Lesson Plan – What is a Dichotomous Key?

Summary
Scientists have identified and classified over one and a half million species of animals, plants, fungi, and other organisms on the earth. Species are identified by scientists all over the world by a uniform classification and naming system. A dichotomous key is a process of identifying an organism with a series of steps, each containing two questions. The answers lead you along a path until the organism is identified.

Content Area
Biology, Botany, Zoology

Grade Level
3-5

Key Concept(s)
- With well over 1.5 million species of organisms on earth described, scientists around the world have developed a uniform process of identifying and naming species.
- One species may have many different common names but each species has only one scientific name.

Lesson Plan – What is a Dichotomous Key?

Key Concept(s)

- Binomial nomenclature gives each described named species a two part name; the genus and species.
- A dichotomous key is a guide in which you progress through steps, each with two questions, until you identify an organism.

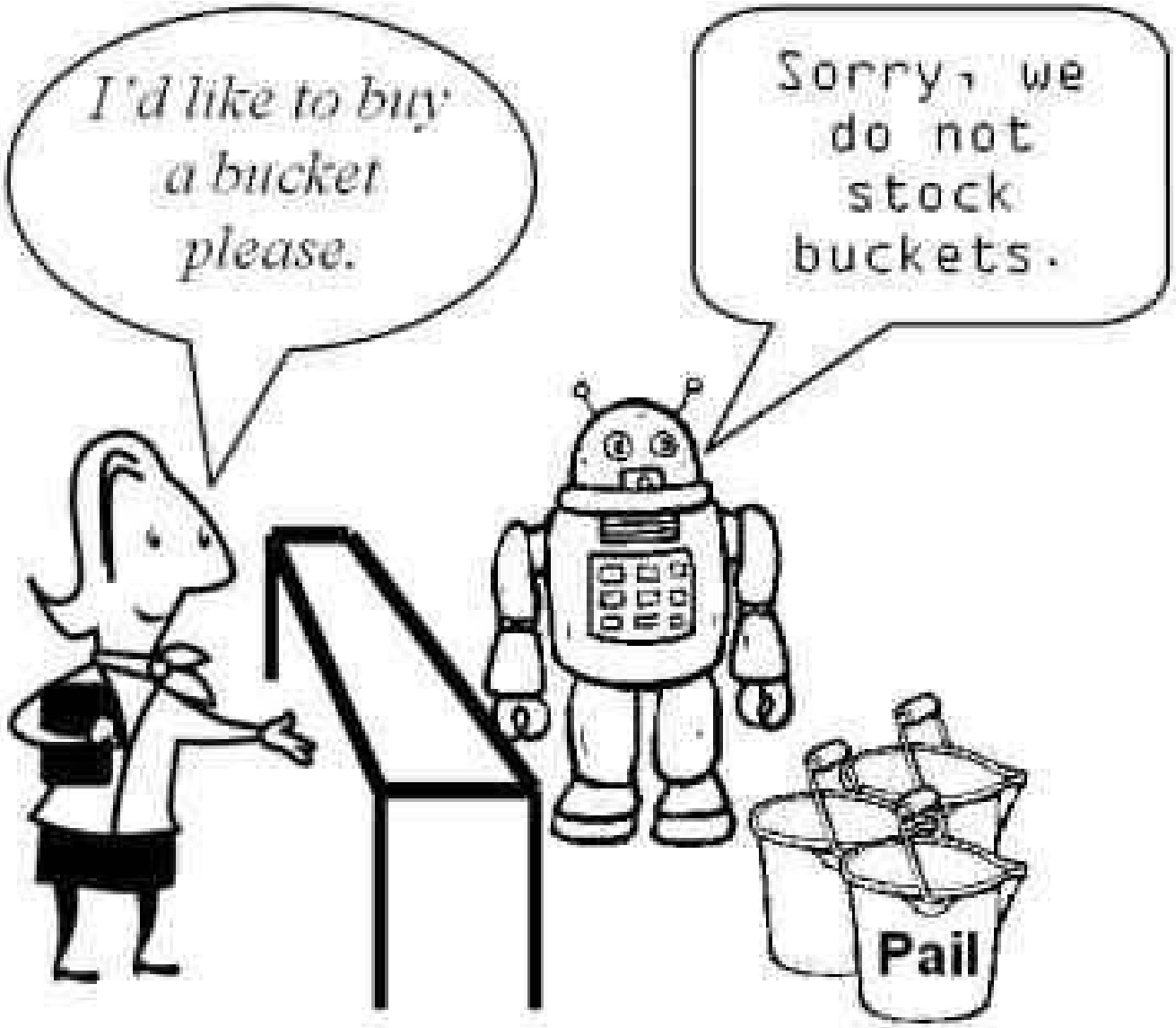
Objectives

Students will be able to:

- Describe the difference between a common name and a scientific name.
- Understand that scientist sort living things into groups for classification from large Kingdoms down to individual species.
- Explain and demonstrate how to use a dichotomous key.

Lesson Plan – What is a Dichotomous Key?

National Science Education Standard or Ocean Literacy Essential Principle	Learning Goals
Unifying Concepts and Processes 1. Systems, order, and organization	Types and levels of organization provide useful ways of thinking about the world. Types of organization include the periodic table of elements and the classification of organisms.
Life Science C.1. Characteristics of organisms	Each plant or animal has different structures that serve different functions in growth, survival, and reproduction. For example, humans have distinct body structures for walking, holding, seeing, and talking.
Principle 5 (3-5, B.) The ocean supports a great diversity of life and ecosystems. Diversity of Life	The ocean provides most of Earth's living space and supports a great diversity of life from the surface, through the water column, and down to the sea floor.


I'd like to buy a bucket please.
Sorry, we do not stock buckets.
Pail

People have many names for the same thing.

What would you call it?

People have many names
For the same things.

What would you call it?

Car
Truck
Transportation
Automobile
Motor Vehicle
Vehicle
Bucket of Bolts

Pick-up truck
2015 Toyota Tacoma pick-up truck
Four-door 2015 Toyota Tacoma pick-up truck

Scientists Need to Speak the Same Language!

- Confusion over words may not seem like a big deal, but it can be!

We are sinking!

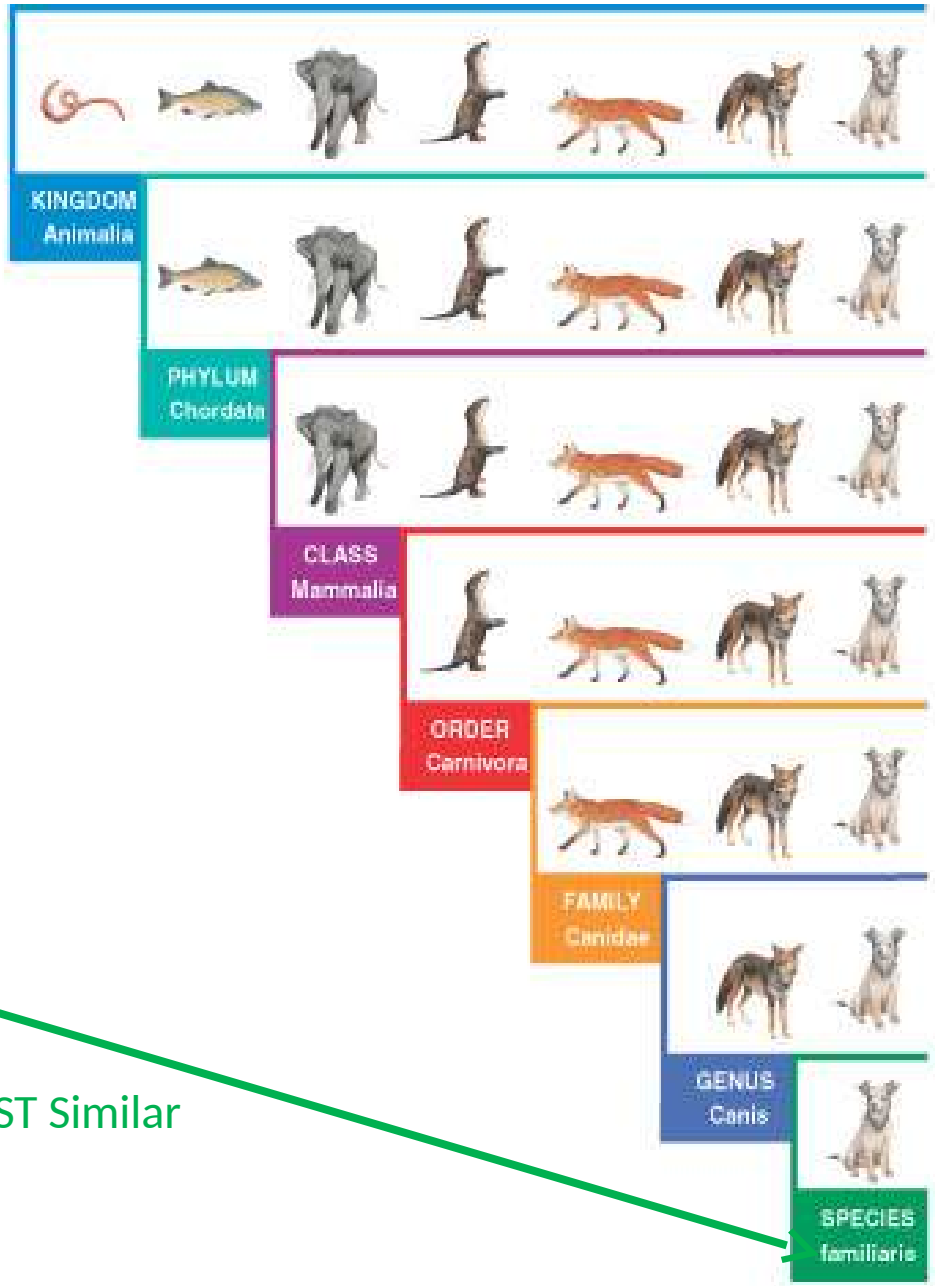
What are you thinking about?

German Coast Guard

Nomenclature: How scientists name living things by sorting into groups.

- Kingdom
- Phylum
- Class
- Order
- Family
- Genus
- Species

LEAST Similar



MOST Similar

Carl Linnaeus, 1758

Created the system of naming living things.

Binominal nomenclature

Ursus arctos, Linnaeus, 1758

Ursus maritimus, Phipps, 1774

YES or NO: The key to naming living things is asking the right questions!

- Dichotomous (dīˈkätəməs) means divided in two parts.
- When you use a dichotomous key, you follow a path. Each choice along the path has only two questions. The answer is always YES or NO.

1. Does it have a shell?
   YES, go to question 2
   NO, go to question 3

2. Does it have two shell halves that fit together? YES, it is a clam

3. Does it have wings? YES, it is a butterfly
   NO, go to question 4

4. Does it have 8 legs? YES, it is a spider

Let’s Practice!

We will divide into groups.

I have five bags with supplies.

How many can be in each group?

Groups:
3 groups of 4
2 groups of 3

Let’s Practice!

1. Is it an animal — Yes, go to 2 / No, go to 7
2. Does it have feathers — Yes, it’s a bird / No, go to 3
3. Does it have fins — Yes, go to 4 / No, go to 6
4. Does it have gills — Yes, it’s a fish / No, go to 5
5. Does it have a blowhole — Yes, it’s a whale
6. Does it have a long trunk — Yes, it’s an elephant
7. Does it have leaves — Yes, it’s a plant

Test your ‘Yes’ and ‘No’ Questioning Skills!

- Asking the right questions is key to figuring out what things are.
- We are going to play a game.
- You will have the picture of a living thing taped to your back. YOU cannot look at it. Your classmates can.
- You can ask them questions about what it is, BUT you can only ask Yes or No questions.

Let’s Practice First!

- Does it live in the water?
- Does it live on land?
- Can it fly?
- Does it have fur?
- Is it a mammal?
- Is it wild?
- Can it be a pet?
- Is it a dog?
- Is it a cat?

Make Your Own Dichotomous Key

- Work in groups of two or more people.
- Each team take a paper bag.
- Choose at least five items from your bag. You can use all of the items if you are feeling inspired!
- Using “yes” or “no” questions, make a key that leads to the identification of each of the items you selected.
- Use the practice sheet from before as a guide. There are also real identification keys to view if you need ideas.

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2. Does it have feathers — Yes, it's a bird / No, go to 3
3. Does it have fins — Yes, go to 4 / No, go to 6
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GULF OF MEXICO COASTAL OCEAN OBSERVING SYSTEM

GCOOS

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