
I. TITLE: RAISE YOUR HAND. . .OR APPENDAGE. . .OR LEAF. . .OR FIN

II. LESSON SUMMARY: STUDENTS WILL IDENTIFY THE ANATOMICAL STRUCTURES OF VARIOUS ORGANISMS AS AN INVESTIGATION FOR STRUCTURE RELATING TO FUNCTION IN ORGANISMS (form follows function). This follows natural selection well because students will understand that certain features/ parts developed as the need for the adaptation was established.

III. GENERAL GOAL:

- The purpose of the inquiry lesson is for students to discover how the use of anatomical parts is related to the form of the parts
- Multiple comparisons will lead to further study of diversity and adaptations for survival.

IV. DURATION: Three, 50 minute class periods

V. SPECIFIC LEARNING OBJECTIVES:

1. Students determine how form is related to function.
2. Students will observe characteristics of common tools and physical characteristics of various specimen.
3. Students will form questions and make conclusions based on their comparisons.
4. Students will create new anatomical forms and explain its purpose to the organism to demonstrate understanding.
5. Students will be able to identify any given example and predict the function of a particular structure.

VI. PRIOR KNOWLEDGE/ SKILLS:

- > Students will benefit having done investigations involving observations, question formation and conclusion drawing on their own.
- Appendage is a term that might be useful.

VII. BACKGROUND INFORMATION

1. The phenomenon investigated is "form follows function" or "similar solutions to common problems" in the biological world. This idea is used to support the variation seen between species and used for survival of the fittest.
2. Allow students time to make observations and form questions. It should take one class session for the initial observations of the objects. The students will look at objects that they may or may not already recognize. The student will observe and determine the "purpose" of each item (in an attempt to see that they will assume function based on shape, size and form of the object.)
3. Having a format for recordings will encourage the students to make observations, form questions and come to conclusions.

VIII. PREPARATION FOR LESSON

MATERIALS:

index cards

spaces for stations

objects (any household items that may not be obvious as to their purpose.)

examples of items that were used:

potato ricer

apple corer/ slicer

strawberry huller

olive pitter

lemon zester

egg slicer

weed digger

egg seperater

garlic press

hardware items, etc.

melon baller

seperate usage:

crab legs

potted flowers (prefer in bloom)

maple tree seed

pictures of strange organisms

any preserved specimen

polar bear picture (they like this one)

IX. INSTRUCTIONAL STRATEGY

ENGAGE

Have students think of their favorite animal or plant. In their journal, students should describe the animal with as many descriptives as possible. They should list the most outstanding characteristics of the animal.

EXPLORATION

Students will work independently as they go from station to station. They should use the INVESTIGATIVE PAGE (see page A attached) to make record of the investigation.

1. Place one of the objects and a numbered index card (1-12 . . .or as many as you need) at stations you establish.
2. Students will spend 3-5 minutes at each station. Each student will start at a station.
Note: Do not tell the students the name of the items given.
3. Allow more time if needed at each station. Check to see that students are recording plenty of observations. They should say WHAT they think the function is and WHY they think that (what gave them any guess that it slices eggs?)
4. Continue until all stations have been visited and students recorded hypotheses.
5. At the conclusion of the actual investigations, have students share observations and concluding statements with the class. Hold up items and get students responses.
6. Ask students what they have noticed about the conclusions they have drawn. How did you “assume” what the object does?
“How might this be applicable in the animal world?”
"Can you explain your observations as pattern that could be traced in evolution?"

PART 2

1. Have students in pairs observe different specimen. (see above list for separate usage). Record in journals.
2. For example, if the students have a crayfish, have them observe AS MANY parts as possible and the assumed function for each. (the same for plant parts, picture, etc.)

X. ASSESSMENT

- > +,0,- will be recorded for note cards collected
- > A rubric is suggested for the grading of Investigative Pages.
- > An assignment to complete for assessment. Students are to pick an animal and move it to a new habitat (or give it a new part) The students are to create or change anatomical features of the species that would allow the species to better survive.

WRITTEN ASSESSMENT

- > Place a picture of an animal on the test and have students draw ten conclusions about the animal based on its physical characteristics. (I have a great make believe animal for this.)
- > Describe in your own words what "form follows function" means and why it matters in the world.
- > If you could change one anatomical structure on your body, what would it be and why? How would this help you?
- > Display 20 different bird species from around the world with obvious beak distinctions. Ask what one might conclude from this picture and provide support for the conclusion.

XI. COMMENTS

This lab went very well and the results did end with the students drawing their own conclusions.