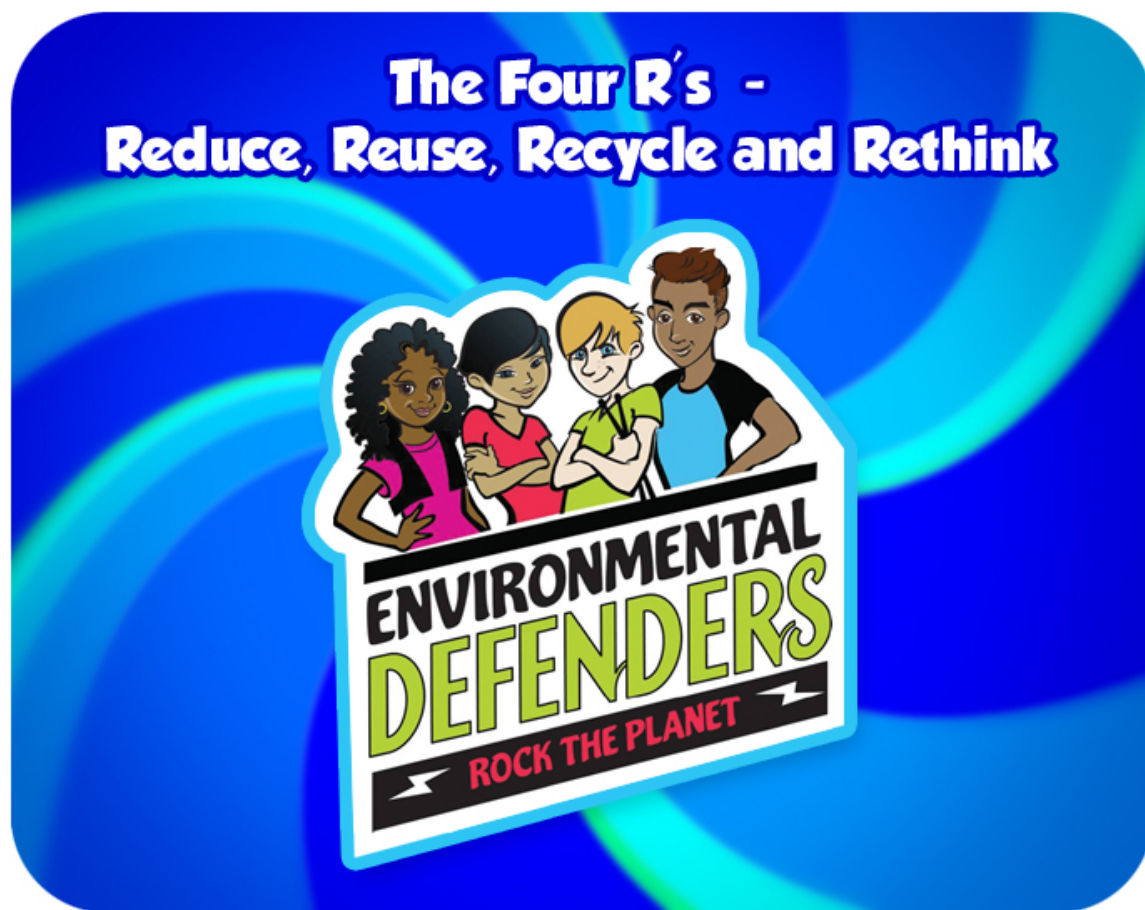




Environmental Defenders Program
EnvironmentalDefendersLA.com

Environmental Lesson Plan



5E Learning Sequence: Grades K-3

*Developed by K-12 Science Education Specialists in L.A. County and Aligned With:
California Common Core Standards,
Next Generation Science Standards (NGSS), and
California Environmental Principles and Concepts (CA EP&C)*

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LESSON PLAN

Objective

Students will demonstrate an understanding of the four R's by providing and identifying a number of examples representing each R and the role they play in the conservation of planet Earth. They will apply their understanding by putting together a personal action plan that incorporates the Four R's.

Standards

Next Generation Science Standards (NGSS)

- [K-ESS-3](#) Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.

California Environmental Principles and Concepts (CA EP&C)

- **Principle I** People Depend on Natural Systems
- **Principle II** The long-term functioning and health of terrestrial, freshwater, coastal, and marine ecosystems are influenced by their relationships with human societies.

Common Core State Standards - Language Arts

Reading: Literature

- [CCSS.ELA-LITERACY.RL.K.1](#) With prompting and support, ask and answer questions about key details in a text.
- [CCSS.ELA-LITERACY.RL.K.2](#) With prompting and support, retell familiar stories, including key details.
- [CCSS.ELA-LITERACY.RL.K.3](#) With prompting and support, identify characters, settings, and major events in a story.
- [CCSS.ELA-LITERACY.RL.1.1](#) Ask and answer questions about key details in a text.
- [CCSS.ELA-LITERACY.RL.1.2](#) Retell stories, including key details, and demonstrate understanding of their central message or lesson.
- [CCSS.ELA-LITERACY.RL.2.1](#) Ask and answer such questions as *who*, *what*, *where*, *when*, *why*, and *how* to demonstrate understanding of key details in a text.

Reading: Informational Text

Key Ideas and Details:

- [CCSS.ELA-LITERACY.RI.K.1](#) With prompting and support, ask and answer questions about key details in a text.
- [CCSS.ELA-LITERACY.RI.K.2](#) With prompting and support, identify the main topic and retell key details of a text.

- [CCSS.ELA-LITERACY.RI.K.3](#) With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text.
- [CCSS.ELA-LITERACY.RI.1.1](#) Ask and answer questions about key details in a text.
- [CCSS.ELA-LITERACY.RI.1.2](#) Identify the main topic and retell key details of a text.
- [CCSS.ELA-LITERACY.RI.1.3](#) Describe the connection between two individuals, events, ideas, or pieces of information in a text.
- [CCSS.ELA-LITERACY.RI.2.1](#) Ask and answer such questions as *who*, *what*, *where*, *when*, *why*, and *how* to demonstrate understanding of key details in a text.
- [CCSS.ELA-LITERACY.RI.2.2](#) Identify the main topic of a multiparagraph text as well as the focus of specific paragraphs within the text.

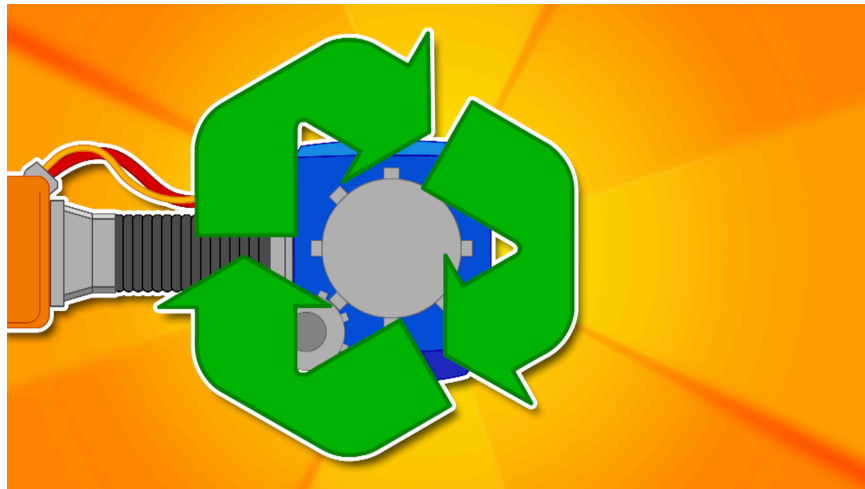
Speaking and Listening

Comprehension and Collaboration:

- [CCSS.ELA-LITERACY.SL.K.1](#) Participate in collaborative conversations with diverse partners about *kindergarten topics and texts* with peers and adults in small and larger groups.
- [CCSS.ELA-LITERACY.SL.K.1.A](#) Follow agreed-upon rules for discussions (e.g., listening to others and taking turns speaking about the topics and texts under discussion).
- [CCSS.ELA-LITERACY.SL.K.1.B](#) Continue a conversation through multiple exchanges.
- [CCSS.ELA-LITERACY.SL.1.1](#) Participate in collaborative conversations with diverse partners about *grade 1 topics and texts* with peers and adults in small and larger groups.
- [CCSS.ELA-LITERACY.SL.2.1](#) Participate in collaborative conversations with diverse partners about *grade 2 topics and texts* with peers and adults in small and larger groups.

Teacher Background

Reduce, reuse, and recycle are the foundations of waste management. Along with the understanding of the benefits of the three R's, this learning sequence incorporates another R - Rethink. This fourth R aims to have students think twice about their choices and to make better ones by incorporating the first three R's into their daily habits. By using the four R's, students learn and comprehend that their choices can help reduce humanity's environmental footprint, carbon dioxide emissions and energy use to lessen the amount of landfill space people create.



Time Needed

2-3 hours collectively, as it can be broken down into three smaller lessons (Introduction: Engage, Procedure: Explore and Explain, Conclusion: Elaborate and Extend)

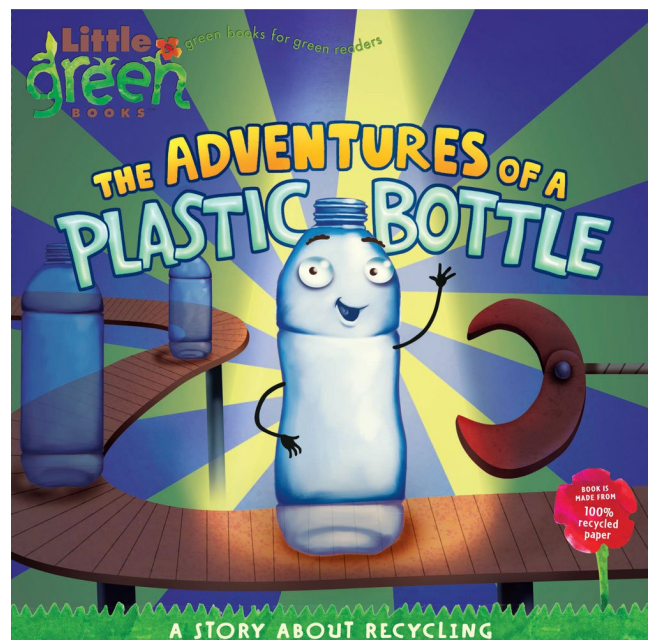
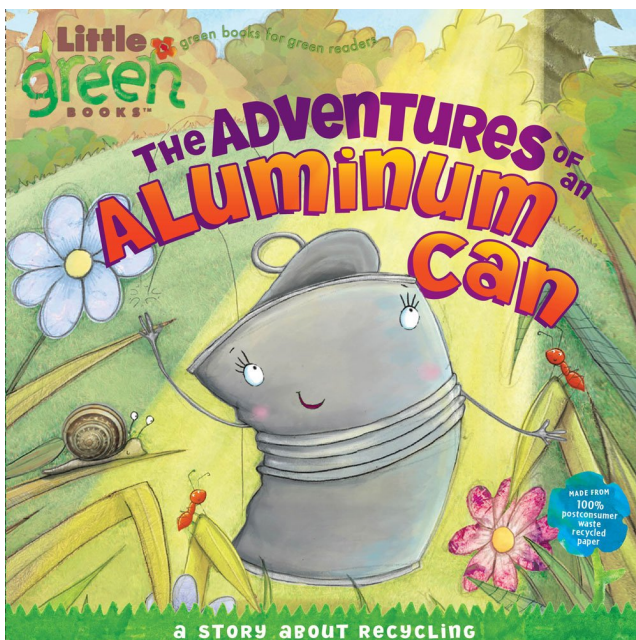
Materials Needed

- Four R's PowerPoint
- REDUCE and REUSE materials:
 - Supermarket reusable bags and non-reusable bag or plastic bags
 - Reusable plastic bottles and non-reusable bottles
 - Paper bags and a lunchbox/bag
 - Plastic snack baggies and plastic reusable containers
- RECYCLE materials:
 - Recycled material object(s) - napkins, clothes, bottles, etc.

Literacy Books

The Adventures of an Aluminum Can: A Story About Recycling (Little Green Books)
Paperback by Alison Inches (Author), and Mark Chambers (Illustrator)

The Adventures of a Plastic Bottle: A Story About Recycling (Little Green Books) Paperback
by Alison Inches (Author), Pete Whitehead (Illustrator)



Vocabulary

Conservation - According to Encyclopedia.com, conservation of natural resources is now usually embraced in the broader conception of conserving the Earth itself by protecting its capacity for self-renewal.

Reduce - Waste reduction means decreasing the amount of waste that humans produce each day. By using less we help conserve resources. Reduction is the first choice because it aims to stop the problem of waste production at its source. For example, by refusing to buy a plastic shopping bag and instead bringing our own, it means having one less plastic bag in the landfill. Reducing the amount of waste we produce is the beginning of environmental conservation.

Reuse - Along with the premise of waste reduction, the next step is that of finding new uses for old materials. Using a lunch bag daily instead of paper bags leads to the decrease of paper in landfills. A reusable drinking bottle reduces the amount of plastic bottles that would be thrown out. Using cleaning rags that can be washed (in an environmentally friendly way, of course!) instead of paper napkins decreases paper thrown away. Reusing also means that instead of throwing things away, they can be given to others to continue to be used. As an example, donating clothes to thrift stores reduces the amount of new clothes that need to be made and also provides clothing for people suffering financial hardship.

Recycle - The process of collecting and processing materials that would otherwise be thrown away as waste and turning them into new products. Recycling can benefit your community and the environment by diminishing the need for new products. By turning a water bottle into a fleece jacket, natural resources are conserved. Recycling is a process that requires commitment at the level of each individual citizen and collectively as a city, state and, ultimately, as a nation.

Directions

(S1) Lesson Title - The Four R's
Introduction (Engage)

Essential Questions: What is conservation? Why is it important?

1. (S2) Ask students: What do you do if you're thirsty?
 - K students: Guide them to tell you where they get their drinking water.
 - 1st and 2nd graders: Where does their drinking water come from? If students have their lunch boxes, have them share with you what they are drinking.

2. (S3) Show students a plastic water bottle. Ideally have different brands available but any one will do.
 - Ask: When was the last time you drank water from one of these? What did you do with the empty bottle?
 - Ask: What do you think happens to all the empty bottles we drink? Note: Statistics show that the average American uses about 165 disposable bottles.
3. (S4) Show students this slide and have them tell you what they think.



<https://cdn.cnn.com/cnnnext/dam/assets/120423050340-china-landfill-horizontal-large-gallery.jpg>

4. (S5) Ask: What do you think happens to other waste? What do we do with all the waste that humans make?
5. (S6) Show them the following pictures. Ask students where they think these places exist and why they are needed. These are pictures of waste in California, Indonesia and Hong Kong.



Heavy equipment operators use machinery to compact and shape mountains of trash at L.A. County's Puente Hills Landfill. (Luis Sinco / Los Angeles Times)
<http://www.latimes.com/world/global-development/la-fg-global-trash-20160422-20160421-snap-htmlstory.html>



People search for material to recycle at the biggest garbage dump in Jakarta, the Indonesian capital. ((Bay Ismoyo / AFP/Getty Images))
<http://www.latimes.com/world/global-development/la-fg-global-trash-20160422-20160421-snap-htmlstory.html>



Trash piles in Hong Kong.
<http://www.bbc.com/future/story/20170427-hong-kong-has-a-monumental-waste-problem>

6. (S7) Show students the picture of planet Earth.

- K students: Ask them if they know what this picture is, and what the planet is named. Ask them to describe our planet.
- 1st and 2nd graders: Ask them to tell you what they know about planet Earth and how they would describe it to someone else. Ask students to explain why our planet is so important to us.



<https://technoking.deviantart.com/art/The-Planet-Earth-87216225>

7. (S8) Introduce the concept of **Conservation**.
8. (S9) Have a class discussion around the question:
 - *Why is it important that we protect and conserve our planet?*
9. (S10) Have students brainstorm with their group a list of some things they can do to stop humans from making so much waste and to help protect our planet. For K students, teacher can chart their responses. For 1st and 2nd graders, they can chart their responses and have a class discussion around the students ideas for waste reduction.

Procedure (Explore and Explain) - Essential Question: What are some things we can do to help with Earth's conservation?

(S11) REDUCE and REUSE (RETHINK)

1. The goal in this section is to guide students to understanding how to not only reduce the amount of waste produced but also how reusing materials helps in conservation. These steps of the Four R's (and actually all of them) work in conjunction with each other.
2. Give students a few paper bags used to pack daily lunch, a few plastic bags used for grocery shopping, water bottles, and plastic snack baggies. Each group can get one set of the items described.
3. (S12, S13) Lead students into having discussions about reducing the paper bags by using a lunchbox/bag instead, using a reusable water bottle, using recycled grocery

shopping bags instead of plastic ones, using plastic containers for snacks instead of baggies.

4. Explain that the first step to conservation is REDUCING waste so we don't end up with so much in our landfills. S12 can be used again as a visual example of how they can reduce and reuse. Ask students to describe how reducing and reusing are being used here.
5. Prompt: "Imagine if we all used these materials every day and we threw them away, what would happen to our landfills? Think of ways that we can decrease or reduce the amount of waste we could make from using reusable items daily."
6. (S14) Have students take a look at the materials passed out earlier to their group, as you go over the question in S14. Have students come up with alternatives to the items in their group. Have students explain why using the lunchbox, the reusable water bottle, a reusable snack container, and reusable grocery bags (perhaps not of plastic, but rather cloth or another eco-friendly material) helps reduce the amount of waste we make. Teachers can use drawings of these "reusable materials" for the K students and a combination of drawings and a cause and effect symbols or thinking maps for the older students.
7. (S15) Ask them to Rethink their choices about Reducing and Reusing items at home. *How does Rethinking your choices by Reducing and Reusing items help in the conservation of our planet?*

Note - See Resource page for additional ways to REDUCE waste production for ideas for other groups.

(S16) RECYCLE (RETHINK)

1. (S17) Read *The Adventure of a Plastic Bottle* or *The Adventure of an Aluminum Can* (both by Alison Inches) to the class. The stories detail the adventures of a plastic bottle and an aluminum can. They are written as a journal which explains the beginning of the bottle and aluminum can from raw products like fossil fuels and alumina to synthetic fleece jacket and an aluminum bat.
2. During the discussion section, use the following prompts to guide students to understand the concept of Recycling:
 - a. "Who is the main character in the story? Where did it come from? What happened to it? What was the last thing it became in the story? What are some other things/options the bottle or can could have turned into?"

- b. For the younger students, having a whole class discussion about the questions/answers above would be sufficient. Some of the language used in the books may not be appropriate for the younger students. A recommendation would be to focus on the journal aspect of the story with clarification from the teacher about words students may not understand.
 - c. Older students could be asked to use a Sequence of Events/Flow Thinking Map to describe the life of the bottle or can.
3. (S18) Have students compare the graphics of this slide to the life of the bottle from the book. Review the recycling process with students.
4. Ask students to explain or write a paragraph that explains the recycling process. Guide them to understand that it's turning a specific object into a new object so its life can be extended.
5. (S19) Finally, ask them to Rethink their choices and about items they can recycle at home. *How does Recycling help in the conservation of our planet?*
6. (S20) Display the definition of Recycle.

Note - See Resource page for additional items to RECYCLE.

Conclusion (Elaborate and Extend)

Essential Question: How might Rethink increase our habits around the original three R's?

1. (S21) Have students collaborate and put together a Four R's Action Plan for their home, school, and community.
 - a. Have student groups plan together ways to start applying their understanding of the four R's individually first, then at their school, and finally for their community or city.
 - b. Lead them through the process with the following questions:
 - i. How would you start reducing your waste production at home? At school? In your community or city?
 - ii. How would you start reusing materials at home so you don't add to waste? At school? In your community or city?
 - iii. Make a list of items that you can start recycling at home? At school? In your community or city?
 - c. This is a Long Term Project which would involve students using and applying their new understanding of the four R's and how they can involve their family members, friends, and fellow students.

- d. **ACTION PLAN SYMPOSIUM** - Have student groups share their Action Plan with the class in a formal symposium. Invite other students, classes, the school principal, and local agencies to be part of the audience.
2. (S22) Wrap up the learning sequence by having the students summarize their learning for the four R's and their role in Conservation. Prompt: *How does RETHINKING your choices by REDUCING, REUSING and RECYCLING items help conserve our planet?*

Resources

EPA Region 9 Environmental Information Center/Library Service

<https://www.epa.gov/libraries/region-9-environmental-information-centerlibrary-services>

Recycling Facts and Stats

<https://visual.ly/community/infographic/environment/recycling-facts-and-stats>

Bottled Water Facts

<https://www.banthebottle.net/bottled-water-facts/>

The Plastic Water Bottle Effect

<https://thatbiologist.wordpress.com/2017/11/24/the-little-things-water-bottles/>

From <https://www.rethinkrecycling.com>

Here are some additional ways we can REDUCE, REUSE, AND RECYCLE:

Reduce Waste

- Bring reusable bags and containers when shopping, traveling, or packing lunches or leftovers.
- Choose products that are returnable, reusable, or refillable over single-use items.
- Avoid individually wrapped items, snack packs, and single-serve containers. Buy large containers of items or from bulk bins whenever practical.
- Be aware of double-packaging - some "bulk packages" are just individually wrapped items packaged yet again and sold as a bulk item.
- Purchase items such as dish soap and laundry detergents in concentrate forms.
- Compost food scraps and yard waste. Food and yard waste accounts for about 11 percent of the garbage thrown away in the Twin Cities metro area. Many types of food scraps, along with leaves and yard trimmings, can be combined in your backyard [compost bin](#).
- Reduce the amount of unwanted mail you receive. The average resident in America receives over 30 pounds of junk mail per year.
- Shop at second-hand stores. You can find great used and unused clothes at low cost to you and the environment. Buy quality clothing that won't wear out and can be handed down, whether to other people you know or on to a thrift store.
- Buy items made of recycled content, and use and reuse them as much as you can. For instance, use both sides of every page of a notebook before moving on to the next clean notebook. Use unneeded, printed-on printer paper for a scratch pad.
- Also, remember that buying in bulk rather than individual packages will save you lots of money and reduce waste! Packaging makes up 30% of the weight and 50% of trash by volume. Buy juice, snacks, and other lunch items in bulk and use those reusable containers each day.

Reuse

- What does it mean to reuse? It is purchasing items that can be used over and over again, like cloth napkins instead of paper ones.
- Many of the things we normally think of as recyclable or as garbage can be used again or made into a new, useful product. Sometimes it really isn't garbage, just resources waiting to be reused.
- We all have items we no longer want. Before you throw the item out, ask yourself these questions: Is the item reusable for its original purpose? Could it be used for something else? Could someone else use it?
- Before you recycle something or throw it in the trash, consider donating or selling it to someone who can use it.
- Rather than throwing your unwanted things away, consider repairing, maintaining or repurposing them.
- By borrowing and sharing instead of buying, you'll spend less money, keep your home organized, and simplify your life.

Recycle

- **Aluminum Cans** Aluminum cans are shredded, cleaned, melted, and mixed with a pure aluminum base, then recast into new aluminum products.
- **Aluminum Foil/Trays** Foil packaging can be made into wrapping foil, semi-rigid packaging such as pie plates and food trays, and flexible packaging such as gum or candy wrappers.
- **Boxes: Cereal, Cracker, Pasta, Cake Boxes** These boxes are generally used to make new boxes, puzzles, and things such as egg cartons.
- **Cardboard** Cardboard can be recycled into new cardboard, cereal, cake, chip and cracker boxes, puzzles, games and items such as tablet backing.
- **Glass Bottles and Jars** Old food and beverage containers are crushed into a material called cullet and made into new food and beverage containers. The clear glass is used for clear containers, green glass for green containers and brown glass for brown containers.
- **Magazines, Catalogs and Phone Books** Magazines are recycled into items such as food or gift boxes (boxboard), tissue paper, game boards, and greeting cards.

- **Mail, Office and School Paper** These papers can be used to make new cereal boxes, facial and toilet paper, greeting cards, gift wrap, and writing paper.
- **Newspapers** Newspaper and its inserts are mixed in with other grades of paper and used to make new newspapers, paperboard, puzzles, wallboard, gift/food boxes, cellulose insulation, and animal bedding
- **Steel Food Cans** The two by-products, high grade steel pellets and tin ingots, are both remade into tinsplate containers. Most steel cans are used to make new cans for food products, paint, aerosol and other materials.