



Man's Best Friend

Lesson Overview

GRADE LEVEL: 5-8

TOPIC/SUBJECT MATTER: Life Science

TIME ALLOTMENT: Two 45-minute class periods

OVERVIEW:

During this video-enhanced lesson, students will learn about dogs' senses and how they compare to those of humans, with particular focus on the senses of smell and hearing. Students will test their own senses of smell in a sniff test of familiar scents. Students will explore different ways that dogs help humans and watch video segments from the NATURE film "Dogs that Changed the World," featuring 3 different situations where dogs help humans-sled dogs in the Arctic Circle, sheep dogs in the United Kingdom and a dog in the US who alerts a boy with diabetes when his blood sugar levels are low. Students will then conduct research and create a presentation about a modern dog hero.

MEDIA RESOURCES:

Video

Access the streaming and downloadable video segments for this lesson at the [Video Segments Page](#).

Clip 1: Dog Sense

A comparison of dog and human senses

Clip 2: Sled Dogs

A close look at sled dogs and their relationships with the Inuit people in the Arctic Circle

Clip 3: Moving Sheep

A close look at how dogs help perform this job



Clip 4: Delta

Delta, a German Shepherd helps prevent a boy from having diabetic seizures

Web sites

[American Kennel Club](http://www.akc.org/breeds/index.cfm?nav_area=breeds) (http://www.akc.org/breeds/index.cfm?nav_area=breeds)

This Web site is a good source for information and photographs of dogs.

[Los Angeles Natural History Museum](http://www.nhm.org/) (<http://www.nhm.org/>)

This Web site contains an exhibit entitled "[Dogs- wolf, myth, hero and friend](http://www.nhm.org/exhibitions/dogs/)," (<http://www.nhm.org/exhibitions/dogs/>) which contains a lot of information about dogs and related online activities and hands-on activities that can be done at home. One of the featured activities is "Dog Gone Perfect Laboratories," which challenges visitors to build an online dog for a specific task (pull a sled, herd sheep, etc.). To access this activity, go to the [Artificial Selection](http://www.nhm.org/exhibitions/dogs/evolution/selection/artificial.html) page at www.nhm.org/exhibitions/dogs/evolution/selection/artificial.html, scroll down to the bottom and click on "Dog Gone Perfect Laboratories Activity" in the left hand column.

[National Geographic Web sites' Animal Section](http://animals.nationalgeographic.com/)

(<http://animals.nationalgeographic.com/>)

This Web site features many photos of dogs, which can be used in this lesson.

[Sheppard Software Web Site's Dog Section](http://www.sheppardsoftware.com/content/animals/profile_dogs.htm)

(http://www.sheppardsoftware.com/content/animals/profile_dogs.htm)

This Web site includes interesting facts, quizzes and activities about dogs, including a fun "Dog Heroes" quiz.

Standards:

[National Science Education Standards, Grades 5-8](http://www.nap.edu/openbook.php?record_id=4962)

(http://www.nap.edu/openbook.php?record_id=4962)

LIFE SCIENCE: Content Standard C

As a result of their activities in grades 5-8, all students should develop understanding of

- Reproduction and heredity



o The characteristics of an organism can be described in terms of a combination of traits. Some traits are inherited and others result from interactions with the environment.

- **Regulation and behavior**

o Behavior is one kind of response an organism can make to an internal or environmental stimulus. A behavioral response requires coordination and communication at many levels, including cells, organ systems, and whole organisms. Behavioral response is a set of actions determined in part by heredity and in part from experience.

o An organism's behavior evolves through adaptation to its environment. How a species moves, obtains food, reproduces, and responds to danger are based in the species' evolutionary history.

- **Diversity and adaptations of organisms**

o Biological evolution accounts for the diversity of species developed through gradual processes over many generations. Species acquire many of their unique characteristics through biological adaptation, which involves the selection of naturally occurring variations in populations. Biological adaptations include changes in structures, behaviors, or physiology that enhance survival and reproductive success in a particular environment.

MATERIALS:

For each student:

- "Dogs' Work" Student Organizer

For the class:

- A large sheet of paper or board and something with which to write
- Five small, identical, opaque containers (such as 35mm film canisters)
- Five cotton balls and aromatic items. (See the "Prep for Teachers" section for details.)

Note: For a large class, you can prepare more than 5 containers and cotton balls. See the "Prep for Teachers" section for details.

- Labels or small pieces of paper and tape (to label the containers)



- A photograph of a Bloodhound (If you need a photograph, go to the American Kennel Club's [Bloodhound page](http://www.akc.org/breeds/bloodhound/index.cfm) ([http://www.akc.org/breeds/bloodhound/index.cfm.](http://www.akc.org/breeds/bloodhound/index.cfm))
- One computer for the teacher with a digital projection system and internet access
- One copy of the "Dogs' Work" Student Organizer Answer Key for the teacher

Objectives

Students will be able to:

- Compare human and dog senses;
- Provide details about how dogs use their senses of smell and hearing to help humans;
- Discuss different ways that dogs help humans;
- Describe tasks performed by sheep dogs, sled dogs and service dogs;
- Describe different skills of different breeds of dogs;
- Explain how a dogs' features (body, head, tail, etc.) can be advantageous for specific environments and tasks.
- Provide examples of heroic acts performed by dogs;
- Discuss why dogs are referred to as "man's best friend."

Prep for Teachers

Prior to teaching this lesson, you will need to:

Preview all of the video segments and Web sites used in the lesson.

Download the video clips used in the lesson to your classroom computer, or prepare to watch them using your classroom's Internet connection.

Bookmark the Web sites used in the lesson on each computer in your classroom. Using a social bookmarking tool such as [del.icio.us](http://delicious.com/) (<http://delicious.com/>) or [diigo](http://www.diigo.com/) ([/www.diigo.com/](http://www.diigo.com/)) (or an online bookmarking utility such as [portaportal](http://www.portaportal.com/), www.portaportal.com/) will allow you to organize all the links in a central location.

Prepare containers and cotton balls for the sniff test:

- o Pre-soak at least 5 cotton balls with common scents. Possible scents include: lemon, orange, pizza sauce, peppermint extract, vanilla extract, garlic "juice" squeezed from a clove, cinnamon, etc.



- o Place each cotton ball in one of the clearly-labeled, small, identical, opaque containers, making sure only to put one cotton ball in each container.
- o Place a label on each container. Write a different number, from 1 to 5, on each label.

Note: During the "sniff test" activity in the lesson, you will be dividing the students into groups and giving each group one container at a time. If you have a large class, feel free to prepare more than 5 cotton balls. Make sure to have the corresponding number of containers and labels.

Make a copy of the "Dogs' Work" Student Organizer for each student.

Make one copy of the "Dogs' Work" Student Organizer Answer Key for the teacher

Dogs' Work Student Organizer

Name: _____ Date: _____

Fill out the chart with details from the video segments.

Video Segment	Type of dog	The dog's job	Person or people helped by the dog	Primary skills used to perform the job	Comments
Sled Dogs					
Moving Sheep					
Delta					

Dogs' Work Student Organizer
ANSWER KEY

Video Segment	Type of dog	The dog's job	Person or people helped by the dog	Primary skills used to perform the job	Comments
Sled Dogs	Sled Dog	To pull people and their loads and detect danger along the way. They also identify snow-covered air holes, where the Inuit can catch seals and sense changes in snow underfoot and stop if they sense danger. In the past, the sled dogs served as transportation, protectors, found food for the Inuit and carried heavy loads.	Inuit people in the Arctic Circle	Good navigation skills. They know how to get home, even in a blizzard or complete white out. They are small enough to survive on very little (snow and seal blubber) and large enough to pull heavy weight. Can live in cold environments and run long distances. Can run up to 5 marathons a day. Double-layered fur provides protection from the cold. Have a stiff backbone which transforms muscle power from the legs into pulling power.	Dogs have made it possible for humans to live and survive in the Arctic Circle.
Moving Sheep	Border Collies (Liz, Eve and Fly)	Move sheep from one point to another in a controlled manner. Eye, stalk and chase prey.	A shepherd (Joe Relph) in the Lake District in the United Kingdom	The dogs have a combination of innate and learned behaviors. It has a sequence of behaviors, inherited from the wolf- eye, stalk, chase and bite prey. The sheep dogs have been trained not to bite. They can hear and interpret human commands from up to a half mile away.	The dogs make it possible for the shepherd to do his work. Collies help move sheep, goats and reindeer in a variety of different countries (from the plains of Argentina to the icy mountains of New Zealand). Sheep dogs help humans achieve tasks couldn't do by themselves.

Delta	German Shepherd	To detect and alert others when Joseph is about to have a seizure or when blood sugar levels fall. Delta has given Joseph freedom he didn't have before. Joseph can visit friends, since he knows Delta will keep him safe.	Joseph Reinkemeyer, a 13-year old with congenital type 1 Diabetes.	He can smell subtle body chemistry changes that warn that Joseph's blood sugar levels are falling (well in advance of a seizure). Ability to communicate with others to alert them to low sugar levels.	Service dogs, like Delta, can be trained to detect diseases like epilepsy, diabetes and cancer or provide support and companionship to people suffering from mental illness.
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