

Classification – Grouping Animals Using a Dichotomous Key

Theme: Animals are grouped by their common characteristics.

Materials Needed:

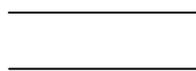
- Shoes – one from each student in the class.
- Several dozen toy animals or pictures of animals from all 5 classes of vertebrates.
- Dry erase or chalkboard and appropriate writing utensils.

Engage:

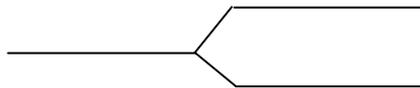
- Make a K-W-L chart on the dry erase board
- Ask the students the following questions
 - What do you know about animal groups?
 - Record the answers on the board.
 - What would you like to know about animal groups?
- Introduce a live animal.
 - Ask the students the kind of animal.
 - Ask them if they know what group it belongs to.
 - Ask them to name the various characteristics of that group.
 - Allow the students to touch the animal.

Explore:

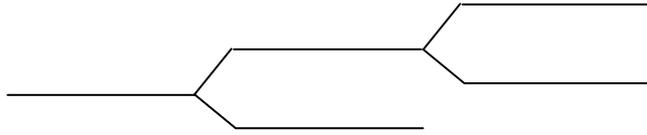
- Have the students arrange their chairs in a circle.
- Take off one shoe and have each of the students take off one shoe and place them in the middle of the circle.
- Tell the students that they are to divide the shoes into two piles.
 - Explain that the piles don't have to have an equal number of shoes but that they must be grouped according to some common characteristic.
 - Draw two horizontal lines on the board. Label the line with the agreed upon characteristics.



- Return to the pile of shoes.
 - Ignore one of the piles for the moment.
 - Explain that the class must now divide the other pile of shoes into two distinct piles.
 - After the task is complete, add two new lines and record the information.



- Continue the task of dividing the shoes into two distinct piles, adding the information to the sketch until there is only one shoe remaining with the identifying characteristic.
 - At this point the shoe is identified and the owners name is added to the sketch.



- Divide the second pile of shoes in the same way as the first pile until all of the shoes have been identified.
- Push all the shoes back together in one pile.

Explain

- Explain to the students the meaning of the word “dichotomous” – it means “two forks”.
- Explain that dichotomous keys are used by scientists to help them identify and group animals, plants and other living things by their common characteristics.
- Dichotomous keys are very important tools that help scientists place living things in the right group.
 - Why is this important?
 - Some of my main work here at the Zoo involves working with butterflies.
 - Butterflies rely on plants to live. The caterpillars eat the plants and the adults drink nectar from the flowers.
 - I might notice an adult butterfly land on a flower and begin feeding. If I don’t know what kind of plant it is, how do I find out? I would take a sample of the plant and use a dichotomous key that has been prepared for plants to identify it.
 - Some of the characteristics used by scientists for grouping animals are not as obvious as others.
 - Some characteristics are very subtle.
 - Some characteristics are not always present.
 - Flowering plants are often identified and group by characteristics of the flowers themselves.
 - Flowers may not always be present and the scientist might have to wait until a flower appears to place the plant in its proper group.
- Explain to the class the characteristics of the 5 major vertebrate classes of animals.
 - Mammals
 - Warm blooded
 - Live birth to young
 - Suckles young on milk
 - Covered with fur/hair
 - Bird
 - Warm blooded
 - Lays eggs
 - Hollow bones
 - Covered with feathers
 - Has wings
 - Reptile
 - Cold blooded

- Covered with scales
 - Lays eggs
- Fish
 - Cold blooded
 - Covered with scales
 - Usually lays eggs
 - Breaths through gills
 - moves with fins
- Amphibians
 - Cold blooded
 - Wet skin
 - Goes through metamorphosis
 - Lays eggs

Extension

- Divide the students into groups of 3 or 4.
- Give each group a pile of 20-30 animal toys. The animal toys in each pile should consist of 2 vertebrate classes (e.g., mammal, reptile, amphibian, bird, fish).
 - There can be several examples for each class (e.g., for mammals perhaps two or three different cats, bears, etc.)
- Have the students divide the pile into two major groups (e.g., the classes)
- Working with the first pile, have the students further divide each pile, replicating what they did with the shoe exercise.
- Repeat the exercise with the the other pile.
- Record the characteristic of each subsequent pile on the lines of the “key” as with the shoe exercise.

Evaluation

- Ask the students to explain their groupings of animals.
- Have the students construct a dichotomous key using their system of grouping the animals.

Conclusion

- Wrap up the lesson by showing the students another live animal. Ask the students if the animal could be placed anywhere on the keys that they constructed earlier.