Classifying Objects

Summary

Sets of animal cards are used to help students practice using a type of classification system.

Time Frame

1 class periods of 45 minutes each

Group Size

Small Groups

Life Skills

Thinking & Reasoning, Communication

Materials

For each group of students:

- A lunchroom tray with a collection of approximately 6 objects such as:
  - pine cones
  - leaves
  - shells
  - dried peas
  - beans (lima, black, kidney, black eyed)
  - nuts (acorns, peanuts, walnuts, chestnuts)
  - small rocks/stones

Background for Teachers

Classification systems are used by scientists to help us understand the natural world. When objects are classified, they are simply put into a group with other similar objects. The classification systems used in biology are based on the similarities and differences in organisms. Without classification systems, scientists would have to talk about individuals and not groups. When you think of all the different living organisms that can be found in Utah alone, you can realize how hard it would be to always refer to individuals. This activity helps students learn to use a simple classification key. Objects are checked against a set of criteria. For instance: has fur, does not have fur. Based upon the decision made, the organism is compared to a series of statements until the name of the organism is discovered. This type of key is often used for plants and animals. Common Utah animals are used in this activity.

The cards and the key for this activity are located in the web sites under the "materials section."

Intended Learning Outcomes

- Sort and sequence data according to a given criterion.
- Compare things
- Develop and use simple classification systems.
- Use observations to construct a reasonable explanation

Instructional Procedures

Step 1.Working in small groups, spread the articles out on the tray. Students are to observe the materials closely and discuss each item together quietly. Remind students that they are looking at

each item individually.
Step 2. After all the items have been discussed, the students are to place the materials into two groups. After all the items have been categorized, each group should write a short explanation of the basis of their classification scheme. This should be kept secret.
Step 3. Have all the groups trade trays. Now, using the new tray, observe the objects and try to guess the basis or rules used to group the objects.
Step 4. Compare the guesses with the explanations and discuss.

- Were the guesses close to the actual classifications schemes chosen by the original groups?
- What is easier to write about and describe, the items when seen as individuals or the items when seen as a group?
- Why do you think scientists categorize things?
- Can you think of some categories that scientists have made?
- Are there other groups of similar objects that could be classified? (such as music: rock, rap, classical, folk,etc.)
- Was any one system of classification used in the groups the only right one? Why or why not?

Step 5. If time allows, have students repeat the activity with 3 different groups.
Step 6. Pass out the sets of animal cards to each group. Have students sort all the animal into 2 groups. Students should decide on the characteristic to use (e.g., those with wings,those with legs; only eat plants, only eat meat).
Step 7. Have students record all the characteristics they can that would divide the animals into 2 groups. Remind the students that the 2 groups do not have to be equal in size.
Step 8. Have each group share one animal classification rule they used with the class, and then have the rest of the class name the animals that would fit. Discuss:

- Can animals be classified in more than one way?
- Would it be helpful if scientists used the same criteria to decide on different animal classifications? Why or why not?

Students should understand that the process of classification changes over time. More differences in organisms are being found which changes the way they are grouped. It doesn't mean the old systems were wrong, but simply that we now have more useful systems with which to understand the world.
Step 9. Distribute the Key and choose one of the animal cards (such as puppy) and work it through the key to name its classification as a group. Then give groups time to work through the key with each animal card and decide upon its classification. Discuss any differences of opinion and reinforce the idea that as long as a classification can be backed by logical reasoning, it could be accepted.

Extensions

Develop a similar key for any set of organisms. Have each group create their own key with a set of plants or animals. Trade with another group and try to classify using the key.

Assessment Plan

Assess student understanding of the classification system by observing participation in small group activities.
Have students fold a paper into two columns. Select 2 classifications and have them label the columns accordingly. Example: four legs and no legs. Have students list as many animals as they can that would belong in each column. At the bottom of the page, have them write a sentence that explains what a classification system is("When you classify, you put stuff into a bunch with stuff that's like it") and why it is useful to scientists ("Classification systems help scientists better study things.").

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