Wonderful World of Insects

Summary

Students will use simple classification schemes to sort Utah's common insects. Students will classify invertebrates as either insects or non-insects. They will create simple classification keys for insect pictures. By examining insect mouthparts, they will relate structure to function and classify again.

Time Frame

3 class periods of 30 minutes each

Group Size

Small Groups

Life Skills

Thinking & Reasoning, Communication

Materials

For each student group:

- Bug nets
- Jars
- Student journals or paper and pencil

For the teacher:

- Pictures from the website listed below
- A variety of resource materials on insects
- A collection of invertebrates, including insects, for students to observe and classify in a center.

Background for Teachers

In this lesson students will use a classification scheme to determine whether or not invertebrates are insects. Children are naturally curious about insects. This curiosity makes them great learners. From the observations they make during these activities, they should learn that animals are classified as either invertebrates (animals without backbones) or vertebrates (animals with backbones).
Insects are just one type of invertebrate. All insects have three body parts and six legs. If it does not have three body parts and six legs, it is not an insect. Worms do not have any legs. They are not insects. Ticks have eight legs. They are arachnids (spiders). They are not insects. Millipedes and centipedes have many, many legs. Pill bugs/potato bugs/rolly-pollies have many body segments and many legs. They are not insects either. They are crustaceans. Once again, insects have six legs and three body parts. If it does not have six legs and three body parts, it is NOT an insect.

Student Prior Knowledge

Students will need to have participated in classification activities and understand their make-up since they will be constructing one for insects.

Intended Learning Outcomes

Observe objects and report their observations.
Sort and sequence data according to a given criterion.
Pose questions about objects.
Record data accurately when given the appropriate form and format.

Instructional Procedures

Step 1. As a large group, review the purpose of classification systems. Four common classification groupings are plants, animals, fungi, and micro-organisms. The animal group is further narrowed as either having a backbone (vertebrate) or without a backbone (invertebrate.) Insects are one of many types of animals without a backbone. Tell the students that they are going to use what they know about classifying things to determine whether animals are insects or not.

Step 2. Find out through discussion or journal writing what the students already know about insects. Use the pictures from the Internet site or another source for reference and the rest of the activity.

Step 3. Using students' prior knowledge, build on what they know about insects and what they observe from the pictures. Ask questions about their observations. List these on the board. They should include the following:

Insects have three body parts.
These body parts are called the head, thorax, and abdomen.
Insects also have six legs.
Is a spider an insect? Why not? (A spider has two body parts, and eight legs.)
Insects can also have wings and antennae.

Step 4. Ask the children how they think that insects are classified.

What classifies an insect from other animals? (three body parts, six legs)
How are insects classified one from another? Encourage students to discuss this question. (Insects are classified on the basis of wing structure, mouthparts, metamorphosis, etc.)

List some of the different ideas that students generate.

Step 5. Using the Internet pictures or another source, have students work in groups. First they will come up with a classification system that their group will use to classify a group of insect pictures. Remind them that they should be able to defend their method of classification. Then give each group a set of six insect pictures. Using their simple insect key, (such as wing size, mouthpart type) students will classify their pictures. Have each group share their photos and their classification system.

Step 6. Take the children on a walking field trip with bug nets and jars. Have them collect any invertebrates (animals without backbone: insects, worms, potatobugs, etc.) they find and put them in the jars. Be careful about catching bees or other dangerous animals. Require the students to treat the animals respectfully. Take the collected invertebrates to the classroom for the children to view.

Step 7. Using what they now know about insects, have the students classify the collected animals as either insects or non-insects. They should use a simple insect key that they have created. Have groups rotate around the room looking at each other's data and classification systems.

Step 8. Next, encourage the students to examine the mouthparts of the various insects and classify them accordingly.

What does the insects' mouth shape and size tell them about what the insect eats?
Is it a biting insect, stinging insect, sucking insect, or chewing insect?
How can you tell what the insect eats by looking at its mouth?

Develop the idea that in the natural world, structure and function are tied together. The way the insects' mouth is shaped determines what functions it can perform. A butterfly's long tube mouth enables it to suck nectar from flowers. A grasshopper's large jaws enable it to chew plants.

Step 9. Return the invertebrates to their appropriate habitats.

Step 10.Have each students draw a Utah insect using the information they have learned. They must decide what their insect eats and draw appropriate mouthparts. The isects must have three body parts and six legs. Display the finished drawings in a center filled with resource materials about insects.

Extensions

Bring several invertebrates to class, or have students bring them from home and display in a center in the classroom. Ask the students to classify them as either insects or non-insects.

Assessment Plan

Evaluate the student's insect drawing. The drawn insect should have six legs and three body parts. The insect's mouth parts should match the function stated by the students. For example, if the student states that the insect chews on wood, it would have relatively large, powerful jaws. Using all students' drawing, develop a classroom classification system and display them in a way that shows understanding of the topic.

Bibliography

Original lesson plan developed by Lana Williams

Authors

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