



Sustainable Living

Students will learn about different types of energy and ways they can lessen their impact on our planet's resources.

Grade Level: 4th-6th

Objectives:

- Students will learn about renewable and non-renewable energy.
- Students will understand why it's important to conserve energy and resources.
- Students will learn how to calculate their ecological footprint.
- Students will feel empowered to make small changes in their own lives to live more sustainably.

Materials Needed:

- As many bandanas as you have participants
- Ecological Footprint calculator sheets
- Fridge Cards (Reduce, Reuse, Recycle, Rot, and Trash)
- Dry erase board
- Dry Erase Markers
- Tape

Prep Time: 10 minutes

Activity Time: 90 mins

Follow-up Activities:

Wonderful Watersheds

Nevada State Standards Addressed:

- **N5.B2.**— Students know technologies impact society both positively and negatively.
- **N8.B1.**— Students understand that consequences of technologies can cause resource depletion and environmental degradation, but technology can also increase resource availability, mitigate environmental degradation, and make new resources economical.

NAAEE standards Addressed:

- 1.3 Openness to Inquiry
- 3.1 Creative and Critical thinking
- 3.2 Applying Skills to Issues
- 4.1 Sense of personal stake and responsibility
- 5.1 Learner-centered Instruction
- 5.2 Different Ways of Learning
- 5.3 Connection to Learners Everyday Lives
- 6.7 Fit with National, State, and Local Requirements

Key Vocabulary:

Conservation: The protection, improvement, and wise use of natural resources to provide the greatest social and economic value for the present and future.

Renewable Resource: A resource that can be used continuously without being completely depleted (because it regenerates itself within a useful amount of time). Examples include water (hydro) and wind power, solar energy, and geothermal energy.

Non-renewable Resource: A resource which cannot be replaced once it is used up, for example fossil fuels (oil, natural gas and coal).

Ecological Footprint: A measure of human demand on earth's ecosystems that compares human demand with earth's ecological capacity to regenerate resources.

Sustainable Lifestyle: A lifestyle that does not use natural resources at a rate faster than the earth can produce them and reduces the amount we waste, consume, and discard.

Lead-In Information:

There is a lot of talk these days about global warming, pollution, and the uncertainty of human life as we know it. Sometimes it seems really overwhelming and it's almost like there isn't anything we can do about it! Not anymore! Did you know that:

- Every ton of recycled paper saves about **380** gallons of oil.
- Recycling **1** aluminum can saves enough energy to run a TV for **3** hours.
- Turning off the faucet while brushing your teeth can save about **9** gallons of water.

These are just a few of the things that all of us can do to help conserve energy and live more sustainably! What else do you think we can do?

Preparations:

Just make sure you have all of your materials on the list. This lesson doesn't need a lot of set-up. Make sure you have a dry erase board for writing down terms and drawing pictures during instruction. The activities in this lesson are: The Fridge, Resource Tag, and Ecological Footprint Calculator. Have fun!

Activity 1: The Fridge

Step 1: This is a fun activity where students get to go through a series of items and decide if they should be recycled, reused, reduced, or if they can rot (be composted).

Step 2: Mark 4 corners of the room (or field or playground) with the 5 signs (Reduce, Reuse, Recycle, Rot, and Trash).

Step 3: Stand in the middle of the room and read students an item from the list of cards (which includes items such as water bottles, tires, old cloths and banana peels).

Step 4: They will then have 10 seconds to decide what they would do with the item when they are done with it. (For example, let's say the item is "water bottle". Some of the students will go to Recycle, some to Trash, and some to Reuse.)

Step 5: Ask one student at each station why they are there. For students in the Trash corner, ask what they could do next time with that bottle. Ask why no one went to Reduce. What would happen if we all reused our water bottles all the time, we would be reducing without even knowing it! (Each round will be different depending on the item.)

Step 6: Follow up with a brief discussion on impacts we can have just by doing little things like reusing or reducing.

Activity 2: Resource Tag

Preface this activity with a talk about the difference between renewable and non-renewable resources. Use the dry-erase board to illustrate these. Have the kids name some of both. Make sure you have enough outdoor space for the activity.

Energy Break: Resource Tag

This is a really fun activity to get the students up and moving. This is a variation of "Everybody's it" tag. Ask if every knows how to play everyone's it tag. (Everyone is it – if you tag someone, they are out. If both participants tag each other at the same time, you "Rock, Paper, Scissors" to see who wins). Explain that there will be two rounds. In the first round, we will be Non-Renewable Resources, such as gas, coal, and oil. Ask the students what resources are. What are the different kinds? How do we use them? Are they unlimited or in endless supply? Eventually, you will get to the point that most of the resources that we use here in North America are non-renewable. There is a limited supply. So, make a small boundary (no bigger than 20 feet by 20 feet for up to 30 students) area and tell the students that this is the Earth and all of us are becoming non-renewable resources.

Give everyone a bandana and tell them to stick it in a pants pocket. It must be very visible and easy to grab. When you say the magic word, everyone is it and must safely remove bandanas for other peoples pockets. Whoever is left last wins. This round will go by very fast! Ask the students what happened to all of the resources. What will happen in North America when all of the non-renewable resources are all gone? Ask if they want to play again. This time, everyone will be Renewable resources. What are some examples of Renewable resources? (Hydro power, solar power, geothermal energy) Give each of these a hand motion. Tell the students that we will still play everyone's it tag with the same boundaries, however, this time we are all going to be able to renew ourselves, with time. When you say the magic word this time, we will be grabbing bandanas again. However, this round, if someone grabs your bandana, you will decide which kind of renewable energy you are and do that hand motion for 10 seconds. After you have renewed yourself, you can get back into the game! This round has the potential to go forever, so stop them after about 7-10 minutes. Ask the students what happened that round. How long could it have lasted? What should we think about renewable resources?

Activity 3: My Ecological Footprint

Step 1: Ask the students what conservation and sustainable living means to them. If need be, review what those things are and lead into a discussion of some things we can do as individuals to lessen our impact.

Step 2: Tell the students that they are going to calculate their ecological footprints which is a way of finding out their individual impact on the planet.

Step 3: Pass out the laminated ecological footprint quizzes.

Step 4: Ask students to honestly answer all of the questions. Make sure to explain that this is not being graded, but only to inform us about what our current energy usage is.

Step 5: After everyone has finished answering the questions, have them add up the corresponding numbers next to their answers (1, 2, or 3).

Step 6: Explain to students what their scores mean. **10-15** points= Smallest Footprint, you are an eco-warrior! **16-22** points= a Medium Footprint, your impact on the planet is pretty good and with a few small lifestyle changes, you could easily become an eco-warrior too! **23-30** points= the largest footprint. Now that you have learned about energy and conservation, you have some of the tools to reduce your impact. Let's talk about some more ways we can do that.

Step 7: Lead a follow-up discussion about ways to reduce your impact and lower your eco-

footprint. Have some of the students who had lower footprints give some suggestions. Have students learn from each other as much as possible. This should be a positive discussion to encourage students with larger footprints to make small changes to reduce their impact. Keep it as positive as possible and a group effort brainstorming session.

Review Questions:

- What is the difference between renewable and non-renewable energy?
- What does it mean to live a sustainable lifestyle?
- What is an ecological footprint?
- What are some ways we can reduce our impact on the planet?

Evaluation:

- Students should be able to name several types of energy and determine whether they are renewable or non-renewable.
- Students should understand what conservation is and why it is important.
- Students should know what kinds of things they can do at home to reduce their ecological footprint.

Learning Intelligences Addressed:

- Kinesthetic
- Linguistic
- Spatial
- Logical/Mathematical
- Interpersonal
- Intrapersonal