Exploring the differences between animals!

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School- University of South Carolina  
Grade Level- Second  
Subject- Science

Science Standard: 2-2.2 Classify animals (including mammals, birds, amphibians, reptiles, fish, and insects) according to their physical characteristics.

Purpose/ Essential Question: Which animals are mammals, birds, amphibians, reptiles, fish, and insects? Which animals are warm-blooded and cold-blooded?

Time Frame: Five 30-45 minute lessons  
Day 1: Classify animals into mammals, birds, amphibians, reptiles, fish, and insects.  
Day 2: Complete “Animals Animals” worksheet about classifying animals into mammals, birds, amphibians, reptiles, fish, and insects.  
Day 3: Discuss the difference between warm-blooded and cold-blooded animals and perform cold-blooded animal simulation.  
Day 4: Review the difference in warm and cold-blooded animals and perform an outside activity.  
Day 5: Complete “Warm vs. Cold” worksheet about which animals are warm-blooded and cold-blooded.

Resources: (All of these materials can be bought at Wal-Mart for a reasonable price.)  
- Blank paper (enough for whole class)  
- Markers or crayons (enough for whole class)  
- Poster board (number dependent on how many groups you will have doing the exercise at one time)  
- Velcro (18 squares)  
- Picture of an animal for each student in the class  
- String (18 in. per student)  
- Green crayon and red crayon (one for every student)  
- Cut out sun with a magnet on the back (there is a sun attached or you may make your own) (1)  
- Blue stickers for half the class and red stickers for the other half

Instructional Activities:

Day 1:  
- Pass out a blank piece of paper to every student and tell students to be creative and draw an animal and label it. Tell them not to draw the same animal as their neighbor. Help them get started by telling them to think of different animals in all places around the world and name some examples of animals.
• Explain to the children that they are going to classify the animals that they draw. Ask the class what it means to classify. Tell children that when they classify, they are deciding how objects can be divided into groups that have common characteristics.

• Ask the children to name different categories of animals. Get them started by naming the first category as mammals. Write each category on the board as a separate column.

  1.) Mammals
  2.) Reptiles
  3.) Amphibians
  4.) Fish
  5.) Insects
  6.) Birds

• Ask the students the difference between each group and brainstorm characteristics.

  1.) Mammals - A warm-blooded vertebrate that grows hair on its skin and (in females) produces milk for its young (4)
  2.) Reptiles - dry, scaly skin; most of them lay eggs on land (5)
  3.) Amphibians - moist skin, no scales, most of them begin life in water but live on land when fully grown (5)
  4.) Fish - aquatic vertebrates usually having scales and breathing through gills (6)
  5.) Insects - a type of small animal characterized by a hard external skeleton, three body sections, six legs, single pair of antennae, wings, and compound eyes (8)
  6.) Birds - egg-laying vertebrates characterized primarily by feathers, forelimbs modified as wings, and hollow bones (9)

• After brainstorming, pass out the “How do I classify animals?” fact sheet to all the students for them to keep (fact sheet can be found on page 11).

• Have groups of children come to the board and place their animals under the correct category with sticky tack. Have two pictures of animals from each category to hang up after the children hang their pictures. Below are pictures of animals that will be helpful.

• Discuss the animals in the different categories

Day 2:
• During the students’ table activities, a small group of children will work together to place pictures of animals on a poster board under the correct category. Have the poster board already labeled with the 6 categories of animals (including mammals, birds, amphibians, reptiles, fish, and insects). After they have finished placing the animals in the right category, have them complete worksheet 1, “Animals Animals!” (page 9).

• Grading:
  1. Cooperating and working together (4pts)
  2. Completion of activity (4pts)
  3. Correctly matching (12pts total, 2 points each question)

Day 3:
• Explain that today we are going to further classify animals.

• Animals can be sorted as warm-blooded and cold-blooded.

• Talk about the difference between warm-blooded and cold-blooded animals.
Ask the students if they are allowed to eat candy before they go to bed, and why they think they are not allowed to. Next, explain that a lizard could eat all the candy it wants and not get hyperactive because cold-blooded animals do not metabolize food into energy.

Show the infrared pictures to the class to help them better understand body temperatures of animals.

Next, an activity will be done to help the students better understand the difference between warm and cold-blooded animals. In order to explain how a cold-blooded animal warms up and cools down and survives through a day, have all the students pretend like they are a snake. Then have the class act out what it would be like to live like snakes. Imagine is night time, and turn off the lights and the students will get under their desks as if it was their hole so they can stay warm through the night. Then imagining the sun comes up, and turn the lights back on and the students will have to find an area under one of the overhead lights to bask and warm-up from the night. Now the snake is able to hunt for food but remind the students that the snake cannot convert its food into energy. Next, tell the students it is in the middle of the day and the sun is really intense so they need to find shade. Have them find a place in the classroom to “be in the shade” such as under a table or chair. When the sun cools down, tell the students they can come back out into the sunlight and look for food again. Finally, when it is night time again they need to find their hole for the night and turn the lights back out (10). Throughout this whole time, have a big sun attached to a magnet on the chalk board and move it throughout the day so the students can see what time of day it is.

Day 4:

Before class put a picture of an animal on each of the students’ desks with a string attached so the students can wear the animal as a necklace because they are going to be that animal for the day (animals are on pages 21-30). Place a sticker of a red dot on the warm-blooded animals and sticker of a blue dot on the cold-blooded animals so the students will know the difference.

Review the difference between warm and cold-blooded and look at the fact sheet again.

Allow the students to color their animal.

For the activity take the children outside and only allow the warm-blooded animals to wear their coats (preferably do this activity in the winter or on a cool day). Tell the students who are cold-blooded animals that they may not wear a coat but once outside they can move around or find sun or shade. Bring the students back in after about five minutes and separate the warm and cold-blooded animals to each side of the classroom.

Ask the cold-blooded animals how they felt when they were outside.

Ask the warm-blooded animals how they felt outside.

Explain to the children that the coats represented that animal’s ability to keep itself warm, such as a layer of fat or fur.

Ask the class what the cold-blooded animals could have done in order to warm up without a coat?

1. burrow into the ground
2. lay out in the sun
3. live in warmer climates
4. migrate
• Have the children put their names on their animals and collect the necklace animals so they can be used the next day.

Day 5:
• Pass out worksheet 2, “Warm vs. Cold,” (page 10) along with a green crayon.
• Have the students fill the worksheet out on their own.
• After the students are done filling the worksheet in on their own, take up all the green crayons and pass out a red crayon so the teacher can see the two different answers.
• Next have each animal stand up in front of the class and tell what they are, if they are warm or cold-blooded, and what kind of animal they are (mammal, bird, reptile, amphibian, insect, or fish). Have the children listen and correct their own paper by what their classmates are telling them.
• Grading
  1. Listening/ following direction (5pts)
  2. Accuracy (5pts)
  3. Completion (10pts)

Background Information:
The students will be classifying animals into mammals, amphibians, reptiles, fish, birds, and insects using the characteristics on the “How do I classify animals?” fact sheet. Those characteristics are below.

Mammals (4)
• produce milk to feed babies
• growth of hair or fur
• live birth
• characteristic teeth
• vertebrate (have backbones)

Reptiles (5)
• vertebrate (have backbones)
• bodies are completely covered in scales
• lay eggs on land or bear live young
• have at least one lung

Amphibians (5)
• vertebrate (have backbones)
• skin is smooth and shiny
• begin life in water but live on land when fully grown
• some fertilize eggs externally, some internally
• breathe through skin as well as lungs in some cases

Fish (6)
• vertebrate (have backbones)
• live in water
• fins for swimming
• some have scales
• breathe by gills, lungs, specialized chambers, or skin (7)

Birds (9)
• feathers
• lay eggs
• vertebrates (have backbones)
• wings
• hollow bones

Insects (8)
• 3 body parts
• outside skeleton
• 6 legs
• Single pair of antennae

On Day 3, the students will learn the difference between warm and cold-blooded animals. The following facts will help the students better understand what it means to be warm-blooded or cold-blooded.

Warm-blooded animals
• Animals, such as birds and mammals, maintain a constant body temperature regardless of the temperature of the surroundings (12).
• Warm-blooded animals have to eat often because that is how they maintain an optimal temperature (12).
• Warm-blooded animals’ food = energy which generates heat when they are in a cold environment (10).
• Warm-blooded animals warm up by shivering; some organs can make heat, stopping all efforts to cool off (10).
• Warm-blooded animals often have layers of fur, feathers, and fat to help them maintain body heat (10).
• Warm-blooded animals cool off by sweating, panting, licking, bathing, shedding and resting (10).

Cold-blooded animals
• Animals, such as reptiles, fish, and amphibians, cannot control their body temperature and therefore become sluggish in cold weather (12).
• They do not require as much food, because in cold-blooded animals, food does not equal energy which generates heat (12).
• When it is hot, a cold-blooded animal is active. When it is cold, a cold-blooded animal is not very active and tends to stay burrowed somewhere, usually in the ground so it does not get too cold (12).

A good resource to look at before teaching this lesson is http://coolcosmos.ipac.caltech.edu/.
Assessment

This lesson plan teaches students how to classify animals, defines warm and cold-blooded, and categorizes animals as either warm-blooded or cold-blooded. Often times, younger students become confused when they hear the terms warm and cold-blooded and think that the animal’s blood is really warm or cold. This lesson will clarify this misconception. Also, by teaching the children about cold-blooded animals and how cold-blooded animals depend on external temperature to drive their body temperature, the children can begin to realize how climate change can greatly affect some animals even though it might not affect humans.

With this lesson plan, there are two different worksheets: Animals, Animals and Warm vs. Cold

- For the first worksheet, Animals, Animals, the students will be graded on:
  1. Cooperating and working together (4pts)
  2. Completion of activity (4pts)
  3. Correctly matching (12pts total, 2 points each question)

- For the second worksheet, Warm vs. Cold, the students will then be graded on:
  1. Listening/ following direction (5pts)
  2. Accuracy (5pts)
  3. Completion (10pts).