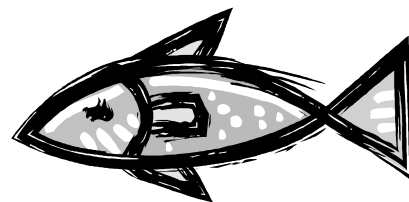


FRED the FISH



From: Environmental Education Coalition
Fort Wayne, IN; adapted from Karen Lind by Kate Ferguson
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Purpose: A fun activity to engage students in the study of human impact on environmental systems (specifically rivers), and a great activity to further students' exploration of a variety of themes or topics.

National Geography Standards:

2. How to use mental maps to organize information about people, places and environments in a spatial context.
4. The physical and human characteristics of places.
14. How human actions modify the physical environment.
15. How physical systems affect human systems.
16. The changes that occur in the meaning, use, distribution, and importance of resources.
17. How to apply geography to interpret the past.
18. How to apply geography to interpret the present and plan for the future.

Objectives: (Objectives may vary depending upon the direction you take the activity.)

Upon completion of this lesson/activity, students will be able to...

1. Retell the story of Fred the fish.
2. Create a story from their own imagination of a similar nature.
3. Identify a real-life situation, in their own community, similar to the Fred the fish situation.
4. Identify the causes of the situation in their community.
5. Evaluate the community's situation.
6. Develop possible solutions to the community's situation.
7. Engage in activity to resolve the community's problem.

Materials Required:

- one clear plastic tub filled 1/3 with water
- a straight, strong wire with a "fish" on the end (a piece of heavy, white cloth works well and you can even cut it in the shape of a fish)
- Ziplocs containing 2 – 3 T. dry items: see table below
- Small cups or bottles containing liquid items: see table below
- access to on-line resources
- local newspapers

CANISTER LABEL	CANISTER INGREDIENT
Soil	Potting soil
Fertilizer	Paprika or garlic powder
Leaves and grass	Crushed leaves or oregano flakes
Oil	Cooking oil
Salt	Salt
Trash	Paper dots from hole punch
Soda cans	Pull tabs or pieces of aluminum foil
Factory pollution	Soapy water with lots of bubbles
Waste water	Red food coloring drops
Toxic chemicals	Green food coloring drops

Procedures:

1. Briefly introduce the session to the students as a study of human and environment interaction. Request volunteers: one to be Fred the Fish and others to be the "polluters".
2. Teacher to read the following text while Fred the Fish and the "polluters" act accordingly. As Fred the Fish "swims" the pollutants will be stirred up.
 - a) Imagine a clean river as it meanders through a protected wilderness area. In this river lives Fred the fish. How does Fred feel? Fred has lived in this stretch of the river all of his life, but now he

decides to go on an adventure and explore the area downstream. (Fred should be happily swimming in the clean water.)

- b) Fred swims into farm country. He passes a freshly plowed riverbank. It begins to rain, and some soil erodes into the river. How does Fred feel? (The soil should be dumped into the river. Potting soil is commonly accessible.) (Silt and soil are one of the top “pollutants” of water-ways.)
- c) Fred nears a suburban housing development. Some fertilizer from the farms and the lawns washed into the river a while back. The fertilizer made the plants in the river grow very fast and thick. Eventually, the river could not furnish them with all of the nutrients that they needed. The plants died and are starting to decay. Their decomposition is using up some of Fred’s oxygen. How does Fred feel? (The fertilizer should be dumped into the river. Use paprika or garlic powder as the color and odor are effective.)
- d) The people in the housing development let leaves and grass go into the gutter and down into the drainage system. The leaves and grass are washed into the streams and rivers where they decay and use up more of Fred’s oxygen. (Leaves and grass should be dumped into the river. Use real crushed up leaves or oregano flakes.)
- e) Fred swims under a highway bridge. Some cars traveling across the bridge are leaking oil. The rain is washing the oil into the river below. How does Fred feel? (The oil should be dumped into the river. Use syrup.)
- f) During a recent cold spell, ice formed on the bridge. County trucks spread salt on the road to prevent accidents. The rain is now washing salty slush into the river. How does Fred feel? (The salt should be dumped into the river.)
- g) Fred swims past the city park. Some picnickers did not throw their trash into the garbage can. The wind is blowing the trash into the river. How does Fred feel? (The trash should be dumped into the river. Paper dots from a 3-hole punch are easy.)
- h) A family is boating near the park. They are throwing their empty cans of soda into the river. How does Fred feel? (The soda cans should be dumped into the river. Pop tops or aluminum foil pieces.)
- i) Several factories are located downriver from the city. Although regulations limit the amount of pollution the factories are permitted to dump into the river, the factory owners do not always abide by the regulations. How does Fred feel? (The factory waste should be dumped into the river. Soapy water with lots of bubbles.)
- j) The city’s Waste Water Treatment Plant is also located along this stretch of the river. The pollution regulations are not as strict as they should be, and a section of the plant has broken down. How does Fred feel? (The Waste Water should be dumped into the river. Two drops of red food coloring.)
- k) Finally, Fred swims pas a hazardous waste dump located on the bank next to the river. Rusty barrels of toxic chemicals are leaking. The rain is washing these chemicals into the river. How does Fred feel? (The toxic chemicals should be dumped into the river. Two drops of green food coloring.)

3. Discuss the activity. Introduce the students to several real-life situations that exist similar to the Fred the Fish simulation: the Alabama Department of Transportation Hwy. 98 construction site that had runoff going into Big Creek Lake; trash along the streets to and from school; and other grade appropriate situations (local, state, national, and global).
4. Visit **The Citizen's Guide to Reducing Polluted Runoff in Coastal Alabama** at <http://www.aces.edu/pubs/docs/A/ANR-1215/>. Have the students do reports on polluted runoff and solutions they can participate in.
5. Visit the local wastewater treatment facility. These are well educated, hard-working people dealing with a variety of environmental, political, corporate and financial constraints.
6. Find out “where” your trash goes. Invite a representative from the local land-fill / incinerator to come to the class and answer questions and provide students with solutions. Or visit the land-fill / incinerator. Personally seeing the quantity of trash accumulated by the community will definitely make an impact.