

Lesson 9



Student Conference

Summary

Students work in groups to create an informational poster that summarizes how climate change impacts biomes. They present their posters to the class, and grade each others' work using a peer review rubric.

Lesson Objectives

Students will be able to:

- Define climate change mitigation and adaptation.
- Identify examples of climate change mitigation and adaptation in their own lives and throughout the world.
- Communicate actions they can take to reduce greenhouse gas emissions and adapt to climate change impacts.

Vocabulary

- *Climate change*: The change in long-term weather patterns in a specific area or globally, as a result of changes in average temperature.
- *Climate change mitigation*: Slowing the rate of climate change by reducing greenhouse gas emissions.
- *Climate change adaptation*: Identifying and preparing for the impacts of climate change.
- *Carbon footprint*: The amount of carbon dioxide (CO₂) created by your everyday actions.

Materials

- Peer Review Rubric

Teacher Preparation

- Copy Peer Review Rubric (1 per student)

Activities

Part 1 (20 minutes)

Engage

1. Give students 5 minutes to prepare for presenting their group's poster to the class. Decide who will explain your findings to the class. More than one person can do this. Be ready to explain your findings in 2-3 minutes.
2. As a class, listen to each group's poster presentation. Try to limit each group presentation to 3 minutes in order to provide enough time for the poster walk and peer assessment activity.

Part 2 (20 minutes)

Explore

1. Hand out copies of the Peer Review Rubric (1 per student). Part of scientific presentations includes peer evaluation. This means your fellow scientists view your work, decide how well it portrays certain facts or ideas, and give you feedback or advice on how to improve your presentation. For example, did the poster do a good job of explaining information? Did it include good visual aids like pictures, drawings, or maps? Your comments should be polite, positive, and useful.
2. Have students walk around the classroom, read the other

groups' posters, and fill out the Peer Review Rubric for two posters. If you want a more structured poster walk, announce every 5-10 minutes when everybody should move on to the next poster.

Part 3 (10 minutes)

Extend

1. Discuss the climate change mitigation and adaptation strategies students learned from each other. Potential discussion questions:
 - What do you think about the recommended actions (e.g., easy or hard)?
 - Who the audience might be for each Climate Action Card (grown-ups, kids)?
 - Were any of the actions suggested on the Climate Action Cards beyond your control (e.g., choosing what car to drive)? Which ones were within your control?
 - Are there any actions you learned that you are willing to do in the future?
 - Which of these actions can anybody do? Which require training in a certain career?

2. **Wrap up** by summarizing what students have accomplished throughout **Climate Change and Michigan Forests**. During this unit, you learned about plant growth and the causes of climate change. You practiced collecting and analyzing data like a scientist, including using scientific models. We made conclusions about how climate change might impact certain tree species and biomes around the world. In the coming decades, climate change will continue to affect our environment, society, and economy. We can take steps to slow climate change, but the climate will continue changing because of the greenhouse gases that are already in the atmosphere. This means we should prepare for and adapt to those changes. Mitigation and adaptation will help us remain resilient in the face of climate change, and we can all be a part of this.

Part 4

Evaluate

- Evaluate the Student Posters and/or the Peer Review Rubrics.

Michigan Grade Level Content Expectations (Grade 7)

- E.ES.07.41 Explain how human activities (surface mining, deforestation, overpopulation, construction and urban development, farming, dams, landfills, and restoring natural areas) change the surface of the Earth and affect the survival of organisms.
- E.ES.07.42: Describe the origins of pollution in the atmosphere, geosphere, and hydrosphere (car exhaust, industrial emissions, acid rain, and natural sources), and how pollution impacts habitats, climatic change, threatens or endangers species.
- G3.2.1 Explain how and why ecosystems differ as a consequence of differences in latitude, elevation, and human activities.
- G5.1.1 Describe the environmental effects of human action on the atmosphere (air), biosphere (people, animals, and plants), lithosphere (soil), and hydrosphere (water).
- G6.1.12 Investigate the impact of global climate change and describe the significance for human/environment relationships.



Next Generation Science Standards (Middle School)

Performance Expectations

Students who demonstrate understanding can:

- MS-LS2-1 Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
- MS-LS2-4 Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect population.
- MS-LS2-5 Evaluate competing design solutions for maintaining biodiversity and ecosystem services.
- MS-ESS3-4 Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

Science and Engineering Practices

Analyzing and Interpreting Data

- Analyze and interpret data to provide evidence for phenomena. (MS-LS2-1)

Engaging in Argument from Evidence

- Evaluate competing design solutions based on jointly developed and agreed-upon design criteria. (MS-LS2-5)
- 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. (MS-LS2-4, MS-ESS3-4)

Disciplinary Core Ideas

LS2.A Interdependent Relationships in Ecosystems

- Organisms, and populations or organisms, are dependent on their environmental interactions both with other living things and with nonliving factors. (MS-LS2-1)
- Growth of organisms and population increases are limited by access to resources. (MS-LS2-1)

LS2.C Ecosystem Dynamics, Functioning, and Resilience

- Ecosystems are dynamic in nature; their characteristics can vary over time. Disruptions to any physical or biological component of an ecosystem can lead to shifts in all its populations. (MS-LS2-4)

LS4.D Biodiversity and Humans

- Changes in biodiversity can influence humans' resources, such as food, energy, and medicines, as well as ecosystem

services that humans rely on—for example, water purification and recycling. (secondary to MS-LS2-5) ESS3.C Human Impacts on Earth Systems

- Typically as human populations and per-capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise. (ESS3-4)

Crosscutting Concepts

Cause and Effect

- Cause and effect relationships may be used to predict phenomena in natural or designed systems. (MS-LS2-1, MS-ESS3-4)

Stability and Change

- Small changes in one part of a system might cause large changes in another part. (MS-LS2-4, MS-LS2-5)