

Floating Food

(HHMI/PWSSC Marine Science class, 3-5)

Objectives

Students will be better able to:

- describe plankton and their adaptations allowing for slow movement through the ocean.
- appreciate the connectivity of living things in the marine environment, particularly the dependency of marine life on plankton.
- connect a living thing's physical characteristics (form) with its place in the system (function).
- work through the scientific processes of observation, experimentation and modification.

Materials

Plankton signs (3)	plankton dvd	race "tank" & stand
demo tanks (3)	race board & pen	plankton prizes
plankton pictures	stopwatches (2)	plankton retrieval devices
plankton-making supplies	paper towels	Plankton Plan worksheets
screen, stand	projector	dvd player
food web poster	disposable table cloth	chalk/markers

Before the Class

There is potential for quite a mess. Place the race "tank" and stand in a location that allows for easy filling/emptying and away from the flow of traffic. Fill up "tank" and smaller demo tanks. Place the tank where you want it to stay before filling; it will be quite heavy once it is full! We suggest placing newspaper or a tablecloth under the demo tank to catch spills; remind students to be careful around the area as water may make the floor slippery. The practice tanks can be placed around the room, once the class has settled. Arrange plankton making supplies for easy access and dispersal. Set up video equipment to allow for either large group viewing or small group exploration.

Outline

- I. Introduction (5 min)
 - a. Welcome and review of basic behavior rules
 - b. Alaska Seafood web – use the poster and input from volunteers to discuss the marine food web and introduce plankton as its base
- II. Plankton Investigation (10 min)
 - a. Review vocabulary (plankton, zooplankton, phytoplankton) and utilize pictures to create some understanding
 - b. Have students discuss what existence would need to be like for survival
 - c. View plankton video and discuss observations of movement
- III. Plankton Making (20 min)
 - a. With worksheet as guide, explain the process of designing, building and testing their plankton creation
 - b. Allow students to conceptualize and create plankton, encourage experimentation and revision – use stopwatches
- IV. Race and Review (10 min)
 - a. Bring class back together. Set up timed race where one team has a time trial. Work through all until we have a slowest. Award Plankton Prize (while supplies last)!
 - b. Share ideas about what worked well (or not so well)
 - c. Questions, comments, etc.

Description of Activities

Alaska Seafood web – Select one student to share their favorite Alaskan seafood treat. Ask all to share and work in what you know about their place in the web. Examples are listed below. Use poster as well.

Salmon (adult) → herring → zooplankton

Salmon (young) → invertebrates and zooplankton

Halibut → Pollock, cod → crabs → barnacles, plankton

Alaska King Crab → worms, clams, oysters → plankton

Plankton Making – Divide students into pairs and provide with “Plankton Planning” worksheet. Discuss the materials available, possibly have a couple of examples, and reinforce the parameters: the plankton must sink (in reality, the problems with floating include too much exposure to the sun and lack of a good food source), must be constructed of materials provided and it has to fit into the race tank. Students should draw out their ideas, taking ideas from the observations of video, pictures and hints on the sheet. Once a basic design has been established, they should start constructing, experimenting and modifying. (There may have to be limits on materials, things will get heavier as they get wet, may sink faster, etc. Have paper towels available.)

Plankton Race – Select a team to race; have them discuss what materials were used and its evolution from the initial plan. Drop the plankton platform in and record its descent to the bottom. Record the group’s names and time (using the teacher’s board or chart paper). Work through all groups; ask them to predict how they think each design will do. Present the group with their Plankton Prize.



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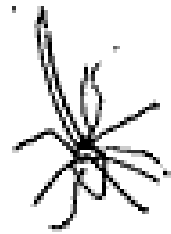
Plankton Plan



Directions: Your challenge is to create a plankton creature that will sink very slowly to the bottom of the race tank. Your plankton may be made using only the materials provided, including at least one washer. It must fit into the race tank in order to compete. With your partner, plan the plankton by making a sketch, gather the supplies you would like to use and start building. Once you have your plankton, experiment in test tanks and make changes so that it sinks even slower.



Design Ideas:



Materials:

