



Frisch's Outreach: What Did You Say? (Gr. 1-3) Extensions

At a glance

This program will allow learners to discover that animals need to communicate to survive.

Goal(s)

. This class is designed to familiarize students with the many different ways animals can communicate.

two ways animals can communicate (audibly, inaudibly-silently).

Objective(s)

- 1) Upon completion of this program students will be able to name animal body parts that help animals communicate.
- 2) Upon completion of this program students will be able to tell two reasons why animals must communicate to survive.
- 3) Upon completion of this program students will be able to identify

Theme

Animals need to communicate so that they can survive.

Sub-themes

- 1) Animals have special body parts that help them communicate.
- 2) Animals have special behaviors that help them communicate.
- 3) Animals communicate to find food, water, shelter, and to stay safe.

Academic standards

Ohio Science Academic Content Standards	<p>Life Science Grade One <i>The Characteristics & Structures of Life</i> 1 <i>Scientific Inquiry</i>—1, 2</p> <p>Grade Two <i>The Characteristics & Structures of Life</i> 1,6 <i>Scientific Inquiry</i>—1, 2, 3, 5</p> <p>Grade Three <i>Diversity & Interdependence of Life</i> 2</p>
Kentucky Core Content—Science	<p>Life Science: Grades Primary through 4: <i>The Characteristics of Organisms</i>: SC-E-3.1.2, SC-E-3.1.3 <i>Life Cycle of Organisms</i>: SC-E-3.2.2 <i>Organisms And Their Environment</i>: SC-E-3.3.1</p>

Background

Within the community of animal’s survival is dependent on how well an animal can acquire and maintain food, water, shelter, and stay safe in their space. Each animal’s unique adaptations allow them to attempt to succeed in these tasks.

Animals can use communication to aid them in their challenge for survival. The types of animal communication are as diverse as animals themselves and we are just beginning to uncover some of the fascinating secrets held within their communications.

Communication by an animal is any behavior on one animal’s part that has an

effect on the current or future behavior of another animal. Communication can take many forms that we can observe and some mysterious forms that are not so readily understood by man.

Audible communication is perhaps the easiest for us to identify but our understanding of its intricacies is still very basic. Birds, monkeys, gibbons, frogs, etc. use vocalizations to mark territories, court mates, warn of danger,



locate/ beg for food, stay in groups, and attempt to frighten predators, etc. over short spaces or long distances.

Howler monkeys can be heard ten miles away which helps keep their groups together. Hyenas “laugh” to keep their pack cohesive. Owls, during courtship, will call alternately to each other (“dueting”) and the calls’ pitch can identify the sex of each owl. The audible begging response among many baby birds will trigger a feeding response

from the adult bird. Some research suggests that certain clucks made by chickens tell what kind of food is located for the flock. Some monkeys have separate, distinct alarm calls which will tell the group if the predator is on the ground or in the trees (leopard) or in the air (eagle). Recent research suggests that birds also have these identifying alarm calls. Animals that belong to social groups will alarm call so that individuals can run for cover, freeze, or gather as a group. Dolphins and whales have distinct clicks and squeaks to communicate with each other under water over many miles. It has been discovered that Killer Whales may have accents or dialects for hunting that are individual pod specific. At times alarm calls are not vocally produced. Rabbits will pound their feet in warning.

There are communicating sounds made by animals that are sub-audible or infra-sonic. Elephants can hear low sounds undetected by humans. Their feet can detect low frequencies of sound not perceived by man. Echolocation, although not true communication, enables bats, dolphins, etc. to locate their food by emitting sound that is then reflected back from the food source to them.

Animal communication can also be conducted chemically. The olfactory sensibilities of animals can unlock many secrets of communication from animal urine, feces, and scent glands. Cats have scent glands on their flanks and foreheads that can help them identify each other and their territories. Many animals mark their territories with urine and feces so that possibly harmful physical confrontations with trespassing animals are avoided. Female

receptiveness to mating can be chemically transferred among animals. Some predatory animals can gain information about the health and vigor of their prey animals by smelling the scent left by bodies, urine, and feces. Ants can leave chemical trails for the colony so that food can be located. Honey bees carry nectar in a “nectar pouch” back to the hive that identifies them as a member of their hive. Amoebas even seem to communicate chemically. Our understanding of pheromones used in animal communication is just beginning to unfold.

Can plants communicate? Yes! If you consider the use of chemicals! Tannin imbedded in some plants will turn away insects before they try to dine on the plant. There has been some research to determine if plants do emit some form of communication other than chemically.

Another realm of communication that is just beginning to be studied is electro communication. Sharks, Rays, Lampreys, and some fish have electroreceptors on their bodies to perceive electrical impulses generated by other animals. This can enable them to locate objects and food in the murky waters of the sea. Some of these animals can actively generate electric fields to detect distortions and food in their habitat. Weakly electric fish can modulate their generated electric waveform to communicate with each other when finding a mate. Monotremes such as echidnas and platypuses have electroreceptor to locate their food. Could that mean they could also carry on electro communication?

Visual displays, though inaudible, communicate between specie members and between different species. Brilliant colors on male birds will attract females and advertise a healthy mate. Anoles flash their dewlaps in silent communication to protect their territories or find a mate. Bright warning colors on amphibians, as well as other animals, ward off would be predators. Flashes of color can work as a startling stimulus to catch predators off guard or to frighten them away.

Bioluminescence, in animals of the deep sea that possess chromatophores (cells bearing pigment that can expand and contract in tissues), enables them to quickly change color to camouflage for defense, to get food, or signal each other. Octopi, squids, and cuttlefish can flash color change much faster than any other animals. Lantern fish seem to be able to recognize each other by these colorings. Bioluminescence can happen on land too! It can be seen in Lightning Bugs (aka. Fireflies, glow worms). A male lightning bug will flash a signal or pattern, to a female and if she chooses she will respond. When lightning bugs sense danger, they turn their light off, and fly up.

Do animals always tell the truth when they are communicating? Visually mimicking the color pattern or shape of another more dangerous or toxic animal can provide safety for some animals. Blending in or camouflaging colors enable animals to hide within their surroundings to avoid detection. Alligator Snapping Turtles have a “fishing lure” within their mouths. A small fleshy piece of tissue that resembles a worm wiggles in the water

as the Turtle’s mouth gapes. Fish are lured in by the “food” and become an easy catch for the Snapping Turtle.

At times visual displays of certain behaviors are a form of silent communication. Visual displays, which often must follow prescribed patterns during courtship, may determine the success or failure of mating between many members of some species. Many times pair and group bondings are cemented by silent ritualized behaviors. Thompson’s Gazelles display a pursuit deterrent behavior by running and leaping very high in the air. “Stotting” tells all potential predators- “you will need to expend a lot of energy to catch and eat me!” The “Waggle Dance” Honey Bees display in the hive is believed to communicate the exact location of food for the rest of the bees in the hive. Submissive behavior in social animals will do much to avoid injury for individual animals and it can order the animals’ society so that the group as a whole can survive.

Among many animals, especially primates and canines, facial expressions can communicate aggression, fear, threats, willingness to play, etc. These often very quickly changing displays do much to keep social groups in tact, avoid harmful physical confrontations, and teach youngsters the “manners” of group life.

A very new and provocative study of animal communication explores Metacommunication. Are animals communicating in ways other than those that humans have observed and recorded? Are these communications transcending the forms of communication known to man? Are

there ways animals can communicate that are beyond our traditional understandings? All of these questions

will provide interesting scientific study and may reveal astonishing insights into the world of animals!

Vocabulary

Adaptations- any body part or behavior that helps an animal survive

Audible- capable of being heard

Behavior- the way a person or animal acts

Camouflage- conceal by imitating the colors of the surrounding environment

Communicate- to exchange information, to convey a thought or feeling by speech, writing, or gesture

Communication- the exchange of information between living things

Inaudible-not loud enough to be heard

Mimicry- The superficial resemblance which some animals exhibit to other animals or to the natural objects among which they live; thereby, securing concealment, protection or the like.

Survive- to live; not die or disappear

Assessment

The classroom teacher can assess the student's progress by observing the students during the program and by performing at least one of the extensions.

Unsatisfactory-student seems uninterested, does not participate, and does not answer questions.

Satisfactory-student seems somewhat interested, participates to some degree, and attempts to answer questions when asked

Excellent-students seem very interested; participate willingly in all activities, and answers questions. Student offers his or her own questions.

Extensions

Listen Up!

Go outside and sit quietly for about one minute to just listen. Take a record keeping sheet of paper with you that has spaces labeled

DOMESTIC ANIMAL SOUNDS (cats, dogs, cattle, goats, etc.)

ANIMAL SOUNDS (birds raccoons, frogs, insects)

MECHANICAL SOUNDS (cars, trucks, planes, lawn mowers, etc.)

PEOPLE SOUNDS (human voices)

Each time you hear a sound classify or categorize what you are hearing. After listening for about one minute what did you find? You may wish to graph or just tabulate or count your results. Which group of sounds has the most entries? Where could you sit to get completely different results? Could you find different results at different times? Which group of sounds did you enjoy listening to most? Why?

Investigate!

Find out about animals who use facial expressions to communicate (primates, canines, felines) Find all of the ways they use their face to tell what they want to say. Can you compare those facial expressions to how people use their faces to communicate? Can you find other animals who use other body parts to communicate?

Watch Your Pet

Spend some time carefully listening to your pet. You may even want to record

them. Remember to not force your pet to make sounds. Good research never makes animals show behavior. Good **observation** is a must! Can you tell all of the sounds they make? What are they trying to audibly communicate? Share your discoveries with others.

Now spend some time just observing your pet moving (or not moving!). You may want to videotape them. Again, remember, good research never makes animals show behavior. Good **observation** is a must! Share your discoveries with others. Which way does your pet communicate most often?

Visit The Zoo!

Spend some time visiting the animals at the Cincinnati Zoo & Botanical Garden! How many animals are communicating? Are they communicating audibly or inaudibly? Can you tell what they are saying?

Resources

Ganier, Anita. Questions and Answers About Animal Talk. Aladdin Books, New York. 1991.

Hauser, Marc and Konish, Mark. The Design of Animal Communication. Bradford Books, 2003.

Louv, Richard. Last Child in the Woods: Saving Our Children From Nature Deficit Disorder. Algonquin Books, 2005.

Mc Ewen, Bruce and Elizabeth Norton Lasley, The End of Stress As We Know It. Dana Press, Joseph Henry Press, Washington, D.C., First Edition. 2002.

Page, George, Inside the Animal Mind. Random House, New York. 1999.

Articles

Dornin, Rusty, "There's More to Animal Communication Than Meets The Ear" CNNinteractive.cnn.com

Websites

ALA's Great Websites for Kids: Animals

<http://www.ala.org/gwstemplate.cfm?section=greatwebsites&template=/cfapps/gws/displaysection.cfm&sec=1>

Awesome Library – Kids

<http://www.awesomelibrary.org/Classroom/Science/Animals/Animals.html>

Awesome Library – Teachers

<http://www.awesomelibrary.org/Classroom/Science/Animals/Animals.html>

Cincinnati Zoo & Botanical Garden

www.cincinnati-zoo.org

ENature

www.enature.com

Internet Public Library/Kidspage/
Animals (comprehensive listing)

<http://www.ipl.org/kidspage/browse/mas4500>

mnsu.edu/emuseum/cultural/language/chimpanzee

National Geographic: Animals

<http://www3.nationalgeographic.com/animals/>

