

Invent A Key for Echinoderms

Students will make observations and use their understanding of classification to create a dichotomous key which will help distinguish several echinoderms.

Activity time 40 minutes

Materials:

Each team will require:

Echinoderm Photo Set (8 cards)

Invent a Key worksheet

Background:

Echinoderm is taken from a Latin term that means “spiny skin.” The members of this phylum of animals live underwater and include sea stars, sand dollars, sea cucumbers and brittle stars.

Procedure:

1. If you have not already done “Key to Odds and Ends”, consider using some of the same background discussion recommended for that activity (steps 1 and 2).
2. Divide the class into teams of 2 to 4. Give each group an Echinoderm Photo Set and an Invent a Key worksheet. The photo set is available in the teaching kit. A master set of echinoderm photos is also available in this book. These may be scanned or copied to produce the needed number of sets.
3. Have the students begin by examining the cards and thinking about different characteristics they might use to group the objects (body shape, color, number of arms, etc.)
4. Once the students have had a chance to think about grouping, ask teams to devise a dichotomous key for their echinoderms on the worksheet provided. Remind them that they will write couplets, which basically provide a choice between two options.

Example: Animal lives underwater.
 Animal does not live underwater.

6. Encourage students to follow one branch of classification to its completion, rather than looking back at the whole picture all at one time.
7. Once students have completed their key, ask each team to present their classification scheme to the class. As they describe their choices, ask other students to consider how their dichotomous key was different. Alternatively, you may ask groups to exchange keys and see if they can classify the pictures using the other team's key.

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Variation:

Some students may be able to organize their key better in a more graphic mode. Consider asking students to choose which mode (written text or branching diagram) they prefer. When creating a branching diagram, Remind students to describe the characteristics at each branch point.

Extensions:

1. After students have created their own keys, you might share with them the actual names of these echinoderms.

species	common name	scientific name
A	purple sea urchin	<i>(Strongylocentrotus purpuratus)</i>
B	bat star	<i>(Patiria miniata)</i>
C	sunflower star	<i>(Pycnopodia helianthoides)</i>
D	brittle star	<i>(Ophiothrix spiculata)</i>
E	brittle star	<i>(Ophioderma panamense)</i>
F	sea star	<i>(Pisaster giganteus)</i>
G	sea cucumber	<i>(Paristichopus parvimensis)</i>
H	sea cucumber	<i>(Paristichopus parvimensis)</i>

2. Ask students to create a classification system for more common "species" such as snack foods, writing utensils or types of shoes worn by students in the class.

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Student Worksheet

1. _____ → _____
_____ → _____

2. _____ → _____
_____ → _____

3. _____ → _____
_____ → _____

4. _____ → _____
_____ → _____

5. _____ → _____
_____ → _____

6. _____ → _____
_____ → _____

7. _____ → _____
_____ → _____

8. _____ → _____
_____ → _____







photo credits:

Randy Harwood	Species B, C, D, E, G
Rick Moffit	Species F
Todd Winner	Species A, H