



Theme: Sustainability (Grades 9-12)

Pre-Visit Activity #1 Ecological Footprint

Overview:

Ecological Footprints measure humanity's demands on nature. Everything humans do has consequences. Humans influence the environment in many ways. Everyone uses a certain amount of natural resources depending on his or her lifestyle. If a person does not live sustainably, the earth is impacted negatively.

Activity:

1. Go on the www.myfootprint.org website. Stay on the home page. Ask the students to define the term ecological footprint after giving them the overview. Discuss, using the terms and pictures on the main page, the following terms and how humans affect the environment.

Define and discuss these terms found on the homepage:

Deforestation, pollution, desertification, urban sprawl, global warming, soil erosion, extinction, wildfires, and pollution.

2. Once terms have been discussed ask students if they have ever wondered how much their personal lifestyle requires of the earth.

3. In order to better understand the impact that humans make, the teacher should project or have the students click on the terms Enter Here, which are right below the words "How Big is Your Ecological Footprint?" This will bring you to the page entitled "Refining Progress, The Nature of Economics" section. This section takes students through what this quiz measures and how it calculates the ecological footprint and what the results mean.

a. Average Per Capita Footprint In Global Hectares By Consumption Category

The first section explains that the quiz will ask questions in one of four categories to get a well-rounded idea about the ecological footprint that each person makes. Those categories are shown in graph form on this page and include: carbon footprint, food footprint, housing footprint, goods and services footprint.

b. Average Per Capita Footprint in Global Hectares by Biome Category

The biomes represented are Forestland, Marine Fisheries, Pastureland, and Cropland. The current number shows that humans are using 23.47 global hectares of land. There are only 15.71 global hectares available per person on a renewable basis. This means that humans are already using too much of the environment. At the current rate of consumption, humans need 1.5 earths!

4. Next, students are going to take the Ecological Footprint Quiz. It estimates the amount of land and ocean area required to sustain consumption patterns and absorb wastes on an annual basis. After answering 27 easy questions, students will be able to compare their ecological footprint to others' and learn how to reduce their impact on the Earth. By pressing next on the Redefining Progress Page, it will lead to the first page of the quiz.

5. Have the students take the quiz individually and have them take notes on the choices they make and note how many earths they need to sustain their current lifestyle.

6. After completing the quiz, have students break into groups of 5-6 to compare and contrast their results for five minutes. Do the students have the same results? Why or why not? What did they choose that brought their numbers up or down?

7. Groups then share results with the class.

The teacher may ask questions to prompt discussion, such as: Is it sustainable for humans to live in a desert environment? What affected the results most drastically? Does recycling impact the environment? Why is being a vegetarian better for the croplands? Does driving individually in a car vs. commuting or using public transportation change the results?

Discussion/Debrief:

There are many simple ways to reduce the footprint you leave on the planet. Learn how to reduce your footprint in each consumption category—carbon, food, housing, and goods and services—but don't stop there. Amplify your impact by encouraging others to follow your lead. Engage your friends and community with local and global movements for social change, or start your own movement!

Assignment:

Reduce your Carbon Footprint: Give students this list below or they can find it on the website under **Reduce Your Carbon Footprint**. Have them choose one of the following categories below and write a two-page report on how they can individually decrease their carbon footprint. The paper can include their individual results, their action plan, and how it will help to live more sustainably.

Categories:

1. Use cleaner transport

- Walk, bike, or take public transit whenever possible.
- Avoid allowing your car to idle. If you'll be waiting for more than 30 seconds, turn off the engine (except in traffic). Also, don't take the drive-through—park the car and walk inside instead.
- Have your vehicle serviced regularly to keep the emission control systems operating at peak efficiency. Check your car's air filter monthly, and keep the tires adequately inflated to maximize gas mileage.
- Avoid short airplane trips—take a bus or train instead.

2. Add energy-saving features to your home

- Install compact fluorescent bulbs in all your home light fixtures—but remember, compact fluorescents contain mercury, so look for low-mercury models and be sure to dispose of old bulbs safely through your local hazardous waste program.
- Weatherproof your home. Make sure your walls and ceilings are insulated, and consider double-pane windows. Eliminate drafts with caulking, weather strips, and storm windows and doors.
- Insulate your water heater. Even better, switch to a tankless water heater, so your water will be heated only as you use it.
- Choose energy efficient appliances.

3. Adopt energy-saving habits

- Keep thermostat relatively low in winter and ease up on the air conditioning in summer. Clean or replace dirty air conditioner filters as recommended to keep the A/C operating at peak efficiency.
- Unplug your electronics when not in use. To make it easier, use a power strip. Even when turned off, items like your television, computer, and cell phone charger still sip power.
- Dry your clothes outside whenever possible.
- Make minimal use of power equipment when landscaping.
- Defrost your refrigerator and freezer regularly.
- Choose green electricity. Many utilities give you the option to purchase electricity generated by wind and solar power for a small rate surcharge.
- Purchase carbon offsets to make up for the energy use you can't eliminate.

4. Know what you are eating

- Eat more local, organic, in-season foods.
- Plant a garden—it doesn't get more local than that.
- Shop at your local farmer's market or natural foods store. Look for local, in-season foods that haven't traveled long distances to reach you.
- Choose foods with less packaging to reduce waste.

- Eat lower on the food chain—going meatless for just one meal a week can make a difference. Globally, it has been estimated that 18% of all greenhouse gas emissions are associated with meat consumption.

5. Choose sustainable building materials, furnishings, and cleaning products

- Explore green design features for your building, like passive solar heating, a rainwater catchment or grey water recycling system, and recycled materials.
- Choose efficient appliances, including low flow shower heads, faucets, and toilets.
- Choose furnishings that are second-hand, recycled, or sustainably produced.
- Plant drought-tolerant plants in your garden and yard.
- Use biodegradable, non-toxic cleaning products.

6. Adopt water-saving habits

- Take shorter, less frequent showers—this saves not only water, but the energy necessary to heat it.
- Don't use the garbage disposal. Compost instead.
- Run the dishwasher and the laundry machine only when full.
- Wash cars rarely, or better yet, take them to a carwash. Commercial carwashes use less water per wash than home washers, and they are also required to drain used water into the sewage system, rather than storm drains, which protects aquatic life.
- Avoid hosing down or power-washing your deck, walkways, or driveway.
- Regularly look for and fix leaks.

7. Reduce your Goods and Services Footprint

- Buy less! Replace items only when you really need to.
- Recycle all your paper, glass, aluminum, and plastic. Don't forget electronics!
- Compost food waste for the garden. Garbage that is not contaminated with degradable (biological) waste can be more easily recycled and sorted, and doesn't produce methane gases (a significant greenhouse gas contributor) when stored in a landfill.
- Buy recycled products, particularly those labeled "post-consumer waste."