



Animal Classification

Teacher Lesson Plan

Creature Categories Pre-Visit Lesson

Duration: 30-40 minutes

**Minnesota State
Science Standard**

Correlations:

3.4.1.1.2

**Wisconsin State
Science Standard**

Correlations:

C.4.1, C.4.2

Supplies:

- 1) Smart Board or Dry Erase Board and Makers
- 2) Paperclips
- 3) Pencils
- 4) Markers
- 5) Erasers
- 6) Letter paper
- 7) Construction paper
- 8) Crayons
- 9) Animal Pictures (Appendix I) – Cut out with the names removed, so students are not biased by names. Make sure to keep the animal categories together.

Overview

Students will learn how scientists use their observations of the physical characteristics of animals to discover how different animals are related to each other.

Objectives

At the end of the lesson, students will be able to:

- 1) Describe how and why scientists sort living things.
- 2) Observe the physical characteristics of animals and explain how they are similar and dissimilar.

Background

Scientists use physical characteristics, behavioral characteristics, and DNA to sort animals into different categories. Animals with the most similar characteristics are grouped closer together than animals that share fewer of the same characteristics. For example, all vertebrates have a backbone, but not all vertebrates have fur. Vertebrates such as cats, dogs and bears have fur covering their bodies, so they are in the mammal group. Vertebrates such as snakes, lizards and crocodiles have scales covering their body, so they are in the reptile group. This difference in body covering causes mammals and reptiles to be in two different groups even though they are all vertebrates. Scientists group animals to better understand how the natural world is related and to learn all they can possibly learn from studying nature.



Animal Classification

Procedure

- 1) Tell the students they will be observing physical characteristics (color, shape, size, patterns, etc.) of objects and sorting the objects into groups based on what physical characteristics the objects have in common.
- 2) Break the students into 6 groups and give each group about 8 different office supplies (For example: a pencil, pen, eraser, printer paper, construction paper, paper clips, crayon, marker, etc.).
- 3) Ask the students to observe and describe the physical characteristics of the objects. Explain that physical characteristics describe how things look and generally are measurable. If they are having trouble coming up with physical characteristics, you can prompt them with different characteristics of their objects: shape of the object, color of the object, material the object is made from, etc.
- 4) After the students have observed the objects, ask them to sort the objects into groups based on one characteristic they have in common. For example, if they choose color as the characteristic they might sort them into a blue object group, a red object group and a green object group.
- 5) Once the students have sorted the items, ask each group to explain why they have grouped certain objects together? What do their objects have in common, and what makes them different?
- 6) Tell the students they have just become scientists! Scientists use physical characteristics as one of the ways they decide how to group animals.
- 7) Now collect the office supplies and hand each group pictures from one of the categories of animals. One group receives all the mammal pictures, one all the reptile pictures, etc.
- 8) Explain that they will now be looking at pictures of different categories of animals. Have them take a minute to look at the pictures and decide what all the animals in their pictures have in common (body covering, number of legs, wings/no wings, fins/no fins etc.). While they are looking at their pictures, write each animal category on the board (Reptiles, Amphibians, Birds, Fish, Mammals, and Insects).
- 9) Have each group tell you the characteristics they observed and write the correct observations on the board under their animal group. Fill in the rest of the characteristics they didn't find or couldn't observe from the pictures (see Important Terms section).
- 10) Once they understand the general characteristics of each group have the students sort their pictures even further. Tell them to now sort their pictures based on one characteristic, just like they did with the office supplies. For example, if they chose to sort by spots they would have a group with spots and a group without spots.
- 11) If the students are having trouble sorting the animals, you can prompt them by asking them to look at tails, color, size, skin type, number of legs, fin position, body patterns, etc. They do not have to sort the animals into their correct categories, but just practice sorting them into smaller categories within the larger category.
- 12) When the students are done sorting, ask them why they sorted each group the way they did (they do not need to have the correct answers, just a logical explanation). You can display the pictures of each animal category using a Smart Board or projector so all students can see the pictures while one group talks. Did they notice any similarities in their categories, any differences? Was it hard to sort the animals based on physical characteristics alone?
- 13) If you would like to give the students the correct answers, you may (see Answer Key). You can explain that even though animals look alike (e.g. hedgehogs and porcupines) they may not be related. That is why scientists cannot rely on physical characteristics alone and also use DNA and behavior characteristics to group animals.

Animal Classification

Assessment

- 1) Why do scientists categorize animals? *So they can better understand their traits and how they are related.*
- 2) What are the names of some the different groups of animals? *Reptiles, Amphibians, Birds, Fish, Mammals, Insects.*
- 3) What traits do scientists use to determine to what group an animal belongs? *Physical traits, behavior traits and DNA.*

Answer Key

<p>Mammals</p> <p><u>Carnivores (Order Carnivora)</u></p> <p>Amur Tiger - Cat Family (Felidae)</p> <p>Snow Leopard - Cat Family (Felidae)</p> <p>Brown Bear - Bear Family (Ursidae)</p> <p>European Ferret - Weasel Family (Mustelidae)</p> <p><u>Rodents (Order Rodentia)</u></p> <p>North American Porcupine - Porcupine Family (Erethizontidae)</p> <p>Woodchuck - Squirrel Family (Sciuridae)</p> <p><u>Primates (Order Primates)</u></p> <p>Angolan Colobus Monkey - Old World (Europe, Africa, and Asia) Monkey Family (Cercopithecidae)</p> <p><u>Hedgehogs (Order Erinaceidae)</u></p> <p>Pygmy Hedgehog - Hedgehog Family (Erinaceidae)</p>	<p>Reptiles</p> <p><u>Lizards and Snakes (Order Squamata)</u></p> <p>Rainbow Boa - Non-Venomous Snake Family that has live young (Boidae)</p> <p>Corn snake - Miscellaneous Snake group (Colubridae)</p> <p>Leopard Gecko - Gecko Family (Gekkonidae)</p> <p>Gila Monster - Venomous Lizard family (Helodermatidae)</p> <p>Gray Monitor Lizard - Monitor Lizard family (Varanidae)</p> <p><u>Turtles and Tortoises (Order Testudines)</u></p> <p>Eastern Box Turtle - Pond turtle family (Emydidae)</p> <p>Red-Eared Slider - Pond Turtle Family (Emydidae)</p> <p>Red-Footed Tortoise - Land Turtle/Tortoise Family (Testudinidae)</p>
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Animal Classification

Birds

Water Birds (Order Anseriformes)

Black Swan - Duck, Geese, and Swan Family (Anatidae)

Parrots (Order Psittaciformes)

Blue and Gold Macaw - True Parrot Family (Psittacidae)

Black Headed Caique - True Parrot Family (Psittacidae)

Nocturnal (Nighttime) Raptors (Order Strigiformes)

Burrowing Owls - Typical Owl Family (Strigidae)

Diurnal (Daytime) Raptors (Order Accipitriformes)

Bald Eagle - Hawk, Eagle, Kite, and Old World Vulture Family (Accipitriformes)

Kingfishers and Hornbills (Order Coraciiformes)

Kookaburra - Kingfisher Family (Halcyonidae)

Ground Feeding Birds (Order Galliformes)

Peafowl - Chicken Family (Phasianidae)

Cranes (Order Gruiformes)

White-Naped Crane - Crane Family (Gruidae)

Amphibians

Frogs and Toads (Order Anura)

Red-Eyed Tree Frog - Tree Frog Family (Hylidae)

African Bullfrog - True Frog Family (Ranidae)

Salamanders and Newts (Order Caudata)

Tiger Salamander - Mole Salamander Family (Ambystomatidae)

Eastern Red Newt - Newt and True Salamander Family (Salamandridae)

Mudpuppy - Aquatic Salamander Family (Proteidae)

Japanese Giant Salamander - Giant Salamander Family (Ambystomatidae)

Lesser Siren - Siren Family (Sirenoidea)

Animal Classification

Bony Fish

Fresh Water Ray - Finned Fish (Order Perciformes)

Walleye-Brackish Water Ray - Finned Fish Family (Percidae)

Yellow Perch-Brackish Water Ray - Finned Fish Family (Percidae)

Largemouth Bass - Sunfish Family (Centrarchidae)

Salmon Family (Order Salmoniformes)

Lake Trout - Salmon Family (Salmoniformes)

Sockeye Salmon - Salmon Family (Salmoniformes)

Pike Family (Order Esociformes)

Northern Pike - Pike Family (Esocidae)

Salt Water Ray - Finned Fish (Order Gadiformes)

Burbot - Cod-Like Fish Family (Lotidae)

Insects

Cockroaches (Order Blattodea)

Madagascar Hissing Cockroach - Giant Cockroach Family (Blaberidae)

German Cockroach - Small Cockroach Family (Blattellidae)

Walking Sticks (Order Phasmatodea)

Common Walking Stick - Stick Insect Family (Diapheromeridae)

Flying Insects (Order Diptera)

50 Species of Mosquitoes in Minnesota - Mosquito Family (Culicidae)

House Fly - Fly Family (Muscidae)

Butterflies and Moths (Order Lepidoptera)

Monarch Butterfly - Four-footed Butterfly Family (Nymphalidae)

Luna Moth - Large Moth Family (Saturniidae)

Wasps, Bees, and Ants (Order Hymenoptera)

Fire Ant - Ant Family (Formicidae)

Animal Classification

Important Terms

Adaptation - Changes made by living things in response to their environment (where they live).

Amphibian - A cold-blooded (ectotherm), vertebrate animal that lays many soft, jelly-like eggs which allow for water and air to enter. Young are born with gills and metamorphose into adult animals that breathe through their skin. This group includes frogs, toads, salamanders and newts.

Bird - A warm-blooded (endotherm), vertebrate animal that lays hard-shelled eggs, is covered in feathers, has wings, and breathes through lungs. This group includes raptors, penguins, water fowl and songbirds.

Complete Metamorphosis - A type of metamorphosis found in insects. The insect goes through 4 stages of growth: Egg-Larva-Pupa-Adult. Insects that undergo complete metamorphosis include butterflies, ants, bees, and mosquitoes.

Ectotherm (cold-blooded) - Animals that rely on outside temperature for their body heat. They may raise their body temperature by moving to a sunny spot or lower their body temperature by moving to a cool spot.

Endotherm (warm-blooded) - Animals that generate their own body heat. They are able to raise their body temperature by shivering or eating to increase energy, or lower their body temperature by sweating or panting.

Energy - Ability to do work or produce a change by pushing or pulling some form of matter or to cause a heat transfer between two objects at different temperatures.

Fish - A cold-blooded (ectotherm), aquatic animal that lays many soft-sided, jelly-like eggs which allow water to enter. They are covered in scales, breathe through gills and have fins. This group includes sturgeon, lamprey, and carp.

Habitat - The area or type of environment in which an organism or biological population normally lives or occurs.

Hibernation - A state of inactivity some animals enter in the winter to conserve energy. Animals lower their heart rate and slow their digestive system.

Incomplete Metamorphosis - A type of metamorphosis found in insects. The insect goes through 3 stages of growth: Egg-Nymph-Adult. Insects that undergo incomplete metamorphosis include grasshoppers, cicadas, cockroaches, and lice.

Insect - An invertebrate animal with 6 legs and an exoskeleton. They breathe through holes in their exoskeleton and reproduce by laying eggs which then undergo either complete or incomplete metamorphosis until they reach adulthood.

Invertebrate - An animal without a backbone.

Mammal - A warm-blooded (endotherm), vertebrate animal with fur/hair that gives birth to live young, feeds its young milk, and breathes through lungs. This group includes dogs, cats, bears and cows.

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Metamorphosis - The process of transferring from one life stage to the next (e.g. egg to tadpole to froglet to frog). This process is found in insects and amphibians.

Reptile - A cold-blooded (ectotherm), vertebrate animal that is covered in scales, lays soft shelled eggs, and breathes through lungs. This group includes turtles, snakes, lizards and crocodilians.

Vertebrate - An animal with a backbone.