Design an Organism

Age: 5th Grade

GSE: S5L1. Obtain, evaluate, and communicate information to group organisms using scientific classification procedures.

> a. Develop a model that illustrates how animals are sorted into groups (vertebrate and invertebrate) and how vertebrates are sorted into groups (fish, amphibian, reptile, bird, and mammal) using data from multiple sources.

Learning Objective: Students will create their own imaginary organisms using different traits drawn from a bag.

Gather your Gear

- Adaptation Cards
- Bag to draw cards from
- Chart paper/lined paper
- Crayons/markers/pencil/pen

Get Ready

A little background information for you to have before the lesson.

Scientists classify animals according to their body characteristics. This orderly arrangement of the animal kingdom shows how the various kinds of animals are related.

Taxonomy is the science of classification of living things. There are seven basic ranks, as well as many intermediate ranks, which define animals:

> **Kingdom** is the highest rank. The most easily recognized kingdoms are those for plants and animals. There is some disagreement among scientists over the other kingdoms. Some scientists include a kingdom for fungi, one for protists (one-celled organisms), and one or two kingdoms for various types of bacteria.
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> **Phylum** is the largest subdivision of the animal kingdom and covers animals of broadly similar characteristics. The phylum *Chordata*, for example, includes all animals with any kind of backbone. This rank also includes invertebrates which are animals with no backbone. The phylum *Arthopoda* includes insects, spiders, and crustaceans.
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> **Class** is the main subdivision of phylum, bringing together animals with a closer relationship. The phylum group is then divided into even smaller groups, known as classes. The *Chordata* (vertebrates) phylum splits up into *Mammalia* (Mammals), *Actinopterygii* (Bony Fish), *Chondrichthyes* (Cartilaginous Fish), *Aves* (Birds), *Amphibia* (Amphibians) and *Reptilia* (Reptiles).
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> **Order** takes the subdivision a stage further. *Mammalia*, for example, is divided into 19 orders, among them *Marsupial*, *Primates*, *Rodentia*, and *Carnivora*.
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> **Family** includes animals that are recognizably similar. For example, among the *Carnivora* (flesh eaters), the family *Felidae* includes all cat-like animals. Family names end in the suffix *-idae*.

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Genus is a group of closely related animals within a family. For example, the *Felidae* include the genera *Panthera* (big cats such as lions), *Felis* (cats that purr but do not roar), *Acinonyx* (the cheetah, with its nonretractable claws), and *Lynx* (the lynx).

Species is the most specialized division. It defines animals that are of the same kind and can interbreed.

Adaptation is a behavior or skill that an organism has that allows it to thrive in its habitat.

Lesson

1. Review what classification is and how scientists classify organisms.
2. Go over what an adaptation is. Brainstorm examples of animal adaptations, prompting the students if necessary.
3. There are two types of adaptations. A physical adaption is a type of structural modification made to a part of the body. A behavioral adaptation is something an animal does: how it acts in response to its environment.
4. Brainstorm some examples of both types of adaptations and classify them into each area.
5. After the students understand what an adaptation is and the differences between the two types, have them engage in the design exercise below.

<u>Design Time</u>

1) Each student will pick four adaptation cards.
2) They will then design an organism with these adaptations. As part of the design, students will give their organism a name, classify the organism into a Kingdom at least, define the habitat in which the organism lives, and describe how the organism's adaptations help it survive in its habitat.
3) As an artifact of the lesson, each student will either create a drawing or written description of their organism, making sure to express each of the items in #2 above.

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Adaptation Cards

Tall	***Aquatic***	***Social***
Short	***Jumper***	***Sedentary***
Diurnal	***Slithers***	***Active***
Nocturnal	***Creeps***	***Solitary***
Furry	***Crawls***	***Territorial***

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Slippery	***Walks***	***Terrestrial***
Arboreal	***Runs***	***Detachable limbs***
Short	***Swim***	***Long legs***
Smelly	***Night Vision***	***No skeleton***
X Ray Vision	***Can see long distances***	***Exoskeleton***
Fly	***Prickly***	***Retractable tail***

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Pale coloration	***Scaly***	***Strong***
Magnetic	***Feathery***	***Long tail***
Incredible Hearing	***Camouflage***	***Great sense of smell***
Flexible	***Invisible***	