

Fred the Fish Lesson

Story and water filtration activity

Objectives

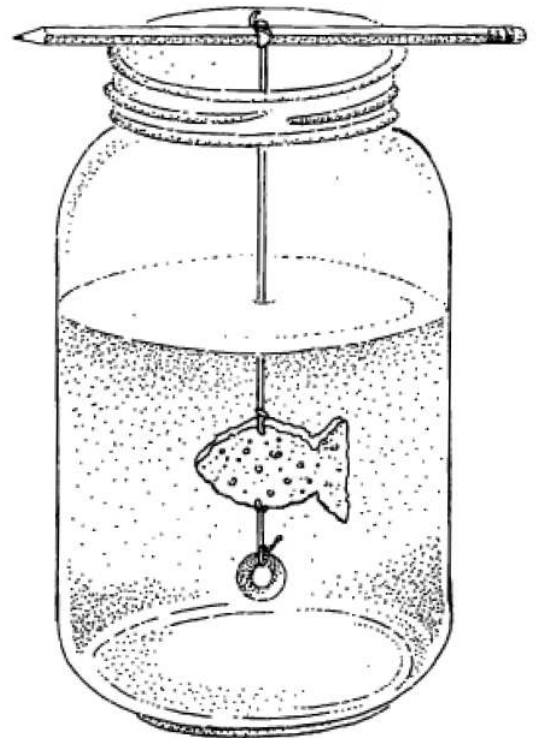
Part 1 - To learn in a hands on, fun way about real life water pollution and it's effects on the environment and ecosystems.

Part 2. Optional for older students: To learn the different steps in the water treatment process.

Part 1: Fred the Fish Story and Activity

Materials

- Fred the Fish Story available at <https://www.butlerswcd.org/onlineeducationresources>
- Large clear jar or container
- Long handled spoon
- Plastic fish or fish cut from a sponge suspended from pencil with fishing line
- Water
- Small amount of the following or something equivalent)
 - Cocoa powder = Soil
 - Creamer = Fertilizer (lawns)
 - Coco crispies = dog waste
 - Chocolate syrup = Oil (car oil change no recycling)
 - Salt = road salt
 - Oatmeal or tiny bits of paper = Litter
 - Soap = factory waste
 - Green Food Coloring =Leaking toxic waste (rusting barrels)



Procedure

1. Read the story to the students dumping in the appropriate pollutant at each stage of the story. Water in rivers is always moving, so you can have the students use the large spoon to mix the water after each pollutant is dumped in.
2. Don't end the story at the end, flip back through the book as Fred heads home past the park, house, farm, etc so that the story does not end with Fred stuck in nasty water
3. At the end of the story, ask the students about ways they can help to keep our water clean.

Part 2- Older Student Extension: Water Filtration

Objective: Create a filtration system to clean up Freddy's habitat.

Materials:

- Sand – good to have both fine (play) and course (builders) sand available
- Gravel – god to have different sizes available

- Charcoal
- Alum – 1 teaspoon for each team
- Spoon for each team
- Fred’s water – 1 cup per team
- water filter kits (1/team)
 1. 2 liter bottle cut in half with the top inverted as a funnel into the lower half.
 2. cotton in the bottle mouth
 3. cheesecloth or coffee filter over the mouth
 4. Secured with a rubber band

Teacher Prep:

- Stir Fred’s water briefly to thoroughly mix.
- Pour the water into cups for class teams.
- Provide a tray or containers containing each of the different rock sizes that can be used as filter materials.
- Provide a small container of charcoal to each group.
- Each team should have a cup of Fred’s water.

Student Procedure:

1. Have students add 1 teaspoon of alum to the sample and gently stir for a few minutes to bind the soil in the water. Alum attaches to the soil and makes it settle to the bottom (practice in actual water treatment)
2. Allow the students to examine the various filter materials (rocks and charcoal).
3. Have students form a hypothesis of which material, or combination of materials, will clean the water the best.
4. Have them draw a diagram of their planned filtration system.
5. Build their filter.
6. Test the filter by gently pouring “Fred’s” water through their filter system. Students may compete to see which filtration system cleans the water the best.
7. Have students verify the performance of the design. Does it perform as predicted?
8. If time allows, have the students modify their design to see if they can improve their results.

