1ST GRADE

TEACHER RESOURCE GUIDE

THEME:

While negative human/environment interactions can cause long-lasting damage to the environment, effective conservation strategies can help save and support wildlife.

CRITICAL ISSUE:

Marine Debris, Plastic Pollution, Freshwater Flows

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MISSION STATEMENT:

Aquarium of the Bay's Education and Conservation Department's mission is to promote literacy in ocean and watershed health, climate change issues, and science career development through the lens of critical issues such as sustainable seafood, marine protected areas, marine debris and plastics, climate change and fresh water flows.

ACKNOWLEDGEMENTS:

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S. D. BECHTEL, JR. FOUNDATION
STEPHEN BECHTEL FUND

LESSON 1

LIVING THINGS: RIVER OTTERS

Enduring Understanding: River otters are living creatures with special body features to help them to survive.

Materials

- "Draw a Picture of a River Otter" worksheet
- Extension activity worksheet
- Pictures of North American river otters
- Pictures of things that are alive and not alive
- Writing area (chart paper, white board, interactive board)
- Internet access (optional but preferable)
- "The River Otter" reading passage
- Pencils and/or highlighters

SETUP:

1. Prepare pictures of North American river otters.
2. Prepare pictures of things that are alive and not alive.
3. Make copies of "The River Otter" reading passage.
4. Make copies of "Draw a Picture of a River Otter" worksheet and extension worksheet.
5. Set up chart paper/white board and Internet (if available).

PROGRAM OUTLINE:

How do we know something is alive?

- It takes in energy (sunlight/food).
- It grows and can create new life.
- It produces waste.
- It reacts to things around it. (A puppy might turn its head if it hears a car horn).
  - Show students different pictures of things that are alive and not alive (or do this verbally).
    - Students give a "thumbs up" (alive) or "thumbs down" (not alive).
    - Things that are alive include humans, animals, and plants.

What do plants, animals, and humans need to live?

- They need water, food, air, and space.
- Another word for live is "survive." You can say, "Humans need water to live" or "Humans need water to survive."
- Make a list with pictures to show students examples and use as a reference.

PROGRAM OUTLINE CONTINUED:

How does our body help us to survive?

- Our hands help us grab and pick up food.
- Our teeth help us to chew food and eat.
- The hair on our heads keeps us warm.
- Our legs and feet allow us to walk, run, and move to different places.

What special body parts do otters have that help them to survive?

- River otters have webbed paws, ears and noses that close, second eyelids, claws, tail, and sharp teeth.
- These body parts help otters to eat, move from place to place, and survive in their environment.
- Watch "The River Otter" video at https://www.youtube.com/watch?v=0jyyfIT_bl4.
  - While watching the video, ask students to notice what is special about the bodies of river otters. (Replay the video if necessary.)
  - After watching the video, lead the discussion and begin to compile a list of features.
- Hand out and read "The River Otter" passage together.
  - While reading, have students underline, circle, or highlight any other important body features otters have that help them survive. Add these to the list.

SAMPLE FEATURES LIST

Special Features of an Otter

1. Webbed feet and hands to swim
2. Special ears and noses that can close when they swim underwater
3. Clear second eyelids that help them see underwater
4. Claws to grab food
5. Tail to help swim
6. Sharp teeth to eat
7. Waterproof fur

Drawing a river otter

- Explain that students will draw and color their own river otter to make it look as realistic as possible.
  - They must label the parts of the body that help the otter survive. (The "Word Bank" and class chart can be used to help.)
  - Students need to write about how these body features help the otter survive.

Sharing Results

- Check worksheets as a group and have students share with the class.

Extension Activity

- Students draw pictures of themselves and label the body parts that help them to survive.

TEACHER BACKGROUND:

What Is a Living Thing?

Living things are made up of many different and connected parts. They are intricate, complex, and arranged in a structured way. To be considered a living thing, it must meet the following standards:

- Living things can take in and use energy from the environment to grow and reproduce.
- Living things regulate and maintain homeostasis. Homeostasis is the ability to maintain internal stability to counterbalance environmental changes. (For example, a human being maintains an average body temperature of 98.6°F even if the external temperature is higher or lower.)
- Living things respond to triggers in the environment.
- Living things give off waste as they grow and develop.
- Living things reproduce to create new life.

Physical Features of River Otters

North American river otters, which are found throughout Canada and the United States (including the San Francisco Bay Area), have special physical features that help them survive. To help them swim underwater, river otters have waterproof fur, powerful tails, long bodies, and webbed paws. These features also make them strong swimmers. They also have a second set of eyelids, which are clear to help them see underwater. River otters can shut their ears and nose to keep out water. This helps them stay underwater for as long as eight minutes. River otters use their sharp claws and teeth to hunt, catch, and eat food, such as crayfish, insects, shrimp, or birds. River otters are one of the many important animals that live in the San Francisco Bay Area.

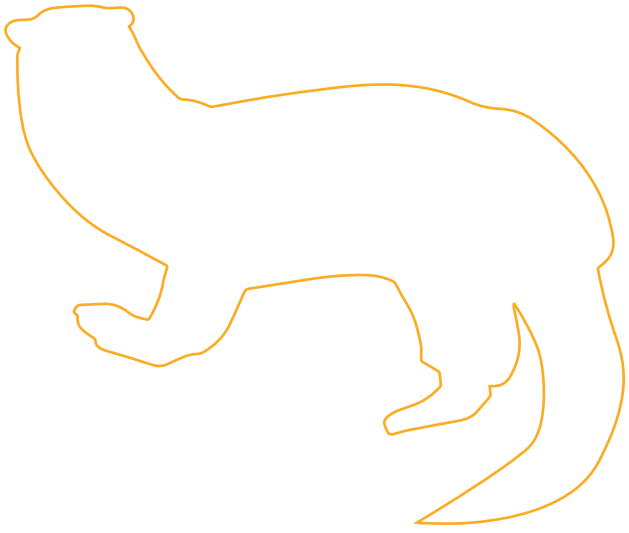
River Otter Adaptations

Over time, river otters have adapted in order to survive both on land and in water. These adaptations include the following:

- Increased metabolism (to convert food to energy)
- Insulated fur
- Ability to swim and run fast

Fun Facts about River Otter Physical Features

- Adult males can weigh as much as 25 pounds.
- Adult females can weigh as much as 18 pounds.
- Adult river otters can grow to be more than three feet long.
- Adult river otters have 36 teeth.
- River otters can walk, slide, and run.
- River otters use their eyes to hunt prey at night.
- River otters usually swim with their belly down.
- River otters have bodies that are built for swimming, but they spend most of the time on land.



GLOSSARY:

Claw: Curved, pointed nail on each digit of the foot of an animal

Webbed: Having toes connected by a membrane

1ST GRADE STANDARDS:

California Science Content Standards

- 2. Students know different plants and animals inhabit different kinds of environments and have external features that help them thrive in different kinds of places.

California Next Generation Science Standards

- LS1.A. Structure and Function: All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air.

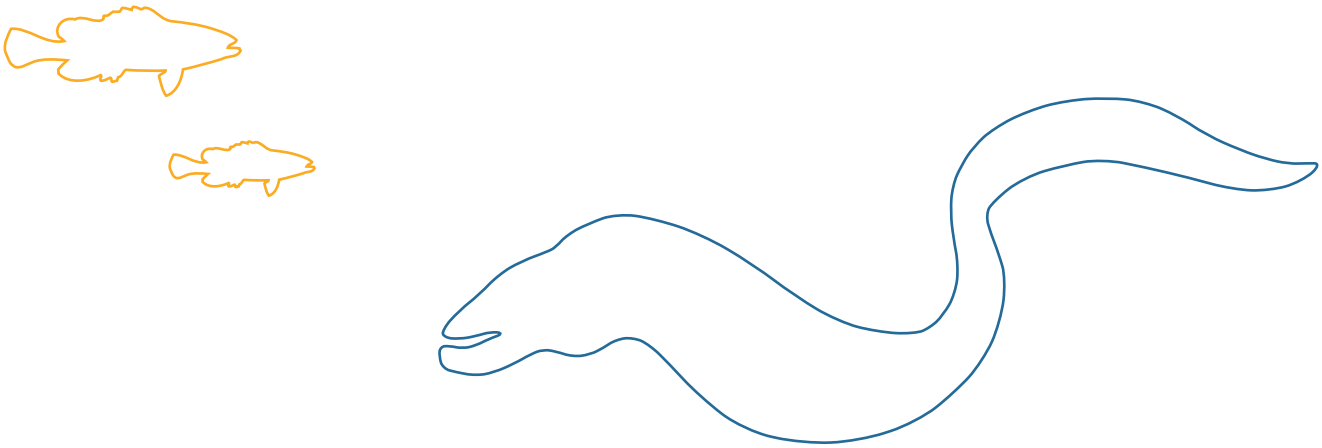
California Common Core Standards

ELA/Literacy

- 1.10. Ask and answer questions about key details in a text.

PROGRAM MATERIALS:

- "Draw a Picture of a River Otter" worksheet
- Extension activity worksheet
- "The River Otter" reading passage



Name: _____

THE RIVER OTTER



The river otter lives on land. It lives in water, too. It has special body parts that help it live. A tail and webbed paws help the river otter swim fast. Its ears and nose can close tight. No water can get inside its body when it is swimming underwater. It has sharp teeth and claws to catch fish, frogs, and birds. All of these body parts help the animal eat, swim, and live.

Name: _____

THE RIVER OTTER

Directions: Draw a picture of a river otter in the box below. Label each body part that helps it to survive.

Webbed paws	Ears that close	Nose that closes
Sharp Teeth	Tail	Waterproof fur

Name: _____

THE RIVER OTTER

Directions: Fill in the blanks to complete each sentence.

1. Webbed paws help the river otter to

_____.

2. Sharp teeth help the river otter to

_____.

3. Closable nose and ears help the river otter to

_____.

4. Claws help the river otter to

_____.

5. A tail helps the river otter to

_____.

6. Waterproof fur helps the river otter to

_____.

Name: _____

THE RIVER OTTER

Directions: Draw a picture of yourself. Label the parts of your body that you use every day to help you survive.

Directions: Pick two body parts that you drew. Tell how each one helps you to live. Write in complete sentences.

1. I use my _____ to help me _____

_____.

2. I use my _____ to help me _____

_____.

LESSON 2

THE EFFECTS OF POLLUTION

Enduring Understanding: Pollution comes in many forms. It has long-lasting, negative effects on the environment.

Materials

- Images of land, water, and air pollution
- Images of pollution sources (trash dumps, oil spills, factories, storm drains, cars, etc.)
- Water bottles or containers (distributed individually, in pairs, or in small groups)
- Olive oil and other home kitchen ingredients (rice, sprinkles, sauce)
- Cheerios or beads
- Craft feathers (one for each student, pair, or group)
- Paper towels or cloth
- Ending discussion worksheet

SETUP:

1. Gather materials.
2. Prepare water bottles.
3. Make copies of ending discussion worksheet.

PROGRAM OUTLINE:

What is pollution?

- Pollution is anything that harms Earth (air, water, and land).
- People, animals, and plants can't live without clean air, water, and land.
- Pollution is everywhere around us.

What does pollution look like?

- Pollution can be found in the air, on land, and in the water.
- Show students pictures of air, land, and water pollution.
  - Garbage and trash on land.
    - It looks dirty.
- Smog in the air.
- Record student responses if desired.

Where does pollution come from?

- Show students images of various pollution sources.
- Pollution happens when people litter or don't pick up their trash. This trash stays on land, but a lot of it gets into the water.
  - For example, garbage is sent to landfills. There the waste breaks down into the soil and gets into the groundwater beneath the landfill. This groundwater then leaks into rivers and other nearby bodies of water.
- Gas from cars pollutes the air.
- Other examples: Smoking cigarettes and painting houses gives

off bad smells and chemicals that get into the air.
- Cigarette butts are the number one form of trash found in the ocean.

- Big oil tankers can accidentally spill oil that gets into the ocean and travels to other bodies of water.
- Factories can produce pollution that gets into the air, land, and water.
- People put chemicals on food to kill bugs and make crops grow. Those chemicals can pollute land, air, and water (and harm people, too).

What happens when pollution enters our environment?

- Students receive plastic water bottles filled halfway with clean water.
  - The bottle is their model river.
    - Notice how clear the water looks.
- Students put a few Cheerios/beads in their water. (NOTE: The cereal will hold up for about 20 minutes.)
  - The Cheerios/beads represent river otters that might live in this environment.
    - The otters swim around in the clean water.

What might happen to a bird looking for food in a river?

- Give a feather to each child.
  - Pretend this is the feather of a bird that is looking for fish to eat in the river.
- Students dip the feather in the water and shake the water off the feather.
  - Notice how the feather is almost as good as new. It just needs to dry off.

What happens if this river gets polluted with oil?

- Put a tablespoon of oil into each bottle.
  - Students observe and/or record what happens.
    - The oil stays on top of the water and doesn't mix with the water.
    - Oil and water are very different liquids.
    - The water is not clear anymore.

What might happen to a bird looking for food in a river polluted with oil?

- Students dip their feathers into the oily water.
  - The feather is not easy to clean now. It is dirty, sticky, and oily.
    - In real life it would be hard for a bird to fly away and clean itself. Its wings would be oily and heavy.

What would happen if other things besides oil (such as trash) got into the river?

- Add other ingredients to the water bottle (sprinkles, rice, soy sauce, etc.)
  - These represent different types of trash and pollution that get dumped into rivers.
    - Litter is underwater and floating on top.
- Otters (Cheerios) swim underwater and near the surface. All the otters are affected by this litter and pollution.
  - All of the pollution can make otters and other animals very sick.

PROGRAM OUTLINE CONTINUED:

- Plants living in this polluted area would probably get sick, too. They also need clean water to survive.
  - What happens to a river filled with litter and oil after a big storm?
- Students cap and shake water bottles.
  - Pretend the shaking is a storm coming.
    - The oil and trash go everywhere in the water. The oil doesn't just stay on the top. It moves to the bottom of the river as well.
    - Oil can hurt all animals (not just otters) at the bottom and top of the water.

What would happen to animals if their food, water, and living spaces were polluted?

- Animals need food, water, and spaces to live. If these are harmed or destroyed, the animals might get sick.
  - The animals could also die.
  - Pollution affects many animals.

Conclusion

- Students write down and illustrate why it is important to take care of Earth.
- Share student responses and/or show illustrations.

TEACHER BACKGROUND:

How Do Litter and Pollution Affect the San Francisco Bay Area?

Great amounts of trash collect and build up in San Francisco Bay Area creeks, rivers, and storm drains, which empty directly into the bay. This trash comes from local residents and businesses that sometimes dispose of it carelessly. As a result, plants and marine wildlife living in these areas can be harmed or killed. For example, animals can get tangled in plastic trash or consume food that contains toxic chemicals. Over time, these marine animals could become endangered or even go extinct.

Where Do the Chemicals Come From?

Noxious chemicals come from vehicles (cars/trucks) that release oil, lead, copper, and zinc into the water, air, and land.

In addition to vehicle pollution, chemicals also come from water sources. For instance, when someone washes a car or waters plants and lawns, chemicals from soaps and fertilizers flow into storm drains and waterways and into the Bay. Coyote Creek, a major waterway in the South Bay, is one of the most polluted waterways in the Bay Area. Most of the trash and pollution that enter waterways like Coyote Creek is toxic and not biodegradable.

In addition, cleaning chemicals and medications flushed down a toilet also contaminate the water. Leaky landfills and pet waste reduce the water quality and fill waterways with dangerous bacteria. Marine animals (such as birds, fish, and turtles,) and people who eat fish from this area are thus at high risk of consuming toxins. In fact, the California Department of Fish and Game recently tested samples of Bay Area fish and shellfish and discovered that they contained toxins, specifically mercury and polychlorinated biphenyls (PCBs).

All forms of pollution continue to affect daily life for organisms in the San Francisco Bay Area. It is important to be mindful of how all trash is thrown away and to practice effective, safe waste disposal.

Tips to Help Reduce Pollution

- Take public transportation, walk, ride a bike, or carpool.
- Buy local and organic foods and other goods.
- Use fewer cleaning chemicals, or only use cleaners made with all-natural ingredients.
- Dispose of medication properly; don’t dump or flush it.
- Learn about major polluters in your community.
- Join an environmental group.
- Reuse or fix items instead of throwing them away.
- Buy products with biodegradable packaging.
- Turn off lights and electric appliances when they’re not in use.

GLOSSARY:

Environment: Surroundings or conditions in which a person, animal, or plant lives

Litter: Trash, such as paper, cans, and bottles, that is left lying in an open or public place

Pollution: Presence in or introduction into the environment of a substance or thing that has harmful or poisonous effects

1ST GRADE STANDARDS:

California Science Content Standards

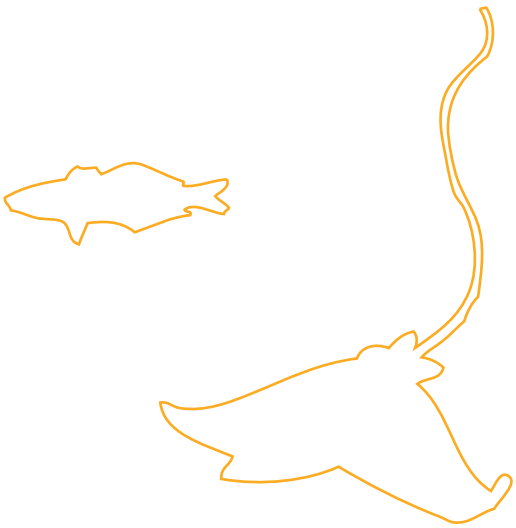
- 2.b. Students know both plants and animals need water, animals need food, and plants need light.

California's Next Generation Science Standards

- K-2-ETS1-1. Ask questions based on observations to find more information about the natural and/or designed world(s).
  - Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.

PROGRAM MATERIALS:

- Ending discussion worksheet



Name: _____

THE RIVER OTTER

Directions: Why is it important to take care of the places where river otters live? Draw a picture to show why it is important.

It is important to take care of river otters' homes because...

_____

_____

_____

_____

_____

_____

LESSON 3

LETTERS FROM AN OTTER

Enduring Understanding: Pollution destroys the homes of many animals, including river otters, but we can help keep that from happening.

Materials

- Images of polluted areas in the San Francisco Bay Area
- Sample letter
- Writing prompt
- Publishing paper

SETUP:

1. Make copies of writing prompt.

PROGRAM OUTLINE:

- A watershed is an area drained by a river or other body of water.

What is the San Francisco watershed?

- Show students images of the San Francisco watershed.
  - Bring up images and map on computer, if available.
- The watershed of the San Francisco Bay area is home to many types of animals, including river otters.

What does pollution look like in our community?

- Show students images of polluted areas in the watershed.
  - This pollution is happening in our community. How does this pollution make you feel?
- Give students sentence frames to help them describe their feelings. “I feel unhappy/angry/sad... because many of the animals, plants, and even people are getting sick.”
  - How would you feel if this were your home?

Who is causing this pollution?

- Human beings litter and dump trash on the land and in the water.
- Humans drive cars and use gas for many things that also cause pollution.
- Create a “Causes of Pollution” chart (see sample below).

PROGRAM OUTLINE CONTINUED:

What happens when animals or humans eat something that has been living in a polluted area?

- Animals eat other animals. For example, river otters eat fish. If the fish is sick because it has eaten dangerous chemicals, the river otters will also get sick.
- Humans eat fish, too. Humans can also get sick from eating fish from polluted water.

What can humans do to stop causing pollution?

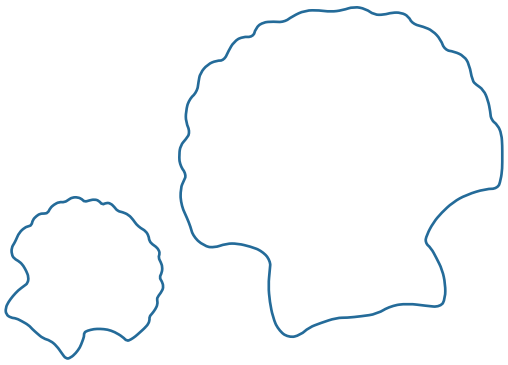
- Add "How to Help Stop Pollution" to the chart and record student responses.

Sample Chart

Causes of Pollution	How to Help Stop Pollution
Dumping trash	Throw away trash in correct garbage can.
Driving vehicles (cars, trucks) causes air pollution (smog).	Take public transportation, ride your bike or scooter, jog, or walk.
Using fossil fuels such as gas (in cars, to produce heat, and to power things at home)	Use energy wisely.
Running factories also causes smog and pollution.	Recycle and reuse items instead of buying new things.
Spilling sewage and wasting water	Use water wisely; reduce the amount of water you use.
Farming uses chemicals that can get into the land.	Eat or grow organic foods.

What can people do to care for Earth and help stop pollution?

- Thinking from an otter's perspective, students explain why it's important to take care of the earth
  - Describe at least three ways citizens of San Francisco can help stop pollution.



PROGRAM OUTLINE CONTINUED:

Read students a sample letter, such as the following.

Dear Citizens of San Francisco,

I am Olivia. I am a river otter. I live in the water of the San Francisco Bay watershed. I am worried. There is a lot of trash in my home. It is very important to take care of the land, water, and air. If we do, we can all be happy and healthy!

There are three things you can do to help keep pollution out of my home. First, you can ride your bike or walk instead of taking a car. Second, you can use energy wisely. For example, you can turn off the lights when you leave a room. Third, you can use less water when you take a shower or brush your teeth. Doing these things will really help my home and yours!

Sincerely,
Olivia Otter

Provide students with the writing prompt.

- Publish letters, if time allows.
- Have students share their letters in small groups and/or have a few students read their letters aloud.

TEACHER BACKGROUND:

San Francisco Bay Watershed

A watershed is a region that drains into a river, river system, or another body of water. Watersheds are valuable because they provide water to bigger bodies of water. The San Francisco Bay watershed comprises several waterways, including the San Joaquin and Sacramento Rivers. It is approximately 500 miles long and stretches from the Cascade Range in the north to the Tehachapi Mountains in the south. The Sierra Nevada and Coast Range also surround it. This watershed serves as a main source of water for millions of people, animals, plants, and organisms living in California. It is a very valuable resource.

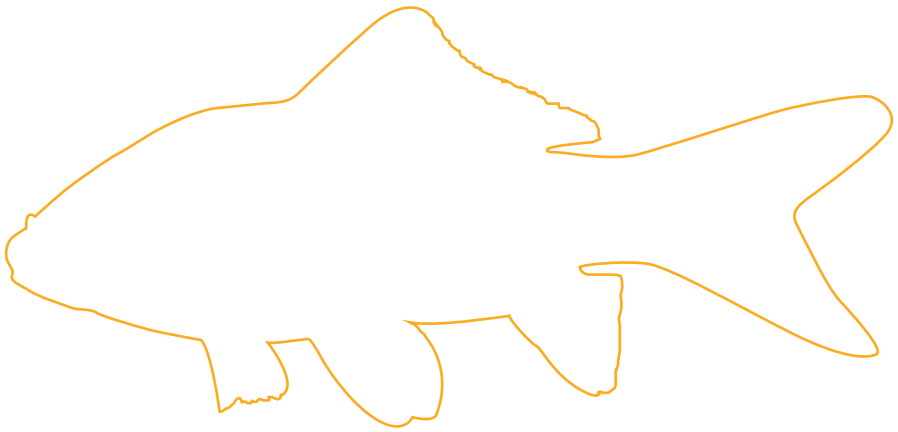
Unfortunately, various types of air, water, and land pollution have damaged the San Francisco Bay watershed. As a result, many toxins from pesticides, vehicles, and trash have seeped into the land and water. This pollution negatively affects marine wildlife and surrounding habitats.

Air, Water, and Land Pollution

Earth is surrounded by various gases that make up the atmosphere, which helps protect the planet. For instance, the atmosphere prevents the sun's heat from burning up organisms on Earth. Air pollution occurs when air becomes contaminated by fumes or gases entering the atmosphere. Human actions and pollution from factories, cars, and other vehicles put harmful gases into the air and negatively change the atmosphere's balance.

Human interaction with Earth has also caused water pollution. This happens when bodies of water are contaminated. This contamination occurs when chemicals enter bodies of water without effective methods to remove these harmful pollutants. Industrial waste, sewage, mining and farming activities, oil leaks, animal waste, and urban development are several major causes of water pollution.

Finally, land pollution, also typically caused by human activity and interaction with Earth, is the deterioration of Earth's land surface. It occurs most often when waste is not removed properly or when pollutants seep into the soil. Some common sources of land pollution include agricultural waste and pesticides, industrial waste, deforestation, chemical and nuclear plant waste, and landfill waste.



1ST GRADE STANDARDS:

California Science Content Standards

- 2.c. Students know animals eat plants or other animals for food and may also use plants or even other animals for shelter and nesting.

California Next Generation Science Standards

Engineering Design

- ETS1.A. Asking questions, making observations, and gathering information are helpful in thinking about problems.
- ETS1.A. Before beginning to design a solution, it is important to clearly understand the problem.

California Common Core Standards

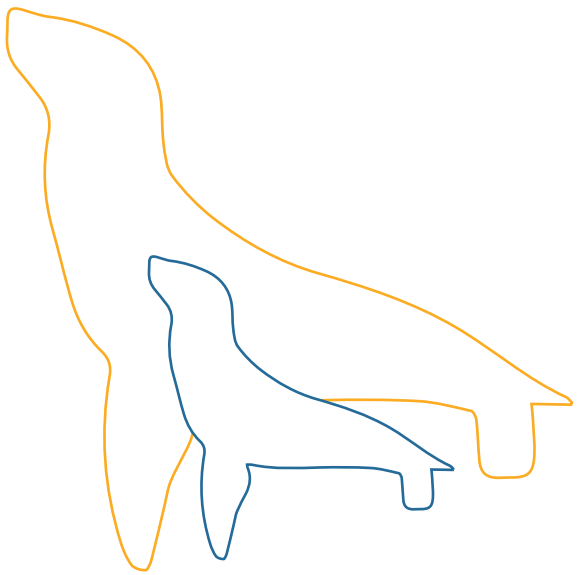
ELA/Literacy

- W.2. Write informative/explanatory texts in which they name the topic, supply some facts about the topic, and provide some sense of closure.

PROGRAM MATERIALS:

- Writing prompt

Pretend you're a river otter. Humans have been polluting the watershed in San Francisco where you and your family life. Write a letter to a human/citizen living in San Francisco to tell them how pollution makes you feel. Then tell them at least three things they could do to help stop pollution and make things better. Use the chart to help you.



Name: _____

THE RIVER OTTER

Directions: Pretend you are a river otter. Write a letter to the citizens of San Francisco. Tell them how the pollution in your home makes you feel. Tell them at least three things they could do to help take care of your home and the planet that we share and live on together.

Dear Citizens of San Francisco,

_____

_____

_____

_____

_____

_____

Three things you could do to help take care of river otters' homes are

(1)_____

_____

(2)_____

_____

(3)_____

_____

Sincerely,

_____

LESSON 4

REUSING RECYCLED MATERIAL

Enduring Understanding: Pollution hurts wildlife and the environment, but effective conservation strategies carried out by people of all ages can make a difference and help restore nature.

Materials

- Images of polluted and unpolluted areas
- Internet (preferable but optional)
- Chart paper/white board
- Used or recyclable material (examples include toilet paper/ paper towel rolls, egg cartons, juice/milk cartons, plastic bottles, used paper, newspaper, magazines, plastic bags, cardboard boxes, paper bags, glass jars, soup cans, buttons, popsicle sticks)
- Paint
- Paintbrushes
- Markers, colored pencils, crayons
- Glue
- Tape
- Images of simple recycled crafts

SETUP:

1. Gather used/recyclable materials; spread them out in boxes or containers so students can browse.
2. Prepare paint, paintbrushes, and other art supplies.

PROGRAM OUTLINE:

Why is it important to take care of our Earth?

- Living things need clean water, air, and land in order to survive.
- Pollution is harming our planet. It is our job to put more effort into taking care of the earth so that we and future generations can lead healthy lives.
- Show students pictures of polluted areas and pristine, clean ones.
  - Have a class discussion about which area they would rather live in.

What are some things we can do to help take care of our earth?

- Play the song "Reduce, Reuse, Recycle" found at https://www.youtube.com/watch?v=wtoeZ9Nkeqk.

We can reduce waste.

- Reduce means to use less of something.
- We can reuse items (such as containers, water bottles).
  - Reuse means to use again.
- We can recycle materials correctly.
  - Recycle means to make new items from old ones.

PROGRAM OUTLINE CONTINUED:

Sample Chart

Reduce	Reuse	Recycle
to use less of something	to use an item again	to make new items from old ones
Turn off lights, TV, and other electrical appliances.	Reuse plastic/paper bags, water bottles, containers, lunch boxes.	Paper, newspapers, magazines
Turn off water.	Donate old clothing, shoes, and toys.	Plastic bottles
Use “scrap” paper or use both sides of a sheet of paper.	Make crafts out of reusable materials/items (toilet paper rolls, egg cartons, etc.).	Glass
	Buy used things (books, DVDs, clothes, toys, etc.).	Aluminum cans

Give students three scenarios. Students show one finger, two fingers, or three fingers to tell if they think the answer is reduce, reuse, or recycle.

Scenario 1
Jose threw away cardboard boxes in the landfill trash can. His friend, Leo, helped him to put the boxes into the correct bin. (Recycle)

Scenario 2
Ling lost his lunchbox and brought his lunch to school in a paper bag today. During free time he used the paper bag to make a silly puppet for his little sister, Lilly. (Reuse)

Scenario 3
Olivia’s father was reading in the kitchen. He received a phone call and went upstairs to talk on the phone. He left the kitchen lights on, so Olivia made a smart choice to turn off the lights for him. (Reduce)

How can we reuse materials that are ready to be recycled?

- Recycled materials can be reused to make a variety of helpful or fun items.
- Let students browse through recycled materials and brainstorm ideas.
  - Students look at materials and determine what materials they can reuse to make a simple craft, toy, or tool.
- Show students some images of different recycled crafts (see chart next).
  - Students sketch two to three ideas on a sheet of paper and choose one final craft to make.

PROGRAM OUTLINE CONTINUED:

Craft	Materials Needed	Basic Instructions
Pencil Holder	Can, scrap paper, magazines, scissors, glue/tape	1. Cut a piece of white scrap paper to fit the tin can. Glue or tape paper around the can. 2. Cut words out of a magazine that describe the special person who will receive the pencil holder. (The student can write words on it, too.) 3. Glue/tape the words to the can.
Shaker/Maraca Instrument	Empty water bottle with lid, masking tape, paint or markers, pasta shells, rice, or dried beans	1. Wrap the water bottle from top to bottom with masking tape. 2. Decorate the maraca by drawing or painting a unique design on the tape. 3. Fill the bottle with pasta shells, rice, or beans. 4. Put the lid on the bottle and shake it!
Spaceship	Paper towel roll, white cardstock or construction paper, black construction paper, red/orange paper (tissue or construction), scissors , glue, markers	1. Paint paper towel roll white. 2. Cut a white triangle from recycled construction paper. 3. Crumple up a small piece of black construction paper and glue it in the top of the roll. Use markers or paint to decorate spaceship. 4. Glue red paper strips to the bottom of the roll to make the engine "fire." 5. Glue the roll to the middle of the triangle so it looks like two wings.

Conclusion

- Students can walk around and view finished products. If time allows, have a few students present their products or have students present to a table partner.

TEACHER BACKGROUND:

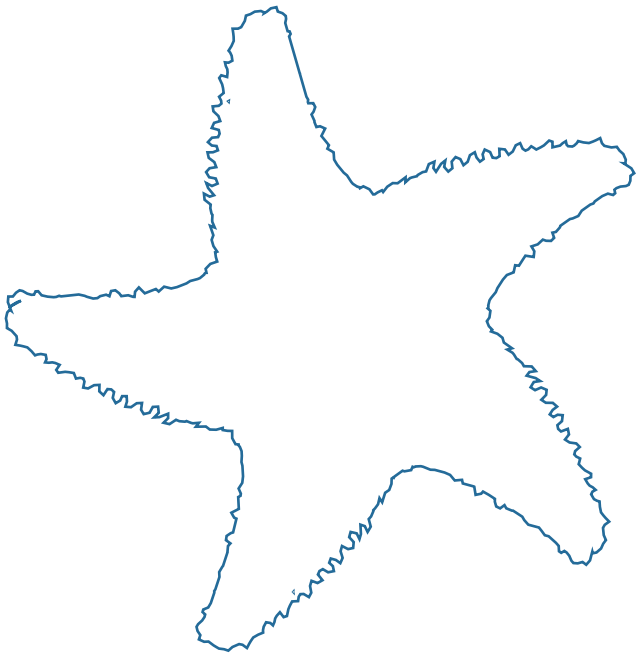
Reduce, Reuse, Recycle

Reducing, reusing, and recycling can help individuals, communities, and the environment by saving money, energy, and natural resources.

Best practices for reducing, reusing, and recycling waste include

1. Sell, donate, or give away old items.
2. Find creative ways to reuse old materials.
3. Purchase secondhand materials or recycled products.
4. Compost biodegradable material.
5. Recycle properly at home and in your community. Check labels to determine if and how an item can be recycled.
6. Repair items instead of purchasing new ones.
7. Buy items in large quantities or in bulk to avoid excess packaging.
8. Substitute reusable items for consumable ones.
9. Educate others about the importance of conservation and what they can do to get involved.

Reducing, reusing, and recycling materials demonstrate concern for the environment and show effort in helping to make the world a cleaner and healthier place to live. By engaging in these practices, people can use raw materials more efficiently, help decrease the use of toxic materials, lessen the overproduction of materials, improve communities around the world, and set a positive example for future generations.



GLOSSARY:

Conserve: To prevent wasteful or harmful overuse of a resource

Recycle: To convert into reusable material

Reduce: To make smaller or less in amount

Reuse: To use again or more than once

1ST GRADE STANDARDS:

California Next Generation Science Standards

- K-2-ETS1-2. Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people.

California Science Content Standards

- 4.a. Draw pictures that portray some features of the thing being described.

California Common Core Standards

Visual Arts

- Create artwork based on observations of actual objects and everyday scenes.

1ST GRADE

RESOURCES

- BrainPopJr, “Reduce, Reuse, Recycle”
http://www.brainpopjr.com/science/conservation/reducereuserecycle/preview.weml

- Clean Air Kids, “Air Quality”
http://www.clean-air-kids.org.uk/airquality.html

- Conserve Energy Future, “Water Pollution Facts”
http://www.conserve-energy-future.com/various-water-pollution-facts.php

- EPA, “Drinking Water”
http://water.epa.gov/learn/kids/drinkingwater/gamesandactivies.cfm

- Eschooltoday, “Your Cool Facts and Tips on Waste Management
http://www.eschooltoday.com/waste-recycling/waste-management-tips-for-kids.html

- NIEHS, “Reduce, Reuse, Recycle”
http://kids.niehs.nih.gov/explore/reduce/

- Save the Bay, “Pollution Facts”
http://www.savesfbay.org/pollution-facts

- “The Three R’s: Reduce, Reuse, Recycle” song
https://www.youtube.com/watch?v=wtoeZ9Nkeqk

- The Wild Center, “The River Otter” video
https://www.youtube.com/watch?v=0jyyfIT_bl4