

Unit 1 Lesson Plan developed for Grade(s) 7

Title: Introduction to the Green House Effect and Global Warming

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Applies to Lesson(s) "Our Global Climate System" *from*
<http://cimss.ssec.wisc.edu/climatechange/>

Objective: Introduce "Global Warming" and "The Greenhouse Effect" to students

Total Time Expected: One class period--45 to 50 minutes

Overview:

7th grade students have probably heard the buzzwords 'Global Warming' and 'Greenhouse Effect' somewhere in their lives. However, they are probably not clear as to what they really mean scientifically. This lesson will introduce both concepts and provide basic information about them. It will also engage student awareness of change in the earth energy system and provide information as to what humans are doing to effect global climate change.

Sequence:

1. Pose Questions "What is the Greenhouse Effect?" and "What is Global Warming?"
2. Guide students to make a T-Chart in their science notebooks. Draw a large class T-Chart on the blackboard or overhead projector for all to see. Place Greenhouse Effect on one side and Global Warming on the other side.
3. Allow students to work for 3-4 minutes to brainstorm and write down what they know about these topics.
4. After a few minutes allow for sharing of all ideas. Have a student volunteer record these ideas on the class T-Chart.
Encourage students in the classroom to copy down all information into their notebooks.

5. Begin short lecture to students. Say: Outerspace is cold. Why do we stay warm on Earth? *The Sun*

But, what is it about Earth that allows us to survive here and not any other planets? *Our Atmosphere*

6. Say: The atmosphere on Earth is special. It allows us to breathe and keeps us warm. What is the atmosphere made of? *Gases*

7. On chalkboard write Atmosphere: Main gases Nitrogen and Oxygen. But also smaller amounts of Carbon Dioxide, Water Vapor, Methane, and many others.

Have students write this information in notebooks

8. Circle the greenhouse gases on the list. Say: Carbon Dioxide, Water Vapor, and Methane are called Greenhouse gases.

What is a greenhouse and what is it used for? *To make a warm place for plants to grow.* Right, the sun shines into the greenhouse and warms it up.

Then a lot of the heat energy becomes trapped inside the greenhouse by the windows and the greenhouse stays warm. The atmosphere of the Earth works in a very

similar way.

9. Draw a model of the Sun, Earth, and the energy transfer system that details the greenhouse effect similar to the slide from "Climate Regulators: Concepts on the chalkboard or overhead. Allow for students to sketch it in their science notebooks. Be sure they label the Sun, the Atmosphere, the Earth, Clouds, Greenhouse gasses carbon dioxide, water vapor, and methane, along with clouds.

10. Show Greenhouse Effect video provided in the activities portion of Climate Regulators from the online course pages. The video is about 3.5 minutes long.

11. Say: This greenhouse effect allows the Earth to stay warm and for humans and all other life to survive on it. Earth is 4 billion years old, and the greenhouse effect has been working for a long time to keep earth warm in order to sustain life. But, in the last 300 years, humans have begun to change the system. We are adding more Carbon Dioxide to the atmosphere than ever before by burning fossil fuels to make energy. This increased Carbon Dioxide in the atmosephere is allowing less energy to escape our atmosphere and back into space. This is making the Earth warmer.

12. The survival of Polar Bears is now in question because of global warming. They could become extinct. Show video at

<http://www.youtube.com/watch?v=E1cyUmx5htA>
that details the plight of polar bears. It is a short 1.5 minute video.

Supplies or references required:

1. Science notebooks
2. Chalkboard/Overhead projector
3. Laptop Computer connected to a data projector
4. Internet connection

National Science Standards addressed:

A.8.8. Use the themes of evolution, equilibrium, and energy to predict future events or changes in the natural world

D.8.9 Explain the behaviors of various forms of energy by using the models of energy transmission, both in the laboratory and in real-life situations in the outside world

Related URLs or recommended reading:

<http://www.youtube.com/watch?v=E1cyUmx5htA>