

Lesson at a glance

This lesson is designed to help students process the effects of climate change on the ecosystems on which they depend.

Grade

3-6

Time

30 to 45 minutes

Core Connections

3rd Grade Science

- 2.2b *Predict the effects of changes in the environment on a living organism*

3rd Grade Social Studies

- 1.3.c *Describe ways to conserve and protect natural resources*
- 1.3.e *Make inferences about the positive and negative impacts of human-caused change to the physical environment*

4th Grade Social Studies

- 1.3.b *Explain viewpoints regarding environmental issues*

Materials

- Climate Change Card necklaces
- A ball of yarn
- A gym or open space

Background information

The effects of climate change will have huge impacts on the world around us. Familiarize yourself and your students with the information found on the Environmental Protection Agency's website entitled *Climate Change Impacts and Adapting to Change* at <http://www.epa.gov/climatechange/impacts-adaptation>.

Activity

1. As a class, ask your students to define the terms ecosystem and climate change. Develop class a definition for each term. It should include the following ideas:

Ecosystem:

- An ecosystem can be thought of as a community consisting of different populations of living things. (A population refers to all the members of a species that live in a particular location.)
- An ecosystem includes the physical environment.

- Organisms fill different roles or "niches" in the system.
- Living things in the ecosystem depend on other living things in the ecosystem.

Climate Change:

- Our world is always changing.
 - The Earth's climate is changing, too, but in ways that you can't easily see.
 - The Earth is getting warmer because people are adding heat-trapping gases to the atmosphere, mainly by burning fossil fuels. These gases are called greenhouse gases.
 - Warmer temperatures are causing other changes around the world, such as melting glaciers and stronger storms. These changes are happening because the Earth's air, water, and land are all linked to the climate.
 - The Earth's climate has changed before, but this time is different.
 - People are causing these changes, which are bigger and happening faster than any climate changes that modern society has ever seen before.
2. Now review with your students the necessities of the physical environment for an ecosystem. List students' ideas on a chart, which may include:
 - Sunlight
 - Water
 - Soil (specifically the nutrients in the soil)
 - Air
 - Food sources for various organisms
 3. We are going to play a game that will show how living things in an ecosystem might be affected by climate change. Find an open area.
 4. Hand each student a "climate change necklace." Some students will be living organisms and others will be the effects on climate change.
 5. Pick one student wearing an effect of climate change card and hand them the ball of yarn. Have them toss the yarn to one of the living things in the circle. When the "living thing" catches the yarn, ask the student, "How would you be affected by this climate change result?"
 6. Have the "living thing" toss the yarn to another "climate change effect." This time the student who catches the ball needs to state their "effect" on the "living thing" that tossed them the ball before they pick a new "living thing" to toss the ball to.

7. Draw students' attention to the complex web that has been created with the strings. Have the student who has the ball of string. Anyone who feels a tug on their string should sit down to show that they have been affected. Then those students should gently tug on their strings and anyone who now feels a tug on their string should sit down and so on. Ask, "What does this demonstration show?" Climate change affects everything in the web.

Summary

As a class, discuss if they think the living things can easily overcome the effects of climate change? Why or Why not? What could they do to survive? Sometimes animals can turn to a different food source, but if the green plants disappear, everything will die. As humans what could they do to slow down the pace of climate change? Buy local, walk or use mass transit, unplug lights, computers, televisions not in use, etc.

Remember to end of a positive note, sometimes these discussions can leave students feeling overwhelmed that there is nothing they can do to make a positive impact on the environment. Leave them with things they can do right now so they feel empowered, rather than disheartened.