



## A Teacher's Guide to If We Could Talk to the Animals... Grades Pre-K - 2

**Description** How do animals convey messages without speaking? Explore some of the secrets of animal communication, such as body language, scent, color or sound.

**Outcomes** Students will recognize that animals communicate in various ways – through sound, body language, scent, and coloring. Students will be able to make connections between animal communication and human communication.

### Suggested Activities Before Your Outreach:

#### Vocabulary

communication

scent

information

body language

warning

- Have students brainstorm a list of all the different ways people communicate with each other. Divide this list into categories: How many of those methods involve sound? How many involve smells? How many involve body motion? How many involve colors?
- Create a list of “information” (i.e. The weather outside, favorite color, birthday, etc.). The students then must practice ways of communicating that information to another classmate - without talking!
- Compare these categories of communication with the ways that dogs or cats communicate. Which categories do these animals rely on the most?
- Create a K-W-L chart about animal communication and fill in what the students already know about animal communication and what they want to know about animal communication. Leave the “What We Learned...” column blank and have students fill in new information after the outreach

### Suggested Activities After Your Outreach:

#### Classroom Activities:

- Discuss the lesson with your students. What new ideas or information did they learn? Was anything confusing? What did they like best? Fill in the final column of the K-W-L chart.
- Make up a communication dance, like the one honey bees use! See the attached sheet “Animal Communication Activity: Honey Bees”
- Play “Animal Communication Activity: Smell and Tell.” Directions are included on an attached sheet.

- Observe local birds. Take students outside, if possible, to listen to and watch birds in the area. Listen for distinct songs and calls and make a class list of bird songs.
- See “Animal Communication Activity: Canine Communication Matching.” Talk about body language and play a fun game!

### **Homework Assignments:**

- Try the Crazy Critter Communication Crossword (attached) and reinforce vocabulary concepts.

### **Interdisciplinary Activities:**

- Read Click, Clack, Moo: Cows That Type by Doreen Cronin and Betsy Lewin aloud to the class. Talk about how the animals in the story would communicate on a real farm. Rewrite the book and provide new illustrations incorporating real animal communication.
- Color the attached illustrations of animals from Wildlife of Pennsylvania (<http://www.pgc.state.pa.us> – Go to the “Education” link off the home page, then, the coloring book is under “Wildlife for Kids”) discuss the types of communication used by each animal. Draw new illustrations of animals in your area and write captions describing their means of communication.
- See attached “Animal Communication Activity: Communication Computation” for a math exercise involving animal communication.

### **Writing/Drawing Prompts:**

- You woke up this morning and your face was covered in fur! You look in the mirror and you see Spot’s face staring back at you! How are you going to let your parents know that you switched places with the family dog?
- I am a (an animal of the student’s choosing). Every day I...
- You hear a noise coming from outside of your window. You open the window to find a (an imaginary animal of the student’s choosing) It looks and sounds like it’s trying to tell you something! What is it trying to say? What does it look like? What does it sound like? What does it smell like?

### **Class Project Ideas:**

- Write and perform a play that would show the rest of the school what you have learned about animal communication. Be sure to include at least one animal that uses scent to communicate, one that uses coloration, one that uses vocalizations, and one that uses body language. Research animals and create realistic costumes. Invite other classes to see your play and encourage them to ask questions about communication after. For fun, include humans as one of your animals!
- Ask students to observe a pet (domesticated animals) either at home or in the classroom and write/illustrate an animal communication “dictionary” based on their observations. They are to watch for scent, vocalizations, coloring, and body language to try to figure out what their pet is trying to communicate. Write down their findings and draw illustrations to help others try to figure out what their dog/cat/rodent/reptile is trying to say! Start an animal communication library!

## Resources for Students

- This site describes the way the animals in the movie “The Wild Thornberries” really communicate: <http://www.nationalgeographic.com/ngkids/0212>
- Animal Communication by Janet McDonnell
- Koko’s Kitten by Dr. Francine Patterson
- Eyewitness: Life by David Burnie
- Animal Sounds by Aurelius Battaglia
- Honey Bees by Deborah Heiligman

## Additional Resources for Educators

- Animal Talk: Breaking the Codes of Animal Language by Tim Friend
- The Animal Communication Project provides information on communication among organisms, from arthropods to apes: <http://acp.eugraph.com/index.html>
- A “Bill Nye the Science Guy” video on how animal and human communication differ: Communication - Bill Nye (1995)
- Refer students to this interactive site all about animal communication: <http://www.nhptv.org/natureworks/nwep3.htm>
- Guide to a Well-Behaved Parrot (2<sup>nd</sup> edition) by Mattie Sue Athan. This book has a great section on parrot body language and the meanings behind some of the behaviors that parrots perform. It explains how parrots communicate with each other and with their human owners.
- A great site on bee communication with some great video: <http://www.pbs.org/wgbh/nova/bees/>
- Janice Van Cleave’s Animals: Mind-Boggling Experiments You Can Turn into Science Fair Projects- by Janice VanCleave (great general animal resource!)
- How Nature Works (How It Works) by David Burnie (great general animal resource!)
- A Dictionary of Nature: 2,000 Key Words Arranged Thematically by David Burnie (great general animal resource!)

## AAAS’s Project 2061 Benchmarks

### *5. The Living Environment: Diversity of Life*

By the end of the 2nd grade, students should know that:

- Some animals and plants are alike in the way they look and in the things they do, and others are very different from one another.
- Plants and animals have features that help them live in different environments.

### *5. The Living Environment: The Evolution of Life*

By the end of the 2nd grade, students should know that

- Different plants and animals have external features that help them thrive in different kinds of places.

## Pennsylvania Academic Standards in Environment and Ecology

- 4.7.4      A. Identify differences in living things.  
              B. Know that adaptations are important for survival

**Pennsylvania Academic Standards in Science and Technology**

- 3.3.4 A. Know the similarities and differences of living things.
- B. Know that living things are made up of parts that have specific functions.

**New Jersey Standards**

- 5.10.A.1 Associate organisms' basic needs with how they meet those needs within their surroundings.

## Honey Bee Two-Step!

(from "Newton's Apple" Teacher's Guide: <http://tpt.org/newtons/newtonsclassics/classic17.html> )

### Background Information:

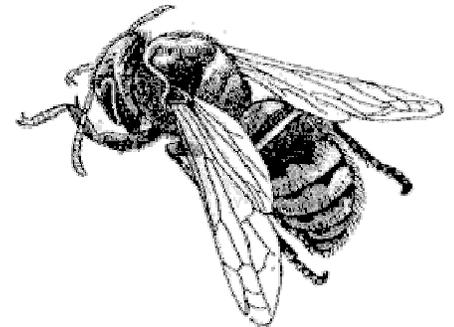
There is no better example of social organization in the animal kingdom than in the hive of the honeybee. Bees are divided into specialized groups called castes made up of workers, drones and one queen. Unless all three are present and functioning, none of the bees can survive. Queens are sexually mature females, and their development is based on the type of food they eat during the larval stage. Most of the bees feed on honey and pollen, but queen larvae eat royal jelly which is made by workers from protein rich pollen. Workers are sterile females whose egg laying structures have been modified into stingers and whose mouthparts have been adapted for collecting nectar, working wax, and carrying pollen. It is the workers that maintain the hive, digest the nectar, and turn it into honey which they feed to the developing larvae. In order for an entire bee colony to survive, scout bees must tell other workers where new food sources are. This way, they can collect enough nectar to feed all the members of the colony. What do drones do? Well, they basically eat, die, and mate with the queen. That's about it!

### Think About This:

After many years of observation, a German entomologist named Karl von Frisch figured out that bees communicate the locations of food sources via a complex dance. Bees are not the only members of the animal kingdom who use non-verbal communication. Many other animals have all sorts of gestures that indicate things like danger, food, and, of course, a desire to mate. Have the students make detailed observations of animal social systems by setting up either a bee hive or ant colony in the classroom. Have them research how other animals communicate via dances and gestures.

### Now Try This:

As an experiment, have the students create their own dance language to simulate the bee wagging dance, and try to communicate simple instructions to other classmates. First, they should create a specific vocabulary or set of instructions, and then act it out to get their message across.



## Animal Communication Activity: Smell and Tell

# Smell and Tell

(from Newton's Apple" Teacher's Guide" : <http://www.ktca.org/newtons/13/dolcom.html> )

Follow your nose to find the person wearing the same scent as you.

Many animal communication systems depend on matching scents or sounds to identify friends and enemies. Explore what it would be like to use your nose to find out who your friends and enemies are.

### Materials

- 1 plastic film canister or similar small container per person
  - poster board
  - yarn or string
  - scissors
  - cotton balls
  - spoons
  - a variety of strongly scented materials, such as vanilla flavoring, peppermint flavoring, pine-scented room freshener, lemon-scented cleaning liquid, cedar chips, freshly chopped or pressed garlic, vinegar, oregano, cloves, bubble gum, peanut butter, and cinnamon
1. Make a scent bracelet for each participant by poking two holes opposite each other about 1 cm (3/8") from the top of each film canister. Cut a 25-cm (10") length of string or yarn to pull through the holes. Tie a knot in the yarn to complete the bracelet.
  2. Poke several holes in the canister lids to allow the scent to escape.
  3. Place the same scent in pairs of canisters to create matching sets of scent-filled canister bracelets. For the liquid scents, such as vanilla or peppermint flavoring, pour a small amount of liquid onto a cotton ball and place it in the canister. Cover each canister with a lid to hide the contents.
  4. Distribute the bracelet sets at random to the participants.
  5. Instruct the participants that they may use only their noses to find the other person with the same scent. No words, sounds, or gestures are allowed. When they find their friend, they should report to you.
  6. Record on a poster board which pairs were easiest or hardest to find.
  7. Repeat the exercise, but be sure that each participant has a different scent.

### Questions

1. What factors could have affected the discovery process?
2. Is it easier for the new pairs to locate each other after learning to use their noses in the first session? Why is that the case?



### Canine Communication Game!

This game is designed to help students understand that so much of animal communication is transmitted through body language. In playing this matching game, students are asked to look closely at one of the most easily observed animals in their world: dogs.

First, discuss the concept of body language. Ask the students if they have ever felt that a pet was trying to communicate with them without even making a noise. Talk about how the position of a pet's ears and tail and the animal's posture help to send very clear messages about how the pet feels. Each student is given two sheets (attached) with six cards on each. (There are two cards representing each emotion. One card just has a picture of a dog. The second card has an identical picture and a short sentence describing the message. These are the two cards that will make a match during the game.) The students may color the pictures. Talk about the messages on each card. The six messages are as follows with short descriptions to aide you in helping the children understand the dog's body language:

*I am paying attention.* -The body leans slightly forward. The ears stand up and the mouth is slightly open. The dog doesn't seem scared or angry. It's a rather neutral position.

*I am very scared!* - Everything about the body and head says fear! The ears are laid back, the eyes are small, and the mouth is tightly closed. The body is stooped and the tail is between the legs. It is a completely submissive posture. This is a dog that is very frightened.

*I am angry!* - This dog is a dominant dog that is standing up to a challenge. The ears are straight up and the eyes are large and staring. The teeth are bared in a snarl.

*I am curious.* - Like the first posture, this dog has its ears and eyes at attention. The mouth is slightly open, but is not aggressive. This may be accompanied by the head being cocked to one side.

*I am friendly.* - The ears are slightly back on this dog in order to maintain a non-aggressive stance. His mouth is slightly open, but he not baring any teeth. He's interested, but relaxed and ready to play.

*I am worried.* - This dog is stressed. The ears are laid flat against its head, the eyes are small, and the lips are pulled tight. This dog is not happy, but is submissive and scared.

The students then cut out the cards along the dotted lines. Each student should write her or his name on the back of each card. Pairs of students take one deck of cards, mix them up, and turn them face down. Students take turns turning over two cards at a time. If the two messages match, the student keeps those cards. Play continues until all of the cards are collected. Save the cards and play again!

## Animal Communication Activity: Communication Computation

When you use this resource in your classroom, you may want to adjust the math problems to the skill level of your particular students. A blank template on which you can fill in appropriate “hints” as well as a usable example with addition and subtraction has been provided. The desired answers are below. Enjoy!

### Answer Key:

*Animals communicate in so many amazing ways. Solve the math problems below to find out some of the really neat ways animals at the Academy of Natural Sciences communicate.*

1. When threatened, large boa constrictors can hiss so loudly that their hiss can be heard up to 100 ft. away. This lets any predators know that they shouldn't mess with this snake.
2. When scared, turkey vultures can project their vomit up to 6 ft. What an extreme way to let your predators know that you're scared!
3. When it wakes up from a night's sleep, a Moluccan cockatoo can scream at 135 decibels! (A 747 Jumbo Jet produces 140 decibels!) This is the cockatoo's very loud way of telling the other members of its flock that it made it through the night safe and sound.
4. About 32 days after a female red-tailed hawk lays her eggs, the eggs hatch. The baby red-tails then can be heard making a “klee-uk” sound. That is the hatchlings' way of asking mom for some food. Hey, Ma, feed me!
5. Dr. Irene Pepperberg's African Grey parrot, Alex, knows about 100 words! Alex not only can say all of those words, but can also answer Dr. Pepperberg's questions about size, shape, and color.
6. When frightened, opossums can “play dead” for less than a minute all the way up to 6 hours. This hopefully communicates to a predator- “Look! I'm already dead! Don't you want to go find some other food that is alive?”
7. Even though bearded dragons can stand temperatures of 120 degrees, young male bearded dragons can find themselves in some pretty hot water! When an adult male bearded dragon wants to start a fight with a younger one, sometimes the kid will wave its arms around to show that it doesn't want to fight. Chill out!
8. A skunk's black and white coloring communicates to other animals (including humans!) that they have a defense that smells really bad. And, boy, are they right! The human nose can smell the spray of a skunk 2,640 feet away.

*Animals communicate in so many amazing ways.*

*Solve the math problems below to find out some of the really neat ways animals at the Academy of Natural Sciences communicate.*

1. When threatened, large boa constrictors can hiss so loudly that their hiss can be heard up to \_\_\_\_\_ ft. away. This lets any predators know that they shouldn't mess with this snake. Hint: \_\_\_\_\_

2. When scared, turkey vultures can project their vomit up to \_\_\_\_\_ ft. What an extreme way to let your predators know that you're scared! Hint: \_\_\_\_\_

3. When it wakes up from a night's sleep, a Muluccan Cockatoo can scream at \_\_\_\_\_ decibels! (A 747 Jumbo Jet produces 140 decibels!) This is the cockatoo's very loud way of telling the other members of its flock that it made it through the night safe and sound. Hint: \_\_\_\_\_

4. About \_\_\_\_\_ days after a female red-tailed hawk lays her eggs, the eggs hatch. The baby red-tails then can be heard making a "klee-uk" sound. That is the hatchlings' way of asking mom for some food. Hey, Ma, feed me! Hint: \_\_\_\_\_

5. Dr. Irene Pepperberg's African Grey Parrot, Alex, knows about \_\_\_\_\_ words! Alex not only can say all of those words, but can also answer Dr. Pepperberg's questions about size, shape, and color. Hint: \_\_\_\_\_

6. When frightened, opossums can "play dead" for less than a minute all the way up to \_\_\_\_\_ hours. This hopefully communicates to a predator- "Look! I'm already dead! Don't you want to go find some other food that is alive?" Hint: \_\_\_\_\_

7. Even though Bearded Dragons can stand temperatures of \_\_\_\_\_ degrees, young male bearded dragons can find themselves in some pretty hot water! When an adult male bearded dragon wants to start a fight with a younger one, sometimes the kid will wave its arms around to show that it doesn't want to fight. Chill out! Hint: \_\_\_\_\_

8. A skunk's black and white coloring communicates to other animals (including humans!) that they are dangerous and have a defense that smells really bad. And, boy, are they right! The human nose can smell the spray of a skunk \_\_\_\_\_ feet away.

Hint: \_\_\_\_\_

*Animals communicate in so many amazing ways.*

*Solve the math problems below to find out*

*some of the really neat ways animals at*

*the Academy of Natural Sciences communicate.*

1. When threatened, large boa constrictors can hiss so loudly that their hiss can be heard up to \_\_\_\_\_ ft. away. This lets any predators know that they shouldn't mess with this snake! Hint:  $95 + 5 =$  \_\_\_\_\_

2. When scared, turkey vultures can project their vomit up to \_\_\_\_\_ ft. What an extreme way to let your predators know that you're scared! Hint:  $12 - 6 =$  \_\_\_\_\_

3. When it wakes up from a night's sleep, a Muluccan Cockatoo can scream at \_\_\_\_\_ decibels! (A 747 Jumbo Jet produces 140 decibels!) This is the cockatoo's very loud way of telling the other members of its flock that it made it through the night safe and sound. Hint:  $133 + 2 =$  \_\_\_\_\_

4. About \_\_\_\_\_ days after a female red-tailed hawk lays her eggs, the eggs hatch. The baby red-tails then can be heard making a "klee-uk" sound. That is the hatchlings' way of asking mom for some food. Hey, Ma, feed me! Hint:  $38 - 6 =$  \_\_\_\_\_

5. Dr. Irene Pepperberg's African Grey Parrot, Alex, knows about \_\_\_\_\_ words! Alex not only can say all of those words, but can also answer Dr. Pepperberg's questions about size, shape, and color. Hint:  $50 + 50 =$  \_\_\_\_\_

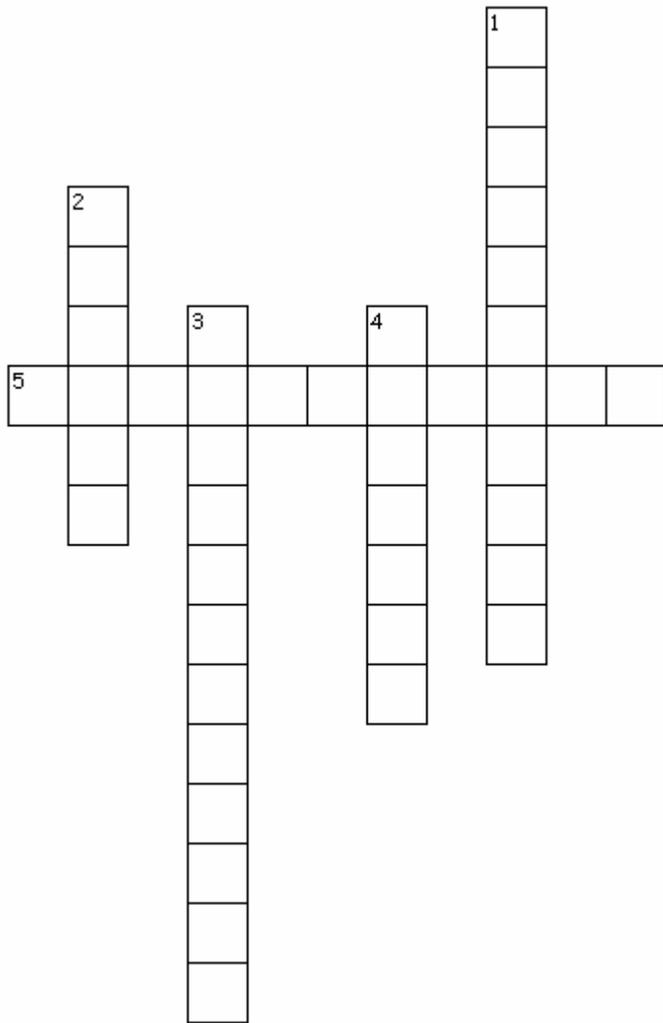
6. When frightened, opossums can "play dead" for less than a minute all the way up to \_\_\_\_\_ hours. This hopefully communicates to a predator- "Look! I'm already dead! Don't you want to go find some other food that is alive?" Hint:  $15 - 9 =$  \_\_\_\_\_

7. Even though Bearded Dragons can stand temperatures of \_\_\_\_\_ degrees, young male bearded dragons can find themselves in some pretty hot water! When an adult male bearded dragon wants to start a fight with a younger one, sometimes the kid will wave its arms around to show that it doesn't want to fight. Chill out! Hint:  $118 + 2 =$  \_\_\_\_\_

8. A skunk's black and white coloring communicates to other animals (including humans!) that they have a defense that smells really bad. And, boy, are they right! The human nose can smell the spray of a skunk \_\_\_\_\_ feet away.

Hint:  $2,639 + 1 =$  \_\_\_\_\_

# Crazy Critter Communication



## Word Box

Communicate

Body Language

Scents

Warning

Information

### Across

5. "I'm scared!" or "Play with me!" are pieces of \_\_\_\_\_ that an animal can communicate using its body language, its voice, its color, or its scent.

### Down

1. An animal can \_\_\_\_\_ using its body language, its scent, its voice, or its color!

2. Animals can communicate with certain smells. Another name for those smells are \_\_\_\_\_.

3. An animal can communicate using its face and body. We call this type of communication \_\_\_\_\_.

4. If an animal wants to be left alone, usually it will give a \_\_\_\_\_.