

Content Spotlight:

Human Impacts on Earth Systems



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See how Britannica experts teach the featured lesson!

Earth Day, celebrated every April 22, reminds us of our responsibility to protect the planet. With a world population of more than 8 billion people, caring for Earth can't be just a one-day event. It must be an ongoing effort that requires understanding our environment, recognizing human impact, and taking action to minimize harm.

Earth's systems interact. Human activities such as deforestation and pollution disrupt these systems, leading to consequences such as habitat loss, extreme weather, and water shortages—all symptoms of climate change. By researching how our actions affect the planet, we can make informed choices to create change.

Why It Matters



In an age of information overload, it's difficult to decipher what's accurate and what's not. Equipping students with the skills needed to think critically and make arguments based on research, evidence, and science is crucial. These skills, of course, lead to academic success. But more importantly, they help shape well-informed members of society who can advocate effectively for our planet.

Expedition: Learn! is an instructional platform with standards aligned, interdisciplinary lessons that build content knowledge, enhance reading comprehension, and critical thinking skills. Check out how our experts use the *Human Impacts on Earth Systems* lesson to help students develop claims and construct an argument.

GRADES 6 - 8



Human Impacts on Earth Systems

- 1 Choose a topic and make an initial claim.



Initial Claim: As the population grows, we use more land for food, harming native plants and animals.

- 2 Conduct research to gather **empirical evidence** and revise the claim.



Revised Claim 1: As the population grows, we use more land for food, which affects the environment in different ways, such as reducing the number of trees and harming native plants and animals.

- 3 Team up for peer review to defend your claim using **scientific reasoning**. Refine your claim based on counterarguments to make it convincing.



Revised Claim 2: Increases in human population and per-capita consumption of natural resources affect Earth systems through the increase in food production and land use that causes deforestation, loss of biodiversity, and soil erosion.

In Practice

Construct An Argument

Use these three steps from the Expedition: Learn!

Hands-On Activity: Construct Arguments on Human Impact to help students develop claims while providing opportunities for 3-dimensional assessment of the NGSS Performance Expectation.

NGSS MS-ESS3-4

SEP: Engaging in Argument from Evidence

Construct an oral and written argument supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem.

Learn more:
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Classroom Guide

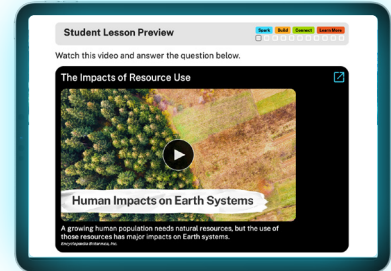
Human Impacts on Earth Systems



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Spark

- Play the **Spark** video and give students time to respond to the question.
- Invite students to share their answers. Use their responses to prompt discussion and elicit questions to be explored during the lesson.
- Then, invite students to make a foldable using the Teach Britannica **Foldables instructional strategy** to organize information about the following vocabulary terms: *mineral*, *population*, and *system*.
- Encourage students to add information to their foldables as they read the articles in the lesson.



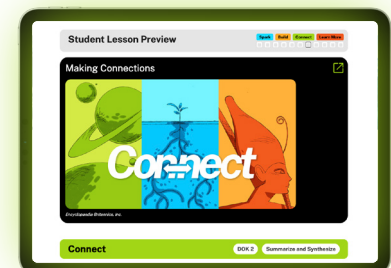
Build

- Model the first two **Build** pages for students by annotating the text and demonstrating how to extract important takeaways.
- Guide students through the two assessment questions by thinking aloud as you critically consider the answer choices and by illustrating how to eliminate incorrect choices.
- For the remaining three **Build** pages, allow students to work on their own or in small groups. Distribute Teach Britannica's **Note-Taking graphic organizer** for students to track their notes.
- Display the following questions to guide students' thinking as they read:
 - ⌚ How has resource consumption changed through human history?
 - ⌚ What is one effect of obtaining resources?
 - ⌚ What is one effect of human resource use?



Connect

- Arrange students in pairs or small groups to complete **Connect** pages 7, 8, and 9.
- Use the Teach Britannica **Assessment Item Analysis graphic organizer** to explain how to break down questions.
- Review responses as a class by discussing key takeaways and highlighting strong student examples of using evidence to support claims.
- For the final short response **Connect** question, prompt students to work independently to write and submit their response. Then, invite them to create a poster based on their response.



Learn More

- Play the video "Who Can Stop Climate Change?" Suggest that each student write and share a short paragraph evaluating approaches to climate change.
- Assign the Hands-On Activity **Construct Arguments on Human Impact** to encourage students to develop argumentation skills by analyzing the real-world consequences of human actions on Earth systems and evaluating potential solutions. In this activity, students practice synthesizing research by writing a cohesive argumentative essay.



Keep the exploration going! Discover these resources and more in Expedition: Learn! on Teach Britannica.





Research Plastic Usage

- Invite students to work in pairs to research the use of plastics.
- Encourage students to investigate the natural resources that are used in the production of plastics and the effects that the production, use, and disposal of plastics have on the environment. Encourage students to find out more about changes in per-capita use and disposal of plastics over time.
- Suggest that each student pair develop a poster to present to the class.
 - Encourage students to use graphics, photos, and text to convey information on the poster.

Explore Resources Management Careers

- Students may be interested in a career in taking care of the environment. Invite students to research a career that involves protecting Earth, such as natural resource management, environmental science, ecosystem science and sustainability, conservation biology, climate activism, and government positions in state and national parks or the Environmental Protection Agency (EPA).
- Have students review the information they have gathered about one specific career and write a three- to five-sentence summary of that career.
- Have students share and discuss their findings with other students in the class.

Develop a Plan: Save a Forest

- Invite students to work in groups to select an old-growth forest that is being deforested and to research the impacts of this example of deforestation.
 - Possibilities include the Amazon Rainforest in Brazil, the Białowieża Forest in Poland, the Tongass National Forest in Alaska, the Cerrado in South America, or the Wallacea region in the Indonesian islands.
- Explain that each group will prepare a presentation that includes the size, location, and age of the forest; the kinds of trees it contains; how the wood is used or what the land is used for; environmental impacts of deforestation; and a plan to address one specific environmental impact of deforestation.

Continue the *Expedition* with these related lessons!

GRADES 6 - 8



The Earth System and Subsystems



GRADES 6 - 8



Monitoring and Minimizing Human Impact



GRADES 6 - 8



Ecosystems: Impacts of Change



GRADES 6 - 8



What Are Greenhouse Gases?

