SUPERNOVA
at Dalhousie University

Title

Dichotomous Key

Workshop Overview

Description
A Dichotomous key uses a series of questions with multiple choices at each point to allow identification of the desired organism. Each choice either leads to another choice or a result.

Topic Area(s)
Biology

Grade Level: 5 and up

Duration: 30-45 minutes

Learning Outcomes:

- Logical thinking
- Observation of physical traits

Hook

Creatively classify some curious critters!

Background Information

- Animals can be identified based on their physical characteristics.
- Dichotomous keys allow animal identification by using a series of questions. Each question either leads to another question or to a result (identifying the organism). The organism either agrees (yes) with the question or opposes it (no).
- Therefore no two animals can share the same set of answers.
- Questions have to be objective, everyone should be able to use a Dichotomous key even if they didn't create it.
- It may be easier for campers to create their Dichotomous keys first using a branching tree method, and then changing it into questions (as seen in Additional Resources).
- Biologists used the keys as an early method for classifying animals. However, physical similarities do not necessarily mean the animals are closely related.
- To increase the accuracy of classification, the method of classifying animals by physical characteristics is now used alongside developmental and DNA evidence.
- Dichotomous keys gave rise to the field of taxonomy, which defines groups of biological organisms based on shared characteristics.

- Organisms are organized in taxonomic ranks, arranged so each rank decreases in size. The current taxonomic rank is: domain, kingdom, phyla, class, order, family, genus, species. (Does King Phillip Come Over For Good Snacks)
- For each set of animals, there can be multiple right Dichotomous keys.

Materials

Per group/student:

- Laminated animal photos (8 per group)
- Pencil
- Paper

Safety Considerations

None.

Procedure

- Hand out a set of laminated animal photos to each pair of students.
- Instruct students to create a Dichotomous key for their animals using questions with only two options.
- Once the key is completed, have pairs swap keys and animal cards. See if other students can use another's groups questions to properly identify the animals.

Wrap-Up/Debrief

- For each set of animals, there can be multiple right Dichotomous keys. Did any groups identify the same animal using a different dichotomous key?

Additional Resources

- Example of a possible Dichotomous key for: lion, elephant, starfish, tiger shark, grizzly bear, flamingo, penguin, and moose.

1.
    a. Animal has four legs..... Question 2
    b. Animal does not have four legs..... Question 3
2.
    a. Animal has fur.....Question 4
    b. Animal does not have fur..... Elephant
3.
    a. Animals always lives in the water.....Question 6
    b. Animal does not always live in the water...Question 5
4.
    a. Animal has a long tail..... Lion
    b. Animal does not have a long tail..... Moose

5.
    a. Animal can fly..... Flamingo
    b. Animal cannot fly..... Penguin
6.
    a. Animal has fins..... Tiger shark
    b. Animal does not have fins..... Starfish