921"
http://www.flickr.com/photos/cygnus921/2338108116/

Journal Entry 4

The first thing I did when I came home from school today was whistle to Heather. She whistled back. However, she did not seem as cheerful and her whistle was a little weak. I took her out of her cage and put her on my shoulder while I cleaned her cage. She watched me, but not like she usually does. Her eyes are a bit dull today and her feathers look a little unkempt. Her respiratory rate was about 70 breaths per minute and the temperature in the room was 70ºF. When cleaning, I noticed the bathing and water bowls were also dirty and close to empty, so I cleaned and refilled them. I also noticed that her droppings were a lot more watery than usual. Heather sneezed a couple times before I put her back in her cage. I put a new toy bell in her cage, but she didn't seem interested in playing with it. She seemed fine otherwise, so I went to finish my homework. I checked on her before I went to bed, and her nose was a little wet looking and she was definitely sneezing more often.

Journal 3

Bird Name: Heather
Breed: Cockatiel
Gender: Female
Age: 2 years

John "cygnus921"
http://www.flickr.com/photos/cygnus921/2338108116/

Journal Entry 5

Before I went to school, I checked on Heather. Her eyes were a little dull and her feathers definitely looked like she has not preened in awhile. She would not whistle and just sat on the bottom perch while sneezing a few times. Her respiratory rate was about 75 breaths per minute and the temperature in the room was 69ºF. After school, Heather was sneezing a lot, sitting on the bottom of the cage, and her eyes looked pink and a little puffy. I put a millet spray in her food dish, but she ignored it and stayed at the bottom of the cage. Her respiratory rate was 80 breaths per minute and the temperature in the room was still 69ºF.

Journal 4

Bird Name: Amber
Type: Parrot
Gender: Female
Age: 1 year

Anna Cervova
http://www.publicdomainpictures.net/view-image.php?image=974

Journal Entry 1

Today my mom brought home a parrot from work. One of her coworkers from her office had a few too many birds and asked if my mom could care for her parrot, Pepper, until she bought a bigger cage. My parrot, Amber, has a very large cage and there is plenty of space for her to hop around in. Taking in another bird was not going to be an issue. Before my mom came home with Pepper, I cleaned the cage as usual. I lined the bottom of the cage with new paper and wiped off the feces. I set out fresh fruits and vegetables and some grains. Then I gave her fresh water. I played with Amber for a while today. I wiped down her toys as I was playing with her. She squawked and was very happy. Her feathers were very bright and smooth. When I looked into her eyes and nose, they both looked clear. When Pepper came home, Amber did not seem to mind and kept quiet and even approached Pepper several times. Pepper was distant and did not want to play with Amber. I noticed that Pepper did not eat much of the food I offered while Amber ate plenty. I hope she will feel comfortable during her stay.

Journal 4

Bird Name: Amber
Type: Parrot
Gender: Female
Age: 1 year

Anna Cervova
http://www.publicdomainpictures.net/view-image.php?image=974

Journal Entry 2

This morning I woke up and checked the two lovely birds. Amber greeted me with a friendly squawk and ran to the edge of the cage toward me. I stroked her feathers which were so soft and smooth and kissed her beak. Her nose looked clean but when I looked into her eyes, I noticed they were a little watery. When I looked over to greet Pepper her eyes had a lot of tears, making her look like she was crying. I didn't think much of it. I quickly looked around the cage and made a mental note of the things I needed to do and clean. There were a few normal looking droppings so I might be able to clean it tomorrow. The water was half empty and the food was still full so I will check it later today to see if I need to refill it.

I received a call from my mom at work saying that Pepper will be going home this afternoon. It was a lovely day. It was sunny but a bit windy. I left the sliding door open with the screen closed so that I can feel the breeze. The air was warm still so I did not worry for the birds. They were fine with the temperature being around 76ºF. I was reading with Amber and Pepper in the living room when the doorbell rang. It was Pepper's mom. She came to pick up Pepper. I gathered up Pepper's toys and Amber and I said good-bye. What a gentle bird. A bit quiet and shy but hopefully she will be happy back at her home. I then went back to reading. Lisa, a friend from school called me and wanted to go watch a movie. So I quickly got ready, told Amber I would be back later, and Lisa picked me up. When I came back late in the evening I was exhausted because we ended up shopping before the movie. So I ate dinner, took a shower, and went right to bed.

Journal 4

Bird Name: Amber
Type: Parrot
Gender: Female
Age: 1 year

Anna Cervova
http://www.publicdomainpictures.net/view-image.php?image=974

Journal Entry 3

I woke up this morning in a panic. I forgot to give Amber clean food and water yesterday! As I ran outside my dad told me to relax because he did it already when he woke up and noticed my forgetfulness. He said that he didn't clean the droppings because there were so few. He changed the water but he didn't change the food because the food bowl was still pretty full. I thanked him and took Amber out of her cage. I noticed that her feathers were a bit dull and dirty looking. I looked at her nose which was still clear but her eyes were still watery. I took a tissue to wipe away her tears. As she sat on my shoulder I walked around the house. I set her on a perch in my room and cleaned my room and organized my closet. As we listened to music together I got her to dance for me. She began bobbing her head up and down with me. It was awesome! I showed my dad our dance and he got a great laugh out of it. I did notice that when she dancing, a few feathers would fall out but I figured that she was just really excited! I set Amber back into her cage and began to clean her cage. I noticed some diarrhea that was on left side of the cage. Amber's favorite side is the right so I think it was from Pepper. I finished cleaning her cage and toys and washed up for dinner.

Journal 4

Bird Name: Amber
Type: Parrot
Gender: Female
Age: 1 year

Anna Cervova
http://www.publicdomainpictures.net/view-image.php?image=974

Journal Entry 4

Today I exercised with Amber. I had her hop from one side of the cage to the other. Usually on Wednesdays we do this two or three times, but halfway through her second run, she stopped and started huffing and puffing. It took her a while to finish her second round so I decided to stop for the day. I laid out new paper under the cage and fresh food and clean water. I then cleaned the cage and stroked Amber for a while. Her feathers seemed a bit more puffed out than usual. Later I was holding her while watching TV. Commercials came on and I looked down at Amber and noticed that both her nose and eyes was running. I wiped it away was a soft cloth and put her back into her cage.

Journal 4

Bird Name: Amber
Type: Parrot
Gender: Female
Age: 1 year

Anna Cervova
http://www.publicdomainpictures.net/view-image.php?image=974

Journal Entry 5

Today I woke up late and rushed to school. I didn't get a chance to check on Amber but I'm sure if my parents noticed anything unusual, they would have told me. When I came home from school I greeted Amber with a big "Hello!" I didn't hear anything in the living room. I raced over to her caged to see why she was being so quiet. Not only were her feathers all ruffled, but there was diarrhea on the right side of the cage.

Journal 5

Bird Name: Corey
Type: Cockatoo
Gender: Male
Age: 1 year

Anna Cervova
http://www.publicdomainpictures.net/view-image.php?image=974

Journal Entry 1

Tomorrow our Granny Pepa will be moving in with us. She has a few belongings such as some clothes, pictures, and her lovely bird, Corey. She lived all alone with Corey since he was a hatchling and never let him outside or out of her sight. In Granny Pepa's old house, Corey lived alone in his cage with few toys. His daily entertainment was basically Granny since they only had each other. My older sister and two younger brothers help build Corey a new cage as a welcoming gift. We painted the cage with bright colors and even elaborately decorated it with plenty of toys, water, and food. My little brothers were running around screaming with excitement when they found out Granny and Corey was coming tomorrow.

Journal 5

Bird Name: Corey
Type: Cockatoo
Gender: Male
Age: 1 year

Louise Docker
http://www.flickr.com/photos/aussiegall/355618139/

Journal Entry 2

When Corey and Granny arrived, I ran and gave Granny a hug almost knocking the caged Corey out of her hands. We all gathered around Corey and started whistling and calling his name. He started squawking and screaming. We took him out of his tiny cage and placed him in his new cage. He started trembling and stayed in one corner of the cage while looking around his new environment. After a day in the airport and in the car, he seemed to be tired. I noticed that his feathers were a beautiful white color and that they were shiny and clean. His eyes were bright and clear and his beak and nares (nostrils) were clean. His toenails looked a little long to me. A couple of them were curled over. I think we will have to trim them soon. We gave him some fresh fruit, which he seemed to love. He ate several grapes and banana pieces.

Journal 5

Bird Name: Corey
Type: Cockatoo
Gender: Male
Age: 1 year

Louise Docker
http://www.flickr.com/photos/aussiegall/355618139/

Journal Entry 3

This morning we cooked Granny some breakfast. Corey's cage is in the kitchen so he watched us fry eggs and hash browns. Jimmy burned the bacon! The house smelled like smoke. It made my nose itch and I kept sneezing. I changed Corey's water and gave him fresh food. I cleaned his cage and his toys that seemed to be untouched. He constantly flapped his wings and went hysterical every time I tried to pet him. After taking care of Corey I heard loud noises from the kitchen. My baby brother Oliver was banging on pots and pans. Everyone ran to the kitchen covering their ears and grabbed the cooking instruments out of his hands. Of course, he began to cry. As we were trying to get Oliver to quiet down, Corey joined in and started screaming too! After he calmed down, I noticed that there was an area on his breast where the feathers looked a little frayed. I also noticed that he kept shifting his weight from one foot to the other over and over again. Maybe his long toenails were bothering him? My mother and I decided to try to trim his toenails, but we couldn't catch him in the towel. Poor Corey! He kept flapping his wings trying to get away from us. I think we may need to give him some more time to get used to us before we try to catch him again. Later in the day, I noticed that his food dish was empty, so I gave him some of his pellets and a couple of slices of apple too.

Journal 5

Bird Name: Corey
Type: Cockatoo
Gender: Male
Age: 1 year

Louise Docker
http://www.flickr.com/photos/aussiegall/355618139/

Journal Entry 4

Today when I checked on Corey to replace his food and water, he was hissing at one of his big toys. As he was hopping around the toy I noticed a bald patch underneath his wing about the size of a quarter. Then I was cleaning his cage and noticed the feathers layering his feces. I threw away the soiled newspaper and put clean ones down. Then I did homework next to Corey in the kitchen table with the radio on. As I was doing homework, I noticed that Corey was spending a lot of time preening his feathers. He kept lifting his wings and it looked like he was chewing on them. His eyes looked clear and bright, but there was a little bit of dried mucus around his nares (nostrils). I wanted to clean it off for him, but when I put my hand in the cage, he squawked really loudly. I tried to feed him some carrot, and he came over to the side of the cage and took it from my hand, but then he dropped it right away. I noticed that he hadn't eaten many of his pellets, but that all of his fruit from the morning was gone.

Journal 5

Bird Name: Corey
Type: Cockatoo
Gender: Male
Age: 1 year

Louise Docker
http://www.flickr.com/photos/aussiegall/355618139/

Journal Entry 5

When I came home from school today I checked on Corey. He was sitting on the bottom of the cage. It didn't look like he had eaten much of his pellets and all of his fruit was still in the bowl. When he lifted his wings I noticed that there were patches of exposed skin on both sides. He also had an area on his chest where there seemed to be a few feathers missing and the feathers on his tail looked frayed. There weren't many droppings in his cage, but I cleaned it anyway. I also added some new toys so he could have something new to explore. There was more dried mucus on his beak, but I didn't try to clean it off because I didn't want to scare him. Instead, I got out the misting bottle and sprayed Corey with some water. He seemed to love it and spread his wings and hung upside down in his cage so I could get him all wet. I don't think he had been given a good bath in a long time.

AVIAN DISEASE INFORMATION SHEET

◆ Psittacosis

Psittacosis (sit-uh-koh-sis), commonly known as parrot fever, is a disease associated with the parrot family. It is an infectious zoonotic disease caused by a bacterium. Both humans and other parrots can contract this disease by coming into contact with an infected bird. Infected birds that are asymptomatic (do not show signs of illness) can still spread the disease through their feces, wet or dry. People and other birds can become infected by ingesting food or water contaminated with infected feces or inhaling dry droppings. Infected humans may experience flulike symptoms and are more susceptible to pneumonia. Symptoms of birds may include

- difficulty breathing
- poor appetite
- ruffled feathers
- running eyes
- running nose
- diarrhea

◆ Feather Plucking

Feather plucking, **also known as feather picking,** is a condition in which birds chew on or remove their own feathers or pluck the feathers of other birds in their cage. This condition can be caused by stress, poor diet, parasites, allergies, or an infection.

Feather plucking can vary in form and severity from one bird to another. Some birds may chew the feathers without removing them from the shaft; others may completely remove the feather from the shaft, a more severe condition. If the bird continues to feather pluck for a period of time, the feather follicle can be damaged to the point where the feathers cannot grow back. In severe cases birds will self-mutilate soft tissue areas on their breasts, legs, and backs, causing sores and bleeding and leaving them susceptible to infection. Certain species of birds, such as African grey parrots and members of the cockatoo family, are more susceptible to feather plucking than others. In poultry, feather plucking is usually directed at other birds in the flock. In extreme cases, this behavior can lead to death and cannibalism. Symptoms of feather plucking may include

- bare spot under the wings
- bald chest
- damage to feathers or feather follicles
- sores or wounds

◆ Marek's Disease

Marek's (mar-iks) disease, a viral infection, primarily infects young birds (chickens), usually 3 to 30 weeks of age. The virus is spread when "dander" (small scales) from the base of the feathers of infected birds mixes with dust and is carried by the wind. Uninfected birds typically contract the virus through their respiratory (breathing) system. Symptoms of Marek's disease may include

- paralysis in one or both legs or wings, making it hard to stand up
- failure to gain weight
- pale eyes (rare symptom)
- generally unthrifty (e.g., lowered egg production, ruffled feathers)

◆ Upper Respiratory Infection

This common infection in birds is caused by bacteria. Birds have a higher chance of getting an upper respiratory infection if they are stressed, have poor nutrition, or are kept in an unsanitary environment. If a cage is not cleaned or disinfected regularly, decaying food and feces can accumulate, making it a great place for bacteria to grow.

If the infection is mild, it may appear simply as if the bird has a cold. However, if the infection is severe, breathing difficulties and problems with food consumption may result. Symptoms of an upper respiratory infection may include

- sneezing
- nasal discharge
- eyes that are dull, red, or appear irritated
- swelling around the eyes
- breathing difficulties (e.g., rapid breathing)

HEALTH ASSESSMENT CHECKLIST

Bird Name: _____ Breed: _____

Gender: _____ Age: _____

General Symptoms

Is there anything you notice that you should be concerned about?

Journal Entry 1: _____

_____

_____

Journal Entry 2: _____

_____

_____

Journal Entry 3: _____

_____

_____

Journal Entry 4: _____

_____

_____

Journal Entry 5: _____

_____

_____

Suspected Diagnosis: _____

(Use the avian disease information sheet)

Observations

Explain which symptoms from the above journal helped you indicate a problem, and explain why.

_____

_____

_____

What other observations do you think might be important?

_____

_____

_____

Why do you think recording daily observations of your bird would be helpful in monitoring your bird's health?

_____

_____

_____

YOUR BIRD'S HEALTH

Subject Overview and Background Information

Youth should use the skills and knowledge acquired from the previous activity to assess their bird's health in this application activity. As important as it is to teach youth about animal health assessments, it is even more vital for youth to apply their knowledge in the real world. This application activity allows youth with animals to evaluate their pets' health and determine the right time to consult a **veterinarian**. Youth should be in a regular habit of checking their animal's overall health and notice any signs of abnormality.

The best way to assess the health of a bird is through observation. There is no clear-cut definition of what is normal; normal varies from bird to bird, so abnormal depends on your bird as well. Observing your bird daily is the best way to monitor its health and be able to identify changes that might be symptoms of disease or injury.

In this activity, youth will fill out the health assessment charts used in the previous activity, except that they will make observations on their own birds. In addition, they should write a short journal entry on the back of the chart about what they did with their bird daily. The daily observations should last a minimum of 14 days.

Birds can be difficult animals to handle and take vital measurements from. We suggest developing an inexpensive kit that may help the youth in their observation and measuring process. This kit could include the following:

- Latex gloves for general use every time they examine the bird, especially when they make personal contact with sensitive areas of the bird. Wearing disposable gloves is highly recommended when performing any of these procedures to prevent the spread of disease from human to bird and vice versa.
- Penlight for use when examining the bird's eyes and nares (nostrils). Encourage the youth to note anything that looks abnormal in these areas and compare this with observations from previous days.
- Magnifying glass for use when looking at the bird's feathers. The youth can look closely at the feathers and external features of the bird and note any interesting observations.

Checking a bird's vitals is important in order to assess its health. Before checking the bird's vitals, make sure the youth understand how to take each of these measurements.

- Respiration (breathing) rate: Get your bird in a comfortable position and watch its breast or chest move up and down as it breathes. One breath is equivalent to the bird's chest moving up and down once. Count how many breaths the bird takes in 1 minute; or count the number of breaths it takes in 15 seconds (using a stopwatch or watch with minute hand) and multiply the number by 4 to get the number of breaths in 1 minute. The breathing rate differs between bird species and increases with activity. Contact your **veterinarian** if you notice that your bird's respiration is abnormal.

It is important to let the youth know that they should not make immediate conclusions about their animals' health. Most of the youth will probably have perfectly healthy pets. Do not give them the impression that they must find something wrong with their animal. Emphasize the concept of **health care maintenance** rather than health diagnosis.

- **Note**: When caring for sick birds, be careful when cleaning cages because diseases may be transmissible to humans and can be spread in the air. Make sure to wear a dust mask when cleaning cages and wash hands immediately after working with sick birds.

Working with animals can get dirty, so appropriate clothing is required (new clothes are not recommended). Make sure clothes and shoes are comfortable, so that youth can move around and work in them. The recommended dress includes

- closed-toed shoes
- long pants
- long-sleeved shirt
- a tie for long hair, if necessary
- no free-hanging earrings
- secure glasses

When outdoors with birds, sun protection is recommended, such as sunscreen, a hat, and sunglasses. A painter's mask may be needed by those who are asthmatic, sensitive, or allergic to dust and small particles in the air.

Activity Concepts and Vocabulary

- **Health care maintenance**: The regular monitoring of an animal's health.

Life Skills

- **Head**: Keeping records, problem solving, decision making, critical thinking
- **Heart**: Sharing, communication, concern for others, empathy
- **Hands**: Self-motivation
- **Health**: Disease prevention, self responsibility, personal safety

Subject Links

Science and Language Arts

State Content Standards

Science

- Third Grade
  - *Investigation and Experimentation: 5e*
- Fourth Grade
  - *Investigation and Experimentation: 6c*
- Fifth Grade
  - *Investigation and Experimentation: 6h, 6i*
- Sixth Grade
  - *Investigation and Experimentation: 7d*

Language Arts

- Fourth Grade
  - *Listening and Speaking Strategies: 1.7*
- Fifth Grade
  - *Listening and Speaking Strategies: 1.5*
- Sixth Grade
  - *Listening and Speaking Strategies: 1.5*

Purpose of Activity

The purpose of this activity is to have youth record observations of their own bird over a period of time.

ACTIVITY 2
Bird Health Journal

Overview of the Activity

Youth will have the opportunity to assess the health of their bird for a minimum of 14 days. They will make observations of their animal and record what they observed for each day. They will also write a journal entry each day on their animal's activity. During their group meetings, youth will have a chance to share their observations of their animal and discuss any potential diseases or illnesses with their group.

Time Required

Approximately 15 minutes daily for at least 2 weeks

Suggested Grouping

Individual

Materials Needed for Each Youth

*(*Materials provided in curriculum)*

- Flip chart paper
- *Animal health journal:
  - *Animal background information sheet*
  - *Animal health daily recording sheet for each day of observation*
- Health assessment kit:
  - *Latex (disposable) gloves*
  - *Penlight*
  - *Magnifying glass*
- Writing tool (pencil, pen, etc.)
- Stopwatch or watch with second hand
- Disinfectant
- Painter's mask (if sensitive or allergic)

Getting Ready

Each individual is expected to observe their bird for 14 to 28 days. Make an animal health journal for each youth, which consists of an animal background information sheet and one blank animal health daily recording sheet for each day the youth will observe their bird.

Opening Questions

Ask the youth to respond to each question below by sharing their ideas verbally and/or by recording them on the flip chart paper provided.

1. When you are sick, what observations might your parents make that would lead them to take you to see the doctor?
2. Describe what you might notice about birds that are not feeling well.
3. What kinds of observations about your bird would prompt you to call your veterinarian?
4. Why might keeping a daily journal about you or your bird be helpful to a doctor or veterinarian?

Procedure (Experiencing)

1. Give each individual an animal health journal packet, which includes the animal background information sheet and one animal health daily recording sheet for each day of observation.
2. Review the terms on the checklist and how to properly take the respiration rate. Make sure the youth know the proper dress code for working with animals.
3. Explain to the youth that they are to fill out the animal background information sheet. If they have more than one animal, they may choose one to work with for this activity. They may need to work with their parents to answer the background information questions.
4. Youth will also fill out an animal health daily recording sheet every day for the chosen number of days (14 days are recommended). The youth should also write a brief journal entry on the back of the recording sheet, describing what they did with their animal each day.
5. Ask the youth to prepare to share a report with their peers at the next group meeting. Reports should include an oral description of observations along with any potential symptoms of illness. Youth may want to graph respiration rates and could also create a poster or PowerPoint presentation to share their findings.

Sharing, Processing, and Generalizing

Have each youth share his or her report with the group. Follow the lines of thinking developed through the general thoughts, observations, and questions raised by the youth. If necessary, use more targeted questions as prompts to get to particular points, such as:

1. What are some advantages of keeping a daily health journal for your bird? Were there any challenges? Please explain.
2. Did your bird present any symptoms of concern? If so, what were they, and what did you do?
3. In what ways are graphs of respiration rate helpful in assessing your bird's health? Please explain.
4. What similarities, if any, were there between your bird and other birds? What differences, if any, were there? Please explain.

Concept and Term Discovery/ Introduction

Volunteers need to ensure that the concept of **health care monitoring** has been introduced or discovered by the youth.

- **Note:** The goal is to have the youth develop concepts through their exploration and define terms using their own words.

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Animal Health Journal

ANIMAL BACKGROUND INFORMATION SHEET

Date: _____ Youth's name: _____

Animal's name: _____ Species: _____

Breed: _____ Date of birth or age of animal: _____

Gender (male, female, or unknown/fixed or intact): _____ Has this animal been bred? _____

If yes, how many times? _____ Date of last breeding? _____

Health history: Is this animal on any medications? _____ If yes, please list. _____

_____

Does this animal have current vaccinations? _____

Does this animal have any allergies? _____ If yes, please list. _____

_____

Has this animal had any major illnesses or surgeries? _____ If yes, describe. _____

_____

Date of last veterinary checkup: _____

Environment: Please describe the housing for this animal (indoor/outdoor, with other animals/alone, size of enclosure).

_____

_____

_____

Diet: Please describe the diet and the feeding schedule for this animal. Describe how water is provided (bowl, automatic waterer, etc.)

_____

_____

_____

ANIMAL HEALTH DAILY RECORDING SHEET

Date: _____ Time: _____

Animal name: _____

MEASUREMENTS

Respiration (breathing) rate: _____

OBSERVATIONS

Behavior: _____

_____

Activity level: _____

_____

Appetite: _____

_____

Body condition: _____

_____

Posture and flight: _____

_____

Skin, feathers, and nails: _____

_____

Eyes: _____

Nose/nares: _____

Body waste: _____

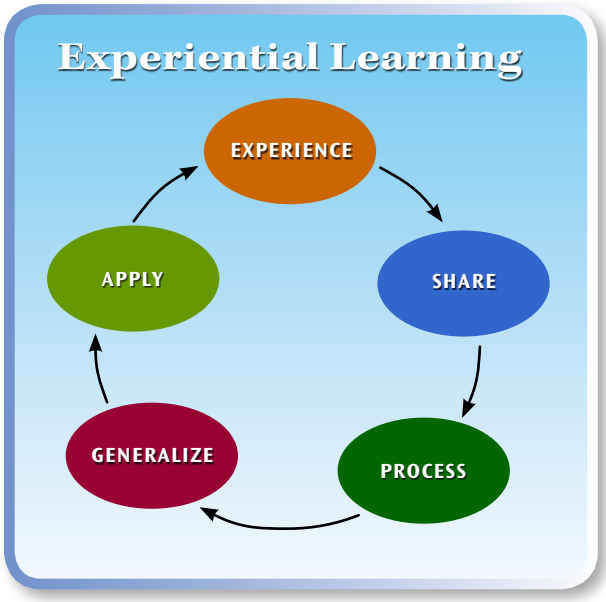
Other: _____

_____

_____

APPENDIX

The activities in this curriculum are designed around inquiry and experiential learning. Inquiry is a learner-centered approach in which individuals are problem solvers investigating questions through active engagement, observing and manipulating objects and phenomena, and acquiring or discovering knowledge. Experiential learning (EL) is a foundational educational strategy used in 4-H. In it, the learner has an experience phase of engagement in an activity, a reflection phase in which observations and reactions are shared and discussed, and an application phase in which new knowledge and skills are applied to a real-life setting. In 4-H, an EL model that uses a 5-step learning cycle is most commonly used. These five steps—Exploration, Sharing, Processing, Generalizing, and Application—are part of a recurring process that helps build learner understanding over time.



For more information on inquiry, EL and the 5-step learning cycle, please visit the University of California's Science, Technology, Environmental Literacy Workgroup's Experiential Learning Web site, http://www.experientiallearning.ucdavis.edu/default.shtml.

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YOUTH DEVELOPMENT THROUGH VETERINARY SCIENCE 8

Is Your Dog Feeling Down?

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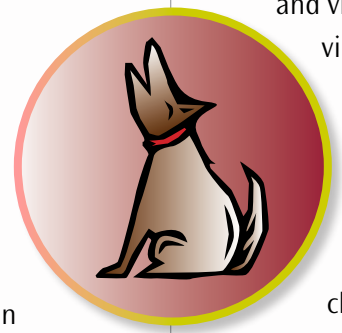
Subject Overview and Background Information

Dogs are domesticated from wolves and have been associated with humans for between 12,000 and 150,000 years. Originally, dogs were used as hunting partners and for guarding, but dogs have been used for many other jobs since then. Today, dogs are bred for hunting, guarding, and herding, as well as for companionship. The American Kennel Club divides dogs into seven categories: sporting, hound, working, terrier, toy, nonworking, and herding. Today, dogs are one of the most popular species of animals to have as pets. A male dog is called a **dog**; a female is called a **bitch**; a young dog is called a **puppy**; and a dog of mixed breeds is called a **mutt** or **mongrel**.



Dogs are naturally social animals that live in packs. They have a social hierarchy with an alpha male and an alpha female. They are **carnivores** but can and will eat vegetation for supplementation. Bitches can come into heat at any time of the year. If impregnated, a female will produce a **litter** of puppies. Puppies are born blind and deaf but develop these senses within a few days after birth.

Dogs normally live between 8 and 14 years; typically, the larger the dog, the shorter the life expectancy. Many different diseases and disorders affect dogs. Like humans, dogs suffer from **bloat**, heart disease, diabetes, allergies (e.g., **food allergies**), and obesity. Both humans and dogs can also be affected by parasites that can lead to diseases such as **Lyme disease**, and they can also suffer infestations of mites or hookworms**.** Dogs exhibit an array of genetic disorders ranging from skeletal problems like **hip dysplasia** to hearing and vision problems. Vaccinations are given to prevent viruses such as rabies, **parvovirus**, and distemper; some viral diseases are transmissible between dogs and humans.

As with any pet, proper care is essential to keeping a dog healthy. It is important to take a dog to the veterinarian at least once a year for a checkup and vaccinations. It may be necessary to take a puppy or an older dog to a veterinarian more frequently. Proper feeding can help prevent diseases such as bloat, while just watching a dog for itching can alert an owner to fleas, ticks, or allergies. For viruses such as rabies or parvovirus, vaccinations are the best prevention. Along with proper vaccination and disease prevention, it is important to keep dogs fit, since obesity is a serious problem for dogs.

Different breeds require different amounts of daily exercise, so it is important that you research the breeds and choose a dog that will need only as much exercise as you can give it.

Activity Concepts and Vocabulary

- **Bacterial infection**: A disease caused by bacteria.
- **Bacterium (bak-teer-ee-um), pl. bacteria**: An organism that cannot be seen with a naked eye. Some bacteria (germs) can cause diseases. Pneumonia, a disease that affects animals' lungs, is caused by a bacterium.
- **Carnivore (kahr-nuh–vohr)**: An animal that eats meat.
- **Fungus (fuhng-guhs)**: An organism (e.g., mold, yeast) that lives and feeds on organic material such as bread, wood, and other animals. A common fungus that affects animals is ringworm.
- **Inflammation (in-fluh-mey-shuhn)**: A local reaction of a tissue to irritation that causes pain and swelling.
- **Parasite (pair-uh-site)**: An organism (e.g., bacterium, worm, tick) that receives food and energy from another organism. A common parasite that affects animals is tapeworm.
- **Veterinarian (vet-er-uh-nair-ee-uhn)**: A doctor who takes care of animals.
- **Virus**: A type of germ that causes diseases. Rabies is a disease caused by a virus.
- **Zoonotic diseases (zoe-oh-nah-tick)**: A disease that affects an animal that can also be passed to humans.

Life Skills

- **Head**: Keeping records, planning and organizing, problem solving, decision making, critical thinking
- **Heart**: sharing, communication, concern for others, empathy
- **Hands**: self-motivation, teamwork
- **Health**: Disease prevention, self responsibility, personal safety

Subject Links

Science and Language Arts

State Content Standards

Science

- Third Grade
  - *Investigation and Experimentation: 5e*
- Fourth Grade
  - *Investigation and Experimentation: 6c*
- Fifth Grade
  - *Investigation and Experimentation: 6h, 6i*
- Sixth Grade
  - *Investigation and Experimentation: 7d*

Language Arts

- Third Grade
  - *Reading Comprehension: 2.2, 2.6*
- Fourth Grade
  - *Reading Comprehension: 2.3*
  - *Listening and Speaking Strategies: 1.7*
- Fifth Grade
  - *Reading Comprehension: 2.3, 2.4*
  - *Listening and Speaking Strategies: 1.5*
- Sixth Grade
  - *Listening and Speaking Strategies: 1.5*
  - *Speaking Applications: 2.5b*

Purpose of Activities

To help youth learn about the proper maintenance and care of dogs. Youth will also investigate the causes and symptoms of several dog diseases.

ACTIVITY 1

Monitoring Dog Health Day by Day

Overview of the activity

The main goal of this activity is for youth to learn to make good physical and behavioral observations of dogs by reading and analyzing descriptive journal entries. Youth will then use these observations to make inferences regarding the health of their dog.

◆ Time Required

Approximately 90 minutes

◆ Suggested Grouping

Pairs or small groups of 3 to 4

◆ Materials Needed for Each Group

*(*Materials provided in curriculum)*

- Writing utensils
- Flip chart paper (one piece per group)
- *Health assessment journals
- *Dog disease information sheet
- *Health assessment checklist

◆ Getting Ready

- Photocopy enough health assessment journals, dog disease information sheets, and health assessment checklists for the groups.

Opening Questions

Ask the youth to respond to each question below by sharing their ideas verbally and/or by recording them on the flip chart paper provided.

1. What are some ways you can tell when you are sick?
2. What signs might your parents, teacher, friends, or doctor use to recognize that you are sick?
3. What are some things you can do to avoid becoming sick?
4. If your animal is sick, what are some changes you might notice about him or her?
5. What are some of the responsibilities you have to keep help your pet or project animal healthy?

Procedure (Experiencing)

- **Volunteer Tip**: Set up the following scenario for the youth: The youth in each group will be playing the role of a dog owner. Each group will receive one of the health assessment journals, one day at a time. As a group, the youth will go through the journal entry of each specific day and record important facts onto the health assessment checklist they have been given. At the end, using the checklists they have made, they will compare their findings with the dog disease information and draw a conclusion regarding what disease, if any, their dog has.

1. Give each group of dog owners Journal Entry 1 from their health assessment journal. The group should read the entry and record important findings on their health assessment checklist.
2. When the groups have completed Journal Entry 1, take away that journal entry and give them Journal Entry 2. Have them read the entry and record important findings on their checklist.
3. Continue this pattern for the remaining days until each journal entry has been assessed.
4. When the group is done with the last day, remove this entry and pass out the dog disease information sheet. Have the groups review the data they recorded on their health assessment checklist and record their diagnosis of their dog's symptoms along with the reasons why they chose that diagnosis.

Sharing, Processing, and Generalizing

Have each group share their diagnosis and indicate which parts of their checklist helped them make that determination. Follow the lines of thinking developed through the general thoughts, observations, and questions raised by the youth. If necessary, use more targeted questions as prompts to get to particular points, such as the following. Ask the youth to respond to each question below by sharing their ideas verbally and/or by recording them on the flip chart paper provided.

1. What might be some advantages to keeping a daily health assessment journal for your dog?
2. What are some examples of the symptoms you used to tell you when to be concerned with your dog's health?
3. What do you think might happen if you ignored those symptoms and didn't seek veterinary care for your dog?

4. Check the groups' diagnosis of their dog with the diagnosis key. If there are any discrepancies, have the youth discuss what lead them to their conclusion.

Dog Disease Diagnosis Key

- Rae: food allergy
- Max: parvovirus
- Allie: Lyme Disease
- Sir James: bloat

Concept and Term Introduction

Volunteers need to ensure that the concepts and terms **bacterium, carnivore, fungus, inflammation, parasite, veterinarian, virus,** and **zoonotic diseases** have been introduced.

- **Note:** The goal is to have the youth develop these concepts through their exploration and define the terms using their own words.

Concept Application

An application for these skills is presented in Activity 2 of this unit. Youth who own a dog may apply Activity 2 to their own pet, while youth who do not own a dog may seek permission from a friend or family member to use their dog in this exercise.

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HEALTH ASSESSMENT JOURNALS

Journal 1

Dog Name: Rae
Breed: Golden Retriever
Gender: Female
Age: 2 years

Joe Sullivan
http://www.flickr.com/photos/skycaptaintwo/107048361/

Journal Entry 1

Rae woke me up this morning by jumping on my bed and licking my face. She seemed really happy and bounced around until I got up to feed her. She gobbled down her food. When she had finished I took her on her morning walk. It was cold this morning, but the sun was shining and Rae's fur looked especially golden in the light. I let her run around and sniff the trees. After she relieved herself, I picked up after her and we went back home. When we got there I checked her feet and fur to make sure she hadn't gotten any thorns or brambles caught on her. Then she drank some fresh water and laid down on the carpet for her morning nap. Before I headed off to school I took a look at her eyes and ears to make sure they were clean. Everything looked good. I also took her heart rate, which was 90 beats per minute, and her respiration rate, which was 12 breaths per minute.

When I got home from school, Rae greeted me at the door with a big wet tongue. She gets so excited to see me even though I'm only gone a few hours. I took Rae on her afternoon walk to the park and played some ball with her. Her coat shimmered as she ran. She seemed pretty happy playing with me. When we got home I checked her paws and coat again and found nothing. Her eyes were bright and shiny as she begged for her dinner. When I fed her, she gulped down her meal and drank some water. Then she napped by my desk while I did my homework. While I was working, I noticed that she would lick her front paws every once in a while. Before I went to sleep, I checked her paws again for thorns, in case I missed something before, but there was nothing in them. Maybe she was just bored.

Journal 1

Dog Name: Rae
Breed: Golden Retriever
Gender: Female
Age: 2 years

Joe Sullivan
http://www.flickr.com/photos/skycaptaintwo/107048361/

Journal Entry 2

Rae woke me up as usual this morning. I really didn't want to get out of bed, but that cold wet nose kept nudging me. I fed Rae her breakfast, and she wolfed it down. When we went out on our morning walk, she ran around like she always does, but she stopped a couple times to scratch herself. I figured she probably just had an itch. Once she went to the bathroom, I cleaned up after her and we headed home. When I gave her fresh water, she drank it and lay down. Then I checked her for any brambles. There was nothing in her fur, but I noticed that the fur around her paws seemed a little discolored; it was a little reddish-brownish. Her eyes and ears still looked clear though.

When I got home from school, Rae ran to greet me at the door. She seemed excited when I first walked in, but after, she seemed to lose interest in me and started chewing on her paws. I tried to get her to stop, but she seemed pretty focused. She eventually stopped and I got her ready to go on her afternoon walk. We played ball like we usually do, but a couple times Rae completely lost interest in the ball and started scratching herself. She's normally completely focused on the ball. It's sometimes even hard for me to get it from her to throw it. When we got home, I checked her coat extra carefully, but there was nothing in it. I think her eyes looked a little more dull than normal too. I gave her dinner and fresh water, which she ate and drank, but then she started chewing on her paws again. I checked her heart rate and it was 99 beats per minute and her respiration rate was about 14 breaths per minute.

Journal 1

Dog Name: Rae
Breed: Golden Retriever
Gender: Female
Age: 2 years

Joe Sullivan
http://www.flickr.com/photos/skycaptaintwo/107048361/

Journal Entry 3

Today, Rae woke me, but she didn't seem as insistent as usual. She just nudged me a couple times then disappeared out of the room. My mom was making me pancakes, so maybe Rae was just trying to get some scraps. The fur on her paws was wet and matted and she had a wet, matted spot on her side as well. She ate all her breakfast. She didn't seem as excited to go on her walk as she usually does, and while we were out there she started eating some grass. When I cleaned up her feces, it seemed a little softer than usual, but I was able to clean it all up. I was running late this morning and wasn't able to do as thorough a check on her as usual, but I gave her water and headed off to school.

When I got home from school today, Rae greeted me, but then immediately started chewing on her side. I noticed that she was missing some fur on her left side and that the fur on her front right paw was very wet and matted. I decided to check her ears before the walk since I hadn't this morning, and there was some dark gunk in them. During our walk she stopped to scratch herself several times and ate some grass. I tried to throw the ball for her, but she didn't seem interested. I was able to get her to run around a little bit though, but I noticed her coat didn't seem to shine like it usually does. I checked her fur when we got home, and I noticed a small patch of reddish skin on her left side. When I gave Rae her dinner, she ate it more slowly than usual, but she still ate all of it.

Journal 1

Dog Name: Rae
Breed: Golden Retriever
Gender: Female
Age: 2 years

Joe Sullivan
http://www.flickr.com/photos/skycaptaintwo/107048361/

Journal Entry 4

This morning Rae didn't even come in to wake me. I found her in the living room chewing on her paws again. Now she has clear bald patches around her paws and on the sides of her back. I don't know what to do to get her to stop chewing. After she finished her breakfast, we started our walk. She was really distracted today. She kept stopping and eating grass on the way to the park we walk to. When she defecated, it was much softer than usual, which made it hard to pick up. On our way home she threw up her entire breakfast. When we got home I took a good look at her ears and eyes again. There was more black stuff in her ears that I tried to clean out with a tissue, and her eyes were draining some fluid. I gave her fresh water and some extra food, but she didn't seem to want to eat it.

Today when I got home, Rae didn't greet me at the door. I found her in the living room again licking her paws. When she saw me, she got up to come lick me, but she didn't seem very excited. Her bald patches were all red from her chewing. I think she might even be breaking the skin a little because they look pretty raw. I tried to take her on her evening walk, but she kept stopping to eat grass. She eventually vomited again, but the only thing that came up was the grass she'd just eaten. I took her straight home and gave her dinner, hoping that maybe some food would settle her stomach. She ate most of it, but left some in her bowl uneaten. There seemed to be more liquid draining from her eyes and more black stuff in her ears. She was panting and her respiration rate was about 26 breaths per minute. Her heart rate was about 105 beats per minute.

Journal 1

Dog Name: Rae
Breed: Golden Retriever
Gender: Female
Age: 2 years

Joe Sullivan
http://www.flickr.com/photos/skycaptaintwo/107048361/

Journal Entry 5

This morning, Rae's bald patches were even worse! They were still all red, but now there was pus coming out of them as well. The food from last night was still in her bowl, but she did eat her breakfast when I gave her new food. I think she was hungry after not having much to eat yesterday. After she ate we started our walk. I tried to prevent her from eating the grass today because I didn't want her vomiting again. Before we even got to the park she had diarrhea. I cleaned up as much as I could and took her home. She looked pretty unhappy when we got home and wouldn't even drink any water. Her coat looked really dingy and scraggly with the bald patches. I still couldn't find anything in her coat or paws to explain the chewing. Before I left for school I noticed her rubbing her ears and eyes with her paws.

When I got home from school Rae looked miserable. She didn't greet me when I walked in and just kept rubbing her eyes and ears with her paws. She didn't even want to go on her walk! There was pus around her eyes and more black stuff in her ears. I tried to feed her, but she just threw it up again. What could be wrong with her?

Journal 2

Dog Name: Max
Breed: German Shepherd
Gender: Male
Age: 4 months

Marilyn Peddle
http://www.flickr.com/photos/marilynjane/2840777824/

Journal Entry 1

First thing this morning I woke up and let Max out of his kennel. We have to keep him in a kennel at night until he's trustworthy in the house, so I have to take him outside first thing in the morning. He was really excited when I let him out. He jumped up and licked my face. I checked his eyes and ears and they both looked clean. His nose was wet and cool. We went into the backyard and Max urinated and defecated. I cleaned up after him and took him inside to give him breakfast. He wolfed down his meal and was ready to play. We played tug-o-war for fifteen minutes and then I had to put Max back in his kennel while I went to school.

As soon as I got home from school, I let Max out of his kennel and took him outside to go to the bathroom. Then I put on his leash and took him on a walk to the park down the street. There are always other dogs there, but I usually don't let Max play with them because he hasn't had all of his shots yet. We were there about a half hour while Max romped around and found rocks and stuff to chew on. Then we went home and I fed Max his dinner and gave him fresh water. He was breathing pretty hard (respiration rate was 30 breaths per minute) when we got home, but he calmed down pretty quick. After he ate I brushed him for a little bit because with his thick fur he sheds so much if I don't. He seemed really happy today.

Journal 2

Dog Name: Max
Breed: German Shepherd
Gender: Male
Age: 4 months

Marilyn Peddle
http://www.flickr.com/photos/marilynjane/2840777824/

Journal Entry 2

I woke up this morning and took Max out to the back yard to relieve himself. He was really bouncy when I opened up the kennel and almost knocked me over. He's growing really fast these days and I don't think he realizes how big he's getting. While we were in the backyard there was a strange sound and Max perked up his ears to listen to it. He's going to make a good guard dog when he gets older. I checked his eyes and they were clear and a little watery, his ears were clean and pink inside. His nose was wet and cool. I brought him back inside and fed him his breakfast. He ate quickly and drank some water. After he ate, I played with him until I had to leave for school.

After school, I let Max out of his kennel and took him outside to relieve himself. I picked up his feces, and then it was time for Max's walk. I remembered to bring a tennis ball today so Max would have something of his own to play with. I threw the ball for him for a little while, but he hasn't figured out that he has to bring it back yet. We had to cut the walk a little short today because it looked like rain. When we got home I fed Max and filled his water bowl. He ran around the house after he ate because he still had a lot of energy. I took his heart rate and it was about 110 beats per minute and his respiration rate was 28 breaths per minute. I finally calmed him down by bedtime, and he fell asleep in his kennel.

Journal 2

Dog Name: Max
Breed: German Shepherd
Gender: Male
Age: 4 months

Marilyn Peddle
http://www.flickr.com/photos/marilynjane/2840777824/

Journal Entry 3

Max was wound up this morning when I took him out of his kennel. He relieved himself pretty quick and we headed back inside. Before I fed him, I noticed Max coughing a couple times. He was probably excited about getting his breakfast. He gulped down his breakfast quickly and was ready to play. We played tug-o-war for a little bit before I put him back into his kennel so I could finish getting ready for school. He was in his kenned almost twenty minutes before I left for school but he was still breathing pretty hard. His respiration rate was about 33 breaths per minute. I guess I must have really tired him out this morning.

This afternoon Max seemed a little distracted when I let him out of his kennel. While we were outside he had some diarrhea that I tried my best to clean up. I thought maybe he'd feel better after we played at the park for a while. This time I didn't bring a ball, so we just ran around together. We were there about fifteen minutes before we got tired and headed home. By the time we got home he was breathing really hard his respiration rate was about 35 breaths per minute. I decided to get him fresh water first because his tongue was hanging really far out of his mouth. His nose also seemed to be warm and dry. He drank all the water I gave him and I had to refill the bowl a second time before he had had enough. Once he had had enough water, I gave him his dinner, which he ate right up. When I brushed him after dinner, I noticed that his eyes seemed a little dull. Because he was so tired after our walk, I decided to put him to bed early. He didn't seem to mind going in his kennel early and just kind of went to sleep.

Journal 2

Dog Name: Max
Breed: German Shepherd
Gender: Male
Age: 4 months

Marilyn Peddle
http://www.flickr.com/photos/marilynjane/2840777824/

Journal Entry 4

This morning, Max seemed more tired than usual. He had drunk all of his water during the night, and when I gave him more, he gulped that down as well. He had diarrhea again when I took him outside. After I gave Max his breakfast, I took him back outside to make sure he didn't need to relieve himself again. While we were out there he started eating grass. I took him back inside and gave him some more water. He started coughing while he was drinking the water. After he was done, I played with him for a couple minutes and put him back in his kenned. I sat with him and pet his fur. He was breathing hard and his ears were very warm to the touch.

When I let Max out of the kennel this afternoon he didn't seem very happy. I took him outside and he relieved himself. This time his feces were less like diarrhea though. I took him for his walk, but we were barely to the park before he was panting. I only stayed at the park with him for ten minutes because I didn't want him to get too tired. By the time we got home, Max was coughing as well as panting. It seemed like he couldn't catch his breath. His respiration rate was almost 40 breaths per minute. I gave him water, which he lapped right up, and fed him his dinner. I decided to put him right back into his kennel after he ate so that he'd rest. I petted his fur and rubbed his ears, which he loves. His ears seemed very warm again. It took more than a half an hour until his breathing returned to normal, but he eventually calmed down and went to sleep.

Journal 2

Dog Name: Max
Breed: German Shepherd
Gender: Male
Age: 4 months

Marilyn Peddle
http://www.flickr.com/photos/marilynjane/2840777824/

Journal Entry 5

When I went to let Max out of his kennel this morning, I found that he had had diarrhea in his kennel. I fed him his breakfast while I cleaned it out. After he ate I took him into the backyard. He just kind of walked around for a while. I thought maybe he didn't have to go because of his accident during the night, but I waited out there with him just in case. I was almost ready to take him back inside when he vomited up his breakfast. I didn't want him to be hungry all day, so I gave him a little more food and some fresh water. Then I put him back into his cleaned kennel and headed off to school.

After school I came home to see if Max was feeling any better. I was happy to see that he hadn't had another accident in his kennel, but when I took him outside he had more diarrhea. When I was cleaning it up, it looked like there was some blood in it. I tried to look more closely at Max to see if I could tell what was wrong with him. His nose and face felt really warm touch and his eyes looked cloudy. When I felt his chest, it seemed like his heart was beating really fast. I took his heart rate and it was 130 beats per minute.

Journal 3

Dog Name: Allie
Breed: Labrador Retriever
Gender: Female
Age: 5 years

Petr Kratochvil
http://www.publicdomainpictures.net/view-image.php?image=249

Journal Entry 1

First thing this morning I got up and fed Allie. Then she ran around the house while I got her leash ready for her walk. We live near a nature preserve, so I always take Allie on walks there because she can run around off leash safely. There's also a small lake she likes to go swimming in when the weather is warm. When we got there, I let her go run around. It was a little too cold to let her go into the water, but she ran around happily sniffing the trees. Her coat looked nice and shiny as she ran. For a big dog, she can run pretty fast. When we got home I got her some water and checked her coat for burrs and ticks. She occasionally gets ticks when we go out there, so I check her every time we go to make sure they get removed. I didn't find anything today though.

After school I came home to take Allie on her afternoon walk. It was a little warmer, so I let her go into the water. I even threw a ball in there for her to fetch. She loves playing fetch, especially when I have her swim to get the ball. While we were out there, she relieved herself, and I cleaned up after her. When we got home I gave her more water and her dinner, which she ate right up. She gets pretty hungry after we go on our walks. Then I checked her coat again. It was shiny and smooth. Then Allie sat with me while I did my homework. It noticed that her respiration rate was at 12 breaths per minute. We played a little more after I finished. She always has so much energy. Then it was time for bed.

Journal 3

Dog Name: Allie
Breed: Labrador Retriever
Gender: Female
Age: 5 years

Petr Kratochvil
http://www.publicdomainpictures.net/view-image.php?image=249

Journal Entry 2

This morning I got up and fed Allie her breakfast as usual. She ate quickly and was ready for her walk. We played for a while. After she went to the bathroom, I picked up after her and we were ready to head home. After I gave her some water I was checking her coat and I found a tick. It looked like it might have been there a while because it was pretty big. I got my mom, and she helped me remove it from Allie's shoulder. I checked the rest of her coat and it looked shiny and clean. Her eyes were clear, but there was some black discharge in the corner of her left eye. Her nose was wet and cool.

By the time I got home, Allie was all ready for her afternoon walk. I decided not to have her go into the water because she gets so dirty. I don't think she minded though, she seemed a little distracted today. She didn't really want to play ball much. We stayed there about 30 minutes and then headed back home. By the time we got home Allie was panting pretty hard. Her respiration rate was about 33 breaths per minute. After I gave her some water and her dinner, I went into my room to work on my homework. After 20 minutes when she hadn't joined me in there, I went to look for her. I found her sleeping in the family room. By now her respiration rate was down to 14 breaths per minute. I guess that walk must have tired her out today. When I was done with my homework I had Allie come sit with me while I watched some TV. Then it was time to go to bed.

Journal 3

Dog Name: Allie
Breed: Labrador Retriever
Gender: Female
Age: 5 years

Petr Kratochvil
http://www.publicdomainpictures.net/view-image.php?image=249

Journal Entry 3

This morning when I fed Allie, she didn't eat all of her food. I tried to wait to give her more time, but finally I just had to take her on her walk and let her finish her breakfast while I was at school. She seemed distracted again on our walk this morning. She was panting hard again when we got home. Her respiration rate was about 38 breaths per minute and her heart rate was about 110 beats per minute. I gave her some fresh water, which she drank up. She had some more black gunk in the corner of her left eye and a little dried mucus around her nose. Her ears were clean and pink and felt warm to the touch.

I came home after school and found Allie sleeping in the family room again. I got Allie's leash and we started our walk. When we got to the park I threw the ball for her, but Allie didn't seem to want to play. It took some coaxing but I finally got her to run around with me a little bit before we had to head home. She seemed to be limping a little bit on her left rear leg. I checked that paw for burrs or stones, but I didn't find anything. When we got home, Allie was panting pretty had again. I gave her some fresh water and checked her fur. Again there was nothing. When I went to give her food, I found she still hadn't eaten all of her breakfast. Maybe she just wasn't very hungry today. I put some more food in her bowl and she ate some of it. After she had eaten a little kibble, she went back into the living room and fell asleep.

Journal 3

Dog Name: Allie
Breed: Labrador Retriever
Gender: Female
Age: 5 years

Petr Kratochvil
http://www.publicdomainpictures.net/view-image.php?image=249

Journal Entry 4

The next morning, Allie didn't seem to want to get up. I was trying to tell her that I was going to give her breakfast, so she needed to come eat it. She finally did get up, but as she walked over to her bowl she seemed really stiff. She ate some of her food, and then I tried to take her on her walk. I figured since she didn't really seem to want to walk, we'd just go out until she relieved herself. After she did, we headed straight home. When I was checking her coat, I didn't find any ticks, but it seemed like her paws and legs were a little bit swollen. I let her go back to sleep and headed off to school after giving her some water.

When I got home, Allie was sleeping again. When I woke her, she didn't really want to get up again. I finally got her up to take her on her walk. She looked pretty stiff again. I was waiting for her to go to the bathroom, but she seemed to be having trouble urinating. It took a while, but she finally did, and we headed home. By the time we got home, it looked like she was limping a little bit. I gave her fresh water and some food. She hadn't eaten all of her breakfast, but she at least had eaten some. She ate a little more, then went back into the family room to lie down. I sat with her and stroked her ears, they seemed very warm to me and I noticed that her nose was warm and dry. She was breathing heavily even though she was resting and her respiration rate was 28 breaths per minute.

Journal 3

Dog Name: Allie
Breed: Labrador Retriever
Gender: Female
Age: 5 years

Petr Kratochvil
http://www.publicdomainpictures.net/view-image.php?image=249

Journal Entry 5

The next day when I got Allie up she was definitely limping as she walked over to her food, but it was hard to tell what leg she was favoring. It almost seemed like she was trying not to have to take steps at all. I gave her breakfast but she only ate about two kibble bits before she got bored of it. I took her outside just in front of our house just so she could relieve herself. She couldn't seem to go, she paced around and squatted a few times, but nothing happened. I brought her back inside and told my mom that she might have to go while I'm at school.

When I got home Allie looked miserable. She didn't want to get up and she hadn't eaten any more of her breakfast. When she finally was able to get up she looked like she could hardly walk. I took her outside again, but she had more trouble urinating. Her ears and nose were very warm and she was whimpering a little. I think there's something really wrong with her. What could it be?

Journal 4

Dog Name: Sir James
Breed: Beagle
Gender: Male
Age: 8 years

Melanie B. "platinumblondelife"
http://www.flickr.com/photos/platinumblondelife5/82171647/

Journal Entry 1

Today is the big day, moving day! We all got up early to start moving things into the new house. Sir James was really excited. He was very alert, barking at the movers and running around the house and outside. At one point, he almost caused my dad to trip, so I had to tie him to a tree outside. He continuously barked until he got tired and fell asleep under the shade. During the lunch break, I sat next to him and checked his eyes, ears, mouth and nose. His eyes were clear, but a little watery and his nose was a little dirty. His ears looked clean and pink inside. His fur was soft and smooth and his tongue was pink and slobbery!

It wasn't until dark when we finished moving all our stuff into the new house. Once Sir James got into the house, he was all over the place, sniffing everything and getting used to the new house. I fed him a big dish of food and gave him lots of water for being so good today. Then I let him sit on my lap while I brushed him. While he was resting I took his heart rate, which was 95 beats per minute, and counted his respirations, which were about 14 per minute. As I was petting him, he fell asleep. This must have been a very tiresome day for him because this was the first time he has ever experienced moving into a new home.

Journal 4

Dog Name: Sir James
Breed: Beagle
Gender: Male
Age: 8 years

Melanie B. "platinumblondelife"
http://www.flickr.com/photos/platinumblondelife5/82171647/

Journal Entry 2

Today I started unpacking and organizing my room. Sir James still seemed very excited and curious about his new home. He would wander around the house and in and out my room. When he got tired, he would flop on his bed and take a little nap. When he woke up, he would be alert again and start wandering the house again. I felt bad for him so I gave him extra treats and a big rawhide bone to chew. That calmed him down a bit. He had a little bit of black discharge around his left eye that I cleaned off with a tissue, and his nose was wet and cool. His ears were clean and pink, and his coat was smooth and shiny.

After feeding Sir James dinner and refilling his water, I sat down with him and starting petting him. I was a little worried about him due to all the excitement that happened the past day so I did a little mini-examination to see if everything was OK. His heart rate was at 88 beats per minute, and his respiration rate was at 18. He seemed pretty happy to be in our new home and really liked the big bone I gave him...he ate the whole thing!

Journal 4

Dog Name: Sir James
Breed: Beagle
Gender: Male
Age: 8 years

Melanie B. "platinumblondelife"
http://www.flickr.com/photos/platinumblondelife5/82171647/

Journal Entry 3

Today was the first day of school. While I was getting ready for school, Sir James was still asleep. When I went to say goodbye, he looked so peaceful I decided not to wake him up. However, I noticed that he was wheezing a little. Before leaving, I made sure he had a nice full bowl of food and water.

When I got home, Sir James was really excited to see me and greeted me at the door. I set my backpack down and gave him a good rubdown. When I went to scratch his stomach, it looked like his stomach was a little bigger than normal. His eyes, ears, nose, and coat all seemed fine, though. Then I looked over at the food and water bowl and it was empty! Oops, I think that with all of the extra treats I might have fed him too much. Sir James seems to be getting fat. I will cut down his food portions for dinner. I got up and started doing my homework. While doing my homework, Sir James kept pacing back and forth in the living room. He didn't want to lie down in his bed. I couldn't take his heart rate, but his respirations were at about 21 breaths per minute. I didn't hear any more of the wheezing from this morning. Maybe he had just been snoring!

Journal 4

Dog Name: Sir James
Breed: Beagle
Gender: Male
Age: 8 years

Melanie B. "platinumblondelife"
http://www.flickr.com/photos/platinumblondelife5/82171647/

Journal Entry 4

This morning my mom reminded me to walk Sir James. Since we moved, I forgot to walk him! So this morning, I took him on a little walk before going to school. While walking, I noticed his stomach still looked a little big. We only walked around the block but when we were done, he was breathing heavily. His respiration rate was about 25 breaths per minute, and his heart rate was 110 beats per minute. When we got home, I put a little food in his food bowl and refilled his water. I went to say goodbye to Sir James before going to school.

When I got home after soccer practice, Sir James greeted me at the door but didn't seem very excited to see me. I gave him his dinner, and he only took a couple of bites before leaving his food alone. About an hour later, I took him for another walk to make up for the time I forgot to take him out. He didn't seem in the mood to go out but I eventually got him to go. It took a really long time to get around the block this time. He seemed to be breathing very heavily, so I walked slower. His stomach didn't look smaller from this morning. However, his eyes, ears and nose were still clear.

Journal 4

Dog Name: Sir James
Breed: Beagle
Gender: Male
Age: 8 years

Melanie B. "platinumblondelife"
http://www.flickr.com/photos/platinumblondelife5/82171647/

Journal Entry 5

This morning I was woken up by Sir James's heavy breathing. When I tried to get him up to go for a walk, he was very hesitant to move. Eventually he got up and slowly walked to the door. His stomach looked a little bigger. While walking, at one point it looked like he was going to throw up, but he didn't. I was worried about him, so we turned back after only walking a quarter of the way. When I got back home, he went straight for his bed, plopped down, and slept. His heart rate was 80, and his respiration rate was 22.

When I got back home, Sir James wasn't there to greet me at the door. I looked for him around the house and found him in his bed. He was curled up in a ball, moaning and breathing heavily. I tried to get him out of his bed but when I touched his stomach, he pulled back and whimpered. I noticed that it was even bigger than this morning. At this point, I was really worried so I called my parents at work to let them know that something was wrong with Sir James.

DOG DISEASE INFORMATION SHEET

Bloat

Bloat is the common term for gastric dilation-volvulus. This condition involves the swelling of the stomach from gas, fluid, or both, and is often associated with a rotation of the stomach.

It is still unknown precisely what causes bloat, but it often has to due with a stress of some sort. Symptoms can be subtle, but occurrence of bloat is a veterinary emergency. If not treated immediately, death is very likely, but dogs that are treated quickly have a very good survival rate. Bloat is also often misdiagnosed as a simple stomach ache.

Though it is not exclusive to any breeds in particular, it is more common in dogs with large, deep chests. Preventative measures include feeding smaller meals multiple times per day and limiting water intake and activity immediately after feeding. Symptoms of bloat may include

- distended abdomen
- difficulty breathing
- moaning
- abdomen sensitive to touch
- dry heaves or retching
- pacing

Food Allergies

Itchy skin in dogs is often more than a minor annoyance. Just like humans, animals can suffer from a wide variety of allergies. Most food allergies are related to meat, eggs, corn, and soy, which are foods high in protein. Proteins in the diet are sometimes recognized by the immune system as foreign invaders to be attacked. The resulting inflammation may target the intestinal tract or other organ systems, but in dogs it is the skin that most often suffers. As opposed to weather-related allergies, food allergies will continue throughout the year. Symptoms of food allergies may include

- facial itching
- foot or limb chewing
- abdominal itching
- recurrent ear problems
- bald patches
- rashes and/or puss on skin
- vomiting
- diarrhea

Parvovirus

Canine parvovirus is a deadly disease that affects all members of the canine family, including wolves and coyotes. Usually this disease is found only in puppies. The most common form of transmission is ingestion of fecal material from an infected dog.

The best prevention of parvovirus is vaccination. Puppies are given the vaccine every 2 to 4 weeks until the puppy is 16 weeks of age. Most adult dogs continue to be immune to this disease. Typically, adult dogs are vaccinated yearly. Symptoms of parvovirus may include

- fever
- anorexia
- bloody diarrhea
- dehydration
- respiratory distress
- decrease in numbers of white blood cells

Lyme disease

Dogs get Lyme disease when deer ticks pass bacteria into the dog's bloodstream when they bite. The tick must remain attached to the animal's skin for at least 1 day before the bacteria can be transmitted. Quick removal of the tick can lessen the chances of transmission of the disease.

Treatment involves the use of an appropriate antibiotic for at least 3 to 4 weeks. Dogs should begin to show signs of recovery 2 to 3 days after beginning treatment. However, the disease may recur within a few weeks or months; in these cases, the dog will need to return to antibiotic therapy for extended periods. Symptoms of Lyme disease may include

- loss of appetite
- fever and lethargy
- lameness
- skin or kidney problems
- joint problems or inflammation
- heart problems

HEALTH ASSESSMENT CHECKLIST

Dog Name: _____ Breed: _____

Gender: _____ Age: _____

General Symptoms

Is there anything you notice that you should be concerned about?

Journal Entry 1: _____

_____

_____

Journal Entry 2: _____

_____

_____

Journal Entry 3: _____

_____

_____

Journal Entry 4: _____

_____

_____

Journal Entry 5: _____

_____

_____

Suspected Diagnosis: _____

(Use the dog disease information sheet)

Observations

Explain which symptoms from the above journal helped you indicate a problem, and explain why.

_____

_____

_____

What other observations do you think might be important?

_____

_____

_____

Why do you think recording daily observations of your dog would be helpful in monitoring your dog's health?

_____

_____

_____

Your Dog's Health

Subject Overview and Background Information

Youth should use the skills and knowledge acquired from the previous activity to assess their dog's health in this application activity. As important as it is to teach the youth about animal health assessments, it is even more vital for the youth to apply their knowledge in the real world. This application activity allows the youth with animals to evaluate their pets' health and determine the right time to consult a veterinarian. The youth should be in a regular habit of checking their animal's overall health and notice any signs of abnormality.

The best way to assess the health of a dog is through observation. There is no clear-cut definition of what is normal; normal varies from dog to dog, so abnormal depends on your dog as well. Observing your dog daily is the best way to really get to know it and to be able to identify changes that might be symptoms of disease or injury.

In this activity, youth will fill out the health assessment charts used in the previous activity, except that they will make observations on their own dogs. In addition, they should write a short journal entry on the back of the chart about what they did with their dog daily. The daily observations should last a minimum of 14 days.

Dogs can be difficult animals to handle and to take vital measurements from. We suggest developing an inexpensive kit that may help the youth in their observation and measuring process. This kit could include the following:

- Latex gloves: for general use every time they examine the dog, especially when they make personal contact with sensitive areas of the dog. Wearing disposable gloves is highly recommended when performing any of these procedures to prevent the spread of disease from human to dog and vice versa.
- Penlight: for use when examining the dog's eyes and nostrils. Encourage the youth to note anything that looks abnormal in these areas and compare this with observations from previous days.
- Magnifying glass: for use when looking at the dog's coat. The youth can look closely at the skin and coat and note any interesting observations.

Checking a dog's vitals is important in order to assess its health. Before checking the dog's vitals, make sure the youth understand how to take each of these measurements.

- Respiration (breathing) rate: Get your dog in a comfortable position and watch its chest move in and out as it breathes. One breath is equivalent to the dog's chest moving in and out once. Count how many breaths the dog takes in 1 minute; or count the number of breaths it takes in 15 seconds (using a stopwatch or watch with minute hand) and multiply the number by 4 to get the number of breaths in 1 minute. If you have a hard time watching your dog breathe in and out, you can put a tissue or mirror by your dog's nose and watch for tissue movement or fog on the mirror. The normal respiration rate for dogs is from 10 to 30 breaths in 1 minute. Contact your veterinarian if your dog's respiration rate is out of this normal range.
  - ***Note:*** *Make sure to count your dog's respirations when it is resting and not immediately after exercise or when it is excited.*
- Heart rate: Stand over your dog with its head facing away from you. Gently place both hands on its ribs just below its elbows. Move your hands around its ribs until you feel its heartbeat (pulse) easily. A stethoscope can also be used in place of your hands. Count the number of beats in 1 minute; or count the number of beats in 15 seconds and multiply by 4 (or count for 30 seconds and multiply by 2). Other areas where you can check your dog's pulse are on the sides of its neck, on the inner thighs of its hind legs, and on its lower front legs (equivalent to your wrists).
  - *It is important to note that the normal heart rate of dogs depends on the breed and cardiovascular fitness.*
  - *Large-breed dogs (breeds over 50 pounds): 70 to 120 beats per minute.*
  - *Medium dogs (breeds weighing 25 to 50 pounds): 80 to 120 beats per minute.*
  - *Small dogs (breeds between 10 and 25 pounds): 90 to 140 beats per minute.*
  - *Toy dogs (breeds under ten pounds): 100 to 160 beats per minute.*
  - *Puppies: 180 beats per minute.*

The growth of a puppy can be measured in addition to its heart rate and respiration rate. Use a tape measure to measure the dog's height by measuring from its shoulder to the floor. A dog's girth (width) can be measured by pulling the measuring tape around the widest part of the dog. The dog's length can be measured from the tip of its nose to the base of its tail.

The penlight and magnifying glass can be used to get a closer look at any part of the dog. Youth can make complete observations by looking at the ears, eyes, and the mouth with the light. Do not flash the light directly in the dog's eyes; rather, pass the light back and forth slowly and steadily acress the eyes. **Do not substitute a laser pointer for the light**. The magnifying glass allows youth to take a closer look at the skin and coat, as well as any abnormalities in the dog's ears and mouth.

It is important to let the youth know that they should not make immediate conclusions about their animal's health. Most of the youth will probably have perfectly healthy pets. Do not give them the impression that they must find something wrong with their animal. Emphasize the concept of **health care maintenance** rather than health diagnosis.

Working with animals can get dirty, so appropriate clothing is required (new clothes are not recommended). Make sure the clothes and shoes are comfortable so that the youth can move around and work in them. The recommended dress includes

- closed-toed shoes
- long pants
- long-sleeved shirt
- a tie for long hair, if necessary
- no free-hanging earrings
- secure glasses

When outdoors with dogs, sun protection is recommended, such as sunscreen and a hat and sunglasses. A painter's mask may be needed by those who are asthmatic, sensitive, or allergic to dust and small particles in the air.

◆ Activity Concepts and Vocabulary

- **Health care maintenance:** The regular monitoring of an animal's health.

◆ Life Skills

- **Head**: Keeping records, problem solving, decision making, critical thinking
- **Heart**: Sharing, communication, concern for others, empathy
- **Hands**: Self-motivation
- **Health**: Disease prevention, self responsibility, personal safety

◆ Subject Links

Science and Language Arts

◆ State Content Standards

Science

- Third Grade
  - *Investigation and Experimentation: 5e*
- Fourth Grade
  - *Investigation and Experimentation: 6c*
- Fifth Grade
  - *Investigation and Experimentation: 6h, 6i*
- Sixth Grade
  - *Investigation and Experimentation: 7d*

Language Arts

- Fourth Grade
  - *Listening and Speaking Strategies: 1.7*
- Fifth Grade
  - *Listening and Speaking Strategies: 1.5*
- Sixth Grade
  - *Listening and Speaking Strategies: 1.5*

◆ Purpose of Activity

The purpose of this activity is to have youth record observations of their own dog over a period of time.

ACTIVITY 2
Dog Health Journal

Overview of the Activity

Youth will have the opportunity to assess the health of their dog for a minimum of 14 days. They will make observations of their animal and record what they observed for each day. They will also write a journal entry each day on their animal's activity. During their group meetings, youth will have a chance to share their observations of their animal and discuss any potential diseases or illnesses with their group.

Time Required

Approximately 15 minutes daily for at least 2 weeks

◆ Suggested Grouping

Individual

◆ Materials Needed for Each Youth

*(*Materials provided in curriculum)*

- Flip chart paper
- *Animal health journal:
  - *Animal background information sheet*
  - *Animal health daily recording sheets for each day of observation*
- Health assessment kit:
  - *Latex (disposable) gloves*
  - *Penlight*
  - *Magnifying glass*
- Writing tool (pencil, pen, etc.)
- Stopwatch or watch with second hand
- Disinfectant (for cleaning hands)
- Stethoscope
- Painter's mask (if sensitive or allergic)
- Tape measure

◆ Getting Ready

Each individual is expected to observe their dog for 14 to 28 days. Make an animal health journal for each youth, which consists of an animal background information sheet and one blank animal health daily recording sheet for each day the youth will observe their dog.

Opening Questions

Ask the youth to respond to each question below by sharing their ideas verbally and/or by recording them on the flip chart paper provided.

1. When you are sick, what observations might your parents make that would lead them to take you to see the doctor?
2. Describe what you might notice about dogs that are not feeling well.
3. What kinds of observations about your dog would prompt you to call your veterinarian?
4. Why might keeping a daily journal about you or your dog be helpful to a doctor or veterinarian?

Procedure (Experiencing)

1. Give each individual an animal health journal packet, which includes the animal background information sheet and one animal health daily recording sheet for each day of observation.
2. Review the terms on the checklist and how to properly take the heart rate and respiration rate. Make sure the youth know the proper dress code for working with animals.
3. Explain to the youth that they are to fill out the animal background information sheet. If they have more than one animal, they may choose one to work with for this activity. They may need to work with their parents to answer the background information questions.
4. Youth will also fill out an animal health daily recording sheet every day for the chosen number of days (14 days are recommended). The youth should also include a brief journal entry on the back of the recording sheet, describing what they did with their animal each day.

5. Ask the youth to prepare to share a report with their peers at the next group meeting. Reports should include an oral description of observations along with any potential symptoms of illness. Youth may want to graph heart rates and respiration rates. If they have a puppy or young dog, they may want to graph growth. Youth could also create a poster or PowerPoint presentation to share their findings.

Sharing, Processing, and Generalizing

Have each youth share his or her report with the group. Follow the lines of thinking developed through the general thoughts, observations, and questions raised by the youth. If necessary, use more targeted questions as prompts to get to particular points, such as:

1. What are some advantages of keeping a daily health journal for your dog? Were there any challenges? Please explain.
2. Did your dog present any symptoms of concern? If so, what were they, and what did you do?
3. In what ways are graphs of heart rate and respiration rate helpful in assessing your dog's health? What kind of information can you get from a growth chart? Please explain.
4. What similarities, if any, were there between your dog and others' dogs? What differences, if any, were there? Please explain.

Concept and Term Discovery/ Introduction

Volunteers need to ensure that the concept of **health care monitoring** has been introduced or discovered by the youth.

- **Note:** The goal is to have the youth develop concepts through their exploration and define terms using their own words.

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Animal Health Journal

ANIMAL BACKGROUND INFORMATION SHEET

Date: _____ Youth's name: _____

Animal's name: _____ Species: _____

Breed: _____ Date of birth or age of animal: _____

Gender (male, female, or unknown/fixed or intact): _____ Has this animal been bred? _____

If yes, how many times? _____ Date of last breeding? _____

Health history: Is this animal on any medications? _____ If yes, please list. _____

_____

Does this animal have current vaccinations? _____

Does this animal have any allergies? _____ If yes, please list. _____

_____

Has this animal had any major illnesses or surgeries? _____ If yes, describe. _____

_____

Date of last veterinary checkup: _____

Environment: Please describe the housing for this animal (indoor/outdoor, with other animals/alone, size of enclosure).

_____

_____

_____

Diet: Please describe the diet and the feeding schedule for this animal. Describe how water is provided (bowl, automatic waterer, etc.)

_____

_____

_____

ANIMAL HEALTH DAILY RECORDING SHEET

Date: _____ Time: _____

Animal name: _____

MEASUREMENTS

Heart rate: _____ Respiration (breathing) rate: _____

OBSERVATIONS

Behavior: _____

_____

Activity level: _____

_____

Appetite: _____

_____

Body condition: _____

_____

Posture and flight: _____

_____

Skin, coat, and paws: _____

_____

Eyes: _____

Ears: _____

Nose: _____

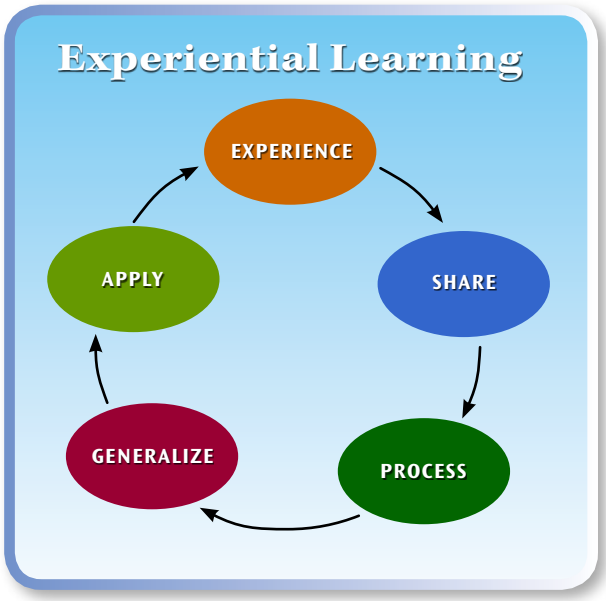
Body waste: _____

Other: _____

_____

APPENDIX

The activities in this curriculum are designed around inquiry and experiential learning. Inquiry is a learner-centered approach in which individuals are problem solvers investigating questions through active engagement, observing and manipulating objects and phenomena, and acquiring or discovering knowledge. Experiential learning (EL) is a foundational educational strategy used in 4-H. In it, the learner has an experience phase of engagement in an activity, a reflection phase in which observations and reactions are shared and discussed, and an application phase in which new knowledge and skills are applied to a real-life setting. In 4-H, an EL model that uses a 5-step learning cycle is most commonly used. These five steps—Exploration, Sharing, Processing, Generalizing, and Application—are part of a recurring process that helps build learner understanding over time.



For more information on inquiry, EL and the 5-step learning cycle, please visit the University of California's Science, Technology, Environmental Literacy Workgroup's Experiential Learning Web site, http://www.experientiallearning.ucdavis.edu/default.shtml.

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YOUTH DEVELOPMENT THROUGH VETERINARY SCIENCE 9

Is Your Goat Feeling Green?

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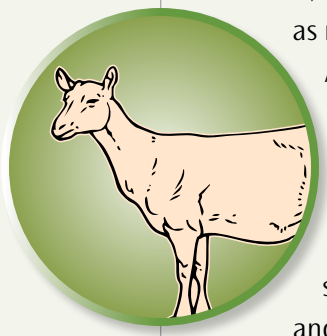
Subject Overview and Background Information

Prevention is the key in keeping a goat healthy. A goat needs the proper types and amounts of food, clean water, well-ventilated housing, exercise, attention, space, and necessary vaccinations. Like any other animal, the best way to help keep a goat healthy is to notice any signs of illness as early as possible. The sooner the goat gets the treatment it needs, the more likely it is to recover fully. Daily observations of your goat will help you detect any physical or behavioral changes that could be a sign of illness.



Goats are intelligent and curious animals that are often kept as pets. They have excellent balance, which enhances their already great climbing ability. They are adaptable to a variety of climates and can be found in most regions of the world. Goats are relatives of sheep and, like sheep, live in herds. Male goats are called **bucks**; females are called **does**; young goats are called **kids**. Goats are **ruminants**, meaning they have 4-chambered stomachs like cows. These chambers allow goats to regurgitate and then redigest their food.

Goats were domesticated around 8,000 years ago in the Middle East for their hair, meat, and milk. Back then, goat skin was also used for parchment (a material on which to write or paint) and wine containers. Today, goats are raised for many of the same reasons: hair, meat, and milk. Goat's milk is becoming popular because it is more easily digested than milk from a cow, and it is used to make several kinds of cheese, such as feta. Several breeds are raised specifically as milk goats, such as Saanens, LaMancha, and Alpine. Other goat breeds, such as the Boer, are bred specifically for their meat. Angora and Pygora goats are both raised for their hair, which is used to make mohair and cashmere sweaters, respectively. Goats are also used for weed control since they enjoy eating woody shrubs and weeds and have quite an ability to climb. Contrary to popular belief, goats will not eat anything and everything: they are actually quite particular eaters. However, be aware that although they are picky, they may eat plants that are poisonous to them. Common plants that cause problems include azaleas (*Rhododendron* spp.), wild mustard, acorns, wilted leaves of any stone fruit tree (like cherries and

peaches), and potato foliage. If you suspect that your goat has eaten any of these plants, make sure to get it medical attention right away.

Goats require energy, protein, vitamins, mineral, fiber, and water in their diets. A goat's specific nutritional requirements depend on its activity and environment. For example, lactating **does** and **kids** require more energy than those that are not lactating. In general, goats should consume at least 3 percent of their body weight in dry matter each day. Pasture and browse can meet the goat's need for dry matter, but they may not be available to all goat owners. Hay is another source of forage when grazing is not available. Make sure to feed fresh hay in order to avoid **mycotoxicosis** (mahy-koh-tok-si-koh-sis), a disease caused by poison found in moldy hay. Concentrates (grains) will often be a necessary part of a goat's diet since grain mixtures can be high in energy or protein. Vitamins and minerals, especially salt, calcium, and phosphorus, should be included in the goat's diet. And of course, goats need access to clean, fresh water all the time. Inadequacies in feed or water can cause health problems.

Since goats are **ruminants**, they are susceptible to digestive problems. The **rumen** (the main chamber of the that is used for digesting) contains **microbes**, microscopic organisms that help the goat digest food, and these **microbes** are very sensitive to sudden changes in pH (acidity). Any sudden changes in pH can cause **acidosis**, a common problem that occurs when feed is changed too suddenly. **Acidosis** can be deadly for a goat. The **microbes** cannot adapt quickly enough to the change in pH and may die off, disrupting the goat's digestion.

Goats may live in herds, but each still needs adequate personal space. Make sure that goats are not overcrowded, as this can spread many diseases, including pneumonia, goat pox, and mange. If goats are penned separately, each will need about 40 square feet of floor space. If they are housed in a group, a minimum of 20 square feet is required per goat. Besides having enough space, goats need to have housing that is well-ventilated but not drafty. Drafts make goats more susceptible to diseases.

◆ Activity Concepts and Vocabulary

- **Bacterial infection**: A disease caused by germs called bacteria.
- **Bacterium (bak-teer-ee-um)**: An organism that cannot be seen with a naked eye. Some bacteria (germs) can cause diseases. Pneumonia, a disease that affects animals' lungs, can be caused by a bacterium.
- **Fungus (fuhng-guhs)**: An organism (e.g., mold, yeast) that lives and feeds on organic material such as bread, wood, and other animals. A common fungus that affects animals is ringworm.
- **Inflammation (in-fluh-may-shuhn)**: A local reaction of a tissue to irritation that causes pain and swelling.
- **Parasite (par-uh-site)**: An organism (e.g., bacterium, worm, tick) that receives food and energy from another. A common parasite that affects animals is tapeworm.
- **Ruminant (roo-muh-nuhnt)**: An animal that eats only vegetation and has a four-chambered stomach (consisting of a reticulum, rumen, omasum, and abomasums) for more efficient digestion of the plant material. The microbes in the rumen can break down cellulose in hay so that it can be used in the body. Nothing else but microbes can break down cellulose, so the ruminant can take advantage of an energy source not fully used by creatures with one stomach.
- **Veterinarian (vet-er-uh-nair-ee-uhn)**: A doctor who takes care of animals.
- **Virus**: A type of germ that causes diseases. Rabies is a disease caused by a virus.
- **Zoonotic diseases (zoe-oh-nah-tick)**: Any disease that affects an animal that can also be passed to humans.

◆ Life Skills

- **Head**: Keeping records, planning and organizing, problem solving, decision making, critical thinking
- **Heart**: sharing, communication, concern for others, empathy
- **Hands**: self-motivation, teamwork
- **Health**: Disease prevention, self responsibility, personal safety

◆ Subject Links

Science and Language Arts

◆ State Content Standards

Science

- Third Grade
  - *Investigation and Experimentation: 5e*
- Fourth Grade
  - *Investigation and Experimentation: 6c*
- Fifth Grade
  - *Investigation and Experimentation: 6h, 6i*
- Sixth Grade
  - *Investigation and Experimentation: 7d*

Language Arts

- Third Grade
  - *Reading Comprehension: 2.2, 2.6*
- Fourth Grade
  - *Reading Comprehension: 2.3*
  - *Listening and Speaking Strategies: 1.7*
- Fifth Grade
  - *Reading Comprehension: 2.3, 2.4*
  - *Listening and Speaking Strategies: 1.5*
- Sixth Grade:
  - *Listening and Speaking Strategies: 1.5*
  - *Speaking Applications: 2.5b*

◆ Purpose of Activities

To help youth learn about the proper maintenance and care of goats. Youth will also investigate the causes and symptoms of several goat diseases.

ACTIVITY 1

Monitoring Goat Health Day by Day

Overview of the activity

The main goal of this activity is for youth to learn to make good physical and behavioral observations of goats by reading and analyzing descriptive journal entries. The youth will then use these observations to make inferences regarding the health of their goat.

◆ Time Required

Approximately 90 minutes

◆ Suggested Grouping

Pairs or small groups of 3 to 4

◆ Materials Needed for Each Pair or Group

*(*Materials provided in curriculum)*

- Writing utensils
- Flip chart paper (one piece per group)
- *Health assessment journals
- *Goat disease information sheet
- *Health assessment checklist

◆ Getting Ready

- Photocopy enough health assessment journals, goat disease information sheets, and health assessment checklists for the groups.

Opening Questions

Ask the youth to respond to each question below by sharing their ideas verbally and/or by recording them on the flip chart paper provided.

1. What are some ways you can tell when you are sick?
2. What signs might your parents, teacher, friends, or doctor use to recognize that you are sick?
3. What are some things you can do to avoid becoming sick?
4. If your animal is sick, what are some changes you might notice about him or her?
5. What are some of the responsibilities you have to keep your pet or project animal healthy?

Procedure (Experiencing)

- **Volunteer Tip**: Set up the following scenario for the youth: The youth in each group will be playing the role of a goat owner. Each group will receive one of the health assessment journals, one day at a time. As a group, the youth will go through the journal entry of each specific day and record important facts onto the health assessment checklist they have been given. At the end, using the checklists they have made, they will compare their findings with the goat disease information and draw a conclusion regarding what disease, if any, their goat has.

1. Give each group of goat owners Journal Entry 1 from their health assessment journal. The group should read the entry and record important findings on their health assessment checklist.
2. When the groups have completed Journal Entry 1, take away that journal entry and give them Journal Entry 2. Then have them read the entry and record important findings on their checklist.
3. Continue this pattern for the remaining days until each journal entry has been assessed.
4. When the group is done with the last day, remove this entry and pass out the goat disease information sheet. Have the groups review the data they recorded on their health assessment checklist and record their diagnosis of their goat's symptoms along with the reasons why they chose that diagnosis.

Sharing, Processing, and Generalizing

Have each group share their diagnosis and indicate which parts of their checklist helped them make that determination. Follow the lines of thinking developed through the general thoughts, observations, and questions raised by the youth. If necessary, use more targeted questions as prompts to get to particular points, such as:

1. What might be some advantages to keeping a daily health assessment journal for your goat? Ask the youth to share their ideas verbally and/or record them on the flip chart paper provided.
2. What are some examples of the symptoms you used to know when to be concerned with your goat's health? Ask the youth to share their ideas verbally and/or record them on the flip chart paper provided.
3. What do you think might happen if you ignored those symptoms and didn't seek veterinary care for your goat? Ask the youth to share their ideas verbally and/or record them on the flip chart paper provided.
4. Check the groups' diagnosis of their goat with the answer key below. If there are any discrepancies, have the youth discuss what lead them to their conclusion. Ask the youth to share their ideas verbally and/or record them on the flip chart paper provided.

Goat Disease Diagnosis Key

- Carrie: pneumonia
- Gwendolyn: acidosis
- Rocket: mange
- Sunday: mycotoxicosis

Concept and Term Introduction

Volunteers need to ensure that the concepts and terms **bacterial infection, bacterium, fungus, inflammation, parasite, ruminant, veterinarian, virus,** and **zoonotic diseases** have been introduced.

- **Note:** The goal is to have the youth develop these concepts through their exploration and define the terms using their own words.

Concept Application

An application for these skills is presented in Activity 2 of this unit. Youth who own a goat may apply Activity 2 to their own pet, while youth who do not own a goat may seek permission from a friend or family member to use their goat in this exercise.

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HEALTH ASSESSMENT JOURNALS

Journal 1

Goat Name: Carrie
Breed: Boer
Sex: Female
Age: 3 years

Jennifer Techanun

Journal Entry 1

Today Carrie seemed pretty happy. She was running around and playing in her pen when I came outside. She had eaten most of her hay, so I gave her more. Right after I refilled her food, she came to eat it. I filled her trough with some fresh water and then raked her pen while she followed me around. Her pen was cleaner than usual today since there were barely any droppings; I barely had to clean it. Then I brushed her, which she loves. She comes to stand right next to me when she sees the brush. She butts me with her head playfully if I hold onto the brush too long without brushing her, sometimes even knocking me over. While brushing her, I noticed that her eyes were clear and her coat was smooth. Afterward, she went back to climbing and exploring.

In the afternoon, when Carrie saw me come up to the gate, she came prancing over to see me. I noticed that her nose was slightly runny, but the discharge was clear. Since I had just learned how to take her rectal temperature, I decided to practice on her. She doesn't seem to like it, but stood pretty still anyways. Her temperature was 102.8°F. Her coat was a little dirty, probably from climbing all over the rocks. I brushed her again to clean her coat while she leaned on me. The whole time she was chewing her cud and her tail was flickering around happily. I think she really likes the attention. She also likes me scratching her ears. Then I took out her out for a walk. Along the path, she stopped and sniffed at every plant, attempting to get a bite. But I knew better than to let her eat anything. She stopped twice to use the bathroom and then we headed home. As I was leaving her pen, she cried out, wanting me to come back.

Journal 1

Goat Name: Carrie
Breed: Boer
Sex: Female
Age: 3 years

Jennifer Techanun

Journal Entry 2

When I came out to see Carrie today, she seemed tired since she wasn't playing around when I came out. Maybe she doesn't like the cloudy weather. I noticed that her nose was still a little runny, too. I gave her more food and water since she had finished all her hay. Carrie didn't seem as interested in me today as she usually is. She didn't even follow me around when I was raking her pen, although it didn't take very long because it wasn't very dirty. She just watched me from a corner of her pen the whole time. But she got up and walked over slowly to me when I pulled out the brush. Her coat looked shiny and smooth, but when I touched her left side, she seemed a little sensitive about it. The whole time I was brushing her, she only seemed half interested. When I left her, she walked toward her food with her tail wagging.

In the afternoon, when I walked toward the gate, Carrie started bleating. I got inside and she immediately started rubbing up against me like she hadn't seen me for a long time. I practiced taking her temperature again. I had to do it twice since she didn't stand still long enough for me to get a good reading. Her temperature was 102.8°F. Her coat was dusty and slightly matted looking, but I think it's because it was raining during the day. I brushed it out so that it looked smooth and shiny again. Her nose was not runny anymore. Instead it felt warm and dry. When I took her out for her walk, she sneaked in a taste of a plant growing along the path. Then we walked past Billy, her goat friend, and they were talking to each other for a while. After the walk, Carrie seemed really warm and slightly out of breath.

Journal 1

Goat Name: Carrie
Breed: Boer
Gender: Female
Age: 3 years

Jennifer Techanun

Journal Entry 3

Today Carrie greeted me with her bright eyes as I entered her pen to give her more food and water. I gave her more water, but most of her food was still there so I didn't give her anymore. She followed me around as I started raking the pen with her tail flickering. I realized it looked messier today, like she had been sitting and getting up a lot. She was probably just trying to get comfortable. And she had clumpy droppings all over her pen. I heard her sneeze a couple times when she was following me around, but maybe it's just from the dust. As I was brushing her, I noticed that she felt really warm. And after I was done brushing her, she didn't run off to play again. Instead she just sat down by her water trough and watched me leave.

When I came to see Carrie again, she just sat there as I entered her pen. She had some clear discharge from her nose and she sneezed a few more times. She seemed to lack the energy to care about me taking her temperature today. It was 103.2°F. I went up to her and scratched her ears before I started to brush her. She liked her ears being scratched because she leaned her head toward me. Her coat looked fine today; it didn't really get dirty at all. When I took her out for her walk, she seemed more sluggish than usual. Usually she trots alongside me, but this time she just walked slowly and she didn't try to eat any of the plants. When some squirrels ran up a nearby tree, she looked at them with interest. She used the bathroom once during our trip. After the walk, she sluggishly walked back into her pen to sit down next to her trough. I think she was tired.

Journal 1

Goat Name: Carrie
Breed: Boer
Gender: Female
Age: 3 years

Jennifer Techanun

Journal Entry 4

Carrie got up when I opened the gate but didn't come out to greet me. She only stood up and then lay back down in the same spot. Her food seemed to be untouched. I dumped out all the old food and replaced it with fresh food; maybe she doesn't like food that's been out for too long. I added some fresh green leaves to her food as a treat to get her to eat some hay. She watched me, bleating loudly, from her spot as I cleaned the pen. As I walked past her, I could hear her breathing hard, like it was hard for her to get enough air. When I picked up her brush, she just looked up at me and blinked a couple times before putting her head back down again. I walked up to her and brushed her. Her coat doesn't look as shiny today and I think she feels skinnier, probably from not eating yesterday. I scratched her ears for a while, which she seemed to enjoy since she turned her head toward the scratching. Then she watched me as I left.

In the afternoon Carrie still looked tired. She walked up to see me, but her tail was not really wagging. I checked her food, and I don't think she touched any of it yet. Maybe she ate a couple of the leaves. I noticed that her nose was runny and the discharge looked white. After she greeted me, she lay back down and waited for me to brush her. Before brushing her, I took her temperature. It was 103.6°F. When I was brushing her, I could tell she was having a hard time breathing. Her chest went up and down more than it normally does with every breath. I decided that I would only take her out for a short walk today. She took her time walking, with her head hanging down the whole time. She sniffed at some of the plants but did not try to eat them. Even a nearby bird didn't interest her.

Journal 1

Goat Name: Carrie
Breed: Boer
Gender: Female
Age: 3 years

Jennifer Techanun

Journal Entry 5

When I came into the pen, she was seemed upset. She hadn't touched any of her food again. I think she ate only one or two of the leaves I had left her; those are usually her favorite. She was having trouble breathing again. She just stared at me, grinding her teeth, the whole time I was in there. A couple times she got up only to circle around and lay back down in the same spot. Her droppings looked consistent, but there weren't too many of them. She didn't even seem interested in getting brushed. She barely looked up at me when I was holding the brush. As I was brushing her, I noticed that her coat looked matted like it had been wet. But it didn't rain last night. While brushing her, I could hear a scratchy sound every time she breathed in. She was felt really warm the whole time.

When I went to see Carrie again, she just looked up at me from where she was laying down. There was a yellowish discharge from her nose, and I think she sneezed 6 or 7 times while I was standing there. She still hadn't touched her food. Her temperature was 104.3°F. When I went over to brush her, I noticed that she looked skinnier. Her coat looked kind of fluffed out. She looked up weakly at me when I scratched her ears. I think she liked the attention but the difficulty breathing was bothering her. I took her out for a short walk again because I didn't want to make it harder for her to breathe. On our usual path, she just walked slowly with her head and tail drooping. We had to stop and take a break once so that she could lie down and rest. When I put her back in her pen, I could still hear a wheezing sound as she breathed. She just sat down, stared at me while bleating loudly.

Journal 2

Goat Name: Gwendolyn
Breed: Pygmy
Gender: Female
Age: 1 year

Michelle Ward
http://www.flickr.com/photos/meeshy_meesh/1468891618/

Journal Entry 1

When I came out to see Gwendolyn today, she was prancing all around her pen. She was climbing all over and exploring everything in her pen. I came in to give her more hay, since she had finished all of it from the day before. I also gave her some fresh water. Her bright eyes followed me as I added food and water. Her tail wagged happily when I brought out her halter to walk her. She kept butting me with her head, wanting me to put on the halter faster. She nearly pushed me over before I got it on. I walked her toward the hill, up to her favorite spot where she sneaked in a few bites of a plant before I could pull her away. When we got back to her pen, she was still excited from the walk. I brushed her to calm her down. Her coat was smooth, shiny, and untangled. I counted the number of breaths she took in a minute and found that her respiration rate was 27 breaths per minute. When I got up to leave her pen, she started crying out for me to come back.

Gwen was climbing and running around her pen when I came to see her again. She kept pushing me with her head, wanting me to play. I decided that I should rake her pen first, and then I could play. There were a few droppings around but not too many. After I was done, I walked her across to the bigger pen so we could play. She looked so happy climbing over the logs and rocks as I chased her around. When she took a break, I noticed her chewing her cud contently. Before I took her back to her pen, I brushed her down. She was a little dirty from playing, but not too bad. There was some clear discharge from her nose. After I let her back into her pen, I scratched her ears for a while as she leaned on me. She was leaning so far that when I stepped back, she almost fell over.

Journal 2

Goat Name: Gwendolyn
Breed: Pygmy
Gender: Female
Age: 1 year

Michelle Ward
http://www.flickr.com/photos/meeshy_meesh/1468891618/

Journal Entry 2

Gwen looked excited to see me this morning. The second I walked in, she followed me everywhere. I went to refill her food, but I noticed that she had only eaten a little of it. I remembered hearing that adding grain to it would get them to eat it, so I poured a cup of grain into her trough. Then I put in some clean water too. I watched her for a while to check her respiration rate. She took 24 breaths in a minute. The second I pulled out her halter, she came running toward me. When I didn't put it on right away, she just blinked at me with her bright eyes wondering why I was taking my time. I put the halter on and took her out toward the hill again. She seemed interested in every little sound in the grass. She didn't try to eat anything, but she was stamping her feet on the road. I brushed her when we got back. She felt kind of warm but her coat was still smooth. She tilted her ears toward me so I could scratch them. When I left, she was running around again.

Gwen was just sitting when I came up to her pen in the afternoon. She had eaten most of the grain but still had lots of the hay left. She looked upset, but I don't know why. When I was raking out her pen, I noticed that she had diarrhea along with some of her regular droppings. She kept getting up and sitting down again. Every once in a while she would scratch her right ear with her hind leg. I put her halter on her to take her into the dirt play pen. She seemed less interested in running around. She circled the pen once before sitting down. I tried to get her to play for about 15 minutes but then gave up when all she did was stamp her feet in the dirt and repeatedly sit and stand. I brushed her again before putting her back in her pen and noticed that her left side seemed to be a little sensitive to the touch. Her ears were also sort of matted, probably from the scratching.

Journal 2

Goat Name: Gwendolyn
Breed: Pygmy
Gender: Female
Age: 1 year

Michelle Ward
http://www.flickr.com/photos/meeshy_meesh/1468891618/

Journal Entry 3

This morning Gwen barely seemed interested in me. As I walked in, she followed me around but from a distance. I also noticed that her ears seemed to be droopy and she was limping slightly. I counted her breaths and found that she took 20 in a minute. She had finished her hay and the rest of her grain, so I gave her more food. Since she seemed to like the grain more, I gave her twice the amount of grain and less hay. Hopefully she will eat all of it. When I brought out her halter, she stared at me and walked closer to me slowly. Her eyes did not seem as bright and clear as before when she stared at me. I took her out to her favorite path, but nothing seemed to interest her. The whole time on the walk, she just walked behind me slowly and limping slightly. She barely had any energy. When we got back to her pen, she stamped her feet impatiently as I brushed her. I checked her left side and it was still sensitive. I left her sitting by the food with her head down.

Gwendolyn still looked sad this afternoon. Her feet seem to still be bothering her because it looked like it took a lot of effort to walk over to me. As I scratched her ears, I noticed that her coat was really scruffy looking. She had more diarrhea than yesterday, and it looks runnier. When I took her out to play in the yard, she tried to play. It took a lot of effort to climb one of her favorite logs, and I think she almost fell off. She kind of staggered when she was on it and almost lost her balance. After a little while, she just gave up and sat down. She coughed a couple times while she was sitting there. I went over to brush her and noticed that her left side was still sensitive. The rest of her coat looked matted and dirty. It wasn't shiny anymore. When I took her back to her pen, she just sat down and blinked at me before putting her head down.

Journal 2

Goat Name: Gwendolyn
Breed: Pygmy
Gender: Female
Age: 1 year

Michelle Ward
http://www.flickr.com/photos/meeshy_meesh/1468891618/

Journal Entry 4

Gwendolyn looked more energetic today. She had eaten all her food; I guess she does like the grain more. I decided to give her mostly grain and a little bit of hay. I refilled her water as she followed me around. I think she is still having trouble walking because she limps and has trouble walking straight. Her tail was not wagging, but hanging limply toward the floor. She took 26 breaths in a minute. I put on her halter without trouble and took her out for a walk. I figure she was tired of the hill, so I took her on a different path. She still didn't seem very interested in anything during the walk. Her head hung near the ground the whole time and she limped slowly along the path. When we got back to her pen, I brushed her. She felt warm. Her coat looked dirty and matted. She bleated loudly when I touched her left side.

In the afternoon Gwen looked tired when I came into her pen. She stood up when I opened the gate but sat back down when I got in. The whole time I was raking her pen, she just watched me from a corner. Her eyes looked sad; they were not bright and happy looking. Her pen smelled more than usual today. I think it was from the diarrhea. I cleaned all that up before I took her out to the big pen. She could barely walk straight as she took a small circle around the pen. It looked like she was about to fall over several times. Watching her, I noticed that her left side seemed swollen. Maybe that's why it was sensitive. Not only did Gwen have trouble walking straight, but she also limped the whole way. She spent most of the time lying down and getting up again. I brushed her to try to make her coat look shiny again. I think that when I scratched her ears, she felt a little better since she leaned into the scratching. When she got back to her pen, she just stamped her feet a little before lying down.

Journal 2

Goat Name: Gwendolyn
Breed: Pygmy
Gender: Female
Age: 1 year

Michelle Ward
http://www.flickr.com/photos/meeshy_meesh/1468891618/

Journal Entry 5

Gwen was lying down and standing up repeatedly when I came in her pen this morning. She didn't look or sound happy at all. She bleated loudly even before I came into her pen. Her pupils looked dilated and her coat looked dull. She had barely touched any of her food so I did not give her any more. Her ears and tail were droopy and she looked really sad. I was hoping her halter would cheer her up, but I don't think it did. She just slowly walked toward me. As she came toward me, I counted her breaths: 28 in a minute this time. It looked like she was in pain when she walked, so I decided to keep our walk short. I took her up to her favorite path and she took twice as long to only go halfway. The whole time, she limped along with her head nearly touching the ground. So when we got back, I decided to give her some fresh green leaves as a special treat. She ate a few of them from my hand but ignored the rest. I brushed her and noticed that she still flinched every time I touched her left side. She sat back down and looked like she wanted to sleep when I left.

Gwen did not seem to have any energy at all this afternoon. She had eaten barely any of her food. The whole time, she just watched me clean her pen with her dull eyes. Her pen was really smelly again; it must be from the diarrhea. She looked sad as she watched me work. When she got up, it looked really painful for her to walk, so I decided not to take her to her play pen today. I just brushed her coat, which still looked matted. Her left side looks more swollen than before and she doesn't like me touching that side. I sat there for a while scratching her ears. She closed her eyes as I scratched them. A couple times she got up and sat back down, but she didn't really walk very much. She just looks very tired and in pain.

Journal 3

Goat Name: Rocket
Breed: LaMancha
Gender: Male, fixed (wether)
Age: 5 years

http://www.flickr.com/photos/7326810@N08/1235531698/

Journal Entry 1

When I came outside this morning, I saw that Rocket was already waiting for me by the gate. His tail was flicking back and forth so fast that I could barely see it. He started rubbing his head against me as soon as I walked in. Then he followed me around as I raked his pen. There were a lot of droppings near his shed, but overall the pen was pretty clean. Then I pulled out his lead so I could take him out for a walk. He got so excited! He ran from me to the gate and back to me again. I think he wanted me to hurry up so he could go out. I put on his lead and took him out near the lake. He urinated twice along the path and tried to eat some plants. When he saw some ducks he curiously tried to sniff at them, but the ducks got scared and flew away. Rocket stopped once to scratch at his face. When I got him home, I brushed him. His smooth coat was very clean and looked shiny when I finished brushing. As I left, Rocket went off to stare at the squirrels in his tree.

Rocket came running up to greet me again this afternoon. He rubbed his head so hard against me that I almost fell over. He had no more food, so I gave him some more hay. I also changed his water. I had just learned how to take my own heart rate, so I tried it on Rocket. He didn't like standing there while I counted, but I finally got a reading of 73 beats for a minute. Then I pulled out his brush to brush him, but he wanted to play. He ran from me and then waited for me to chase him. I chased him around the pen for 15 minutes while he climbed on rocks and old fence posts to avoid me. Finally, he was ready to let me brush him. His coat was a little dirty but still smooth, and he felt slightly warm when I touched him. I scratched his cheek and he really liked it. I had to sneak out really fast so he wouldn't follow me out.

Journal 3

Goat Name: Rocket
Breed: LaMancha
Gender: Male, fixed (wether)
Age: 5 years

http://www.flickr.com/photos/7326810@N08/1235531698/

Journal Entry 2

It was really windy today. I think a storm may be coming. Rocket didn't come out to see me today; he just sat in his shed waiting for me to come in. When I started raking his pen, I could see his bright eyes following me around. There were droppings all over the place. When he saw his lead, he walked out to me quickly but he kept his head down the whole time. He butted me, telling me to put the lead on faster. I took him out to the lake again. All the ducks were sleeping on the grass today so Rocket didn't seem interested in them. He snatched a few leaves off a small bush before I could stop him. Then he rubbed up against a tree to itch his face. When I took him back to his pen, I noticed that he sneezed a couple times. As I brushed him, I noticed some white flakes near his tail. He was ready to go back to his shed when I was done brushing him.

It was raining pretty much the whole day while I was at school. Rocket's pen was really muddy, but he didn't seem to mind. He was full of energy and climbing over everything. When I refilled his food and water, he came up to butt me with his head. Then I took his heart rate again; there were 85 beats in a minute. He rubbed his cheek against the fence a few times. There was some clear discharge from his nose, too. It took a long time for me to brush him because his coat was caked with mud. Rocket didn't seem to mind the attention though since his tail was flicking around happily the whole time. He looked up at me with his bright eyes as I scratched his neck. I think he really liked it. As I left, he got dirty playing in the mud again.

Journal 3

Goat Name: Rocket
Breed: LaMancha
Gender: Male, fixed (wether)
Age: 5 years

http://www.flickr.com/photos/7326810@N08/1235531698/

Journal Entry 3

I brought some leaves out to Rocket this morning, and he came prancing out to see me. He ate the leaves quickly but had to stop to scratch his face before finishing them all off. His shiny eyes stared at me for more leaves after he was done. While I was raking his pen, he followed me around with occasional stops at the fence to itch. His pen was really messy today since the mud was just beginning to dry out. I put on his lead without getting pushed over and took him out for a walk. He used the bathroom twice along the path but had a lot of energy. I stopped him from eating anything, although he tried. Twice he stopped to scratch his face. When we got back, I brushed him. I noticed that the hair on his cheek was getting thinner. The skin felt really hard and thick. The rest of his coat was pretty smooth. It was still muddy from yesterday until I brushed out the dried mud. As I left, he was scratching himself again.

Rocket looked pretty tired this afternoon. Maybe he spent all his energy playing while I was at school. He stood up when I came in and then sat back down again. There was some clear discharge from his nose and he sneezed a few times. He had eaten half of his food but I refilled it anyways. When I came up to take his pulse, he let me without even flinching. It was 75 beats per minute. Then I brushed him. I noticed that there was not very much hair left on his cheek and there were more white flakes in his coat. His coat did not shine in the light. The skin on his cheek looked like it had been bleeding, but it wasn't bleeding anymore. He scratched his cheek occasionally and he bit at his side a few times, too. He got up and sat right back down next to me. As I left, he was getting up and sitting down again.

Journal 3

Goat Name: Rocket
Breed: LaMancha
Gender: Male, fixed (wether)
Age: 5 years

http://www.flickr.com/photos/7326810@N08/1235531698/

Journal Entry 4

This morning Rocket walked slowly up to the gate to greet me and to rub up his face against the fence. After I scratched his neck, he walked back to his shed and sat down. With his head down, he watched me rake his pen. The droppings looked consistent. Every time I looked over at him, he was chewing on his side or scratching his face with his back foot. When I pulled out his lead, he looked up but didn't come running. I walked over to him and put the lead on him. I noticed he had clear discharge coming from his nose. I walked him around the lake, but he barely seemed interested in anything. There was a duck fight and he didn't even care. All he cared about was rubbing up against a tree. Back in the pen, I brushed him. His tail wagged slightly as I brushed. There were a lot more white flakes in his coat and the spot he was itching on his side looked red. There was barely any more hair left on his cheek. The skin felt really thick and was covered in scabs. The spots he had been itching felt really warm.

When I came to see Rocket in the afternoon, he was rubbing his side on one of his rocks. He stopped for a second to bleat at me, but then continued. He had finished his food so I gave him more. I also gave him clean water. I went up to take his heart rate and counted 76 beats in a minute. The whole time I could hear him breathing. His bright eyes just looked at me when I pulled out the brush. Rocket's coat looked matted, probably from the itching. His cheek was nearly bald, and the spot he was scratching on his side was starting to lose hair too. He rubbed his head against me while I brushed him. His side had a little blood from where he had broken the skin from scratching. When I left, he got up to follow me but stopped halfway to scratch some more.

Journal 3

Goat Name: Rocket
Breed: LaMancha
Gender: Male, fixed (wether)
Age: 5 years

http://www.flickr.com/photos/7326810@N08/1235531698/

Journal Entry 5

Rocket bleated at me as I came near his pen. He was coming to greet me but had to stop to scratch himself. When he came up to me, I could see that his coat looked really matted and dull. He followed me around the pen as I cleaned it, stopping to itch often. His droppings looked consistent and were all clustered around the fence post. When I took out his lead, he nearly pushed me over by leaning against me. He seemed like he really wanted to go out for his walk. He nearly stopped at every tree to rub his head and side against. Then we passed some ducks, which he looked at but didn't try to sniff. He used the bathroom once before we got back home. Back in his pen, I brushed him. He felt really warm and there was no more hair on his cheek. His side was no longer bleeding; it was now a scab. The skin in both those locations felt harder than the rest of his skin. Every time I brushed near his cheek or his side, he cried out.

When I came to see Rocket in the afternoon, he was scratching his head on the side of his shed. He looked like he was squinting at me; he looks upset. As I was going to refill his food and water, he kept bleating at me. He also kept getting up, circling, and then sitting back down again. His tail wasn't wagging at all. I could hear him breathing the whole time. When I went up to take his heart rate, I heard 78 beats in a minute. As I started to brush him, I noticed that he had a lot of white flakes in his coat, and his coat did not look shiny at all. It looked really messy with spots that barely had any hair. The skin on his cheek and on his side felt really warm and hard. It wasn't as flexible as the rest of his skin. Rocket kept scratching his cheek and his side. He also scratched his head a lot.

Journal 4

Goat Name: Sunday
Breed: Alpine
Gender: Male, fixed (wether)
Age: 9 months

http://www.flickr.com/photos/7326810@N08/2564245533/

Journal Entry 1

When I came out, I saw Sunday chasing the pigeons from the puddles. As I walked into his pen, he came prancing up to me with his tail flickering happily. His coat looked a little dirty. After he shoved his head into my thigh, I scratched him in his favorite spot, between the shoulder blades. Then I brushed the dirt out of his coat until it glistened in the sunlight. He really enjoyed the attention. Sunday ran off to explore some more as I gave him some clean water. The recent storm had put leaves and twigs in it. As soon as he noticed that I gave him more food, he pranced over and started eating. I tried to take his rectal temperature, but he kept moving around. Eventually, I got him to hold still enough to get a reading of 103°F. As he continued to eat, I raked his pen. It was muddy from the rain, but not too dirty. When I left for school, Sunday was rubbing his head against the fence and bleating for me to come back.

Sunday was napping in a sunny corner of his pen when I came to see him this afternoon. Once I got into the pen, he came up and rubbed against my legs until I scratched him. When I stopped scratching him, he turned and stared at me with bright eyes, waiting for me to continue. Instead, I pulled out his lead and his pack for his pack training. Right now, I am just leading him around the property with an empty pack so he can get used to it. He sniffed the pack curiously when I put it on. He didn't want to walk on the lead at first but after I pulled harder, he calmly followed me. A couple times, he stopped along the path to eat some weeds. When we were done, I played tag with him. He kept running around the pen so I couldn't get him for 15 minutes. When I had to go inside, he was standing on a rock, watching me go.

Journal 4

Goat Name: Sunday
Breed: Alpine
Gender: Male, fixed (wether)
Age: 9 months

http://www.flickr.com/photos/7326810@N08/2564245533/

Journal Entry 2

Sunday was bleating as I came to see him in the morning. Then he sat down in the shade to watch me work. He must feel lazy because of the heat and humidity today. I gave him more water and added more food to what he already had. When I pulled out his brush, he trotted over to me and rubbed his head against me like a cat. I scratched between his shoulders and brushed his coat. His tail stood straight up and wagged back and forth the whole time. I didn't want him to move while I took his temperature, so I tried to keep brushing him at the same time. It didn't work because I couldn't hold onto the brush while I put in the thermometer. Eventually I got him to stand still long enough to get a reading: 102.8°F. I scratched his ears a little until he needed to scratch them with his back legs. Then I raked his pen while he followed me around, butting me once in a while. When I left, he was scratching his ears again.

Sunday was lounging around this afternoon. He was drinking water when I came in to see him. He walked over to me with bright eyes and a flicking tail. After a short scratching session, I pulled out his lead and pack. He didn't let me put on the lead; I think he wanted to play since he kept pulling away every time I got close to him. I finally got his lead and pack on. I walked him on a nearby trail this time. He tried to chase some birds but I had to remind him that we weren't playing. He urinated near some bushes and ate a dandelion plant. He finally calmed down near the end of our walk. After he got back into his pen, he went straight for his food. I followed him so I could brush the sweat out of his coat. I noticed that some of the older hay on the bottom had some black spots on it. Sunday didn't mind; he just took a big bite out of it. He kept eating as I left.

Journal 4

Goat Name: Sunday
Breed: Alpine
Gender: Male, fixed (wether)
Age: 9 months

http://www.flickr.com/photos/7326810@N08/2564245533/

Journal Entry 3

It was not as hot this morning. Sunday tried to chase down a falling leaf when I came out. He came toward me when I walked in. There were a lot of droppings all over the pen. As I was cleaning, he followed me like we were playing a game. Every time I turned around, he would jump backward and be ready to run. I decided to give him more water and food before playing with him. I could tell he enjoyed being chased because he kept bleating at me every time I stopped. Finally he let me catch him and give him a giant hug. He felt really warm and sweaty. His smooth coat wasn't really dirty, but I brushed it anyways. He was too tired to run so I took his temperature; it was 103.6°F. He leaned on me and was breathing loudly for a while. I scratched him while his tail flickered quickly back and forth. Then he went to drink water and I had to go to school.

When I came in to see Sunday after school, he looked up at me from his spot on the ground. I petted him for a while and then pulled out his pack and lead. He bleated when I put on the lead, but there was no resistance. I put his brush in his pack to increase the weight. We walked around the property. He seemed less interested in walking, since he walked slowly behind me with his head drooping down. He sniffed at a plant but didn't eat it. Some birds landed near him and he didn't even look up. When we got back to his pen, I decided to brush him again. Most of his coat was smooth except for a big wet spot under his chin. After I finished brushing him, he circled around and then sat down. He looked tired. He sneezed and then got up, walked in a circle, and lay down again.

Journal 4

Goat Name: Sunday
Breed: Alpine
Gender: Male, fixed (wether)
Age: 9 months

http://www.flickr.com/photos/7326810@N08/2564245533/

Journal Entry 4

This morning, Sunday bleated when I came into the pen. He didn't get up to greet me; he just stared at me from his shelter. I noticed that he had not eaten any of his food so I didn't give him any more. When I raked his pen, the droppings were pellet-like and all around his bed. I noticed that he got up and sat down really often. When I pulled out his brush, he walked toward me and stood nearby to be brushed. His coat looked slightly dull, and there was a giant wet patch under his chin. He was drooling a little, too. Sunday bleated loudly and his tail flickered slowly as I scratched between his shoulders. He didn't even try to resist when I took his temperature, which was 103°F. When I left him, he went back to sit down again.

As I came up to the pen in the afternoon, I noticed that Sunday looked tired. His back looked like it curved up in the middle and he looked skinny. I tried to play chase with him, but he didn't feel like playing. Since he didn't want to play, I put the lead and pack, with the brush in it, on him. We went on the trail again. He walked slowly the whole time with his head drooping and his tail barely moved. When the birds flew by, he barely looked up. After getting back to the pen, I noticed that he was drooling all over himself. When I brushed his coat, that wet spot was still there. Even after I finished brushing him, his coat was not very shiny. He looked up at me with sad eyes before walking back to lie down. I saw that he still hadn't touched his food; some of the food still had dark spots on it. He got up and lay back down several times before I left the pen.

Journal 4

Goat Name: Sunday
Breed: Alpine
Gender: Male, fixed (wether)
Age: 9 months

http://www.flickr.com/photos/7326810@N08/2564245533/

Journal Entry 5

As I got near the pen, Sunday was crying out loudly. His tail was droopy and he was drooling all over himself. As he lay there watching me come in, I noticed that his stomach was contracting and expanding severely for several minutes. He could not seem to control it. His pen didn't take very long to clean since there were very few droppings. When I checked his food and water, I noticed that all the food was still there. He hadn't eaten any. He came up to me, bleating, when he saw his brush. I brushed his coat and scratched him between his shoulders, but he still seemed really upset. There was still a wet spot under his chin and down his neck. I took his temperature; it was 102.9°F. After I finished brushing him, he just sat down and put his head down, too. He blinked at me a couple times before crying out some more. When I left, he just looked up and then put his head down again.

Walking toward Sunday, I noticed that his back looked arched. His head was hanging down even before I walked in. I saw that he was drooling a lot. When he looked up at me, I could see sadness in his eyes. I thought I could cheer him up by walking him out near the fields. He loves trying to eat the flowers. He didn't even notice that I put the pack on him. He followed far behind the lead, walking with his head down the whole time. He didn't seem interested in anything. He looked up once at some birds, but then looked back toward the ground again. Once we got back, he walked into his shelter and sat down. As I brushed him, I noticed that his coat was slightly knotted and dull. The wet spot had picked up a lot of dirt, but it was still wet. Sunday looked like he wanted to sleep, so I left him alone. He had his head down on the floor when I left.

GOAT DISEASE INFORMATION SHEET

Acidosis

A goat can get acidosis (as-i-doh-sis) when the amount of forage (e.g., hay) or grain in its feed is changed rapidly; when it eats too much grain; or when it eats grain before eating forage. Goats are ruminants, which means that they have a four-part stomach. The main compartment of these four parts, the rumen, contains microbes that break down food. These microbes can be killed by a sudden change in the acidity of the rumen. If too many of the microbes die, the goat will no longer be able to digest its food.

Acidosis damages the rumen and can cause secondary infections of the liver. If diagnosed early, veterinarians can treat acidosis with antibiotics, by transferring rumen "juice" from a healthy animal, or by adding basic (non-acidic) solutions to the rumen. In severe cases, the veterinarian may have to surgically empty the rumen, a procedure called a rumenotomy.

The best way to prevent acidosis is to correctly balance and formulate grains and forage in the feed. Forage should be fed before grain. The daily grain ration should be split into a few feedings in order to not overwhelm the rumen. If the feed needs to be changed, do it gradually and over several days to allow time for the microbes in the rumen to adapt. Fiber is very important in a goat's diet because it makes the goat chew more. This results in an increased production of saliva, which is basic (non-acidic) and can balance out the acidity in the rumen. Symptoms of acidosis may include

- changes in appetite (going off feed)
- fast growth of the hooves (developing "rings")
- flaky or brittle horns
- depressed behavior such as decreased activity, hanging head
- erratic behavior or trouble standing straight or walking
- diarrhea that smells acidic and is yellow in color
- bloat, or swelling on left flank (the side of the rumen)

Mycotoxicosis

Mycotoxicosis (my-koh-tok-si-koh-sis) is poisoning caused by mycotoxins. Mycotoxins are not a specific kind of toxin; rather, they are a variety of toxins produced by fungi and molds. These toxins occur more often in hot and humid areas because of the favorable conditions for mold growth. Exposure to mycotoxin is usually through ingestion of old and probably moldy hay or feed.

The best way to prevent mycotoxicosis is to avoid feeding your goat moldy grain and hay. If your goat shows signs of mycotoxicosis, remove the bad feed and contact your veterinarian immediately. The veterinarian may treat your goat with activated charcoal or mineral oil in order to stop additional uptake of the toxin. Symptoms of mycotoxicosis may include

- excessive salivation
- depressed behavior such as decreased activity, hanging head
- anorexia (going off feed)
- convulsions (involuntary spastic movements)
- arched back

Pneumonia

Pneumonia (noo-mohn-yuh) is a common respiratory disease that is a threat to goats year-round. Summer is the peak pneumonia season for goats. Pneumonia is caused by a variety of microorganisms; the most common are bacteria such as *Pasteurella* and *Corynebacterium*. Pneumonia can cause death; in fact, it is one of the leading killers of goat kids every year. Environmental stress as well as any other kind of stress can increase an animal's chances of getting pneumonia.

Once a goat has been properly diagnosed as having pneumonia by a veterinarian, make sure that it is isolated from the herd. The infection can be spread from animal to animal through the air. Keep the sick animal in a dry, draft-free location with plenty of fresh water and food. Antibiotics should be given as directed, as well as any other medications that the veterinarian recommends.

The best way to prevent pneumonia is to minimize stress. Make sure the goat housing has plenty of fresh air and is not too overcrowded. Sudden temperature changes can also make the goat more susceptible to disease. Symptoms of pneumonia may include

- fever
- depressed behavior such as decreased activity, hanging head

- short and rapid breathing or difficulty breathing
- loss of appetite (going off feed)
- weakened body condition
- Breathing that sounds congested
- noises in the chest when breathing

Goat Pox

Goat pox is a contagious viral disease that affects goats of all ages and breeds. The disease is more common and severe in younger animals, lactating females, and older goats.

Because the virus affects the lungs, it is usually contracted through inhalation and is most likely to occur in areas where goats are crowded or gathered together. However, the virus can be spread directly through contact with skin lesions and may even be passed between animals by biting flies. Skin lesions caused by the virus may become infected and can lead to death.

Currently there is no vaccine for goat pox. The best method of prevention is isolation of infected animals. Once an animal is infected it must be isolated and treated with antibiotics to keep the infection from spreading further. Symptoms of goat pox include

- fever
- congestion
- nasal discharge
- pockets of pus on ear, nose, or udder
- skin lesions (sores)

Mange

Mange is a skin disease of mammals caused by a mange mite. The mites cannot be seen with the naked eye, but their effect on the skin can be great. Mange mites spread to new hosts through direct body contact or by transfer from common nests, burrows, and sleeping quarters. The mite lives and burrows in the skin layers. Females deposit eggs as they bore through the skin; the eggs hatch within a few days.

If you suspect that your goat has mange, seek veterinary attention immediately. Treatment includes injections of an antiparasite medication. Symptoms of mange may include

- flaky, scruffy dandruff on the skin
- severe itching
- balding
- thickening of the skin
- scabbing
- weight loss in severe cases

HEALTH ASSESSMENT CHECKLIST

Goat Name: _____ Breed: _____

Gender: _____ Age: _____

General Symptoms

Is there anything you notice that you should be concerned about?

Journal Entry 1: _____

_____

_____

Journal Entry 2: _____

_____

_____

Journal Entry 3: _____

_____

_____

Journal Entry 4: _____

_____

_____

Journal Entry 5: _____

_____

_____

Suspected Diagnosis: _____

(Use the goat disease information sheet)

Observations

Explain which symptoms from the above journal helped you indicate a problem, and explain why.

_____

_____

_____

What other observations do you think might be important?

_____

_____

_____

Why do you think recording daily observations of your goat would be helpful in monitoring your goat's health?

_____

_____

_____

Your Goat's Health

Subject Overview and Background Information

Youth should use the skills and knowledge acquired from the previous activity to assess their goat's health in this application activity. As important as it is to teach the youth about animal health assessments, it is even more vital for the youth to apply their knowledge in the real world. This application activity allows the youth with animals to evaluate their pets' health and determine the right time to consult a veterinarian. The youth should be in a regular habit of checking their animal's overall health and notice any signs of abnormality.

The best way to assess the health of a goat is through observation. There is no clear-cut definition of normal; normal varies from goat to goat, so abnormal depends on your goat as well. Observing your goat daily is the best way to really know it and be able to identify changes that might be symptoms of disease or injury.

In this activity youth will fill out the health assessment charts used in the previous activity, except that they will make observations on their own goats. In addition, they should write a short journal entry on the back of the chart about what they did with their goat daily. The daily observations should last a minimum of 14 days.

Goats can be difficult animals to handle and take vital measurements from. We suggest developing an inexpensive kit that may help the youth in their observation and measuring process. This kit could include the following:

- **Latex gloves:** for general use every time they examine the goat, especially when they make personal contact with sensitive areas of the goat. Wearing disposable gloves is highly recommended when performing any of these procedures to prevent the spread of disease from human to goat and vice versa.
- **Penlight:** for use when examining the goat's eyes and nostrils. Encourage youth to note anything that looks abnormal in these areas and compare this with observations from previous days.
- **Magnifying glass:** for use when looking at the goat's coat. Youth can look closely at the skin and coat and note any interesting observations.

Checking a goat's vitals is important in order to assess its health. Before checking the goat's vitals, make sure youth understand how to take each of these measurements.

- **Respiration (breathing) rate:** Get your goat in a comfortable position and watch your goat's chest move in and out as it breathes. One breath is equivalent to the goat's chest moving in and out once. Count how many breaths the goat takes in 1 minute; or count the number of breaths it takes in 15 seconds (using a stopwatch or watch with minute hand) and multiply the number by 4 to get the number of breaths in 1 minute. The normal respiration rate at rest for adult goats is approximately 10 to 30 breaths per minutes; for kids it is approximately 20 to 40 breaths per minute. If you have a hard time watching your goat breathe in and out, you can put a tissue or mirror by your goat's nose and watch for tissue movement or fog on the mirror. The normal respiration rate for goats is from 10 to 30 breaths in 1 minute. Contact your veterinarian if your goat's respiration rate is out of this normal range.
- **Heart rate:** Place your fingers on each side of the goat's lower ribcage. (A stethoscope can be used instead of feeling with fingers by the ribcage or in the inner thigh.) Feel for the heartbeat and count for 1 minute; or count for 30 seconds and multiply the number by 2. The heart rate can also be counted by placing a hand on the inside of the upper thigh of the rear leg, locating the artery there, and counting the pulse for 1 minute. The normal heart rate for an adult goat is approximately 60-80 beats per minute; for active kids, the heart rate may be up to twice as fast as adults.

The growth of a kid or young goat can be measured in addition to its heart rate and respiration rate. Use a tape measure to measure the goat's height by measuring from its hoof to the top of its shoulder. A goat's girth (width) can be measured by pulling the measuring tape around its stomach (or the widest part of the goat). The goat's length can be measured from its head to tail.

The penlight and magnifying glass can be used to get a closer look at any part of the goat. Youth should use the light to look at the ears, eyes, and mouth. Do not flash the light directly in the goat's eyes; rather, pass the light back and forth slowly and steadily acress the eyes. **Do not substitute a laser pointer for the light**. The magnifying glass allows youth to take a closer look at the skin and coat, as well as any abnormalities in the goat's ears and mouth.

It is important to let the youth know that they should not make immediate conclusions about their animal's health. Most of the youth will probably have perfectly healthy goats. Do not give them the impression that they must find something wrong with their animal. Emphasize the concept of **health care maintenance** rather than health diagnosis.

Working with animals can get dirty, so appropriate clothing is required (new clothes are not recommended). Make sure the clothes and shoes are comfortable, so that the youth can move around and work in them. The recommended dress includes

- closed-toed shoes
- long pants
- long-sleeved shirt
- tie for long hair, if necessary
- no free-hanging earrings
- secure glasses

Since working with goats usually means working outdoors, sun protection is recommended as well. It would be a good idea to apply sunscreen and wear a hat and sunglasses. A painter's mask may be needed for those who are asthmatic, sensitive, or allergic to dust and small particles in the air

◆ Activity Concepts and Vocabulary

- **Health care maintenance:** The regular monitoring of an animal's health.

◆ Life Skills

- **Head**: Keeping records, problem solving, decision making, critical thinking
- **Heart**: Sharing, communication, concern for others, empathy
- **Hands**: Self-motivation
- **Health**: Disease prevention, self responsibility, personal safety

◆ Subject Links

Science and Language Arts

◆ State Content Standards

Science

- Third Grade
  - *Investigation and Experimentation: 5e*
- Fourth Grade
  - *Investigation and Experimentation: 6c*
- Fifth Grade
  - *Investigation and Experimentation: 6h, 6i*
- Sixth Grade
  - *Investigation and Experimentation: 7d*

Language Arts

- Fourth Grade
  - *Listening and Speaking Strategies: 1.7*
- Fifth Grade
  - *Listening and Speaking Strategies: 1.5*
- Sixth Grade
  - *Listening and Speaking Strategies: 1.5*

◆ Purpose of Activities

The purpose of this activity is to have youth record observations of their own goat over a period of time.

ACTIVITY 2
Goat Health Journal

Overview of the Activity

Youth will have the opportunity to assess the health of their goat for a minimum of 14 days. They will make observations of their animal and record what they observed for each day. They will also write a journal entry each day on their animal's activity. During their group meetings, youth will have a chance to share their observations of their animal and discuss any potential diseases or illnesses with their group.

◆ Time Required

Approximately 15 minutes daily for at least 2 weeks

◆ Suggested Grouping

Individual

◆ Materials Needed for Each Youth

*(*Materials provided in curriculum)*

- Flip chart paper
- *Animal health journal:
  - *Animal background information sheet*
  - *Animal health daily recording sheet for each day of observation*
- Health assessment kit:
  - *Latex (disposable) gloves*
  - *Penlight*
  - *Magnifying glass*
- Stethoscope
- Tape measure
- Rectal thermometer
- Writing tool (pencil, pen, etc.)
- Lubricant
- Stopwatch or watch with second hand
- Disinfectant
- Painter's mask (if sensitive or allergic)

◆ Getting Ready

Each individual is expected to observe their goat for 14 to 28 days. Make an animal health journal for each youth, which consists of an animal background information sheet for each youth and one blank animal health daily recording sheet for each day the youth will observe their goat.

Opening Questions

Ask the youth to respond to each question below by sharing their ideas verbally and/or by recording them on the flip chart paper provided.

1. When you are sick, what observations might your parents make that would lead them to take you to see the doctor?
2. Describe what you might notice about goats that are not feeling well.
3. What kinds of observations about your goat would prompt you to call your veterinarian?
4. Why might keeping a daily journal about you or your goat be helpful to a doctor or veterinarian?

Procedure (Experiencing)

1. Give each individual an animal health journal packet, which includes an animal background information sheet and one animal health daily recording sheet for each day of observation.
2. Review the terms on the checklist and how to properly take the heart rate and respiration rate. Make sure the youth know the proper dress code for working with animals.
3. Explain to the youth that they are to fill out the animal background information sheet. If they have more than one animal, they may choose one to work with for this activity. They may need to work with their parents to answer the background information questions.
4. Youth will also fill out an animal health daily recording sheet every day for the chosen number of days (14 days are recommended). Youth should also include a brief journal entry on the back of the recording sheet, describing what they did with their animal each day.

5. Ask the youth to prepare to share a report with their peers at the next group meeting. Reports should include an oral description on observations along with any potential symptoms of illness. Youth may want to graph heart rates and respiration rates. If they have a kid or young goat, they may want to graph its growth. Youth could also create a poster or PowerPoint presentation to share their findings.

Sharing, Processing, and Generalizing

Have each youth share his or her report with the group. Follow the lines of thinking developed through the general thoughts, observations, and questions raised by the youth. If necessary, use more targeted questions as prompts to get to particular points:

1. What are some advantages of keeping a daily health journal for your goat? Were there any challenges? Please explain.
2. Did your goat present any symptoms of concern? If so, what were they, and what did you do?
3. In what ways are graphs of heart rate and respiration rate helpful in assessing your goat's health? What kind of information can you get from a growth chart? Please explain.
4. What similarities, if any, were there between your goat and others' goats? What differences, if any, were there? Please explain.

Concept and Term Discovery/ Introduction

Volunteers need to ensure that the concept of **health care monitoring** has been introduced or discovered by the youth.

- **Note:** The goal is to have the youth develop concepts through their exploration and define terms using their own words.

References

Blackburn, L. Normal values. National Pygmy Goat Association Web site, http://www.npga-pygmy.com/resources/health/normal_values.asp.

Stanton, T. 1999. Routine health care for your wether. New York State 4-H Meat Goat Project Fact Sheet 6. Cornell University, New York State 4-H Youth Meat Goat Projects Web site, http://www.ansci.cornell.edu/4H/meatgoats/meatgoatfs6.htm.

Animal Health Journal

ANIMAL BACKGROUND INFORMATION SHEET

Date: _____ Youth's name: _____

Animal's name: _____ Species: _____

Breed: _____ Date of birth or age of animal: _____

Gender (male, female, or unknown/fixed or intact): _____ Has this animal been bred? _____

If yes, how many times? _____ Date of last breeding? _____

Health history: Is this animal on any medications? _____ If yes, please list. _____

_____

Does this animal have current vaccinations? _____

Does this animal have any allergies? _____ If yes, please list. _____

_____

Has this animal had any major illnesses or surgeries? _____ If yes, describe. _____

_____

Date of last veterinary checkup: _____

Environment: Please describe the housing for this animal (indoor/outdoor, with other animals/alone, size of enclosure).

_____

_____

_____

Diet: Please describe the diet and the feeding schedule for this animal. Describe how water is provided (bowl, automatic waterer, etc.)

_____

_____

_____

ANIMAL HEALTH DAILY RECORDING SHEET

Date: _____ Time: _____

Animal name: _____

MEASUREMENTS

Heart rate: _____ Respiration (breathing) rate: _____

OBSERVATIONS

Behavior: _____

_____

Activity level: _____

_____

Appetite: _____

_____

Body condition: _____

_____

Posture and flight: _____

_____

Skin, coat, and hooves: _____

_____

Eyes: _____

Ears: _____

Nose: _____

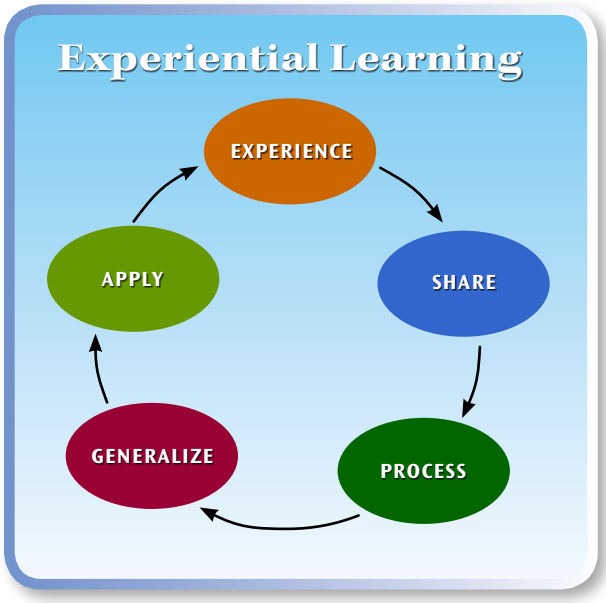
Body waste: _____

Other: _____

_____

APPENDIX

The activity in this curriculum is designed around inquiry and experiential learning. Inquiry is a learner-centered approach in which individuals are problem solvers investigating questions through active engagement, observing and manipulating objects and phenomena, and acquiring or discovering knowledge. Experiential learning (EL) is a foundational educational strategy used in 4-H. In it, the learner has an experience phase of engagement in an activity, a reflection phase in which observations and reactions are shared and discussed, and an application phase in which new knowledge and skills are applied to a real-life setting. In 4-H, an EL model that uses a 5-step learning cycle is most commonly used. These five steps—Exploration, Sharing, Processing, Generalizing, and Application—are part of a recurring process that helps build learner understanding over time.



For more information on inquiry, EL and the 5-step learning cycle, please visit the University of California's Science, Technology, Environmental Literacy Workgroup's Experiential Learning Web site, http://www.experientiallearning.ucdavis.edu/default.shtml.

For Further Information

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YOUTH DEVELOPMENT THROUGH VETERINARY SCIENCE 10

Is Your Horse Healthy?

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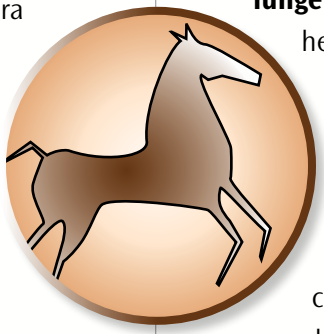
Subject Overview and Background Information

Protecting your horse's health begins with providing your horse with proper nutrition, shelter, exercise, and grooming. A horse's diet should consist of plenty of clean water and a mixture of legume hay (such as alfalfa) and grass hay. A horse's nutritional needs depend on its age, size, and breed. The average adult horse will eat 2 to 2.5 percent of its body weight each day. If your horse requires extra nutrition in addition to the hay, a grain mixture may also be fed. Too much grain or not enough forage material can cause intestinal problems, commonly known as **colic**. **Colic** can be very serious and is the number one cause of horse deaths. Excessive amounts of grain can also cause swelling in the tissue in your horse's hooves, leading to a condition known as **laminitis**.



Your horse should have a clean, dry, sheltered place to live in cold weather. It is up to you whether you keep your horse in a barn or out to pasture in mild weather. If your horse is in a stall, it needs plenty of room to be able to turn around, move around, and lie down. Straw or wood shavings make good bedding material. If your horse is out in pasture, it should be provided with access to a covered shelter.

Just like you, your horse needs exercise to remain healthy and happy. It is best to exercise your horse daily. Going for long periods of time without exercising your horse and then forcing your horse to exercise a lot can cause fatigue and even injure your horse. **Joint disease** and **tying-up disease** (a muscle problem that makes your horse reluctant to move) are just some of many conditions that can result from improper exercising. It is a good idea to **lunge** your horse before going out for a ride, both to help warm up the horse and to spend some of the horse's energy so he or she is easier to control. Lunging involves making your horse walk, trot, jog, or run around in a circle on a lead.

Grooming your horse daily is also very important. You should use a **curry comb** in circular motions to help remove dirt from its coat and stimulate blood flow to the skin. Then you should follow with a stiffer brush, called a **dandy brush**, using straight motions. A horse should be brushed before putting a saddle on it, as well as washed and brushed after exercise to remove the sweat from its coat. Proper daily grooming also includes using a hoof pick to keep your horse's hooves clean and free from debris.

In addition to taking good care of your horse's daily needs, you should also have your horse seen regularly by a **veterinarian**, even if it doesn't seem sick. Although a **veterinarian** is an expert on treating sick animals, he or she is also an expert in helping to prevent animals from becoming sick. Some diseases can be prevented through vaccination programs. One such disease is strangles, a highly contagious bacterial infection. Your **veterinarian** helps keep your horse healthy by knowing what vaccinations your horse needs, answering any questions you may have about horse care, and possibly noticing disease symptoms in your horse that you may not have recognized.

Overall, you should be as observant as possible regarding your horse's physical condition. Any changes in your horse's attitude, behavior, or appearance could be a sign of a health problem.

Activity Concepts and Vocabulary

- **Bacterial infection**: A disease caused by germs called bacteria.
- **Bacterium (bak-teer-ee-um)**: An organism that cannot be seen with the naked eye. Some bacteria (germs) can cause diseases. Pneumonia, a disease that affects animals' lungs, can be caused by a bacterium.
- **Fungus (fuhng-guhs)**: An organism (e.g., mold, yeast) that lives and feeds on organic material such as bread, wood, and other animals. A common fungus that affects animals is ringworm.
- **Inflammation (in-fluh-may-shuhn)**: A local reaction of a tissue to irritation that causes pain and swelling.
- **Lunging**: training a horse to walk, trot, and canter in a circle on a lead line.
- **Parasite (par-uh-site)**: An organism (e.g., bacterium, worm, tick) that receives food and energy from another. A common parasite that affects animals is tapeworm.
- **Veterinarian (vet-er-uh-nair-ee-uhn)**: A doctor who takes care of animals.
- **Virus**: A type of germ that causes diseases. Rabies is a disease caused by a virus.
- **Zoonotic diseases (zoe-eh-notick)**: An disease that affects an animal that can also be passed to humans.

Life Skills

- **Head**: Keeping records, planning and organizing, critical thinking, problem solving, decision making
- **Heart**: Concern for others, communication, sharing, empathy
- **Hands**: Teamwork, self-motivation
- **Health**: Disease prevention, self-responsibility, personal safety

Subject Links

Science and Language Arts

State Content Standards

Science

- Third Grade
  - *Investigation and Experimentation: 5e*
- Fourth Grade
  - *Investigation and Experimentation: 6c*
- Fifth Grade
  - *Investigation and Experimentation: 6h, 6i*
- Sixth Grade
  - *Investigation and Experimentation: 7d*

Language Arts

- Third Grade
  - *Reading Comprehension: 2.2, 2.6*
- Fourth Grade
  - *Reading Comprehension: 2.3*
  - *Listening and Speaking Strategies: 1.7*
- Fifth Grade
  - *Reading Comprehension: 2.3, 2.4*
  - *Listening and Speaking Strategies: 1.5*
- Sixth Grade
  - *Listening and Speaking Strategies: 1.5*
  - *Speaking Applications: 2.5b*

Purpose of Activities

To help youth learn about the proper maintenance and care of horses. Youth will also investigate the causes and symptoms of several horse diseases.

ACTIVITY 1

Monitoring Horse Health Day by Day

Overview of the Activity

The main goal of this activity is for youth to learn to make good physical and behavioral observations of horses by reading and analyzing descriptive journal entries. Youth will then use these observations to make inferences regarding the health of their horse.

Time Required

Approximately 90 minutes

Suggested Grouping

Pairs or small groups of 3 to 4

Materials Needed for Each Pair or Group

*(*Materials provided in curriculum)*

- Writing utensils
- Flip chart paper (one piece per group)
- *Health assessment journals
- *Horse disease information sheet
- *Health assessment checklist

Getting Ready

- Photocopy enough health assessment journals, horse disease information sheets, and health assessment checklists for the groups.

Opening Questions

Ask the youth to respond to each question below by sharing their ideas verbally and/or by recording them on the flip chart paper provided.

1. What are some ways you can tell when you are sick?
2. What signs might your parents, teacher, friends, or doctor use to recognize that you are sick?
3. What are some things you can do to avoid becoming sick?
4. If your animal is sick, what are some changes you might notice about him or her?
5. What are some of the responsibilities you have to keep your pet or project animal healthy?

Procedure (Experiencing)

- **Volunteer Tip**: Set up the following scenario for the youth: The youth in each group will be playing the role of a horse owner. Each group will receive one of the health assessment journals, one day at a time. As a group, the youth will go through the journal entry of each specific day and record important facts onto the health assessment checklist they have been given. At the end, using the checklists they have made, they will compare their findings with the horse disease information and draw a conclusion regarding what disease, if any, their horse has.

1. Give each group of horse owners Journal Entry 1 from their health assessment journal. The group should read the entry and record important findings on their health assessment checklist.
2. When the groups have completed Journal Entry 1, take away that journal entry and give them Journal Entry 2. Then have them read the entry and record important findings on their checklist.
3. Continue this pattern for the remaining days until each journal entry has been assessed.
4. When the group is done with the last day, remove this entry and pass out the horse disease information sheet. Have the groups review the data that they recorded on their health assessment checklist and record their diagnosis of their horse's symptoms along with the reasons why they chose that diagnosis.

Sharing, Processing, and Generalizing

Have each group share their diagnosis and indicate which parts of their checklist helped them make that determination. Follow the lines of thinking developed through the general thoughts, observations, and questions raised by the youth. If necessary, use more targeted

questions as prompts to get to particular points, such as the following. Ask the youth to respond to each question below by sharing their ideas verbally and/or by recording them on the flip chart paper provided.

1. What might be some advantages to keeping a daily health assessment journal for your horse?
2. What are some examples of the symptoms you used to tell you when to be concerned with your horse's health?
3. What do you think might happen if you ignored those symptoms and didn't seek veterinary care for your horse?
4. Check the groups' diagnosis of their horse with the answer key. If there are any discrepancies, have the youth discuss what lead them to their conclusion.

Horse Disease Diagnosis Key

- Betsy: colic
- Patches: joint disease
- Winnie: tying-up disease
- Mr. Darcy: strangles

Concept and Term Introduction

Volunteers need to ensure that the concepts and terms **bacterial infection, bacterium, fungus, inflammation, lunging, parasite, veterinarian, virus,** and **zoonotic diseases** have been introduced.

- **Note:** The goal is to have the youth develop these concepts through their exploration and define the terms using their own words.

Concept Application

An application for these skills is presented in Activity 2 of this unit. Youth who own a horse may apply Activity 2 to their own pet, while youth who do not own a horse may seek permission from a friend or family member to use their horse in this exercise.

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HEALTH ASSESSMENT JOURNALS

Journal 1

Horse Name: Betsy
Breed: Thoroughbred
Gender: Female
Age: 2 years

Brittney Hogan
http://www.flickr.com/photos/brittanylynae/2251873904/

Journal Entry 1

When I went to visit Betsy today at Sunnyvale Farms, she seemed to be in a pretty good mood. I think she likes being boarded there. She whinnied when I came up to her stall and let me pat her nose. She sniffed in my jacket pockets, probably looking for treats. I didn't have any carrots or apples to give to her today. It looked like Betsy had eaten most of her hay already, so I doubt she was really hungry. The barn manager is the one who gives her the roughage part of her diet each day, and it's up to me to give her any grain or treats she might need. My project volunteer says Betsy only needs a couple of small scoops of grain each day.

I did my overall health examination of Betsy before I groomed her and put on her saddle and bridle. Her pulse (heart rate) was 35 beats per minute and her respiration rate (breathing rate) was 10 breaths per minute. Her temperature was 100ºF. Her eyes were clear and bright and her ears were clear as well. Her nose was moist, but there was no discharge. Her coat was very dusty but she didn't have too many tangles in her mane or tail. She cooperated well when I made her lift her hoof to use the hoof pick. There were some big rocks stuck in her front right hoof. She didn't urinate while I was with her, but her feces in the stall looked typical.

We went for a short ride around the ranch. We walked for a while, then did some loping, and then walked again. I didn't notice any problems with her gait. When we got back, I led her out to the pasture to let her graze or run around as much as she wanted. I mucked out her stall which wasn't all that dirty. After about an hour I put Betsy back in her stall and brushed her again. She only got a little sweaty from the exercise. I didn't spray her down with water since it's a cold day.

Journal 1

Horse Name: Betsy
Breed: Thoroughbred
Gender: Female
Age: 2 years

Brittney Hogan
http://www.flickr.com/photos/brittanylynae/2251873904/

Journal Entry 2

Betsy seemed eager to get out and run today. She whinnied when I approached her and let me groom and put her tack on very easily. It was as if she knew if she cooperated she would get to run outside sooner. It didn't take long because her coat was very clean and shiny. She wiggled her ears a lot, but when I looked at them there didn't appear to be any problems. While grooming her I noticed that her eyes were a little drippy. The discharge looked clear. Her nose wasn't moist today. Her pulse was 45 and her respiration rate was 12. I didn't take her temperature today. The first thing I did when I led Betsy outside was make her lunge. Lunging usually helps her get some of her energy out so I don't have such a hard time controlling her during my ride. She bucked a few times on the lead rope and didn't seem to want to trot. She either wanted to walk or canter.

I rode her for a fairly long time after that. We did lots of cantering and some running. There were no changes in her gait. Betsy seemed to love it.

When we got back I sprayed Betsy down with the hose since she got really sweaty. The barn manager let me borrow a blanket that would keep her warm after the little bath. I turned Betsy out to pasture so I could muck her stall. Her feces looked the same. She had eaten all of her hay and grain mixture. I put her back after about 30 minutes.

Journal 1

Horse Name: Betsy
Breed: Thoroughbred
Gender: Female
Age: 2 years

Brittney Hogan
http://www.flickr.com/photos/brittanylynae/2251873904/

Journal Entry 3

Betsy seemed a little more nervous than usual when I came to see her today. The weather has been a little stormy, and I don't think Betsy likes thunder. There were a lot of flies in the barn today, and I don't think she liked that either. She swished her tail and wiggled her ears a lot. There was some dirt in her ears, so I cleaned them out with some cotton balls. At least her eyes were clear of any discharge and her nose was dry. I groomed her and she cooperated when I checked her hooves. Her coat and hooves looked good. She seemed a little impatient when I put on her saddle and bridle and didn't stand as still as she normally does. Her pulse was 44 and her respiration rate was 10. Her temperature was 101ºF.

It looks like she didn't eat very much hay today. She did eat a carrot when I offered it to her, though.

Since Betsy was so nervous, I made sure to lunge her so she wouldn't try to buck during our ride. She jogged around the circle on the lead and got three or four bucks out. She didn't listen to all of my directions when I told her to speed up or slow down. Her gait was a little uneven, and it seemed like Betsy was holding her neck more stiffly that usual.

When we went for our ride, she seemed to spook very easily. She almost started to buck when a small squirrel scampered down a tree and across our path. We walked and trotted, but I didn't want to go any faster than that.

I let Betsy stay out in the field for half an hour after our walk while I mucked her stall. It seemed really dirty, and I had a lot of feces to clean up. I led her back to her stall and brushed her again.

Journal 1

Horse Name: Betsy
Breed: Thoroughbred
Gender: Female
Age: 2 years

Brittney Hogan
http://www.flickr.com/photos/brittanylynae/2251873904/

Journal Entry 4

Betsy still doesn't seem to like the weather and isn't eating very much. My project volunteer and I decided to add a little more grain to her diet to see if that makes her more interested. Her pulse was 50 and her respiration rate was 17. Her temperature was 101ºF. While grooming I noted that Betsy's eyes, ears, and nose were all clean, though her nose was a bit moist again. Her coat was a bit dirty and her mane was tangled again.

Betsy did her lunging well today. She followed my directions much better. Her posture and gait looked better, too.

On our ride today I went really slowly because I didn't want to have any accidents with the weather still like it is. Betsy didn't seem quite as jumpy. I decided to go through the orchard because I think it's pretty, and I thought Betsy might like to see someplace different. I'm not sure if it was a good idea because Betsy kept trying to stop and eat the weeds. She got a few mouthfuls in here and there before I could pull her head up.

I brushed Betsy and let her stay out in pasture for an hour when we got back. I mucked out her stall (which didn't have much poop in it), put her back, and groomed her. She was a little sweaty and snorting when I left.

Journal 1

Horse Name: Betsy
Breed: Thoroughbred
Gender: Female
Age: 2 years

Brittney Hogan
http://www.flickr.com/photos/brittanylynae/2251873904/

Journal Entry 5

Today when I walked up to Betsy's stall she didn't even seem to notice me. She looked very sweaty and out of breath. She was even kicking at the sides of stall. I watched her for a while and she never seemed to stand still. She would lie down and get up, then lie down again, over and over. She hadn't eaten any of the hay. Her coat was very dirty and covered in straw, and her mane and tail were very tangled. It didn't look like she'd gone to the bathroom during the night. I think she was snorting more than she usually does. Her ears turned from pointing forward to backward often, and she kept her eyes open very wide. Her pulse was 61 and her respiration rate was 29. Her temperature was 101ºF. I went to go get the barn manager.

Journal 2

Horse name: Patches
Breed: Quarter horse
Gender: Male
Age: 10 years

Linda Hartman
http://www.flickr.com/photos/lindaburnett/1188159501/

Journal Entry 1

Patches was running in wide circles when I went out to see him before school this morning. Patches spends all his time out there now that it's summer and the weather is always nice and the nights aren't very cold.

I filled the food trough with alfalfa hay and changed the water in the water trough. There were a lot of clumps of hay floating in it, along with a few flies.

Later, after I returned from school and finished my homework I went out to ride Patches. He was grazing when I first walked out there, but he trotted quickly and smoothly over to the fence. I gave him some apple slices and two carrots. He gobbled them up quickly. His mouth was dripping with drool, and he got my jacket dirty. His eyes looked slightly cloudy. His nose and ears looked clean. I got my saddle and other riding gear out of the shed, put the halter on him and tied him up to the post. He was really dirty, but I only brushed him for a minute or two because I wanted to get riding. I forgot to check his hooves. I did check his pulse and respiration rate , which were 37 beats per minute and 11 breaths per minute. Patches' temperature was 100.5ºF.

We rode the trail that goes behind our garage, past our guest house, and down to the creek. We walked for the first five minutes and trotted the rest of the way to the creek. Patches stopped to urinate once, which seemed to take a long time. From what I could tell it looked yellow. I let him wade in the creek for a little while and then we jogged back home.

Patches was very sweaty after our ride, so I hosed him off and brushed him really well before I went inside for dinner.

Journal 2

Horse name: Patches
Breed: Quarter horse
Gender: Male
Age: 10 years

Linda Hartman
http://www.flickr.com/photos/lindaburnett/1188159501/

Journal Entry 2

My mom fed Patches this morning because I was running late and needed to catch the school bus. She said he ate almost all his hay from yesterday and figures he must be getting some good exercise and working up an appetite being outside all the time. He has appeared more muscular lately, in my opinion.

I went out to ride him after dinner, just a little bit before sunset. He was waiting near the hitching post to get his gear put on. He was standing differently than normal, like he was leaning back a little. I checked his hooves and picked out a few rocks and a lot of dirt. He had dirt all through his coat and even in his ears. His mane and tail were very tangled. I brushed him pretty well, but didn't have time to get all the tangles out. His eyes still look cloudy. His nose was moist. His temperature was 99.3ºF. His pulse (heart rate) was 32. His respiration rate (breathing rate) was 9.

When I climbed into the saddle, he shifted from foot to foot, as if I weighed a lot. Maybe I am growing pretty fast right now. We just went for a short trot out to the big oak tree and back, since it was getting dark. He didn't try to speed up on the way back like he usually does.

He wasn't very sweaty or out of breath when I groomed him once more before bed. I gave him an extra carrot and patted his nose before I said good night.

Journal 2

Horse name: Patches
Breed: Quarter horse
Gender: Male
Age: 10 years

Linda Hartman
http://www.flickr.com/photos/lindaburnett/1188159501/

Journal Entry 3

This morning when I put Patches' food out, he didn't hurry right over. I watched him walk over, and I think he might have been limping a little. His water dish looked clean, so I didn't change it.

After school I went right out to see Patches. He jogged to me and ate my apples, but I think I noticed him limping again. It seems like he's relying on his front left leg more than his front right. I went inside to tell my mom and dad, and they came out to see, too. They noticed the same thing I did. We tied him up and checked his hooves, which were free from debris. We checked his leg for any swelling and didn't notice any. His pulse was 31 and his respiration rate was 9. His temperature was 101.7ºF. Mom said it might be best if I gave Patches the night off.

I groomed Patches for a long time and talked to him about my day. I think he might have been sad because he didn't seem to want to look straight at me. He just stared straight ahead. His eyes were a little cloudy and his ears were droopy. His nose was dry. I hope he's not depressed. He has been eating, and his feces look typical too.

Journal 2

Horse name: Patches
Breed: Quarter horse
Gender: Male
Age: 10 years

Linda Hartman
http://www.flickr.com/photos/lindaburnett/1188159501/

Journal Entry 4

I went out to feed Patches this morning and noticed him limping again. There was some hay left over from yesterday, so I only gave him part of his new hay. I changed his water.

Patches didn't seem very excited when I put the halter and lead rope on him. He walked with his head down. He blinked his eyes a lot. His nose was moist and his ears were clean. I led him around in a circle for a minute in one direction and then made him change directions. He was very hesitant when turning around and didn't want to move at first. He took a couple steps and then stopped. He repeated that two more times before he walked for me. I still saw the limp on the front right leg.

I tied Patches up to the post and groomed him. While brushing his chest and legs I noticed that his right front carpus looked bigger than the left. I felt the bigger carpus with my hand, and it felt a little hot. The rest of him felt hot to the touch also, so that was probably due to the sun. I took his temperature, which was 102.5ºF. His heart rate was 39 and his breathing rate was 14. There was no change in his body wastes.

Journal 2

Horse name: Patches
Breed: Quarter horse
Gender: Male
Age: 10 years

Linda Hartman
http://www.flickr.com/photos/lindaburnett/1188159501/

Journal Entry 5

Mom and Dad went out to check Patches with me today. He stood very still when we approached and had his front right leg bent. They agreed that his knee joint looked swollen and that it was probably the reason he was limping. I checked his pulse, which was 50. His breathing rate was 17. His eyes were cloudy and had some clear discharge. His nose was moist and his ears were clear. I started my weekend chore of picking up the yard. I went around shoveling all the horse poop into a wheelbarrow. The feces hadn't changed. I noticed that we had some gopher holes in the yard that weren't there last week. I didn't see any gophers though.

Journal 3

Horse Name: Winnie
Breed: Appendix (Quarter horse/Thoroughbred cross)
Gender: Female
Age: 6 years

Linda Hartman
http://www.flickr.com/photos/lindaburnett/1188159501/

Journal Entry 1

I went to Copperwood Stables early this morning to visit Winnie. Someday I hope I have enough money to have my own stable so I won't have to travel to see my horse.

Winnie was munching on some hay when I walked up to her stall. She was standing up straight and had her ears perked forward. Her eyes were clear and alert. Her nose was dry and soft. Her coat was clean except for her legs, which were splashed with mud. The wood shavings that we put down in her stall were a little muddy too. I used the curry comb to help get the caked mud off of Winnie's legs, and then gently brushed her all over. She was a bit excitable while I was in the stall, and would keep turning in circles, making me walk around her several times to get all of her groomed. I picked the dirt from her hooves and put on her harness, blanket, and saddle.

First I walked Winnie to the lunging ring and had her trot in circles. Her gait was a little bouncy. I lunged her for 10 or 15 minutes and then walked with her to the main arena. I had Winnie trot, then lope, then gallop around the arena. After that we did some jumping. The bar was fairly low and we had no trouble.

After hosing Winnie off, I turned her out into the pasture for a half hour. In the meantime I cleared all the dirty wood shavings and body waste from her stall. I checked her feces before I threw it away, and didn't see any worms. (She had worms last month.)

I gave Winnie some alfalfa hay and a small bucket of grain when I put her back in her stall. She had a good appetite. I took her pulse (heart rate) and respiration rate (breathing rate), which were 38 beats per minute and 16 breaths per minute. Her temperature was 101.4ºF.

Journal 3

Horse Name: Winnie
Breed: Appendix (Quarter horse/Thoroughbred cross)
Gender: Female
Age: 6 years

Linda Hartman
http://www.flickr.com/photos/lindaburnett/1188159501/

Journal Entry 2

I got to Copperwood around 3 this afternoon. I brought Winnie a special new blanket to keep her warm after her baths now that it's October. I let her sniff the blanket as soon as I walked up to her. She was suspicious at first, probably because she didn't recognize what I had in my arms. She neighed and jumped backward at first, twisting her neck away from me, then timidly approached me with nostrils flaring to sniff. I think the blanket passed inspection.

I cleaned out Winnie's eyes because they had a bit of gunk in them. I wiped her ears out too, just as a precaution. Her nose looked clean. I took her pulse and found that it was 48. Her breathing rate was 17. Her temperature was 102ºF.

I groomed Winnie quickly and checked her hooves. She was very clean, but a little sweaty already. I had put on her gear and started to lead her out of her stall when she just stopped. She would not budge for at least two minutes no matter how hard I tugged on her lead rope. Then for no apparent reason, she started walking quickly as if nothing was the matter.

We walked into the main arena and loped for 15 minutes or so. Winnie didn't run as smoothly as she usually does, and it hurt my legs and butt to try to keep my riding posture.

I put Winnie back in her stall and groomed her one more time. She didn't even look at the apples I waved in front of her. I left them on top of her alfalfa and went home.

Journal 3

Horse Name: Winnie
Breed: Appendix (Quarter horse/Thoroughbred cross)
Gender: Female
Age: 6 years

Linda Hartman
http://www.flickr.com/photos/lindaburnett/1188159501/

Journal Entry 3

They started housing a new horse next to Winnie at the stables. Her name is Firecracker and she is very noisy and active, and I think it's annoying Winnie. When I came to see Winnie today she was kicking at the side of her stall with her back legs on the side Firecracker is on. Winnie had her ears back and kept opening her mouth and curling her lips. Firecracker and Winnie were neighing back and forth. The barn manager says the girls should be used to each other after a day or two, and not to worry.

I led Winnie outside and tied her to a post to do her health check and grooming. She urinated a lot as soon as we got outside. Her pulse was 59 and her respiration rate was 20. Her temperature was 102.1ºF. Her eyes were wide but clear. Her nose was dry and soft. I found a couple small black specks in her ears, which I washed out with a damp cloth. Her coat and skin look good.

After grooming Winnie, I tried to mount her, but she turned her neck and nipped at my arm with her teeth. I scolded her and gave her a tug on the lead rope. I was able to mount the second time. We jogged to the arena and did some laps at a lope. Her gait was stiff, just like yesterday. I let her gallop, because she often thinks that is more fun. When I led her to a jump, she stopped abruptly 10 yards from the jump. Then no matter how much I kicked she wouldn't start up again until at least 5 minutes later.

I turned her out to pasture while I mucked her stall and gave her daily alfalfa and grain rations.

Journal 3

Horse Name: Winnie
Breed: Appendix (Quarter horse/Thoroughbred cross)
Gender: Female
Age: 6 years

Linda Hartman
http://www.flickr.com/photos/lindaburnett/1188159501/

Journal Entry 4

Firecracker and Winnie were snorting at each other when I came to visit this afternoon. It stopped as soon as I entered Winnie's stall. I took her pulse, which was 45, her breathing rate, which was 20, and her temperature, which was 101.8ºF. She stood very still for me. I walked around her to examine her coat, keeping one hand on her at all times so she wouldn't get scared. Her coat looked perfect, but I thought I saw her skin twitching near her shoulders. Her eyes, nose, and ears all looked clean. I brushed her and picked her hooves. She had some feces in them. There were feces all over the floor of the stall and it appeared she had been stamping through it and moving in circles.

I put on Winnie's tack and led her out to lunge. She didn't limp at all when we walked. When we got to the gate of the arena, she stopped walking abruptly. She wouldn't move when I tugged on her lead rope. A nearby rider suggested I slap Winnie on the rump, so I did. That didn't help. She just moved her head up and down like she was nodding at someone. I finally got her to turn, and we walked around the outside of the arena very slowly. Winnie stepped very gingerly.

I took her out to the field so I could clean her stall. She was standing very close to the gate, waiting, when I returned to lead her back inside. She ate the new hay I gave her eagerly.

Journal 3

Horse Name: Winnie
Breed: Appendix (Quarter horse/Thoroughbred cross)
Gender: Female
Age: 6 years

Linda Hartman
http://www.flickr.com/photos/lindaburnett/1188159501/

Journal Entry 5

Winnie wouldn't even leave her stall when I came to see her today. Firecracker was being very quiet next door. Winnie was very sweaty and standing awkwardly. She paced slowly back and forth and then would stand very still with her neck stretched out. She looked skinnier to me. Her nose was wet and her eyes had some clear discharge draining. When I put her harness on she froze and wouldn't follow me out of the stall. I looked at all of her joints and didn't see any swelling. I took her temperature and found it to be 103.2ºF. Her pulse was 57 and her breathing rate was 18.

I stood with Winnie for a long time just patting her nose and talking softly to her. Periodically she would shiver and tremble but was always standing very still. I brushed her and tried to check her hooves, but she wouldn't lift her leg up. Finally I forced her to pick her leg up, but she put it back down immediately. I think it was painful for her. I didn't see anything in her hoof during that instant.

I brought Winnie her food for the day, since it looked like she'd eaten most of yesterday's food. She started eating immediately. After an hour or so I tried to walk her outside again. This time she cooperated but walked very slowly. We walked out to the arena fence and around the outside of the arena, and then back to the stall. She went to the bathroom while we were walking, and I didn't see anything out of the ordinary in her waste. Winnie was very out of breath when we returned to her stall. I brushed her again and put her new blanket on.

Journal 4

Horse Name: Mr. Darcy
Breed: Arabian
Gender: Male
Age: 11 Months

Belinda Hankins Miller
http://www.flickr.com/photos/ninjapoodles/535301561/

Journal Entry 1

Mr. Darcy was a bad boy this morning. He managed to dump out his water bucket and go to the bathroom in the fresh hay he was supposed to eat. Then he pulled his blanket into the whole mess. I told him he'd been bad, but he always thinks everything is a game. He just nuzzled me with his nose and nibbled my hands with his lips. There was no way he was getting a treat after the mess he had made.

I led Mr. Darcy out to the pasture and let him run around while I mucked out the stall. There was a lot of poop in there, and I saw a couple white worms. We're giving Mr. Darcy some deworming medication right now. I gave him fresh straw as bedding and put some new alfalfa hay in there to eat. I used two clips to secure his water bucket to the other side of the stall, which might work better.

At the end of the day I put Mr. Darcy back in his stall and took his vitals. His pulse was 44 and his respiration rate was 16. His temperature was 100.2ºF. I checked his eyes, nose, and ears, which all looked clean. None of his joints looked swollen. I picked his hooves and gave him a good brushing.

Journal 4

Horse Name: Mr. Darcy
Breed: Arabian
Gender: Male
Age: 11 Months

Belinda Hankins Miller
http://www.flickr.com/photos/ninjapoodles/535301561/

Journal Entry 2

Mr. Darcy looked great today. He is really starting to fill out. I can't wait until he gets big enough to ride. I know I have a while to wait, since my 4-H volunteer says horses may still be growing at 3 or 4 years old.

I practiced lunging Mr. Darcy on the lead rope today. He fought the pull of the rope if it seemed like I was tugging too hard, but overall he did well. His gait looked smooth and comfortable. He moved from a walk to a trot to a canter with ease. We practiced starts and stops, too. He doesn't always respond to the "whoa" command immediately.

I let Mr. Darcy play in the pasture all day today. He spent a lot of time bothering our other horses by running circles around them. They typically just ignore him.

I cleaned the dirty straw out of Mr. Darcy's stall and gave him fresh food and water when I put him back in the evening. I groomed him and checked his hooves, joints, and vital signs. His pulse was 42 and his breathing rate was 19. His temperature was 100.7ºF. His eyes, ears, and nose were clean. There were no signs of worms in his feces. That will be nice to tell the veterinarian during our appointment next week.

Journal 4

Horse Name: Mr. Darcy
Breed: Arabian
Gender: Male
Age: 11 Months

Belinda Hankins Miller
http://www.flickr.com/photos/ninjapoodles/535301561/

Journal Entry 3

Mr. Darcy was already out in the pasture when I came home from school today. I joined him in running around for a while and then harnessed him. I tied him up and got his grooming stuff out. When I started brushing him, I noticed right away that he was sniffling. There was a yellow-looking discharge draining from his nose. I wondered if horses got allergies like I did, but I didn't notice any watering in his eyes, which is how I always know I have allergies. His ears also looked clean.

I took Mr. Darcy's temperature and found that it was 102.5ºF. His pulse was 43 and his breathing rate was 15. He looked slightly uncomfortable and kept stretching his neck out while I was working with him. I checked his hooves and picked out some dirt and grass. His joints didn't appear swollen.

I left Mr. Darcy tied up and went to tell my parents what I saw. We decided we should put him in the smaller pasture by himself and at some distance from the other horses, just in case he was coming down with something.

I went to his stall and threw out all the straw and all the leftover food. I dumped the water and cleaned the bucket really well with soap. I sprayed down the empty stall with some water and some bleach and left it to dry. My mom said we should leave the stall empty all day and all night.

Journal 4

Horse Name: Mr. Darcy
Breed: Arabian
Gender: Male
Age: 11 Months

Belinda Hankins Miller
http://www.flickr.com/photos/ninjapoodles/535301561/

Journal Entry 4

Mr. Darcy neighed at me when I approached him the next morning. I don't think he appreciated being alone. He had a nice sheltered area covered in straw that he could sleep in last night, so I don't think he could have been uncomfortable or cold. I tied him up and took his temperature, which was 103.0ºF. His pulse was 44 and his breathing rate was 16. He was still sniffling.

Mr. Darcy's eyes looked drippy with clear liquid and his nose was drippy with yellowish mucous. His ears were clear. His coat was dirty and he had some straw in his mane. I brushed him and cleaned his hooves. I untied him and went sprinting out into the middle of the field to see if he would follow me. Usually he likes to play that game, but today he seemed slower at catching up with me. At least he did follow me. His gait was smooth and comfortable looking. I checked the field for feces and didn't find any.

I gave Mr. Darcy some fresh hay and a small bucket of grain before I had to leave for my friend's birthday party. He didn't look too interested in eating.

Journal 4

Horse Name: Mr. Darcy
Breed: Arabian
Gender: Male
Age: 11 Months

Belinda Hankins Miller
http://www.flickr.com/photos/ninjapoodles/535301561/

Journal Entry 5

I checked on Mr. Darcy first thing this morning and he still looked uncomfortable. He wasn't running around happily, but just stood at the fence swishing his tail and waiting for me to come over. His face looked weird to me. His jaw looked fatter. His nose was still dripping yellow mucus.

Mr. Darcy didn't want to follow me at first when I put the lead rope on him, but eventually he walked with me for a few minutes. His stride seemed less graceful that it usually is and I wondered if he was in pain. Afterward he seemed out of breath even though it was a short walk. His breathing was very noisy and raspy sounding.

I took his temperature and found it to be 103.0ºF. His pulse was 44 and his breathing rate was 20. His eyes and ears looked clear. His coat was dirty and his mane was tangled. I brushed him and cleaned his hooves.

I brought some alfalfa hay to the food trough under the roof in the isolation pasture and checked his water bucket. It looked like Mr. Darcy wasn't eating or drinking much. I think he had gone to the bathroom out in the field. I found where he had gone and didn't see any worms.

I spend an hour patting and talking to Mr. Darcy but he didn't seem very interested in me. He just kept making those strained breathing sounds.

Horse Disease Information Sheet

Colic

Colic refers to any type of abdominal pain, and it can arise for a variety of reasons. Although colic is not technically a disease, it is a dangerous condition that can often turn deadly if untreated. If your horse shows signs of colic, it is important that you talk to your veterinarian immediately.

A horse has small and large intestines that are full of bends called flexures. A horse uses its **cecum** (see-come) to digest roughage to obtain nutrients. The cecum is a large dead-end chamber that connects to the intestinal tract just after the small intestine and before the large intestine. Since a horse does a lot of digesting in the cecum, the horse's stomach is very small. Horses are also physically incapable of vomiting. All of these characteristics make a horse's digestive system very sensitive.

Colic can result from the ingestion of **toxins** (any poisonous substance), twisting in the intestines, a mass of food blocking the intestines, a buildup of gas in the intestines, inflammation of the intestines, overstretching of the stomach, or intestinal **parasites**. Feeding too much grain, too little forage material, changing feed, or changing activity level can contribute to these problems. Symptoms of colic may include

- abnormal behavior such as rolling, kicking (especially at the stomach), lying down more than usual, repeatedly lying down and getting up, lip curling
- standing with the body stretched out
- sweating
- increased heart rate and breathing rate
- reduced digestive sounds
- abnormal bowel activity, constipation

Joint Disease

Joint disease refers to any type of **inflammation** (irritation, swelling, or soreness) of the joints, and it can be caused by a variety of factors. A joint is where two bones come together, usually with a cushion of cartilage in between. Inflammation of a joint can result from overexercising, improper exercising, trauma, infection, defects in the bones or cartilage, or from an inherited disorder. **Degenerative** (dee-jen-er-ah-tive**) joint disease, osteochondrosis** (aus-tee-oh-kohn-dro-sis), and **arthritis** are serious joint disease that actually start to destroy the joint.

A horse's leg joints are most prone to injury because they absorb most of the impact of running. What look like knees on a horse's legs are actually the equivalent of human wrists and ankles, making the horse's lower legs the equivalent of human hands and feet. (This means a horse actually runs on the tips of its fingers and toes!) A horse's front "knee" is called a **carpus,** and the back "knee" is called a **stifle**. When someone talks about a horse's knee, they are most likely referring to the carpus. What look like the horse's ankles are called **fetlocks**. A horse's foot has a **pastern** between the ankle and the hoof. Joint disease can occur in any joint, but you will usually see it in one of joints mentioned above.

Treatment for joint disease often involves stall rest, application of ice packs, pain medication, and anti-inflammatory medication. More serious cases sometimes require surgery. Symptoms of joint disease may include

- swelling around a joint
- stiffness and pain in a joint
- abnormal gait
- joint feels hotter than normal
- decreased performance when exercising
- increased heart rate or breathing rate
- loss of appetite
- depression

Strangles

Strangles is the common name for a type of bacterial infection that causes swelling in a horse's lymph nodes, which are located underneath its jaw. The disease is very contagious, especially in foals. Transmission can occur through discharge from the nose, from burst lymph nodes, or through contaminated water troughs, feed buckets, brushes, or anything shared between horses.

A horse diagnosed with strangles must be isolated and allowed to rest for up to 3 months. A veterinarian may use antibiotics to treat the infection. Your horse may be contagious for up to 8 months after contracting the disease, even if it appears healthy.

Strangles can be prevented with proper vaccination. A vaccine is a very effective method to protect against an infection, but it is not a guarantee that your horse will never get the disease. Symptoms of strangles include

- thin nasal discharge that becomes thick and yellow
- enlarged lymph nodes beneath horse's jaw
- strangled breathing sounds
- high fever
- depression
- lack of appetite

Tying-Up Disease

Tying-up disease is also called **exertional** (egg-zer-shun-ul) **rhabdomyolysis** (rab-doe-my-ol-ih-sis), **azoturia** (a-zoe-tur-ee-ah), and **Monday morning disease**. The term "tying-up" refers to a horse that is unwilling to move. Tying-up disease is characterized by the destruction of muscle cells and severe muscle pain. A horse that has been overexerted may "tie-up" without having any muscle damage, much like you may feel sore if you play a game of soccer after sitting on the couch for a week. Horses that actually tie-up are classified as either "sporadic" or "chronic," depending on whether the condition occurs rarely or frequently, respectively.

Sporadic tying-up can be caused by too much exercise for a horse's fitness level, strenuous exercise while a horse has a respiratory infection, electrolyte imbalance, or hypothermia. Nervous horses appear to be more susceptible to tying-up.

Chronic tying-up can be caused by recurrent exertional rhabdomyolysis. Horses with this condition have an abnormality in their muscles that makes the muscles more sensitive to contraction. Afflicted horses tend to be those with a nervous demeanor. Another cause of chronic tying-up is **polysaccharide** (poly-sack-er-ide) **storage myopathy** (my-op-pathy). Horses with this condition store sugar in an abnormal form of glycogen in their muscles and have greater than normal levels of glycogen in the muscles. Afflicted horses tend to be calm rather than nervous.

Symptoms of tying-up disease may include

- reluctance to move
- muscle stiffness
- stiff gait
- sweating
- painful muscle contractions
- increased heart rate and breathing rate

HEALTH ASSESSMENT CHECKLIST

Horse Name: _____ Breed: _____

Gender: _____ Age: _____

General Symptoms

Is there anything you notice that you should be concerned about?

Journal Entry 1: _____

_____

_____

Journal Entry 2: _____

_____

_____

Journal Entry 3: _____

_____

_____

Journal Entry 4: _____

_____

_____

Journal Entry 5: _____

_____

_____

Suspected Diagnosis: _____

(Use the horse disease information sheet)

Observations

Explain which symptoms from the above journal helped you indicate a problem, and explain why.

_____

_____

_____

What other observations do you think might be important?

_____

_____

_____

Why do you think recording daily observations of your horse would be helpful in monitoring your horse's health?

_____

_____

_____

Your Horse's Health

Subject Overview and Background Information

Youth should use the skills and knowledge acquired from the previous activity to assess their horse's health in this application activity. As important as it is to teach the youth about animal health assessments, it is even more vital for the youth to apply their knowledge in the real world. This application activity allows the youth with animals to evaluate their pets' health and determine the right time to consult a veterinarian. The youth should be in a regular habit of checking their animal's overall health and notice any signs of abnormality.

The best way to assess the health of a horse is through observation. There is no clear-cut definition of normal; normal varies from horse to horse, so abnormal depends on your horse as well. Observing your horse daily is the best way to really get to know it and to be able to identify changes that might be symptoms of disease or injury.

In this activity, youth will fill out the health assessment charts used in the previous activity except that they will make observations on their own horses. In addition, they should write a short journal entry on the back of the chart about what they did with their horse daily. The daily observations should last a minimum of 14 days.

Horses can be difficult animals to handle and take vital measurements from. We suggest developing an inexpensive kit that may help the youth in their observation and measuring process. This kit could include the following:

- **Latex gloves:** for general use every time they examine the horse, especially when they make personal contact with sensitive areas of the horse. Wearing disposable gloves is highly recommended when performing any of these procedures to prevent the spread of disease from human to horse and vice versa.
- **Penlight:** for use when examining the horse's eyes and nostrils. Encourage youth to note anything that looks abnormal in these areas and compare this with observations from previous days.
- **Magnifying glass:** for use when looking at the horse's coat. The youth can look closely at the skin and coat and note any interesting observations.

Checking a horse's vitals is important in order to assess its health. Before checking a horse's vitals, make sure the youth understand how to take each of these measurements.

- **Respiration (breathing) rate:** The average respiration rate of an adult horse is 8 to 15 breaths per minute (foals have higher rates). A horse's respiration rate can change depending on the weather, the amount of exercise it does, and whether it has a fever or is feeling pain. If you notice that your horse's breathing is abnormal or is not quiet while at rest, seek veterinary attention immediately. The respiration rate should never exceed the pulse rate. The time spent inhaling and exhaling should also be equal. To check a horse's respiration rate, watch your horse's ribcage move in and out as it breathes. If it is difficult to see the ribcage clearly, watch the horse's nostrils or place your hand in front of the horse's nostrils. One breath is equivalent to the horse's chest moving in and out once, or one exhalation. Count how many breaths the horse takes in 1 minute; or count the number of breaths it takes in 15 seconds (using a stopwatch or watch with minute hand) and multiply the number by 4 to get the number of breaths in 1 minute.
- **Heart rate:** The average heart rate for an adult horse is about 30 to 40 beats per minute and around 70 to 120 beats per minute for a foal. A horse's heart rate can change if the horse is exited or nervous, in pain, is exercising, or has a disease. If the heart rate is higher at rest than normal, seek veterinary attention immediately. The higher the heart rate, the more severe the condition. A heart rate from 40 to 60 beats per minute for an adult horse is considered serious, and above 80 is considered critical. To take the heart rate of a horse, use your forefinger to find the major artery that sticks out under the front of the horse's left jawbone. Press against the artery firmly and count the number of beats for 15 seconds, then multiply that number by 4 to obtain the horse's heart rate per minute. Or, if you have a stethoscope, listen to the heart on the left side of the chest just below the left elbow. Remember to count each double "lub-dub" as 1 beat.

The penlight and magnifying glass can be used to get a closer look at any part of the horse. Do not flash the light directly in the horse's eyes; rather, pass the light back and forth slowly and steadily across the eyes. **Do not substitute a laser pointer for the light.** The magnifying glass allows youth to take a closer look at the skin and coat, as well as any abnormalities in the ears and mouth.

It is important to let the youth know that they should not make immediate conclusions about their animal's health. Most of them will probably have perfectly healthy horses. We don't want them to get an impression that they are performing analysis to find something wrong with their horses. Emphasize the concept of **health care maintenance** rather than health diagnosis.

Working with animals can get dirty, so appropriate clothing is required (new clothes are not recommended). Make sure the clothes and shoes are comfortable so that youth can move around and work in them. The recommended dress includes

- closed-toed shoes
- long pants
- long-sleeved shirt
- tie for long hair, if necessary
- no free-hanging earrings
- secure glasses

Since working with horses usually means working outdoors, sun protection is recommended, such as sunscreen and a hat and sunglasses. A painter's mask may be needed by those who are asthmatic, sensitive, or allergic to dust and small particles in the air.

Activity Concepts and Vocabulary

- **Health care maintenance:** The regular monitoring of an animal's health.

Life Skills

- **Head**: Keeping records, problem solving, decision making, critical thinking
- **Heart**: Sharing, communication, concern for others, empathy
- **Hands**: Self-motivation
- **Health**: Disease prevention, self responsibility, personal safety

Subject Links

Science and Language Arts

State Content Standards

Science

- Third Grade
  - *Investigation and Experimentation: 5e*
- Fourth Grade
  - *Investigation and Experimentation: 6c*
- Fifth Grade
  - *Investigation and Experimentation: 6h, 6i*
- Sixth Grade
  - *Investigation and Experimentation: 7d*

Language Arts

- Fourth Grade
  - *Listening and Speaking Strategies: 1.7*
- Fifth Grade
  - *Listening and Speaking Strategies: 1.5*
- Sixth Grade
  - *Listening and Speaking Strategies: 1.5*

Purpose of Activity

The purpose of this activity is to have youth record observations of their own horse over a period of time.

ACTIVITY 2
Horse Health Journal

Overview of the Activity

Youth will have the opportunity to assess the health of their horse for a minimum of 14 days. They will make observations of their horse and record what they observed for each day. They will also write a journal entry each day on their horse's activity. During their group meetings, youth will have a chance to share their observations of their animal and discuss any potential diseases or illnesses with their group.

◆ Time Required

Approximately 15 minutes daily for at least 2 weeks

◆ Suggested Grouping

Individual

◆ Materials Needed for Each Individual

*(*Materials provided in curriculum)*

- Flip chart paper
- *Animal health journal
  - *Animal background information sheet*
  - *Animal health daily recording sheet for each day of observation*
- Health assessment kit:
  - *Latex (disposable) gloves*
  - *Penlight*
  - *Magnifying glass*
- Writing tool (pencil, pen, etc)
- Stopwatch or watch with second hand
- Disinfectant
- Stethoscope
- Painter's mask (if sensitive or allergic)
- Tape measure
- Rectal thermometer
- Lubricant

◆ Getting Ready

Each youth is expected to observe their horse for 14 to 28 days. Make an animal health journal for each youth, which consists of an animal background information sheet and one animal health daily recording sheet for each day the youth will observe their horse.

Opening Questions

Ask the youth to respond to each question below by sharing their ideas verbally and/or by recording them on the flip chart paper provided.

1. When you are sick, what observations might your parents make that would lead them to take you to see the doctor?
2. Describe what you might notice about horses that are not feeling well.
3. What kinds of observations about your horse would prompt you to call your veterinarian?
4. Why might keeping a daily journal about you or your horse be helpful to a doctor or veterinarian?

Procedure (Experiencing)

1. Give each individual an animal health journal packet, which includes an animal background information sheet and one animal health daily recording sheet for each day of observation.
2. Review the terms on the checklist and how to properly take the heart rate and respiration rate. Make sure the youth know the proper dress code for working with animals.
3. Explain to the youth that they are to fill out the animal background information sheet. If they have more than one animal, they may choose one to work with for this activity. They may need to work with their parents to answer the background information questions.

4. Youth will also fill out an animal health daily recording sheet every day for the chosen number of days (14 days are recommended). The youth should also include a brief journal entry on the back of the recording sheet, describing what they did with their animal each day.
5. Ask the youth to prepare to share a report with their peers at the next group meeting. Reports should include an oral description on observations along with any potential symptoms of illness. Youth may want to graph heart rates or respiration rates. Youth who have a foal or young horse may want to graph growth. Youth could also create a poster or PowerPoint presentation to share their findings.

Sharing, Processing, and Generalizing

Have each youth share his or her report with the group. Follow the lines of thinking developed through the general thoughts, observations, and questions raised by the youth. If necessary, use more targeted questions as prompts to get to particular points:

1. What are some advantages of keeping a daily health journal for your horse? Were there any challenges? Please explain.
2. Did your horse present any symptoms of concern? If so, what were they, and what did you do?
3. In what ways are graphs of heart rate or respiration rate helpful in assessing your horse's health? What kind of information can you get from a growth chart? Please explain.
4. What similarities, if any, were there between your horse and others' horses? What differences, if any, were there? Please explain.

Concept and Term Discovery/ Introduction

Volunteers need to ensure that the concept of **health care monitoring** has been introduced or discovered by the youth.

- **Note:** The goal is to have the youth develop concepts through their exploration and define terms using their own words.

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Sutor, C. 1997. Vital signs. Equusite Web site, http://www.equusite.com/articles/health/healthVitalSigns.shtml.

Animal Health Journal

ANIMAL BACKGROUND INFORMATION SHEET

Date: _____ Youth's name: _____

Animal's name: _____ Species: _____

Breed: _____ Date of birth or age of animal: _____

Gender (male, female, or unknown/fixed or intact): _____ Has this animal been bred? _____

If yes, how many times? _____ Date of last breeding? _____

Health history: Is this animal on any medications? _____ If yes, please list. _____

_____

Does this animal have current vaccinations? _____

Does this animal have any allergies? _____ If yes, please list. _____

_____

Has this animal had any major illnesses or surgeries? _____ If yes, describe. _____

_____

Date of last veterinary checkup: _____

Environment: Please describe the housing for this animal (indoor/outdoor, with other animals/alone, size of pen or enclosure).

_____

_____

_____

Diet: Please describe the diet and the feeding schedule for this animal. Describe how water is provided (bucket/trough, automatic waterer, etc.)

_____

_____

_____

ANIMAL HEALTH DAILY RECORDING SHEET

Date: _____ Time: _____

Animal name: _____

MEASUREMENTS

Heart rate: _____ Respiration (breathing) rate: _____

OBSERVATIONS

Behavior: _____

_____

Activity level: _____

_____

Appetite: _____

_____

Body condition: _____

_____

Posture and gait: _____

_____

Skin, coat, and hooves: _____

_____

Eyes: _____

Ears: _____

Nose: _____

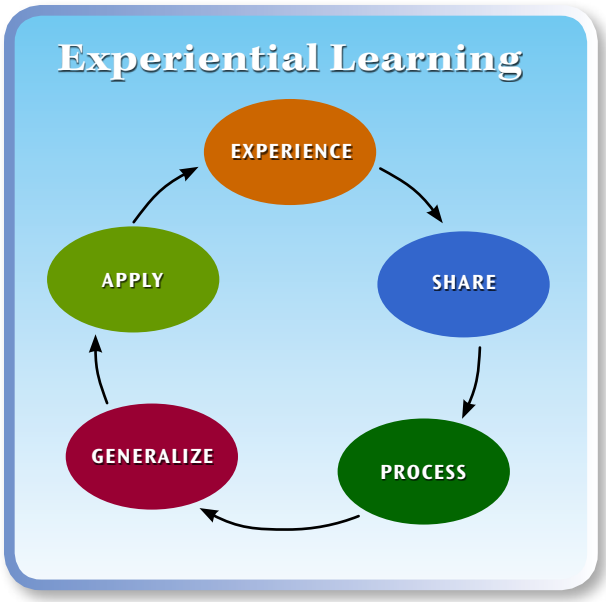
Body waste: _____

Other: _____

_____

APPENDIX

The activities in this curriculum are designed around inquiry and experiential learning. Inquiry is a learner-centered approach in which individuals are problem solvers investigating questions through active engagement, observing and manipulating objects and phenomena, and acquiring or discovering knowledge. Experiential learning (EL) is a foundational educational strategy used in 4-H. In it, the learner has an experience phase of engagement in an activity, a reflection phase in which observations and reactions are shared and discussed, and an application phase in which new knowledge and skills are applied to a real-life setting. In 4-H, an EL model that uses a 5-step learning cycle is most commonly used. These five steps—Exploration, Sharing, Processing, Generalizing, and Application—are part of a recurring process that helps build learner understanding over time.



For more information on inquiry, EL and the 5-step learning cycle, please visit the University of California's Science, Technology, Environmental Literacy Workgroup's Experiential Learning Web site, http://www.experientiallearning.ucdavis.edu/default.shtml.

For Further Information

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YOUTH DEVELOPMENT THROUGH VETERINARY SCIENCE 11

Is Your Snake Sick?

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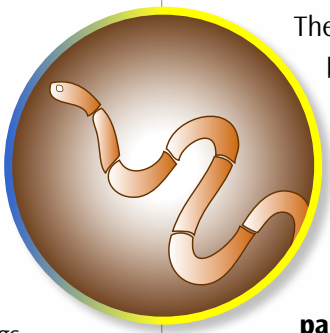
Subject Overview and Background Information

Snakes belong to the group of animals called reptiles, which also includes crocodiles, lizards, and turtles. There are about 2,400 species of snakes in the world. Snakes can survive in a wide variety of habitats, including land, trees, underground, freshwater, and salt water.

Snakes are considered **cold-blooded,** or **ectothermic,** because they cannot control their own body temperature. Rather, they rely on the surrounding environment to maintain a steady body temperature. They can raise their temperature by lying in the sun or lower their temperature by crawling into the shade.



Snakes have long, thin bodies that are covered in dry scales. Since snakes do not have legs, they move by sliding on their bellies. Snakes have very elastic skin, allowing them to move easily and swallow their prey (big or small) whole. Their eyes are protected by clear scales, allowing them to keep them constantly open. They flick their forked tongue repeatedly to sense different odors in their environment.

If you are considering getting a snake for a pet, it is important to know the original source of the snake. Snakes should be obtained from a reputable breeder. It is illegal to catch snakes from the wild. Adult wild-caught snakes don't make good pets because they are hard to tame and may have diseases. Talk to a **herpetologist** (a reptile specialist) or read books on breeds of snakes to pick one that best suits your interests and lifestyle. Carefully examine the snake before purchasing it. Make sure the skin is smooth and clear. The eyes should be bright and alert and free from crust or **mucous**. The **vent** (external opening near the snake's tail) should be clear from any discharge. If housed with other snakes, check for any signs of **external parasites**. If possible, collect and send newly-deposited feces to your **veterinarian** for analysis before purchasing the snake; your veterinarian can let you know whether the snake is free from any **internal parasites**. If you have other snakes, always quarantine a new snake before introducing it to other snakes to prevent the spread of parasites or diseases.

Snakes can make good pets, but before getting a snake, it is important to know their needs and behavior. If you are knowledgeable about snakes before you obtain one as a pet, you will be better able to provide them with the proper diet, environment, and care.

Snakes require plenty of freshwater at all times. They drink the water, but more importantly they soak their entire

body in water to help with the shedding process. If there isn't enough water available, it can cause **skin shed retention**. Therefore, it is important to have a water dish or container that is big enough to fit the entire snake without tipping over.

You can help keep a snake nourished and healthy by establishing an appropriate feeding routine and maintaining a proper body weight. You will need to research your particular species of snake to know what and how often to feed it. In the wild, snakes get plenty of exercise while collecting their food, and at times, they can go a few days without catching any food. However, in captivity, since snakes don't have to catch their food, obesity can become a problem, especially when fed too often.

Having a heating pad under your snake's tank is essential for proper digestion of food and to prevent diseases. If your snake gets too cold, it can get an **upper respiratory infection**, which is like a cold. A snake's immune system can weaken if it is housed improperly or is neglected, stressed, or malnourished. This can increase the chance of a snake getting diseases. For example, if a snake gets a cut in its mouth and gets **bacteria** in it, the snake can develop **ulcerative stomatitis (mouth rot)** if its immune system isn't strong enough. Therefore, it is important to clean the cage regularly and minimize any stress the snake may encounter.

Certain veterinarians specialize in taking care of snakes and other reptiles, so before purchasing a snake, find a local reptile veterinarian and schedule a visit soon after you purchase the snake.

◆ Activity Concepts and Vocabulary

- **Bacterial infection**: A disease caused by germs called bacteria.
- **Bacterium (bak-teer-ee-um)**: An organism that cannot be seen with a naked eye. Some bacteria (germs) can cause diseases. Pneumonia, a disease that affects animals' lungs, can be caused by a bacterium.
- **Cold-blooded animal, or ectotherm (ek-tuh-thurm)**: An animal that relies on the heat (e.g., sunlight) in the surrounding environment to maintain and regulate its body temperature.
- **Inflammation (in-fluh-may-shuh n)**: A local reaction of a tissue to irritation that causes pain and swelling.
- **Parasite (par-uh-site)**: An organism (e.g., bacterium, worm, tick) that receives food and energy from another. A common parasite that affects animals is tapeworm.
- **Veterinarian (vet-er-uh-nair-ee-uh n)**: A doctor who takes care of animals.
- **Virus**: A type of germ that causes diseases. Rabies is a disease caused by a virus.
- **Zoonotic diseases (zoe-eh-notick)**: Any disease that affects an animal that can also be passed to humans.

◆ Life Skills

- **Head**: Keeping records, planning and organizing, critical thinking, problem solving, decision making
- **Heart**: Concern for others, communication, sharing, empathy
- **Hands**: Teamwork, self-motivation
- **Health**: Disease prevention, self-responsibility, personal safety

◆ Subject Links

Science and Language Arts

◆ State Content Standards

Science

- Third Grade
  - *Investigation and Experimentation: 5e*
- Fourth Grade
  - *Investigation and Experimentation: 6c*
- Fifth Grade
  - *Investigation and Experimentation: 6h, 6i*
- Sixth Grade
  - *Investigation and Experimentation: 7d*

Language Arts

- Third Grade
  - *Reading Comprehension: 2.2, 2.6*
- Fourth Grade
  - *Reading Comprehension: 2.3*
  - *Listening and Speaking Strategies: 1.7*
- Fifth Grade
  - *Reading Comprehension: 2.3, 2.4*
  - *Listening and Speaking Strategies: 1.5*
- Sixth Grade
  - *Listening and Speaking Strategies: 1.5*
  - *Speaking Applications: 2.5b*

◆ Purpose of Activities

To help youth learn about the proper maintenance and care of snakes. Youth will also investigate the causes and symptoms of several snake diseases.

ACTIVITY 1

Monitoring Snake Health Day by Day

Overview of the activity

The main goal of this activity is for youth to learn to make good physical and behavioral observations of snakes by reading and analyzing descriptive journal entries. Youth will then use these observations to make inferences regarding the health of their snake.

◆ Time Required

Approximately 90 minutes

◆ Suggested Grouping

Pairs or small groups of 3 to 4

◆ Materials Needed for Each Pair or Group

*(*Materials provided in curriculum)*

- Writing utensils
- Flip chart paper (one piece per group)
- *Health assessment journals
- *Snake disease information sheet
- *Health assessment checklist

◆ Getting Ready

- Photocopy enough health assessment journals, snake disease information sheets, and health assessment checklists for the groups.

Opening Questions

Ask the youth to respond to each question below by sharing their ideas verbally and/or by recording them on the flip chart paper provided.

- What are some ways you can tell when you are sick? Ask the youth to record their ideas verbally and/or record on the flip chart paper provided.

1. What signs might your parents, teacher, friends, or doctor use to recognize that you are sick?
2. What are some things you can do to avoid becoming sick?
3. If your animal is sick, what are some changes you might notice about him or her?
4. What are some of the responsibilities you have to keep your pet or project animal healthy?

Procedure (Experiencing)

- **Volunteer Tip:** Set up the following scenario for the youth: The youth in each group will be playing the role of a snake owner. Each group will receive one of the health assessment journals, one day at a time. As a group, the youth will go through the journal entry of each specific day and record important facts onto the health assessment checklist they have been given. At the end, using the checklists they have made, they will compare their findings with the snake disease information and draw a conclusion regarding what disease, if any, their snake has.

1. Give each group of snake owners Journal Entry 1 from their health assessment journals. The group should read the entry and record important findings on their health assessment checklist.
2. When the groups have completed Journal Entry 1, take away that journal entry and give them Journal Entry 2. Have them read the entry and record important findings on their checklist.
3. Continue this pattern for the remaining days until each journal entry has been assessed.
4. When the group is done with the last day, remove this entry and pass out the snake disease information sheet. Have the groups review the data that they recorded on their health assessment checklist and record their diagnosis of their snake's symptoms along with the reasons why they chose that diagnosis.

Sharing, Processing, and Generalizing

Have each group share their diagnosis and indicate which parts of their checklist helped them make that

determination. Follow the lines of thinking developed through the general thoughts, observations, and questions raised by the youth. If necessary, use more targeted questions as prompts to get to particular points, such the following. Ask the youth to respond to each question below by sharing their ideas verbally and/or by recording them on the flip chart paper provided.

1. What might be some advantages to keeping a daily health assessment journal for your snake?
2. What are some examples of the symptoms you used to tell you when to be concerned with your snake's health?
3. What do you think might happen if you ignored those symptoms and didn't seek veterinary care for your snake?
4. Check the groups' diagnosis of their snake with the answer key. If there are any discrepancies, have the youth discuss what lead them to their conclusion.

Snake Disease Diagnosis Key

- Rory: upper respiratory disease
- Lefty: skin shed retention
- Racer: normal
- Rosetta: external parasites (mites)
- Freddie: internal parasites
- Leroy: ulcerative stomatitis

Concept and Term Introduction

Volunteers need to ensure that the concepts and terms **bacterium, cold-blooded (ectotherm)**, **inflammation, parasite, veterinarian, virus, and zoonotic diseases** have been introduced.

- **Note:** The goal is to have the youth develop these concepts through their exploration and define the terms using their own words.

Concept Application

An application for these skills is presented in Activity 2 of this unit. Youth who own a snake may apply Activity 2 to their own pet, while youth who do not own a snake may seek permission from a friend or family member to use their snake in this exercise.

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HEALTH ASSESSMENT JOURNALS

Journal 1

Snake name: Rory
Species: Ball python
Gender: unknown
Age: 2 years

Dave Parker
http://www.flickr.com/photos/daveparker/2393855533/

Journal Entry 1

Today, I took a quick look at Rory before I took her out to show her to some friends. She looked alert. When I took her out, she was roaming around on my bed, trying to find dark places to hide like she usually does. I checked her cage (it was clean with no feces), the temperature was 90ºF in the basking spot, and the humidity was at 90%. I changed her water bowl because there was some bedding in it. When I looked at her, her body was muscular, with her scales looking shiny and healthy. She was slithering around with little effort, and her eyes and tongue were alert to her surroundings. Her nose looked clear and clean. My friends all took turns holding her and petting her and then I put her back into the cage.

Journal 1

Snake name: Rory
Species: Ball python
Gender: unknown
Age: 2 years

Dave Parker
http://www.flickr.com/photos/daveparker/2393855533/

Journal Entry 2

I stayed home from school today because I had a fever and a cold. I checked Rory's feeding journal this morning and I saw she was slightly overdue (I usually feed her every other week). Before I took her out, I checked her behavior. She was sitting in her hiding spot curled up over the heat pad; when I checked the temperature, I saw that the basking temperature was down to 78ºF but the humidity was still at 90%. I placed her in her plastic feeding box, thawed a rat, placed it in the box, and covered it with a blanket. While I waited, I cleaned her cage (she had some normal poop) and changed her water. After an hour, I checked on her and saw that she hadn't eaten yet. I decided to wait another hour and when I checked on her again, she still hadn't eaten. I took her out and put her back into her cage, throwing away the rat. When I was holding her, I saw her scales were shiny and she was very strong. Her eyes were bright, and her nose looked clean. I wonder why she didn't eat because she looks fine. She has been pretty good up until now.

Journal 1

Snake name: Rory
Species: Ball python
Gender: unknown
Age: 2 years

Dave Parker
http://www.flickr.com/photos/daveparker/2393855533/

Journal Entry 3

When I checked the basking temperature in the cage, it was still at 78ºF; I noticed that the heat pad had become unplugged, so I plugged it back in. Rory looked OK in the cage, curled up in her hiding spot. When I took her out, she didn't seem to explore my bed as much as she usually does, but she was still poking around. Her eyes looked bright and her scales were a beautiful, shiny black and brown. While I was watching her in my bed, I heard this faint wheezing sound. It sounded funny, because I knew it wasn't a hiss, and she wasn't mad at anything. When I put my ear up to her nose, I thought I could hear something, but I wasn't sure; maybe it was the sound of air coming in the house. I changed her water and checked her cage, but it was clean. I listened to her for a while, but she didn't make the sound again, so I put her back and closed the cage.

Journal 1

Snake name: Rory
Species: Ball python
Gender: unknown
Age: 2 years

Dave Parker
http://www.flickr.com/photos/daveparker/2393855533/

Journal Entry 4

The temperature was at 90ºF and the humidity was at 90%. Rory was curled up in the hiding spot. When I took her out, I felt her smooth scales and muscular body. I decided to try feeding her again. I thawed a rat and put it in the feeding box. I then put Rory in the box and covered it with a blanket. I checked her cage (it was clean) and changed the water. My little brother and his friends were running through the house and making a lot of noise. I was afraid that all the activity might be stressful for Rory so I checked on her and I saw that she hadn't eaten yet. I left her for another hour, but she still didn't eat. Her eyes looked bright, and her nose was clean. She moved around the feeding box with ease, smelling every nook and cranny.

Journal 1

Snake name: Rory
Species: Ball python
Gender: unknown
Age: 2 years

Dave Parker
http://www.flickr.com/photos/daveparker/2393855533/

Journal Entry 5

The temperature was 90ºF and humidity was 90%; Rory didn't look too happy in her hiding box. She seemed sluggish when I took her out, not gripping hard to my hand like usual; her scales were still shiny, though. She made the wheezing sound when I placed her on the bed. When I put my face next to her nose, there was a slight wheezing sound. She had some small crust on her nose, like mucous. She wasn't very active because she didn't explore my bed like she usually does. Her eyes looked normal and bright, and her cage was clean of poop. I changed her water, and decided to put her back after noticing that she didn't want to move at all.

Journal 2

Snake name: Lefty
Species: Corn snake
Gender: unknown
Age: 9 months

Neil Lawler
http://www.flickr.com/photos/wheels3217/1859020178/

Journal Entry 1

The cage temperature was 79ºF. Today, I took Lefty out to hold him. He was moving around and smelling the air with his tongue. He kept trying to get into my sweater pocket, where he usually sits; he kept curling around my arm and holding on strongly. His scales were smooth and clean. His eyes and nose were clean and looking normal. I cleaned the normal poop I found in his cage. I also changed his water, which had some bedding floating in it. After I had been playing with him for about an hour, I realized that it was only 60ºF in my room because the window was open. I don't know if Lefty felt cold or not, but I put him back in his cage. I also realized that I need to feed him soon because when I checked my feeding log, it has almost been a week since he last ate.

Journal 2

Snake name: Lefty
Species: Corn snake
Gender: unknown
Age: 9 months

Neil Lawler
http://www.flickr.com/photos/wheels3217/1859020178/

Journal Entry 2

I decided to feed Lefty today. Before taking him out, I saw that the temperature was at 79ºF. Lefty was sitting in the water bowl; I took him out of his cage. I had already thawed a small mouse and had placed it into the bag, so I just put Lefty in the bag. I closed the top and put a paper clip over it. When I was checking his cage, it was clean. The water needed to be changed again because there was more bedding floating in it. After waiting 30 minutes for Lefty to eat, I checked on him. The mouse was still there, and Lefty was curled up in the corner away from the mouse. I did a full body check on him, noticing his smooth, clean scales and his clean eyes and nose. I put Lefty back into his cage and threw the mouse away.

Journal 2

Snake name: Lefty
Species: Corn snake
Gender: unknown
Age: 9 months

Neil Lawler
http://www.flickr.com/photos/wheels3217/1859020178/

Journal Entry 3

The cage temperature was the same as it was the other day; Lefty was curled up in his hiding box. When I went to take him out, I saw that his eyes were cloudy, or they were a lighter color. He wasn't in the water bowl, so I gave him fresh water. Lefty's cage had a little piece of poop; I spot-cleaned that out and put in some clean bedding in its place. He poked his head out of the hiding box and flicked his tongue, but he didn't slither out to see me like he often does. I didn't take him out because he looked comfortable curled up in his hideaway cave over his heating pad. His scales looked smooth and pretty; his nose was clean, too.

Journal 2

Snake name: Lefty
Species: Corn snake
Gender: unknown
Age: 9 months

Neil Lawler
http://www.flickr.com/photos/wheels3217/1859020178/

Journal Entry 4

The cage temperature was about 80ºF. Lefty's eyes looked different than they did yesterday. Today, they were clear instead of cloudy. His nose and scales were clean, too, and he was slithering around my bed. His water had bedding in it again, so I changed it. He was smelling my bed, trying to look for places to hide. I had him out for an hour, walking around the house with him. I even took him outside for a little while to get some fresh air. While we were outside, I collected some rocks and plants and put them into his cage to give him some interesting things to explore.

Journal 2

Snake name: Lefty
Species: Corn snake
Gender: unknown
Age: 9 months

Neil Lawler
http://www.flickr.com/photos/wheels3217/1859020178/

Journal Entry 5

The cage temperature was normal; however, Lefty didn't look well. His entire body was cloudy, like his eyes were the other day. He was just sitting in the water bowl. His nose was clean otherwise, and when I saw him leaving the water bowl, he moved easily. I thought maybe he was hungry so I gave him a mouse, but he did not seem interested in eating. He just sat in his water bowl and was very still. I removed the new rocks and plants from his cage in case they were bothering him.

Journal 2

Snake name: Lefty
Species: Corn snake
Gender: unknown
Age: 9 months

Neil Lawler
http://www.flickr.com/photos/wheels3217/1859020178/

Journal Entry 6

Today, there were small pieces of skin in Lefty's cage, and his water bowl had skin and bedding in it. One eye was clear and bright, but the other one was still cloudy. He was smelling and moving around as usual, and his scales looked brand new. The cage temperature was 79ºF, and his cage was clean of poop.

Journal 3

Name: Racer
Species: California kingsnake
Gender: Male
Age: unknown

Vlad Butsky
http://www.flickr.com/photos/butsky/332168233/

Journal Entry 1

Racer was moving around his cage as usual. The temperature at the basking side of the cage was 85ºF, and there were no signs of poop. I opened the lid and pulled him out. He resisted a little by latching onto his hiding spot, so I knew that he was healthy muscle-wise. He skin was very smooth, the whites contrasting the blacks perfectly. His eyes were alert, and he had a clean nose. I played with him for a while, walking him around the house. I put him on the couch and he quickly slithered away and got under the cushions. I had to remove all of the cushions from the couch in order to catch him again. He is very, very quick! I changed his water before I put him back in his cage.

Journal 3

Name: Racer
Species: California kingsnake
Gender: Male
Age: unknown

Vlad Butsky
http://www.flickr.com/photos/butsky/332168233/

Journal Entry 2

When I checked on Racer, he was very active. He was smelling all around his cage, and trying to get out. When I went to take off the lid, he was almost out of the cage before I put it on the ground. He's so fast! He didn't want to come off the cage, so I had to battle with him for a while. He's very strong and determined to do what he wants. His scales were perfect, except for the ones I bent a little taking him off the cage. He was interested in everything, his eyes bright and attentive. There was some poop in his tank, which I spot-cleaned; I also changed his water. When I looked at the basking spot temperature, I saw that it was at 80ºF. His nose had some marks on it. I tried to feed him, but he wasn't interested in the thawed mouse. He just wanted to race around!

Journal 3

Name: Racer
Species: California kingsnake
Gender: Male
Age: unknown

Vlad Butsky
http://www.flickr.com/photos/butsky/332168233/

Journal Entry 3

Racer wasn't interested in a lot today; he just wanted to sit in his hiding spot. The bulb in his heat lamp burnt out overnight, so the basking temperature was down to 77ºF. I turned the heat up in his heat pad slightly to try to bring up the temperature. I will have to go and get a new bulb today. I took Racer out of the cage and let him explore on my bed. He didn't move around much. He slithered under the pillow and just stayed there. When I checked his scales, they were cold, but smooth. His eyes were bright, and his nose was clean. There was no poop in his cage, and his water needed changing (there was bedding in it, more so than before). I wanted him to move around more, but he was being boring. I decided to put him back.

Journal 3

Name: Racer
Species: California kingsnake
Gender: Male
Age: unknown

Vlad Butsky
http://www.flickr.com/photos/butsky/332168233/

Journal Entry 4

I saw that the basking temperature was at 82ºF, and Racer was moving around the cage again. He had something on his nose, which I was able to clean off with a soft towel. His scales were smooth and clean, with some bent on his belly. His eyes were bright and attentive, his tongue flicking in and out, smelling the air. I tried to feed him again, and he ate the mouse readily. He finished it quickly and it seemed like he was looking for more, but I didn't give him another mouse. I put him back in his cage after he ate, giving him time to digest the mouse.

Journal 3

Name: Racer
Species: California kingsnake
Gender: Male
Age: unknown

Vlad Butsky
http://www.flickr.com/photos/butsky/332168233/

Journal Entry 5

I left Racer in the cage because he had eaten recently; I could still faintly see the mouse lump in his stomach. The basking temperature was at 85ºF. He must have been playing in his water dish, because there was water spilled all over his cage. I had to remove all of the bedding because it was wet and replace it with new bedding. His cage smelled pretty bad. His eyes and nose were clean and clear. He didn't move too much because he was letting his mouse digest while he was on the heating pad.

Journal 4

Snake name: Rosetta
Species: Rosy boa
Gender: unknown
Age: unknown

Tonio H.
http://www.flickr.com/photos/tonios-pics/378847467/

Journal Entry 1

Today, I took a quick look at Rosetta before I took her out to show her to some friends. She looked beautiful! I just got her from a breeder two days ago, and she looks really great. The guy said she ate every week and that she was a nice snake (meaning she didn't bite at all). I checked her cage (it was clean with no poop), the temperature was 90ºF in the basking spot, and the humidity was at 50%. There was bedding in her water bowl, so I changed it. When I looked at her, her body was muscular, with her scales looking shiny and complete. She was slithering around with little effort, and her eyes and tongue were alert to her surroundings. Her nose looked clear and clean. I let all of my friends hold her, but I didn't want to make her stressed so I put her back into the cage after playing with her a while.

Journal 4

Snake name: Rosetta
Species: Rosy boa
Gender: unknown
Age: unknown

Tonio H.
http://www.flickr.com/photos/tonios-pics/378847467/

Journal Entry 2

I couldn't feed Rosetta yet because I had just got her. I wanted to, just so I could see it for the first time! Before I took her out, I checked how she was acting. She was sitting in her hiding spot curled up over the heat pad; when I checked the temperature, I saw that the basking temperature was at 90ºF and the humidity was 50%. I cleaned her cage (she had some normal poop) and changed her water. When I picked her up and held her, I saw her scales were shiny and she was very strong. Her eyes were bright, and her nose looked clean. I thought I saw something on her eye, but I didn't think it was anything because when I blew on it, it went away. While she was out of the cage I added some pea gravel so she would have a new place to explore.

Journal 4

Snake name: Rosetta
Species: Rosy boa
Gender: unknown
Age: unknown

Tonio H.
http://www.flickr.com/photos/tonios-pics/378847467/

Journal Entry 3

Rosetta wanted to be fed today! She was looking pretty hungry when I came home from the pet store; she got really alert when I came up to the cage. Must be the mouse smell I have from the pet store! Luckily, I had gotten one frozen mouse just in case she was ready. While I was thawing the mouse, I checked on her. Her eyes looked bright, and her scales were a beautiful, shiny red and cream. The cage was at her normal 90ºF, with 50% humidity. When the mouse was thawed, I placed her in her plastic feeding box. I then placed the mouse in the box, and covered it with a blanket. Within one hour, she had eaten the mouse! I recorded the date that she ate in the food journal, and put her back into her cage. When I went to clean out her feeding box, I saw some black things in it. It was mouse poop; I just threw them away, not wanting to touch them.

Journal 4

Snake name: Rosetta
Species: Rosy boa
Gender: unknown
Age: unknown

Tonio H.
http://www.flickr.com/photos/tonios-pics/378847467/

Journal Entry 4

Rosetta was curled up in the hiding spot. The temperature was at 90ºF and the humidity was at 50%. When I took her out, I felt her smooth scales and muscular body. Her eyes looked bright, and her nose was clean. Looking at her belly, I thought I saw some black speckles on it. I thought it might be some dust from the new gravel. While I was cleaning her bedding I noticed that it had some black specks in it too. I decided to remove the gravel from her cage and wash it.

Journal 4

Snake name: Rosetta
Species: Rosy boa
Gender: unknown
Age: unknown

Tonio H.
http://www.flickr.com/photos/tonios-pics/378847467/

Journal Entry 5

The temperature was 90ºF and humidity was 50%; Rosetta looked happy in her hiding box. At first I didn't want to take her out; I decided I wanted to because I had my cousin coming over to see her. I wanted to show her off to everyone, my new pet! Her eyes and nose looked clear, except there were some black dots on her. When I looked at her belly, there were more black dots on it than before. She didn't seem to care they were there. When I put her away, there were black crawly things on my hands! I tried to squish them, but it was hard. I washed my hands, and they went away down the drain. I wiped Rosetta off with a soft towel and more of the black crawly specks came off of her. It seemed like there were more and more of them.

Journal 5

Snake name: Freddie
Species: Boa constrictor
Gender: male
Age: 2 years

James Emery
http://www.flickr.com/photos/emeryjl/1695140816/

Journal Entry 1

The cage temperature was at a comfortable 90ºF in the basking spot, and the humidity was at 90%. Today I took Freddie out to hold him. He was moving around and smelling the air with his tongue. He was interested in my dog, who came up and smelled him. Freddie stopped for a moment, just smelling. Then when the dog went away, Freddie continued smelling around. He kept curling around my arm and holding on. His scales were smooth and clean, with a shiny black and brown coloring. His eyes and nose were clean and looking normal. I cleaned the normal poop I found in his cage. I also changed his water, which had some bedding floating in it. I need to feed him soon because when I checked my feeding log, it has almost been a week.

Journal 5

Snake name: Freddie
Species: Boa constrictor
Gender: male
Age: 2 years

James Emery
http://www.flickr.com/photos/emeryjl/1695140816/

Journal Entry 2

It was feeding day for Freddie. Before I took him out, I checked his behavior. He was sitting in his hiding spot curled up over the heat pad; when I checked the temperature, I saw that the basking temperature was 90ºF and the humidity was at 90%. I placed him in his plastic feeding box, thawed a rat, placed it in the box, and covered it with a blanket. His cage smelled really bad, so while I waited, I cleaned his cage and changed his water. After an hour, I checked on him and saw that he had eaten. When I was holding him, I saw his scales were shiny and he was very strong. His eyes were bright, and his nose looked clean. I'm glad he ate, because he had been in hibernation the past couple months and hadn't eaten, so he was a little skinny.

Journal 5

Snake name: Freddie
Species: Boa constrictor
Gender: male
Age: 2 years

James Emery
http://www.flickr.com/photos/emeryjl/1695140816/

Journal Entry 3

When I checked the basking temperature in the cage, it was at 90ºF and the humidity was at 90%; Freddie looked OK in the cage, curled up in his hiding spot. Because he had eaten, I decided not to take him out for the next couple of days. He still had the bulge in his belly, so I just observed him from outside the cage. I saw that his water was dirty with bedding and poop, so I changed it. His cage seemed to smell bad, but after I changed the water it didn't smell at all. His eyes and nose looked clean, and his scales were perfect, except for the stretched out bulge. I'm glad he ate, he was looking skinny!

Journal 5

Snake name: Freddie
Species: Boa constrictor
Gender: male
Age: 2 years

James Emery
http://www.flickr.com/photos/emeryjl/1695140816/

Journal Entry 4

The temperature was at 90ºF and the humidity was at 90%. Freddie was curled up in the hiding spot. I didn't want to take him out yet because he was still digesting his bulge of rat. His eyes looked bright, and his nose was clean. I watched him for a while as he looked around the cage. His water had poop in it, and so did his cage. It smelled awful, so I changed the water, thinking that was what smelled bad. When the smell still didn't go away, I had to clean the cage. I can't believe he made this much of a mess! I took out all the bedding and replaced it with new bedding. I also added some new rocks and a piece of driftwood that I got at the pet store so he could have some new things to explore.

Journal 5

Snake name: Freddie
Species: Boa constrictor
Gender: male
Age: 2 years

James Emery
http://www.flickr.com/photos/emeryjl/1695140816/

Journal Entry 5

The temperature was 90ºF and humidity was 90%; Freddie was moving around his cage again, meaning his rat was digested. He was slithering on the new rocks I had given him. I was disappointed because he still looked skinny, even though I made sure to pick out an extra-fat rat. He had smelly poop in his cage and water bowl, which I changed quickly. When I saw the poop in the water bowl, it looked like it had white spots in it. They weren't the usual-looking poops snakes have; they were small and oblong, looking like pieces of small rice. I threw it away as soon as possible, because it smelled pretty bad. When I took him out, he was alert, and his nose and eyes were clean; he was holding on pretty strong, but his spine stuck out more than usual. Maybe I need to feed him again.

Journal 6

Name: Leroy
Species: Red tail boa
Gender: unknown
Age: 3 years

Tonio H.
http://www.flickr.com/photos/tonios-pics/378847467/

Journal Entry 1

Leroy was moving around his cage as usual. The temperature at the basking side of the cage was 85ºF, and there were no signs of poop. I opened the lid and pulled him out. He resisted a little by latching onto his hiding spot, so I knew that he was healthy because he held on strong. His skin was very smooth, the brown and black contrasting with the red perfectly. His eyes were alert, and he had a clean nose. I held with him for a while, walking him around the house to show my family. Then I took him outside and let him play in the grass for a little while. I changed his water before I put him back.

Journal 6

Name: Leroy
Species: Red tail boa
Gender: unknown
Age: 3 years

Tonio H.
http://www.flickr.com/photos/tonios-pics/378847467/

Journal Entry 2

When I checked on Leroy, he was very active. He was smelling all around his cage and trying to get out. He's very strong and was determined to do what he wants. His scales were perfect. He was interested in everything, and his eyes were bright and attentive. There was some poop in his tank, which I spot-cleaned; I also changed his water. When I looked at the basking spot temperature, I saw that it was at 80ºF. His nose had some marks on it. I tried to feed him, but he wasn't interested in the thawed rat. It was a little cooler out today, so I only took him outside for about 15 minutes. He slithered around in the grass and almost escaped into the wood pile, but I caught him in time.

Journal 6

Name: Leroy
Species: Red tail boa
Gender: unknown
Age: 3 years

Tonio H.
http://www.flickr.com/photos/tonios-pics/378847467/

Journal Entry 3

Leroy wasn't interested in a lot today; he just wanted to sit in his hiding spot. When I looked at the basking temperature, I saw that it was down to ~~77°F~~. I turned the heat up slightly and took him out. He was lazier than usual; when I checked his scales, I noticed that they were mostly smooth except for a few bumps on his belly. His eyes were bright, and his nose was clean. There were no poop in his cage, and his water needed changing (there was bedding in it, more so than before). I wanted him to move around more, but he was being boring. Even though it was cold out, I took him outside for a few minutes because I thought that might cheer him up. I didn't put him down on the ground, though because I didn't want him to try to escape again.

Journal 6

Name: Leroy
Species: Red tail boa
Gender: unknown
Age: 3 years

Tonio H.
http://www.flickr.com/photos/tonios-pics/378847467/

Journal Entry 4

I saw that the basking temperature was at 82ºF, and Leroy was moving around the cage again. It looked like he had something on his nose, but when I took him out to inspect it, it seemed more like something in his mouth. It was like he was a kid hiding a piece of candy in his mouth, and I thought maybe it was a piece of bedding. When he rubbed the side of his head against the cage, it went away. There seemed to be some liquid on his mouth too, like he had just put his face in the water. His scales were smooth and clean, with some small bumps on his belly. His eyes were bright and attentive, his tongue flicking in and out, smelling the air. I tried to feed him again, but he didn't eat. I took him outside and let him play in the grass. The day was pretty warm and he seemed to enjoy being outdoors.

Journal 6

Name: Leroy
Species: Red tail boa
Gender: unknown
Age: 3 years

Tonio H.
http://www.flickr.com/photos/tonios-pics/378847467/

Journal Entry 5

The basking temperature was at 85ºF. I changed Leroy's water (there was bedding in it). His cage was pretty dirty because I hadn't done a full cleaning in a few days. I gave him new bedding and cleaned the poop from the glass and rocks. His eyes and nose were clean and clear. When I looked at his mouth, it seemed like he was hiding a piece of candy again. This time, when he rubbed his head against the cage, some white stuff came out. I thought maybe he had picked up something when we were outside, but I couldn't think of what it might be.

Snake Disease Information Sheet

Skin shed retention

Snakes shed their skin often. The frequency of shedding usually depends on how fast they are growing. To prevent skin shed retention, make sure your snake has plenty of water and has the proper amount of humidity recommended for your particular type of snake.

If your snake hasn't had enough water or doesn't have a structure to rub against, the shedding process will be incomplete and pieces of old skin will be left on the body. Some sources recommend placing your snake in warm water for about 30 minutes and gently placing a towel over the snake to allow it to rub off the remaining skin. If the snake is unable to rub off the remaining skin by itself, bring your snake to a certified reptile veterinarian for treatment.

If the eyepiece does not shed, the snake will have a film on its eyes. This is called a **retained eye cap**. If skin shed retention does occur, don't try to remove the retained eye cap yourself. If you try to pull the skin off, it can be painful for the snake. The removal of the retained eye cap should be done by a veterinarian. Symptoms of skin shed retention may include

- pieces of shed skin in the cage
- pieces of skin still attached to underlying skin
- filmy eyes

Ulcerative Stomatitis (mouth rot)

Ulcerative stomatitis (ul-ser-a-tive sto-mah-tie-tiss) is a bacterial infection of the lining of a snake's mouth. This disease attacks snakes that are weak from stress, hunger, or neglect. This disease progresses in stages, with the first stage being increased salivation. Then, the mouth lining starts to bleed and produce pus, eventually becoming inflamed. In severe cases, teeth may fall out and the lower jaw bone may decay. The same infection may also cause small blisters and discoloration of the snake's scales. Mouth rot is highly infectious, so if you see signs of it immediately separate that snake from your other snakes and make sure that you wash your hands after each handling.

There are many effective treatments for mouth rot, but if left untreated this disease will almost always cause quick death. If you believe one of your snakes has mouth rot, take it to the reptile veterinarian immediately. Symptoms of ulcerative stomatitis may include

- increased salivation
- loss of appetite (not eating on schedule)
- pale or red color at mouth lining
- bleeding gums
- cheesy discharge from the mouth
- inflammation and pus within the mouth
- small skin blisters and discoloration of the scales

Respiratory infection

When their habitat is not kept at the correct temperature, snakes can catch colds, or respiratory infections. Snakes can also get respiratory infections due to unsanitary housing conditions, viral infections, or mouth rot (ulcerative stomatitis).

Symptoms of respiratory infections in snakes include runny noses and loud breathing because their windpipes are clogged. Open-mouthed breathing, coughing, and wheezing can also be observed. Respiratory infections are very contagious, so make sure you separate that snake from your other snakes. Just like you can spread a cold, so can a snake!

If you think one of your snakes has a cold, increase the temperature in your cage to 90ºF and call your veterinarian immediately. In severe cases, the veterinarian may need to drain the fluids out of the snake's lungs so that it can breathe more easily. Symptoms of respiratory infections may include

- runny discharge from the nose
- loud breathing
- foamy saliva
- open-mouthed breathing
- wheezing
- coughing
- clicking or popping noises

Parasitism

Parasitism (par-uh-site-tiz-uh m) is a relationship between two different organisms in which one benefits from the other by causing harm to the other (usually not fatal). Two types of parasites can affect snakes: internal (inside the body) and external (outside of the body).

◆ Internal Parasites

Internal parasites come from the food snakes eat, from their environment, or from an infected snake. Snakes with internal parasites may lose weight even though they are eating. Other symptoms of internal parasitism are smelly, bloody, mucous-covered feces, loss of appetite, swollen throat, and difficulty breathing.

Internal parasites can be infectious, so make sure you separate the affected snake from any others you may have. Get a fresh fecal sample (no more than 2 hours old), and take it into your veterinarian to have it tested. You also might want to check the feces of any other snakes at the same time because symptoms can sometimes be delayed even though a snake is already infected. Symptoms of internal parasites may include

- no appropriate weight gain when feeding regularly
- smelly feces that are bloody or covered with mucous
- loss of appetite (refusing to feed)
- significant increase in appetite
- swollen throat
- difficulty breathing
- breathing with the mouth open

◆ External Parasites

When you look at your snake, do you notice small black dots moving around on it or under its scales? Do you see a buglike animal attached to your snake? If you see either one, your snake may have external parasites.

Mites and ticks can attach themselves over the entire body of a snake, especially under and between the scales and around the eyes. Snakes usually get these parasites through unsanitary housing and exposure to infected snakes. They can also be more susceptible to mites and ticks if they have a poor diet or are suffering from other diseases. While feeding on the blood of their hosts, mites and ticks can cause anemia (loss of red blood cells) and may transmit diseases such as viruses and blood parasites. It is very difficult to get rid of mite and ticks. The entire cage and all of its furnishings must be thoroughly disinfected. Contact your veterinarian for instructions on how to treat for external parasites. Symptoms of external parasites may include

- black spots (moving or non-moving) on the scales, mouth, nostrils, or vent

HEALTH ASSESSMENT CHECKLIST

Snake Name: _____ Breed: _____

Gender: _____ Age: _____

General Symptoms

Is there anything you notice that you should be concerned about?

Journal Entry 1: _____

_____

_____

Journal Entry 2: _____

_____

_____

Journal Entry 3: _____

_____

_____

Journal Entry 4: _____

_____

_____

Journal Entry 5: _____

_____

_____

Suspected Diagnosis: _____

(Use the snake disease information sheet)

Observations

Explain which symptoms from the above journal helped you indicate a problem, and explain why.

_____

_____

_____

What other observations do you think might be important?

_____

_____

_____

Why do you think recording daily observations of your snake would be helpful in monitoring your snake's health?

_____

_____

_____

Your Snake's Health

Subject Overview and Background Information

Youth should use the skills and knowledge acquired from the previous activity to assess their snake's health in this application activity. As important as it is to teach the youth about animal health assessments, it is even more vital for the youth to apply their knowledge in the real world. This application activity allows the youth with animals to evaluate their pets' health and determine the right time to consult a veterinarian. The youth should be in a regular habit of checking their animal's overall health and notice any signs of abnormality.

The best way to assess the health of a snake is through observation. There is no clear-cut definition of normal; normal varies from snake to snake, so abnormal depends on your snake as well. Observing your snake daily is the best way to really get to know it and to be able to identify changes that might be symptoms if disease or injury.

In this activity youth will fill out the health assessment charts used in the previous activity, except that they will make observations on their own snakes. In addition, they should write a short journal entry on the back of the chart about what they did with their snake daily. The daily observations should last a minimum of 14 days.

Snakes can be difficult animals to handle and take vital measurements from. We suggest developing an inexpensive kit that may help the youth in their observation and measuring process. This kit could include the following:

- **Latex gloves:** for general use every time they examine the snake, especially when they make personal contact with sensitive areas of the snake. Wearing disposable gloves is highly recommended when performing any of these procedures to prevent the spread of disease from human to snake and vice versa.
- **Penlight:** for use when examining the snake's eyes and nostrils. Encourage the youth to note anything that looks abnormal in these areas and compare this with observations from previous days.
- **Magnifying glass:** For use when looking at the snake's skin and scales. The youth can look closely at the skin and scales and note any interesting observations.

If youth own a young snake, they may want to measure and record its growth. A snake's girth (width) can be measured by placing a measuring tape around its stomach (or the widest part of the snake). The snake's length can also be measured from its head to tail.

The penlight and magnifying glass can be used to get a closer look at any part of the snake, especially the eyes or mouth. Do not flash the light directly in the snake's eyes; rather, pass the light back and forth slowly and steadily across the eyes. **Do not substitute a laser pointer for the light**. The magnifying glass also allows the youth to take a closer look at snake's scales.

It is important to let the youth know that they should not make immediate conclusions about their animal's health. Most of the youth will probably have perfectly healthy pets. Do not give them the impression that they must find something wrong with their animal. Emphasize the concept of **health care maintenance** rather than health diagnosis.

◆ Activity Concepts and Vocabulary

- **Health care maintenance:** The regular monitoring of an animal's health.

◆ Life Skills

- **Head**: Keeping records, problem solving, decision making, critical thinking
- **Heart**: Sharing, communication, concern for others, empathy
- **Hands**: Self-motivation
- **Health**: Disease prevention, self responsibility, personal safety

◆ Subject Links

Science and Language Arts

State Content Standards

Science

- Third Grade
  - *Investigation and Experimentation: 5e*
- Fourth Grade
  - *Investigation and Experimentation: 6c*
- Fifth Grade
  - *Investigation and Experimentation: 6h, 6i*
- Sixth Grade
  - *Investigation and Experimentation: 7d*

Language Arts

- Fourth Grade
  - *Listening and Speaking Strategies: 1.7*
- Fifth Grade
  - *Listening and Speaking Strategies: 1.5*
- Sixth Grade
  - *Listening and Speaking Strategies: 1.5*

Purpose of Activities

The purpose of this activity is to have youth record observations of their own snake over a period of time.

ACTIVITY 2

Snake Health Journal

Overview of the Activity

Youth will have the opportunity to assess the health of their snake for a minimum of 14 days. They will make observations of their animal and record what they observed for each day. They will also write a journal entry each day on their animal's activity. During their group meetings, youth will have a chance to share their observations of their animal and discuss any potential diseases or illnesses with their group.

Time Required

Approximately 15 minutes daily for at least 2 weeks

Suggested Grouping

Individual

Materials Needed for Each Youth

*(*Materials provided in curriculum)*

- Flip chart paper
- *Animal health journal
  - *Animal background information sheet*
  - *Animal health daily recording sheet for each day of observation*
- Health assessment kit:
  - *Latex (disposable) gloves*
  - *Penlight*
  - *Magnifying glass*
- Writing tool (pencil, pen, etc.)
- Disinfectant
- Tape measure

Getting Ready

Each individual is expected to observe their snake for 14 to 28 days. Make an animal health journal for each youth, which consists of an animal background information sheet and one blank animal health daily recording sheets for each day the youth will observe their snake.

Opening Questions:

Ask the youth to respond to each question below by sharing their ideas verbally and/or by recording them on the flip chart paper provided.

1. When you are sick, what observations might your parents make that would lead them to take you to see the doctor?
2. Describe what you might notice about snakes that are not feeling well.
3. What kinds of observations about your snake would prompt you to call your veterinarian?
4. Why might keeping a daily journal about you or your snake be helpful to a doctor or veterinarian?

Procedure (Experiencing)

1. Give each individual an animal health journal packet, which includes an animal background information sheet and one animal health daily recording sheets for each day of observation.
2. Explain to the youth that they are to fill out the animal background information sheet. If they

have more than one animal, they may choose one to work with for this activity. They may need to work with their parents to answer the background information questions.

3. Youth will also fill out an animal health daily recording sheet every day for the chosen number of days (14 days are recommended). The youth should also include a brief journal entry on the back of the recording sheet, describing what they did with their animal each day.
4. Ask the youth to prepare to share a report with their peers at the next group meeting. Reports should include an oral description on observations along with any potential symptoms of illness. Youth who have a young snake may want to graph growth. The youth could also create a poster or PowerPoint presentation to share their findings.

Sharing, Processing, and Generalizing

Have each youth share his or her report with the group. Follow the lines of thinking developed through the general thoughts, observations, and questions raised by the youth.

If necessary, use more targeted questions as prompts to get to particular points:

1. What are some advantages of keeping a daily health journal for your snake? Were there any challenges? Please explain.
2. Did your snake present any symptoms of concern? If so, what were they, and what did you do? Please explain.
3. What similarities, if any, were there between your snake and others' snakes? What differences, if any, were there? Please explain.

Concept and Term Discovery/ Introduction

Volunteers need to ensure that the concept of **health care monitoring** has been introduced or discovered by the youth.

- **Note:** The goal is to have the youth develop concepts through their exploration and define terms using their own words.

References

Root, B., and P. Hollander. 1995. Care sheet for snakes. Animal Allsorts Web site, http://www.reptileallsorts.com/sngeneral-cs.htm.

Animal Health Journal

ANIMAL BACKGROUND INFORMATION SHEET

Date: _____ Youth's name: _____

Animal's name: _____ Species: _____

Breed: _____ Date of birth or age of animal: _____

Gender (male, female, or unknown/fixed or intact): _____ Has this animal been bred? _____

If yes, how many times? _____ Date of last breeding? _____

Health history: Is this animal on any medications? _____ If yes, please list. _____

_____

Does this animal have current vaccinations? _____

Does this animal have any allergies? _____ If yes, please list. _____

_____

Has this animal had any major illnesses or surgeries? _____ If yes, describe. _____

_____

Date of last veterinary checkup: _____ Date of last shed: _____

Environment: Please describe the housing for this animal (indoor/outdoor, with other animals/alone, size of enclosure).

_____

_____

_____

Diet: Please describe the diet and the feeding schedule for this animal. Describe how water is provided (bowl, automatic waterer, etc.)

_____

_____

_____

ANIMAL HEALTH DAILY RECORDING SHEET

Date: _____ Time: _____

Animal name: _____

MEASUREMENTS

Length : _____ Girth : _____

Heart rate: _____ Respiration (breathing) rate: _____

OBSERVATIONS

Behavior: _____

_____

Activity level: _____

_____

Appetite: _____

_____

Body condition: _____

_____

Body position and movement: _____

_____

Skin and scales: _____

_____

Eyes: _____

Nose: _____

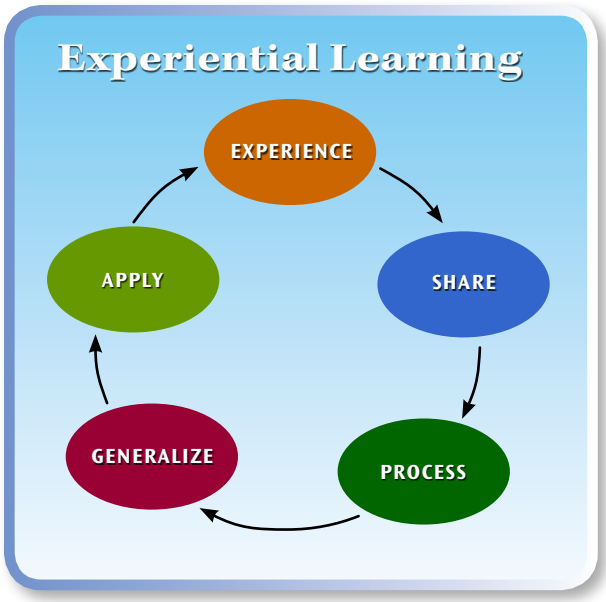
Body waste: _____

Other: _____

_____

APPENDIX

The activities in this curriculum are designed around inquiry and experiential learning. Inquiry is a learner-centered approach in which individuals are problem solvers investigating questions through active engagement, observing and manipulating objects and phenomena, and acquiring or discovering knowledge. Experiential learning (EL) is a foundational educational strategy used in 4-H. In it, the learner has an experience phase of engagement in an activity, a reflection phase in which observations and reactions are shared and discussed, and an application phase in which new knowledge and skills are applied to a real-life setting. In 4-H, an EL model that uses a 5-step learning cycle is most commonly used. These five steps—Exploration, Sharing, Processing, Generalizing, and Application—are part of a recurring process that helps build learner understanding over time.



For more information on inquiry, EL and the 5-step learning cycle, please visit the University of California's Science, Technology, Environmental Literacy Workgroup's Experiential Learning Web site, http://www.experientiallearning.ucdavis.edu/default.shtml.

For Further Information

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