

Life Cycle Diversity in a Balance



SECOND GRADE ORGANISMS



2 WEEKS LESSON PLANS AND ACTIVITIES

LIFE CYCLE OVERVIEW OF SECOND GRADE

ORGANISMS

WEEK 1.

PRE: Distinguishing characteristics of vertebrates.
LAB: Discovering characteristics of animals.
POST: Identifying animals by the tracks they make.
WEEK 2.
PRE: Developing and understanding animal jokes.
LAB: Describing local habitats.
POST: Comparing land and water organisms.



HUMAN BIOLOGY

WEEK 3.

PRE: Charting the growth of humans.
LAB: Comparing the growth of hair.
POST: Analyzing how babies grow.
WEEK 4.
PRE: Investigating growth in humans.
LAB: Comparing the positions of human organs with those of other animals.

POST: Analyzing fingerprints.

PLANT LIFE

WEEK 5.

PRE: Exploring the different types of leaves and roots.
LAB: Comparing and contrasting leaves.
POST: Exploring the parts of trees and flowers.
WEEK 6.
PRE: Discovering the diversity of plants.

LAB: Classifying broad and needle leaf trees.

POST: Discovering the importance of trees.

NATURAL ENVIRONMENT

WEEK 7.

PRE: Exploring different eating strategies.
LAB: Observing a worm family.
POST: Comparing the components of the nutrient cycle.
WEEK 8.
PRE: Investigating the life of owls.
LAB: Exploring ovel pellets.

LAB: Exploring owl pellets.

POST: Exploring your local natural environment.

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PRE LAB

OBJECTIVES:

- 1. Introducing different vertebrates.
- 2. Distinguishing characteristics of vertebrates.

VOCABULARY:

amphibian animal bird fish mammal reptile

MATERIALS:

worksheet pictures of different animal groups

BACKGROUND:

Animals are multicellular living organisms that grow, reproduce, are capable of movement, respire and give off wastes. They cannot make their own food, like plants.

Although some of the finer points of animal classification are still being disputed, children can benefit from learning that animals can be grouped together if they share enough characteristics. Animals are divided into two main groups: vertebrates (with internal backbones) and invertebrates (without internal backbones). The main divisions of vertebrates are fish, amphibians, reptiles, birds, and mammals.

Fish have fins and scales. They live in water whether fresh or salty and breathe oxygen through their gills.

Reptiles are air breathing that have internal fertilization and scaly bodies. Reptiles include snakes, lizards, crocodiles, alligators, and turtles. Amphibians have smooth, moist skin and breathe through lungs as adults. When they are young, they breathe through gills. Amphibians must lay eggs in water and must keep their skin moist at all times.

Birds have feathers. Their front limbs are modified to form wings and their eggs are protected by a shell.

Mammals have fur or hair. Mammals usually have young that develop in the mother's body. The only exceptions to these generalities are the platypus and spiny anteater which lay eggs. Mammals all have glands in the mother's body that produce milk



compare vertebrates.

Students use a worksheet to

for their young.

PROCEDURE:

1. Discuss with students the fact that animals can be divided into categories according to how many characteristics they have in common. Describe the division of animals into those with backbones and those without. Show students different pictures of vertebrates as you discuss each of the animals.

2. Instruct the students to cut out the 18 different animals in the worksheet. Have students sort them into the different vertebrates including mammals, birds, fish, amphibians, and reptiles. You may want to go over each picture to make sure students know what each picture is depicting. (1. elephant - mammal; 2. turtle - reptile; 3. fish; 4. salamander - amphibian; 5. sea - mammals; 6. chicken - bird; 7. horse - mammal; 8. kangaroo - mammal; 9. camel - mammal; 10. frog - amphibian; 11. newt - amphibian; 12. deer - mammal; 13. bear - mammal; 14. duck - bird; 15. sea horse - fish; 16. snake - reptile; 17. bat - mammal; 18. monkey - mammal)

3. Check to make sure that each student has sorted them correctly, then have them paste them into the appropriate groups.



LAB

OBJECTIVES:

Students compare and contrast live animals.

- 1. Discovering characteristics of animals.
- 2. Comparing and contrasting different characteristics of animals.

VOCABULARY:

amphibian bird fish fur hair mammal reptile scale slimy wet



MATERIALS:

live animals (we suggest a rabbit, bird, turtle newt or frog, fish, guinea pig or hamster)

BACKGROUND:

The vertebrates refer to the phylum called CHORDATA. Members of this phylum are our common everyday animals. All mammals, birds, amphibians, reptiles, and fish belong to this group. There are over 45,000 species throughout the world. Vertebrates have a backbone, a nervous system, and a gill slit during some stage of their life cycle. In land-dwelling vertebrates, these slits are present only in the embryo.

Mammals have distinct characteristics including: controlled body temperature, highly developed jaws, a coat or hairy skin covering, highly developed internal organs, and mammalian glands. Most important is their mode of reproduction and the way in which the young are fed on the mother's milk.

Birds are warm blooded and have a constant body temperature (with some exceptions). Birds have succeeded in conquering the air by having a very light skeleton. The beak and eyes are highly developed. They have feathers and produce eggs.

Reptiles are mainly terrestrial, but there are many living partly in the aquatic environment. The body is covered with scales or patches of horny, sometimes bony skin. Limbs are usually short or absent, feet show many variations in form. Most reptiles are oviparous, meaning that they produce external eggs. Representatives of reptiles include lizards and snakes.

Amphibians are aquatic are four limbed. The most common characteristic is an exposed, water permeable skin, rich in glands which secrete mucus, which is sometimes poisonous. Amphibians lay small round eggs protected by a gelatinous mass. Some species go through a larval stage that metamorphoses into a juvenile, for example, a tadpole changes into a frog.

There are two major types of fish, one group called the bony fishes and the other cartilaginous fishes. All fishes live in water and have external fertilization (with some exceptions). Cartilaginous fish include sharks, rays, and lampreys. Bony include most of your present day fishes like tuna, salmon, and goldfishes.

PROCEDURE:

1. This activity requires live animals, which can be obtained or borrowed from a fellow teacher or by having students bring in their small pets. There is always one student who owns a rabbit, turtle, goldfish, hamster, guinea pig, mouse, or any other small animal.

- 2. Discuss the following vertebrates characteristics with the students:
- ! vertebrates have an endoskeleton (internal skeleton) made of bone or cartilage
- ! vertebrates have a body with a head and trunk and many times a neck and tail
- ! vertebrates have eyes, ears, and nostrils on the head

! vertebrates also contain many highly developed systems associated with their specialized organs. The systems include the muscular, skeletal, digestive, respiratory, circulatory, excretory, nervous, and reproductive systems.

3. Emphasize that humans are vertebrates. In the laboratory activity have the students describe the different animals that are brought to lab. On the lab sheet fill in the animal that is brought in on the left-hand column and on the right have the students describe the animal. You might want to develop a list of words that are more suitable for the animals that you have. You may want to compare the position of each animal's eyes, nose, and ears. Ask students to discuss why an animal looks the way it does. The correct answers are not as important as is having the children ask questions that compare and contrast the animals.

PROBLEM: How are organisms different? **PREDICTION:**

PROCEDURE: USE SOME OF THE FOLLOWING WORDS TO DESCRIBE THE ANIMALS IN LAB. YOU MAY USE OTHER WORDS. ANSWER THE FOLLOWING QUESTIONS FOR EACH ANIMAL:

- 1. Where is the animal's nose?
- 2. Where are the animal's eyes?
- 3. Where are the animal's feet?
- 4. Where is the animal's heart?

WORDS THAT MIGHT HELP: slimy, wet, fur, warm, cold, big, little, webbed feet, no feet, shell, scales, lives in water, hops, makes sounds

ANIMAL	DESCRIBE	

CONCLUSION: What are some characteristics to look at when comparing organisms?

POST LAB

OBJECTIVES:

Students use a worksheet to compare animal tracks.

- 1. Discovering characteristics that can identify animals.
- 2. Identifying animals by the tracks they make.

VOCABULARY:

backbone track vertebrate



MATERIALS:

Wild Animal Placemats worksheet

BACKGROUND:

There are many different ways to identify an organism. Their characteristics are not just dependant on the animals' physical make-up. The tracks and trails an animal leaves can tell you the type of animal it is and whether it was walking or running. You can tell if the organism was by itself or with a group of other animals.

The way organisms live can also give you a clue. A mud swallow will leave a very characteristic nest, as most birds do. Burrows, for example from ants or gophers, can also help identify the animal. Even fecal matter gives you a clue. The "scat" of a coyote is very diagnostic! You know an owl is around if you find owl pellets (remains of last meals, usually bones and fur of rodents).

The footprints of animals are very diagnostic. A human footprint is unmistakable! There are grouping of animals that are helpful. For instance, hoofed animals versus animals with paws or toes. Learning the footprints of animals requires observing for unique characteristics.

PROCEDURE:

1. Many times animals leave before we can observe them in nature. In this exercise the students will learn about the different tracks that animals leave.

2. Tracks can be used to identify different animals. Ask the students what they can learn from tracks. List the answers on the board:



3. Go over the following tracks with the students to see if they can predict what types of animals they came from. Notice that these are just a general look at bigger groups of animals. Draw the figure on the board and have the students guess. There are many books available on animal tracks. You may want to consult your library or the recommended book for more information.



4. Have students try to match the animal tracks around the border of the Wild Animal Placemats with the animals listed in the placemat.

5. Use the worksheet to see if students can identify the tracks. Racoon (7), Owl (5), Fox (3), Deer (4), Cat (1), Deer mouse (6), Squirrel (2).

LIFE CYCLE - ORGANISMS (2A) POST MATCH THE ANIMAL WITH ITS TRACK



raccoon

3

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deer mouse

squirrel

3

deer

6

cat







PRE LAB

Students create and record animal jokes.

OBJECTIVES:

- 1. Developing and understanding animal jokes.
- 2. Continuing to investigate different animals.

VOCABULARY:

animal organism



MATERIALS:

102 Animal Jokes by Ski Michaels other books that have animal puzzles, jokes, or amazing stories worksheet

BACKGROUND:

Sometimes students need to develop a "sense of humor" about science. Below are examples of different animal jokes that might help the students develop their critical thinking skills on using words in a humorous fashion.

- Q. Where does a lamb go for a haircut?
- A. To the ba-ba shop.
- Q. What do you call a pig's laundry?
- A. Hog wash
- Q. What do you do for a sore pig?
- A. Put on some oinkment.
- Q. What do you call a cow that's eating grass?
- A. A lawn moo-er
- Q. What do you use to paint a rabbit?
- A. Hare spray.
- Q. What's the best kind of seafood to have with peanut butter?
- A. Jellyfish

Incredible facts about animals are also fun for students. It gives them a "fact"" that can amaze their family and friends.

A. Cows drink a lot of water. If you drank as much, you'd consume 240 glasses every day.

B. "You eat like a pig" is an insult to anyone, including a pig. Pigs like to eat regularly, but they never stuff themselves too full.

C. Imagine a turkey as big as a German shepherd dog. That's the size of one gobbler that was raised in England in 1980.

D. The polar bear doesn't mind icy water because its fur is waterproof. It's so cozy it can swim nonstop for 4km/30 miles at the rate of 7km/4 miles per hour.

PROCEDURE:

1. Discuss the use of amazing facts and jokes to learn about the different animals.

2. As a homework assignment, have the students make up their own "humorous" jokes and to research at least one amazing fact. They can use the Internet, the library, or just poll people who may have some funny stories to tell.



AMAZING DUCK HAS TO TELL AN FUN FACT AND AN ANIMAL JOKE. IN THE SPACE BELOW WRITE A JOKE AND AMAZING FACT ON THE ANIMALS OF YOUR CHOICE.

JOKE

AMAZING FACT

LAB

OBJECTIVES:

- 1. Defining habitats.
- 2. Describing local habitats.

VOCABULARY:

animal habitat organism

MATERIALS:

lab sheet pencils pieces of string about 2 meters long

BACKGROUND:

A habitat is where an organism lives. There are large habitats and small habits. Large habitats would include coral reefs, deserts, forests, islands, lakes, mangroves, oceans and coast, prairies, rangeland, rivers, and wetlands. However, there are smaller habitats including organisms within an aquarium.

Many children walk through different portions of their house and school without realizing that they are sometimes disturbing other organisms' habitat. For instance, walking on a sandy beach, upsets the sand fleas that may live within the pores of the sand. Organisms that are smaller require small spaces, and larger organisms require a larger habitat to sustain their species.

PROCEDURE:

1. Students have their own habitat that they live in. Have the students list the organisms that can be found in their habitats. They will probably come up with people, cats, dogs, other pets, but see if they can figure out what wild animals live in their homes also (i.e., spiders, ant, mice, earwigs, cockroaches). Students will probably say that plants are in their homes, so everything in their homes seems to be an artificial habitat.

2. In this lab the children will be describing a habitat they see everyday. A habitat is an environment that provides an animal with the food, water, temperature, and protection





it needs; it is the place where the animal is naturally found. Examples of habitats are jungles, forests, deserts, oceans, and lakes. A habitat can be described by listing the climate, the terrain, and the plants and animals that live there.

3. Divide children into small groups. Give each group a piece of string and a worksheet. Take them out into the schoolyard or a nearby field. The students should then make the string into a circle on the ground and describe the habitat within the circle. You may want one child to stand in the middle and have the other children rotate the string around the center child.

4. You may want to tell students that they are to form the best circle they can. What plants are there? About how many of each are there (they do not have to count all the grass blades!) Draw pictures of what they see. What animals are there? What kinds of plants and animals do you have the most of? How do these animals get their food, water, and shelter? If this is the schoolyard, how do these animals survive getting walked on all the time? What is the climate like? Remember animals include spiders, worms, flies, mosquitoes, as well as large animals.

5. Make sure you choose a spot on the school ground that is not devoid of life!

PROBLEM: Can the habitat of the schoolyard support life?

PREDICTION: _____

MATERIALS: 2 meter string, outside

PROCEDURE: Go outside and measure a circle with a diameter of about 4 meters. Have your partner stand in the center and walk around him with a 2 meter string in you hand. As you walk around in a circle, the diameter of the circle is 4 meters. The 2 meter string represents the radius.

Draw a picture of the plants and animals in your circle in the space below.



CONCLUSIONS:

1. About how many plants are there in your circle?

2	A ro thou	month	arooo?
Ζ.	Are they	mosuy	yiass: _

- 3. About how many animals did you find?_____
- 4. What kinds of animals were there?_____
- 5. What animal was the most common?

POST LAB

OBJECTIVES:

- 1. Learning where organisms live.
- 2. Comparing land and water organisms.

VOCABULARY:

beach coast deep habitat land shallow

Students use a worksheet to distinguish

land and marine environments.

MATERIALS:

worksheet crayons (optional)

BACKGROUND:

Students have learned about animals that live on land. This exercise is to remind students that organisms of all types live in the oceans. Organisms that reside in the ocean live in certain areas of the ocean just like land animals live in certain areas.

Organisms that live in the marine environment must be able to adapt their bodies to the salt water. They also need to have a supply of nourishment similar to organisms that live on land. The ocean usually has nourishment throughout the water as dissolved minerals. Food created by algae is floating within the upper 200 meters of the water column. Water allows organisms to move around with greater ease than on land. Whales for instance have a much larger habitat than an elephant, because the whales can move within the ocean of their birth.

The beach is an area that is half water and half land. Many portions of the beach are covered by water part of the time, so it is not a friendly area to live.

Shallow waters are usually close to the coast. Organisms, like crabs, clams, corals, and seastars reside in this area. Fish can also live in shallow, and deep water. Deep water organisms include porpoises, fishes, and deep water clams.

PROCEDURE:

1. Emphasize with students that there are many habitats in which organisms live

in both water and land.

2. The worksheet is a picture of a deep marine water, shallow marine, to land environment. Notice that deep water is closest to the bottom of the paper and shallow is toward the beach and land. The view is that of a sail or on a ship in deep water looking towards land.

3. Distinguish for students the differences between deep and shallow waters. Have students draw a line to where they think each organism on the worksheet lives or cut out the pictures and have students paste them on. You many want to include other pictures you may have, or stickers of fish or other marine creatures. You may want students to color the different portions of the ocean and land. Make sure you discuss the organisms first and then have the students complete the lab sheet.

4. Answers: Land: tree; Shallow water: snail, crabs, conch, crab, seaweed, and some fish; deep water: fish, ray (some snails and conchs can live in deeper water)

POST

WHERE DO THESE ORGANISMS LIVE?

DRAW A LINE TO WHERE YOU THINK THESE ANIMALS LIVE.



SHALLOW WATER

DEEP WATER