



National Farmers Union *“Planet Stewardship”*

Section 1: Grades 1-2

Contents:

Lesson 1: What On Earth Are Natural Resources? ~ 1 hour

Lesson 2: Trash Talk* ~ 1 hour

Lesson 3: Water Wonderful World ~ 1 hour

Lesson 4: Sold On Soil ~ 1 hour

Optional Activities

** Lesson contains a cooperative education component.*

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Lesson Plan 1: What on Earth Are Natural Resources?

- Unit Objective:** Students will learn the identity and value of the Earth's natural resources.
- Grades:** 1-2
- Length:** 1 hour: 10 min. for "A Stewardship Story" discussion, 10 min. for introduction of background information and discussion, 10 min. for "The Stewardship Shuffle" and discussion, 30 min. for "Natural Resource Stewardship Bracelets" activity
- Materials Needed:** Pencils, copies of "A Stewardship Story" and "The Stewardship Shuffle" for each child, elastic string and a variety of colored craft beads (See "Natural Resource Bracelets" instructions for colors.) and prizes (optional)
- Preparation Needed:** Cut seven-inch sections of elastic string for each child. Separate craft bead colors for "Natural Resource Bracelets." Make copies of "A Stewardship Story" and "The Stewardship Shuffle" for each child.

Background:

Soil, water, air, wildlife, trees, minerals, oil: these and other raw materials supplied naturally in the environment are known as the Earth's **natural resources**. Many do not value our natural resources, although without them, life would not exist.

We, as humans, cannot create natural resources, but we can impact them. Because many of our natural resources such as water, soil, fossil fuels and minerals are **non-renewable**, or in limited supply, it is important that we do not waste or pollute them. It is the responsibility of all human beings to be good **stewards** of the Earth's natural resources. Stewardship is the wise use and **conservation** of natural resources.

Family farmers, ranchers and fishermen display good stewardship as they work hard to protect our soil, water and air. They need these resources to produce our food and fiber. They know that if they're good to the Earth, it will be good to them. That's what planet stewardship is all about.

Teaching Strategy:

1. Open the lesson with "A Stewardship Story." Have children take turns reading each paragraph and the questions that follow.
2. *This year, Farmers Union's lessons/day classes/camp theme is "Planet Stewardship." What do you think we mean by "Planet Stewardship?" Stewardship can mean taking good care of something that's not necessarily ours. We're talking about taking care of natural resources, which are all of ours to share.*
3. Introduce the background information above. *What would happen if someone upstream from your town dumped harmful chemicals into the river? If our water became polluted, how would we create more water? If your neighbors decided to cut down all of the trees around where you live, how would that impact you? Those natural resources are ours to share and we must be careful to conserve and protect them.*
4. Hand out "The Stewardship Shuffle" with pencils. Allow time for students to fill out the sheets on their own. Take time afterward to go over the answers and lead them in a discussion. *Which of these activities do you do already? Which of these activities would be easy to do now that you know it can help protect our natural resources? What other stewardship activities can we think of?*
5. *Next, we're going to create natural resource stewardship bracelets to remind us how important natural resources are in our daily lives.* Follow the directions on the "Natural Resource Stewardship Bracelets" sheet for leading this group craft.
6. Once the craft is completed, ask volunteers to recite what each of the beads on their bracelets represent for a chance to receive a special prize. Encourage them to wear their bracelets throughout the event and after they get home as a reminder to be good stewards of our planet's natural resources.

Key: Page 4: air, trees, fossil fuels, water

A Stewardship Story

Once upon a time, a little girl received a special bottle of perfume from her grandmother for her birthday. Her grandmother told her that the perfume was quite valuable. She had received the large bottle of perfume from her mother, and this particular brand was no longer being produced.

She encouraged her granddaughter to take good care of it, so it could last her lifetime and one day be passed on to her daughter.

The little girl valued the perfume very much. For years, she would use a single drop of the beautiful perfume on the most special occasions. As she grew up, she carefully protected the special perfume to make sure none was carelessly spilled.



When she had a daughter of her own, she told the girl the story behind the perfume. She told her daughter that her grandmother had entrusted her with this valuable perfume, and it was her turn to enjoy it.

The daughter loved the perfume and found many uses for it. She put it on her dolls, she poured it in her bath water and she left it out on the dresser without the lid where it would easily spill over. In a short amount of time, the rare and beautiful perfume that had been passed down for generations was completely gone.

Discussion Questions:

1. Who was the better steward of the perfume, the mother or the daughter?
2. How did the daughter's actions differ from her mother's?
3. How do you think the daughter felt before and after the perfume was gone?
4. How do you think her mother felt when she discovered the perfume was gone?
5. Have you ever been asked to take care of something that wasn't yours? What happened? How did that make you feel?
6. What precious gifts does "Mother Earth" entrust to us?
7. In what ways do we act like the mother in the story when it comes to these gifts?
In what ways do we act like the daughter in the story?
8. How can we be good stewards of our natural resources to make sure they last a lifetime?
9. How can we make sure these natural resources can be passed down to our sons, daughters and grandchildren?

The Stewardship Shuffle

First, fill in the blank with the correct name of the natural resource pictured. Next, draw a line connecting each natural resource with acts of good stewardship that could help conserve and protect them for future generations. Each natural resource may have more than one action associated with it. Each action may impact more than one resource.









Plant one.

Ride a bike.

Recycle paper.

Walk to school.

Take a shorter shower.

Pick up litter.

Use fuels from the farm.

Do not flush trash.

Do not over-fertilize lawns and fields.

Do not pour chemicals down the drain or on the ground.

Properly seal containers that contain chemicals that could evaporate.

Turn off the faucet while brushing your teeth.

Prevent soil erosion.

Recycle plastics.

Natural Resource Stewardship Bracelets

Materials Needed:

- Stretch Magic clear, elastic string or other type of elastic string
- Medium-sized red, brown, black, white, blue, gold, green, orange, turquoise and yellow beads (1 per student)
- Smaller silver beads (more beads needed for filler)



Activity Steps:

1. Give each student approximately seven inches of elastic string. Have beads divided on paper plates with labels of what each color represents. For large groups, the beads could be divided into bags for teams to sort through when each color is introduced by the leader.
2. Have the students string the beads on their bracelets while the colors are being introduced. Explain what each item represents and its importance to agriculture and their daily lives:
 - a. **Red beads represent soil**, the basis of life. Healthy soil is necessary for growing plants and animals. It must be protected from erosion, nutrient depletion and pollution.
 - b. **Brown beads represent organic matter**. Organic matter is necessary for healthy soil. Old plant and animal material that is broken down in the soil becomes organic matter, which helps the soil absorb water and provides habitat for soil organisms.
 - c. **Black beads represent fossil fuels**. Fossil fuels, such as oil and coal, are created from organic matter. However, fossil fuels are considered to be non-renewable because they take millions of years to form and reserves are being depleted faster than new ones are being formed.
 - d. **White beads represent minerals**. Minerals are considered non-renewable natural resources because their production by Earth's forces cannot keep up with their consumption by humans. Minerals are used for agricultural fertilizers, building materials, dietary supplements and many other purposes.
 - e. **Blue beads represent water**. All living things require water to live, but only 1 percent of the world's water is usable. So, it is crucial to conserve and protect the Earth's water supply.
 - f. **Gold beads represent sunlight**. Humans and animals need the sun for warmth and for healthy plants, which require sunlight for photosynthesis to produce food for themselves and oxygen for animals and people.
 - g. **Green beads represent trees**. Trees help cleanse the environment, prevent erosion and are natural buffers to harsh weather conditions and noise pollution.
 - h. **Orange beads represent animals**. Animals provide nutritious food and many other products we use every day.
 - i. **Turquoise beads represent plants**. Plants provide food and oxygen for people and animals. They also help keep soil in place to prevent erosion. Plants are renewable resources.
 - j. **Yellow beads represent renewable fuels from the farm**. Yellow is the color of corn, which is an important renewable resource that feeds people and animals and is also one of several agricultural products that can be used to create renewable fuels that we put into our cars.
 - k. **Silver beads represent air**. Air is a precious natural resource that is all around us. The air we breathe can become polluted from many sources and must be protected.
3. Have students space out their bracelets with enough silver beads and leftover string to fit their wrists. The leftover string should be used to tie in a double knot. The excess string should be cut and tucked into one of the beads on the bracelet.
4. Throughout the day, ask volunteers to recite what each of the beads on their bracelets represent for a chance to receive a special prize.
5. Encourage them to wear their bracelets as a reminder to be good stewards of our planet's natural resources.

Lesson Plan 2: Trash Talk

- Unit Objective:** Children learn how they can display good stewardship through reducing, reusing and recycling waste products.
- Grades:** 1-2
- Length:** 1 hour: 5 min. for introductory discussion and background information, 15 min. for cooperative recycling puzzles, 5 min. for “Putting Waste in Its Place,” 10 min. for recycling charades, 5 min. for “Farmers Union Stewardship Pledge,” 5 min. to teach and practice recycling songs and 15 min. for “Recycled Pets” activity
- Materials Needed:** Pencils, crayons, glue, tape, markers, paint, trash bin, a variety of trash, recyclables and reusables, plastic sandwich bags, enough copies of pages 8, 9, 10, 11 and 12 (cut into puzzle pieces) for each small group, and enough copies of pages 13, 14 and the “Farmers Union Stewardship Pledge” for each participant
- Preparation Needed:** Fill a trash bin with approximately four pounds of trash that could be dumped on the floor and discussed. Include items that are disposable, recyclable, reusable or could be reduced in some way. Fill sacks with clean, non-perishable trash for use in the “Recycled Pets” activity. Print pages 8, 9, 10, 11 and 12 on cardstock so that each small group will have all the sheets. Cut pages 8, 9, 10, 11 and 12 into individual puzzle pieces, with one picture per puzzle piece and with randomly shaped edges that fit together. Place all individual pieces into plastic bags. Cut out some of the activities on page 14 that would be easy for children to act out. Put the actions in a bowl for children to draw from. Make one copy per child of pages 13, 14 and the “Farmers Union Stewardship Pledge.”

Background:

The average person throws away more than four pounds of trash each day! When you put your garbage in the trash can, you may not see it again, but it doesn’t mean it disappears.

Most trash is taken to **landfills**, which are large controlled dump sites. Once a landfill site is full, new land must be made available to take in our garbage. The landfill site will never go away. The more trash we make, the more land will need to be used for landfills.

Because our **natural resources** are limited, it is important that we not waste or pollute them. By using the three R’s -- **reducing**, **reusing** and **recycling** – we can **conserve** and **preserve** our natural resources. National Farmers Union supports recycling as a responsible activity that protects our environment and natural resources. Any time we can reduce our waste at home, at Farmers Union camp and at school helps protect the environment.

Teaching Strategy:

1. *We’re going to open up today’s lesson with a little trash talk.* Dump the contents of the waste bin on a table or floor so all can see it. *Are these things you normally find in the garbage? What are some of the things you throw away in a week’s time? How much garbage do you think you produce in a day? Where does your garbage go? Do any of these things not belong here?*
2. Introduce the background information above.
3. Divide the group into teams, so that each group has an equal number of team members. Have the teams appoint a leader. Hand each group leader a plastic bag with the puzzle pieces inside and ask them to “deal” the pieces to each member as if they were playing a card game. If there’s time, allow the children to color the puzzle pieces they have as they casually talk with each other about what they are coloring.
4. Next, explain that each member of the group has certain pieces of five larger puzzles and that, through cooperation, they will form five completed puzzle pages that explain the

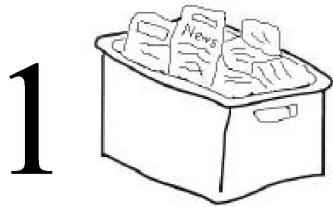
recycling processes for paper, aluminum, steel, plastic and glass. When a team has completed all five puzzles, team members should raise their hands.

5. Teach the song, “We Recycle,” and have the groups sing the song in rounds. (The first group begins the song. The next group starts the song from the top once the first group finishes the second phrase of the song. The third group starts the song from the beginning when the second group finishes the second phrase of the song, and so on. The leader may need to signal when each group begins.)
6. Hand out page 13 with pencils. Ask them to work individually and circle the answer that is the best place to put the item pictured once they are finished with it. Once they have had a chance to fill out their answers, go around the group and ask each person to answer one of the questions and ask questions to expand the discussion, such as “*What might be ways to reuse this item?*” (An example might be turning an old, ratty T-shirt into household rags.) “*What are ways to reduce the use of this item?*” (An example might be to use filtered tap water in a washable water bottle instead of buying disposable water bottles.)
7. Hand out page 14. Take a bowl of cut up activities from page 14 and ask for a volunteer to be the first to act out the activity that they draw from the bowl. The class guesses which activity it is. The one who guesses gets to act out the next activity.
8. Give group members five minutes to fill out the “Farmers Union Stewardship Pledge.” When they are finished, have each come to the front of the room to share their pledges with the rest of the group and to have the leader sign their pledge forms, which they will take home with them.
9. Provide bags with clean disposable items for an activity that encourages creativity and reusing wastes. Distribute glue, tape, markers and paints with the trash. Challenge students to make and name the “recycled pets” with the trash. Hold a recycled pet parade afterward to showcase everyone’s creativity.
10. Teach the other recycling songs.

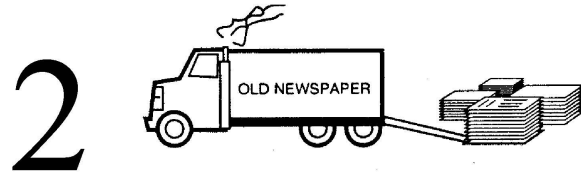
Key: Page 13: 1. a., 2. c., 3. d., 4. b., 5. d., 6. d., 7. d., 8. d., 9. d., 10. d., 11. d., 12. d.

Sources: Lesson adapted from King County, Washington, online solid waste resources, <http://www.metrokc.gov/dnr/kidsweb>, and the Florida Department of Education, “Development of Solid Choices: Thinking, Learning and Making Decisions About Solid Waste,” http://www.erefndn.org/rpts_summary_ordrs/solidchoicesonpdf.htm.

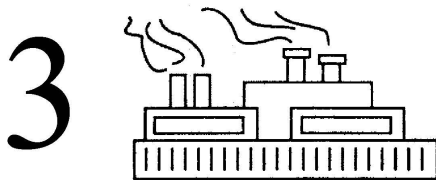
Paper Recycling



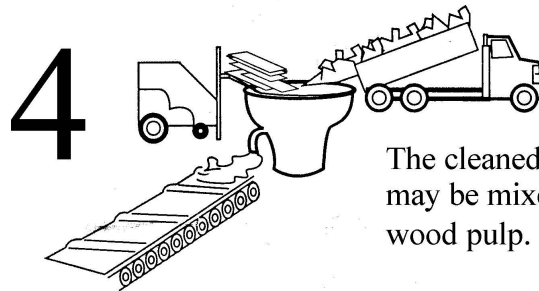
Old newspapers are collected at recycling centers or at curbside.



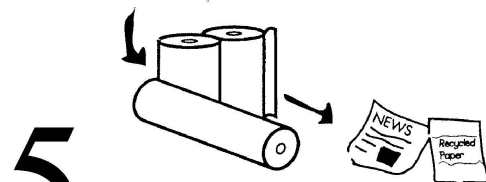
Collected paper is moved to a factory.



The ink is washed and rinsed away with water.



The cleaned newspaper may be mixed with scrap wood pulp.



The pulp mix is poured onto rollers and then made into recycled paper.

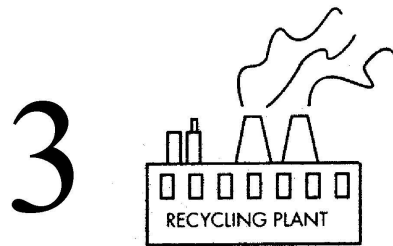
Aluminum Recycling



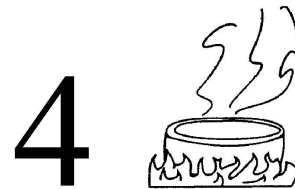
Aluminum is collected from curbside or recycling centers.



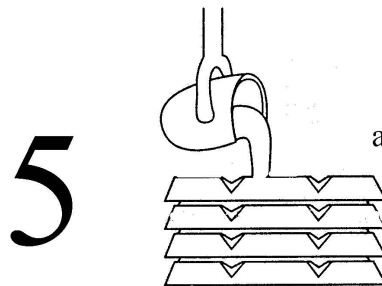
It is moved to a recycling plant.



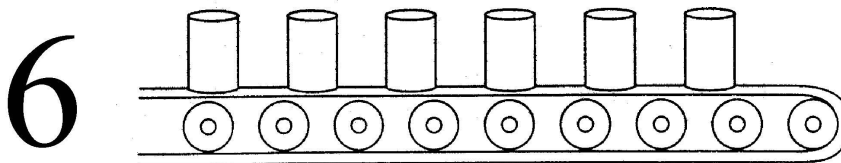
At the recycling plant the aluminum...



is melted...

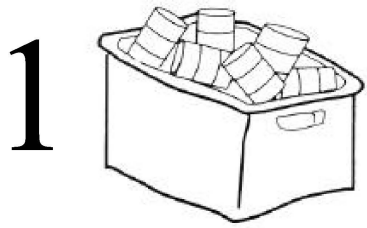


and poured into molds...



and shaped into cans, siding, and other products.

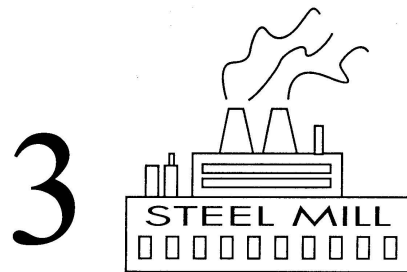
Steel Recycling



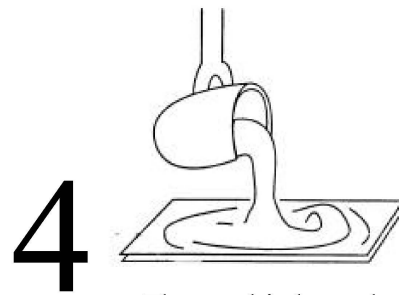
Empty steel cans are collected.



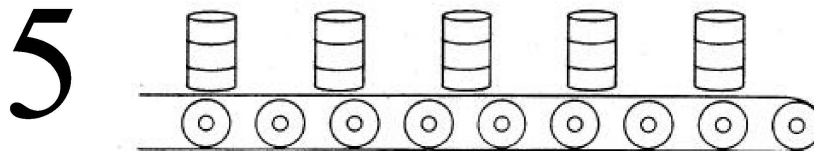
Steel cans and other steel products are moved...



to steel mills.



The steel is heated and poured onto sheets.



The steel is coated with tin and shaped into cans.

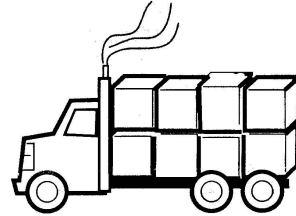
Plastic Recycling

1



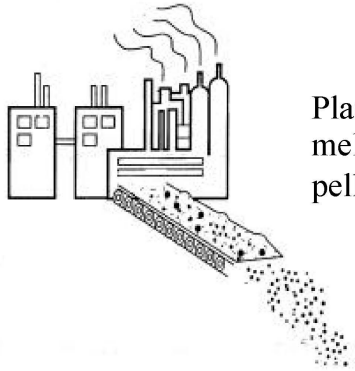
Different kinds of plastic are sorted.

2



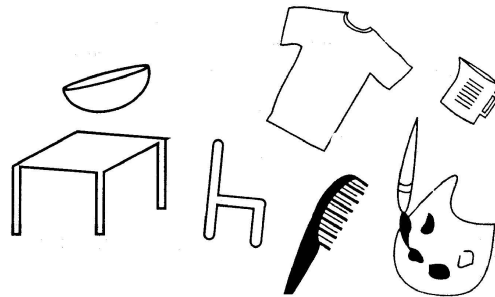
The sorted plastic is sent to a processing plant.

3



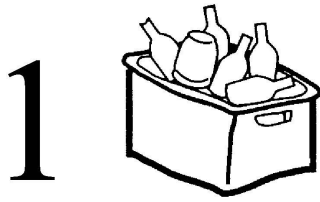
Plastics are washed, crushed, melted, and made into plastic pellets.

4

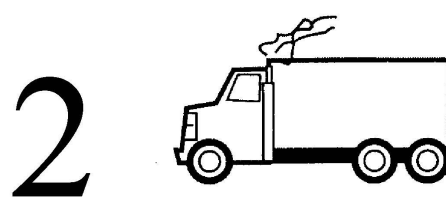


Recycled plastic pellets are used to make new things.

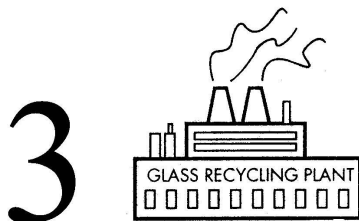
Glass Recycling



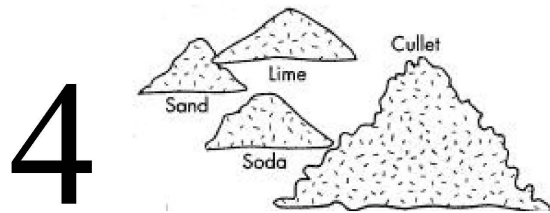
Glass containers are collected curbside at recycling centers.



The containers are taken to a recycling plant.

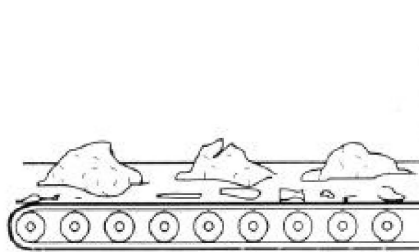


The glass is sorted by color. It is crushed into small pieces called cullet.

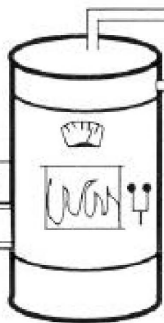


Cullet is cleaned and then mixed with sand, soda ash, and limestone.

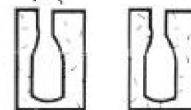
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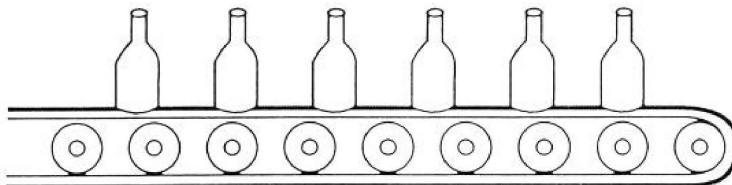
The cullet is melted at very high temperature.



The melted glass is pressed or poured into molds.



6



The molded glass is cooled and shipped for reuse.

Putting Waste in Its Place

Circle the best place to put each of these items when you are through with them.



1. A burned out light bulb?

- a. Garbage can
- b. Recycle bin
- c. Thrift store
- d. Compost bin



2. An old T-shirt?

- a. Garbage can
- b. Recycle bin
- c. Thrift store
- d. Compost bin



3. An empty glass jar?

- a. Garbage can
- b. Recycle bin
- c. Reuse
- d. Either b or c



4. Junk mail?

- a. Garbage can
- b. Recycle bin
- c. Thrift store
- d. Compost bin



5. Leaves and twigs?

- a. Garbage can
- b. Recycle bin
- c. Reuse
- d. Compost bin



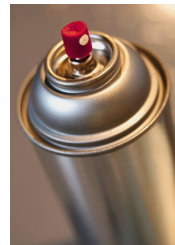
6. Meat, cheese, oily food?

- a. Garbage can
- b. In refrigerator
- c. Compost bin
- d. Either a or b



7. Apple core?

- a. Garbage can
- b. Recycle bin
- c. Reuse
- d. Compost or worm bin



8. Aerosol can?

- a. Recycle bin
- b. Garbage can
- c. Hazardous waste disposal
- d. Either b or c



9. Used toys?

- a. Garbage can
- b. Donate to a charity
- c. Thrift store
- d. Either b or c



10. Beverage bottles?

- a. Garbage can
- b. Throw out the window
- c. Compost bin
- d. Recycle bin



11. Boxes?

- a. Garbage can
- b. Recycle bin
- c. Reuse
- d. Either b or c



12. Paperback books?

- a. Recycle bin
- b. Thrift store
- c. Share with a friend
- d. All of the above

20 Ways to Reduce, Reuse and Recycle Trash

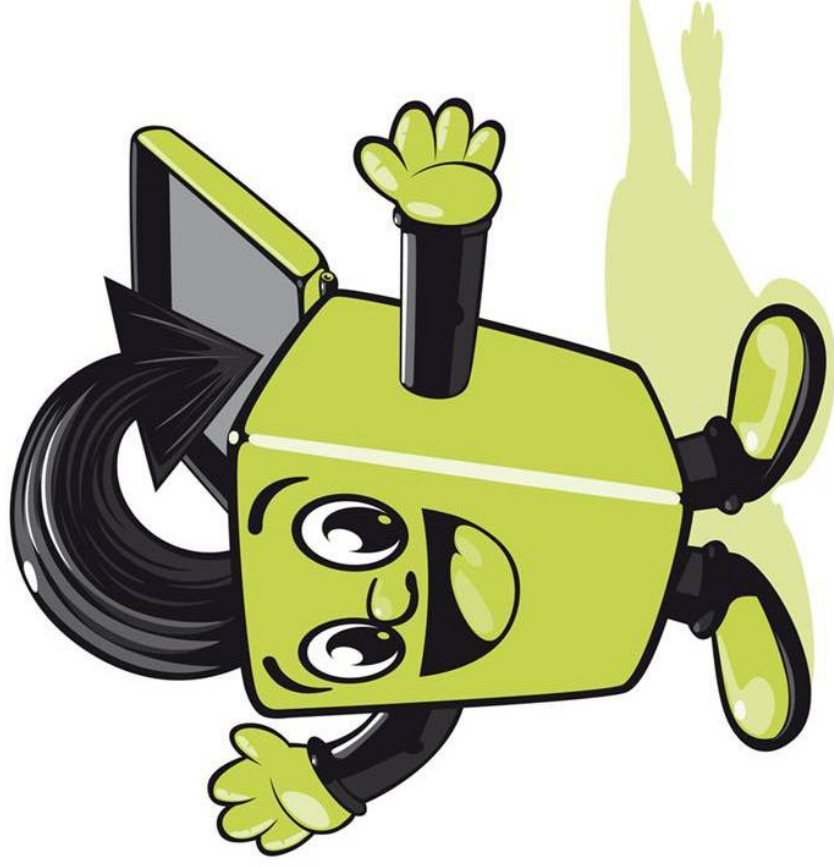


1. Recycle clean paper products.
 2. Peel labels off tin cans and rinse them before recycling.
 3. Recycle clean aluminum foil and aluminum cans.
 4. Store leftover food in the refrigerator for a future snack or meal.
 5. Work with your family or your school to create a composting pit or bin.
 6. Look for products that are “made from recycled material” to complete the recycling loop.
 7. Use washable plates, cups, silverware and napkins instead of paper or plastic products.
 8. Give items such as clothes, toys and old furniture that can be reused to thrift stores or charitable organizations. Have a garage sale, pass on or swap with friends and neighbors who could find use in them.
 9. Purchase products with less packaging.
 10. Plant your own garden to reduce the amount of packaged and transported foods you buy.
 11. Bring your own reusable bags to the grocery store.
 12. Use filtered tap water in a washable water bottle instead of buying disposable water bottles.
 13. Use both sides of a sheet of paper before recycling it.
 14. Use scrap paper for art projects.
 15. Bring a waste-free lunch to school by packing it in reusable or recyclable containers.
 16. Put paper towels out of reach so that they will be used only when needed. Instead, use reusable sponges, rags and cloth towels to clean up messes.
 17. Pick up trash when you see it.
 18. Turn off lights when you’re not using them.
 19. Use rechargeable batteries in your games and toys.
 20. Tell your family you want to become “chief of recycling” for your household. Organize the recyclable items in bins and remember to put them on the curb on recycling day.
-

Farmers Union Stewardship Pledge

My Name

pledges to reduce, reuse and recycle solid waste by:



My Signature

Date

My Leader's Signature

Date

Recycling Songs

We Recycle

(to the tune of “Are You Sleeping?”)

We recycle
We recycle
How ‘bout you?
How ‘bout you?
Paper, glass and plastic
Paper, glass and plastic
Aluminum, too
Aluminum, too



Note: This song may be sung in rounds.

Reduce, Reuse, Recycle

(to the tune of “The More We Get Together”)

Reduce, reuse, recycle
Recycle, recycle
Reduce, reuse, recycle
It’s easy to do
‘Cause your trash and my trash
Make up way too much trash
Reduce, reuse, recycle,
It’s easy to do!

Source: <http://www.canteach.ca>

Working on Recycling

(to the tune of “I’ve Been Working on the Railroad”)

We’ve been working on recycling
All the trash we can
We’ve been working on recycling
It’s a very simple plan
Separate your glass and paper
Separate your plastic and tin
Take the trash you’ve recycled
To the recycling bin!

Source: <http://www.canteach.ca>

Lesson Plan 3: Water Wonderful World

- Unit Objective:** Students learn where water comes from and how to protect and conserve it.
- Grades:** 1-2
- Length:** 1 hour: 10 min. for “The Water Circle Game,” 10 min. for background information, 15 min. for “The Water Cycle” activity page, 15 min. for “Water Cycle in a Bag” activity and discussion, 10 min. for “Save Our Water Stewardship Maze” and closing discussion
- Materials Needed:** Pencils, crayons, a ball or bean bag, one copy per person of “The Water Cycle” activity page and “Save Our Water Stewardship Maze,” a clear zipper-style plastic sandwich bag for each team, a tablespoon, a water source, masking tape and a sunny window
- Preparation Needed:** Make copies of “The Water Cycle” activity page and “Save Our Water Stewardship Maze” for each person. (Make two-sided copies to conserve paper.) Locate a sunny window for the “Water Cycle in a Bag” activity.

Background:

Our water is recyclable! Water molecules are constantly on the move in what is called the **water cycle**. Heat from the sun causes the water to **evaporate** and become a vapor. As the water vapor cools, it condenses, forming tiny droplets which gather to form clouds. As the droplets get larger, they become heavier causing them to fall to the ground as rain, sleet, hail or snow. Some of this water enters lakes and streams as **surface water**, and some of it soaks into the ground where it becomes **groundwater**.

Only 1 percent of the world’s water is usable. The rest is either too salty, polluted, or tied up in glaciers and ice caps. The water we drink can come from surface water or by pumping groundwater with a **well**. Half of everyone in the United States drinks groundwater every day. Farmers also utilize groundwater to **irrigate** the food that they grow.

Groundwater is filtered by underground soil and rock material and through the evaporation process, so mostly it can become usable again even after it has been used. However, there are some **pollutants** that can make groundwater reserves unusable or expensive to clean. Today we’ll learn more about the water cycle and how to keep our water clean.

Teaching Strategy:

1. *What do you, the trees and a cow have in common? You all need water. All living things must have water to survive, whether they get it from a sink, a cloud or a pond. Water is a very important natural resource. Without it, our bodies would not work properly. We also use water to keep clean, to grow the food we eat and to have fun.*
2. *Let’s have some fun right now while we learn more about water in “The Water Circle Game.”* Have the group stand in a circle. Hand a volunteer a ball or bean bag and have them toss the ball to someone else in the circle. When the person catches the ball, he or she must say one way we use water. Explain that the goal is to be the last one holding the ball. If they can’t come up with a use for water that hasn’t already been said, they must leave the circle. The person holding the ball last wins the game if he or she can come up with one final use for using water that has not been said.
3. Ask the group if there are any other uses for water that they thought of that hadn’t been said. (Share others if they haven’t yet been said: cooking, cleaning, growing food, providing power, heating, cooling, fishing, boating, gardening, water balloon fights, etc.)
4. *How old is the Earth’s water?* (It has been around since the beginning of time. So, we are drinking the same water that dinosaurs drank because of the Earth’s water cycle.) *The Earth’s water is constantly being recycled through what we call a water cycle, so there will never be any more or less water than there is right now.*

5. Introduce the background information above while passing out “The Water Cycle” activity page with pencils and crayons. Allow time to color and complete the page and ask for volunteers to tell the story of the water cycle by using the picture as a prop.
6. Number off the group into teams of three. Instruct the “number one” teammates go to the water source and take turns pouring two tablespoons of water into each of their clear plastic bags. Next, the “number two” teammates should blow air into the bag and quickly seal the bags. Finally, instruct the “number three” teammates to tape their team’s bag to a sunny window pane. Let them know that they will be periodically looking at the bag and should note any changes that they see. *Knowing what we’ve learned about the water cycle, what do you think will happen to our bags?* (When the bags begin to show condensation later in the day, discuss the results.)
7. *We have learned that there is a fixed amount of water in the water cycle, meaning there will never be any more or less water than there is right now. However, increasing demand for water has already led to shortages in some communities. The amount of usable water we have can also decrease when it is polluted.*
8. Hand out the “Save Our Water Stewardship Maze” with pencils and discuss the good and bad stewardship actions afterward. Use remaining time to brainstorm about other ways that water can be conserved and protected.

Key: Page 19: 1. sun, 2. vapor, 3. clouds, 4. rain, snow 5. groundwater, 6. well

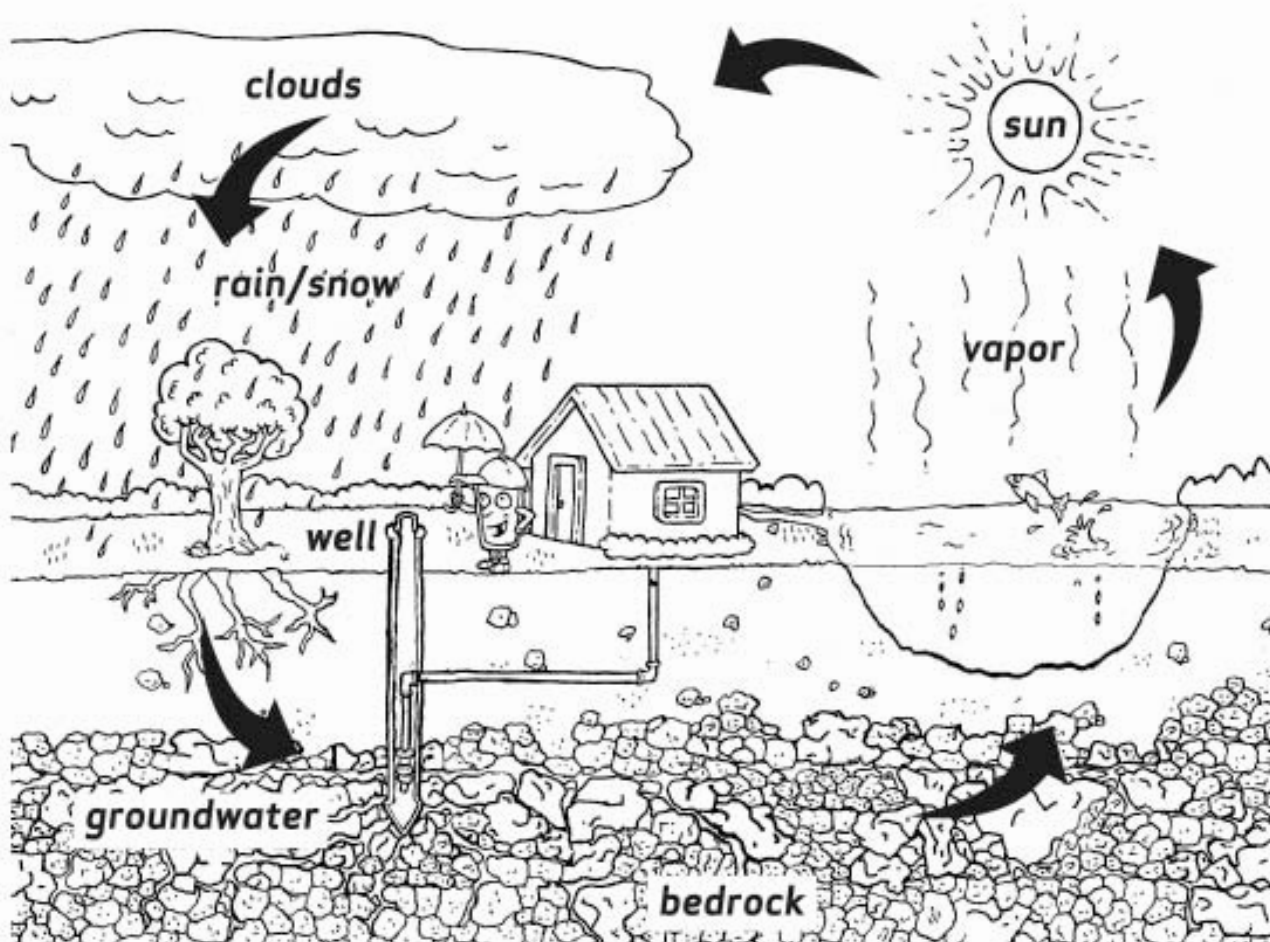
Sources: Lesson adapted from The Groundwater Foundation resources: www.groundwater.org

The Water Cycle

Did you know there will never be any more or less water than there is right now?

Water molecules are constantly on the move in what is called the water cycle. Heat from the sun causes the water to evaporate and become a vapor. As the water vapor cools, it condenses, forming tiny droplets which gather to form clouds. As the droplets get larger, they become heavier causing them to fall to the ground as rain, sleet, hail or snow. Some of this water enters lakes and streams as surface water, and some of it soaks into the ground where it becomes groundwater. The water we drink can come from surface water or by pumping groundwater with a well.

Color the picture below to learn more about the Earth's water cycle.



Source: Environmental Protection Agency

Fill in the blanks below:

1. The heat source in the water cycle is the _ _ _ .
2. The heat source makes water become a _ _ _ _ _ .
3. As vapors cool, they gather into tiny droplets that form _ _ _ _ _ .
4. As the droplets grow bigger and heavier, they become _ _ _ _ _ or _ _ _ _ _ .
5. Water that soaks into the ground becomes _ _ _ _ _ .
6. We can use the groundwater by pumping it from a _ _ _ _ _ .

Save Our Water Stewardship Maze

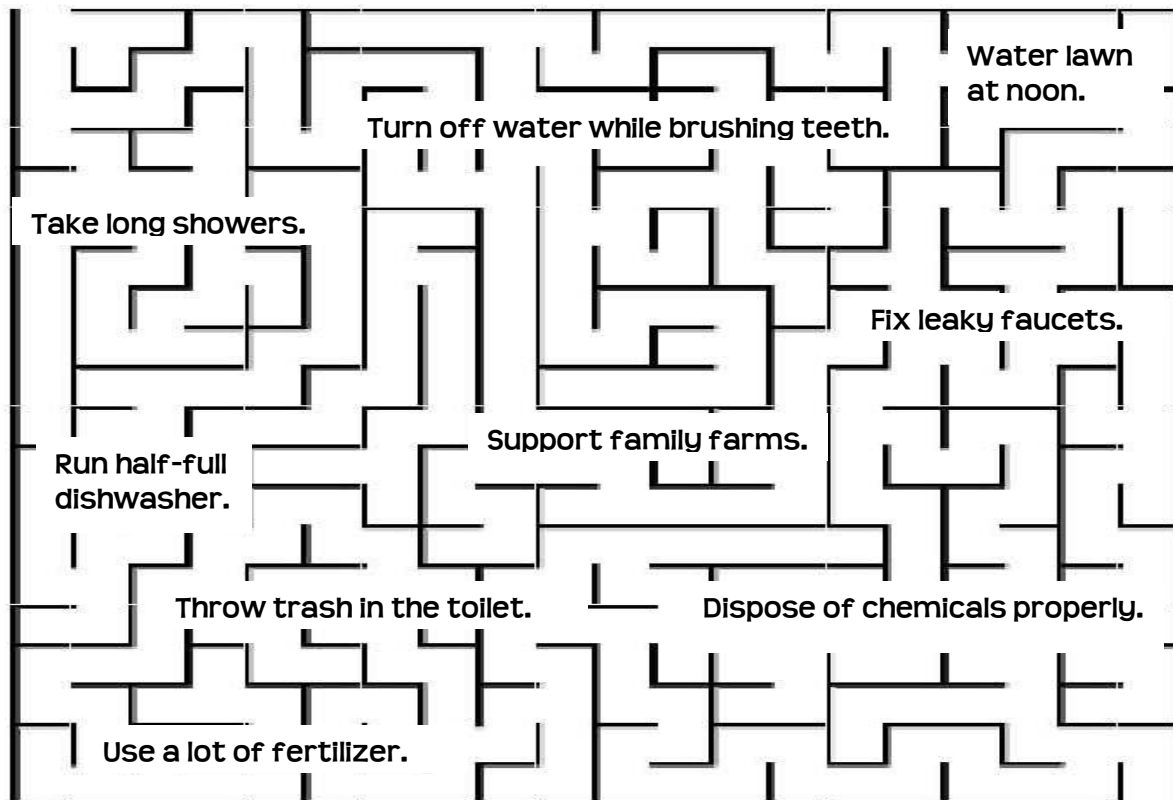
Help! Our water supply is being polluted and wasted, and your help is needed to preserve and conserve it.



Work through the maze below with a pencil until you reach “Good Stewardship.” The good water stewardship tips can help you find your way.

(Watch out for the poor water stewardship pitfalls that may steer you in the wrong direction!)

↓
START HERE TO SAVE OUR WATER!



Conserving water helps protect the environment and wildlife, plus it saves energy and money!



Lesson Plan 4: Sold On Soil

- Unit Objective:** Students will learn the importance of soil and a farmer's role in caring for it.
- Grades:** 1-2
- Length:** 1 hour: 15 min. for background information and opening discussions about soil, 5 min. for "Dirt Made My Lunch" song, 15 min. for "Soil Circle," 15 min. for discussion about soil types and "Particle Parade," 10 min. for composting video and discussion
- Materials Needed:** Pencils, a basketball, baseball, marble, computer with Internet connection, projector and screen or white wall
- Preparation Needed:** Make copies of "Dirt Made My Lunch" lyrics for each student. Set up computer and projector if utilizing the online composting video.

Background:

Everything we need for life starts with soil. Plant roots need oxygen from the air, water and nutrients to survive. About one-half of soil is made up of pores full of air and water. The other one-half is **minerals** and **organic matter**. Some of the nutrients in the organic matter and minerals dissolve in the water so plants can absorb them.

Farmers take special care of the soil because they know that whatever they want to grow on their land is only as good as the soil it's grown in. They make sure the soil has the right nutrient levels and the correct consistency for what they want to grow. They work to protect the fertile **topsoil** from **erosion** from water or wind by planting trees for windbreaks, grasses in waterways and high-density crops. Many farmers also rotate their crops so their soils can renew their organic matter. Many also employ soil-friendly minimal tillage or **no-till** practices to prepare their fields. These and similar activities collectively are referred to as **soil conservation** techniques.

We can help improve the soil by turning things we often put into the trash into **compost**. About 30 percent of our solid waste is valuable **biodegradable** material that can be used to improve soil. Food scraps, leaves, grass clippings and other biodegradable organic wastes can be recycled through composting. Through **decomposition**, microscopic organisms break organic wastes into nutrients that can be used by plants and animals.

Teaching Strategy:

1. Introduce the background information above.
2. *Can anyone think of anything that we eat that doesn't originate from the soil? What about cheese? Well, cheese is made from milk, which comes from a cow, which eats grass, which grows in dirt. What about eggs? Eggs come from chickens, which eat grain, which is grown in the dirt. The fact is, everything we eat comes from dirt!*
3. *I have a song about this. Let's learn it together!* Teach the song "Dirt Made My Lunch."
4. Have students create a "Soil Circle." All stand in a circle and the leader starts the game off with naming an object such as "book." The next person in the circle must say something the book is made of, "paper." The next person in line must say something paper is made from "pulp," the next person should say "tree," the person after that can say "SOIL!" The next person in the circle then comes up with another item and the circle continues. If someone in the circle becomes stumped, the game starts over with the leader again. The game is over when the circle is complete and the last person says "SOIL!"
5. *Try to remember a time when you played in the soil. Did it feel soft sometimes and gritty at other times? It can feel different from one time to another depending on what is in it. **Sandy soil** is made up of mostly sand particles. It feels gritty and allows water and air to move through it. **Silt** feels like flour when dry and very smooth and soft when moist. Silt particles keep the soil softer and easier to plow than soils with too much clay. **Clay soil** has mostly clay particles, some organic matter, silt particles and a little sand. Clay particles are very fine and are the smallest of the three soil particles. Clay is sticky when wet and hard like bricks when dry.*
6. *Sand, silt and clay particles are different sizes. Imagine a piece of sand is the size of a basketball. (Of course it's not that big in real life, but in relation to the other types of soil it is quite large.) If the sand is the size of a*

basketball in this illustration, a silt particle would be the size of a baseball and a clay particle would be smaller than a marble.

7. Ask for seven volunteers to join you at the front of the room for a “Particle Parade.” The first six will represent soil particles; the seventh will represent water.
8. Have the six students hold their arms out straight and touch fingertips with each other. They are now sand particles. Have them put their arms down and have the water flow between them. Since sand particles are large, it is easy for the water to move freely between the particles.
9. Next, have the students stand with their hands on their hips with elbows sticking out and touching each other. They are now silt particles. Have them put their arms down and ask the water to flow between them. Silt particles are smaller than the sand so it is more difficult for water to flow between them.
10. Last, have the students hold their arms at their sides and move in to touch shoulders with each other. They are now clay particles. Have the water try to move between them. Since clay particles are so close together it is difficult for water to move through them.
11. *Why is soil so important to the farmers and ranchers who grow our food and fiber? How might the various types of soil impact crop production?*
12. *How many of you have tried composting before? For those of you who may not be familiar with what composting is, here’s a video we can watch.* Show <http://www.enviromom.com/2008/07/one-can-chall-3.html> (The second to last button on the lower right will maximize the YouTube video to full screen.) Or, for a lower-tech but informative slide show, visit: <http://aggie-horticulture.tamu.edu/sustainable/slidesets/kidscompost/kid4.html>.
13. *What are some benefits of composting household food and yard wastes?* (Doesn’t require the purchase of expensive plastic bags often used for disposing household and yard wastes, saves the cost of transporting wastes, reduces pollution from landfills, creates nutrient-rich organic matter to improve the soil, saves money you might spend on mulch.) *What are some of the possible problems with composting?* (Too much work? Not enough space? Messy?) *What suggestions do you have for solving these problems?*

Sources: Lesson activities adapted from South Dakota Ag in the Classroom, www.sdagclassroom.org

Dirt Made My Lunch

Listen to the tune at: <http://www.bananaslugstringband.com/sound/DirtMML.mp3>

CHORUS:

Dirt made my lunch,
Dirt made my lunch.
Thank you Dirt, thanks a bunch,
For my salad, my sandwich
My milk and my munch 'cause
Dirt, you made my lunch.

VERSE 1:

Dirt is a word that we often use,
When we're talkin' about the earth beneath our shoes.
It's a place where plants can sink their toes;
And in a little while a garden grows.

CHORUS

VERSE 2:

A farmer's plow will tickle the ground,
You know the earth has laughed, when wheat is found.
The grain is taken and flour is ground,
For making a sandwich to munch on down.

CHORUS

VERSE 3:

A stubby green beard grows upon the land,
Out of the soil the grass will stand.
But under hoof it must bow,
For making milk by way of a cow.

CHORUS

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Optional Activities

The following activities could be incorporated at the end of any lesson to fill extra time.

1. Have the kids draw pictures of some of their ideas of stewardship.
2. Introduce “Trash Talk” with introductory activity from Lesson 2, Farmers Union Project Citizenship Curriculum, Grades 1-2: <http://nfu.org/wp-content/2008%20Grade%201-2%20Lesson%20Plans.pdf>
3. Play hangman, charades or a word scramble with some of the bolded words in the background of each of the lessons.
4. Have the group form a human chain to pick up garbage at a local park. They should wear gloves and pick up anything that does not belong in nature. Make sure they notify an adult before picking up anything sharp or dangerous. Include separate bags for items that may be recycled.
5. Organize a tree planting in the community.
6. Have the group create a compost pile using the instructions they learned from the videos in Lesson 4.
7. Lead students in making the “Edible Earth Parfaits” from Lesson 2, Farmers Union Planet Stewardship Curriculum, Grades 3-5.
8. Teach some Farmers Union songs. Provide an opportunity for the kids to sing the new songs they have learned to another group.