

Life in a Fish Bowl

Preparation Time:

Easy-to-do

Moderate

Extensive

Grade: K – 1

Focus: The effect of pollution on wildlife

Subject: Science, Language Arts

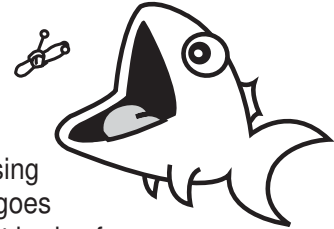
Materials: Glass fish bowl or similar container (a cut, 3-liter plastic bottle works well), fish made from a plastic meal tray, overhead projector or flashlight (optional but recommended), six empty containers, each with 1/8 to 1/4 cup of the following: soil; soy sauce; liquid soap; blue sugar (made by adding a couple drops of blue food coloring to sugar); cocoa powder; bits of trash (a cigarette butt is very effective).

Teaching Time: One class period

Vocabulary: Polluted runoff, storm drain, fertilizer, pesticide, germ, point source water pollutants

drains, thinking that this water then goes to the sewage treatment plant.

Actually, anything passing through a storm drain goes directly into the nearest body of water. To prevent polluted runoff, each of us needs to examine some of our habits. This lesson demonstrates how we cause polluted runoff and how we can make the necessary changes to prevent this type of water pollution.



Learning Objective

Students will understand how water becomes polluted and the effect of water quality on living things.

Learning Procedure

1. For this lesson, you will show what can happen to a fish in a body of water when people pollute the water. To demonstrate this, create a friendly fish character and have it live in a well-known nearby body of water. This could be a stream, lake, river or ocean.
2. If you don't have a fish bowl, you can make one from a pickle jar, clear 3-liter plastic bottle (cut off the tapered top) or any similar container. Your fish can be made from any reusable water-proof item.
3. Put the fish on a stick or tape it to the inside or outside of your bowl. To see the effects of pollution on your pretend water body, put the bowl on an illuminated overhead projector or use a flashlight behind it. Remove a cup full of clear water to demonstrate to the students the clean water in the beginning and the dirty water in the end.
4. Read and adapt the narrative. Ask individual students to add the ingredients in the containers as indicated to represent pollution.

NOTE: When people think about **water pollution**, they automatically imagine a big pipe coming out of the ground near an industry. The pollutants that come from a single, easily identified source such as the end of a pipe are called **point source water pollutants**. But most water pollution comes from a more hidden form called **polluted runoff**. This type of pollution does not come from a single source like a pipe. Polluted runoff occurs when rainwater washes pollutants off of the land and into nearby water bodies. Another form of polluted runoff is when people pour pollutants directly into storm

NOTE: Teachers should review the narrative in advance and adapt the language to the students' level. Also look for ways to personalize the story by including the name of your fish and the name of the water body.

Narrative

READ: This is the story of _____ the fish. He lives in the water right here at _____. _____ loves living here. The clean water and sunshine make him healthy and playful.

ACTION: Point to the fish in the clear water in the fishbowl.

ASK: HOW DO YOU THINK _____ FEELS?

This question should be asked repeatedly throughout the story and should generate an enthusiastic response from your students.

READ: There is one place on the land where some **soil** is washing into the water because someone has cleared the trees and bushes. These trees and bushes used to hold the soil in place. When _____ swims past this place, the soil in the water rubs against _____ gills. This would be like getting soil in your lungs!

ACTION: Have student pour soil from the container into the water.

ASK: HOW DO YOU THINK _____ FEELS?

READ: _____ swims along through the creek. He passes through an area where someone has put too much fertilizer and pesticides on his lawn. It is raining and the extra fertilizer is washing into the water. The fertilizer has caused the algae in the water to grow too fast, making the water cloudy and using all of _____'s oxygen. _____ needs to breathe oxygen just like you and I do, and none is passing through his gills! The pesticides kill the aquatic insects that _____ needs to eat.

ACTION: Add blue sugar to water.

READ: HOW DO YOU THINK _____ FEELS?

READ: _____ swims past a neighborhood that is near the creek. Some of the cars in the neighborhood are leaking oil onto their driveways. Because it is raining, the oil is washing off the drive, down the street and into a storm drain. The storm drain carries the oil straight into the creek. This oil coats _____'s clean, shiny scales, and makes him greasy, dull and sick.

ACTION: Add soy sauce to water.

READ: HOW DO YOU THINK _____ FEELS?

READ: As _____ heads away from the oil, he passes another neighborhood where many people are washing their cars and they are using a lot of soap. This soap is running out of their driveways, into the storm drain and coming right into the creek! This soap stings _____'s eyes and gills, and weakens his scales.

ACTION: Add liquid dish detergent (stir briskly) to represent pollution from car washing.

READ: HOW DO YOU THINK _____ FEELS?

READ: Next _____ swims through a neighborhood where many people have dogs in their yards. When it rains, some of the **dog waste** runs off the yards and into the creek. This waste not only over-fertilizes the water, but also contains germs that can make fish and people sick!

ACTION: Add cocoa powder.

ASK: HOW DO YOU THINK _____ FEELS?

READ: Finally, ____ swims away from all of the polluted runoff. He can feel the water with its pollution behind him, but he knows that all of the things that made him feel so bad are flowing downstream with him. He swims quickly to get away from the dirty water, and OH NO! ____ runs into a piece of **garbage** that someone threw on the ground and then was washed into the water through the storm drain.

ACTION: Add cigarette butt (or other garbage).

READ: HOW DO YOU THINK ____ FEELS?

ACTION: Hold up the cup of clear water you set aside at the very beginning.

ASK: WHERE DO YOU THINK OUR FISH WOULD RATHER LIVE?

Questions for the Class

1. Have you ever seen a river, lake or beach closed for swimming?
2. Would you want to swim in a river like the one in our story?
3. Go back through the story, deciding ways that you can help solve some of these problems. (Examples: keep soil covered with plants to keep it from washing away, fix leaky cars, use only the recommended amounts of yard chemicals if you use any at all, wash cars on the lawn or a commercial car wash where soapy water is sent to the sewage treatment plant, clean up after pets, don't litter.)

Extension Activity

Read or improvise as a blues tune.



The Dirty Water Blues

Pure water gurgles and splashes along
until pollution flows into the song:
oil, tar, paint, dye, mud and muck come
splashing by.

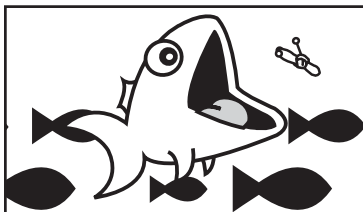
Cans, jars, bottles, cars.

Old shoes, old news –
that's the dirty water blues.

Sweet fresh water rolls away
from this song,

while dirt and pollution keep flowing
along and along and along.

Source: "Save The Earth! An Ecology Handbook for Kids"



This activity can be modified for use with other elementary grades. Middle and high school teachers may let students present this activity to the class.



Use water wisely at home and always take a trash bag with you when you go to the beach, lake or river. Pick up your own trash and leave the shore line cleaner than you found it.