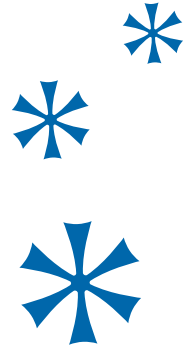




## **The Greenhouse Effect and Global Warming**

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### **LESSON PLAN**



**Grades:**

3rd-5th grade, but can be modified for younger students

**Duration:**

One 45-Minute period

**Materials:**

- \* Nametags for students made from recyclable material (i.e., cardboard)
  - \* 10 labeled "Heat"
  - \* Enough nametags for the remainder of students labeled "Greenhouse Gases"

**Anticipatory Set:**

- \* First, ask students what they think it means to be a "Protector of the Planet"
- \* Next ask:
  - \* Younger Students: How many of you have been in a greenhouse? Share with your partner why you think people use greenhouses.
  - \* Older Students: Share with your partner what you think you already know about Global Warming.

**Learning Objective:**

Today we are going to learn about and act out the Greenhouse Effect and discover how it contributes to the warming of our Earth. This knowledge will help us make better decisions on how we treat the Earth, so we can become better "Protectors of the Planet".

**Purpose:**

The reason for learning this is so you, too, can take this new knowledge and become a better "Protector of the Planet".





### Input:

- \* Gather the students together and assign them "roles" to act out the Greenhouse Effect.
- \* Have 10 students be "Heat" and select 5 students be "Greenhouse Gases" (if there are less than 15 students participating, reduce the numbers of each. Just be sure that there are twice as many "Heat" students as "Greenhouse Gases" students).
- \* Hand out nametags and have students put them on.
- \* Label one end of the room "Sun" and have "Heat" students stand on this end.
- \* Label the other end of the room "Earth".
- \* The 5 selected "Greenhouse Gases" students stand in the middle of the room.
- \* All remaining "Greenhouse Gases" students sit and watch until their turn.
- \* *Remind students that the Sun produces heat that reaches the Earth's surface.*
- \* At this time have the "Heat" students walk from one side of the room to the other, *demonstrating heat traveling from the Sun to the Earth.*
- \* *Explain that some heat escapes back into space while gases in the atmosphere trap some of the heat. These "greenhouse gases" allow the Earth to stay warm and allows life to flourish. To demonstrate this have the "Heat" students travel back to the other side of the room, but this time the 5 "Greenhouse Gases" students each trap one "Heat" student, keeping them on the "Earth" side of the room, allowing the others to "escape".*
- \* *Students need to be aware that the Greenhouse Effect is a beneficial, natural process and that without it the Earth would be too cold to sustain life*
- \* Now introduce the idea of global warming. Have all the remaining "Greenhouse Gases" students join the other "Gases" in the middle of the room. Ask the students to predict what would happen if more Greenhouse Gases were added to the atmosphere.
- \* Again, have the original group of "Heat" students travel from the "Sun" side to the "Earth" side of the room.
- \* Then ask the "Heat" students to try to travel back to the other side of the room. The "Greenhouse Gases" students should then each trap one "Heat" student. Since there are many more Greenhouse Gases, more "Heat" will be trapped on Earth, with very little, if any, "Heat" escaping. *This is how global warming happens.*



### Check for Understanding:

Check for student understanding throughout the lesson, stopping periodically, to ensure students understand the purpose of movement from one end of the room to the other end.

### Independent Activity:

Students will write one paragraph about how they can help become a "Protector of the Planet" along with drawing a picture of a snowflake (see "Save the Snowflakes" submission form). Student paragraph and artwork to be submitted by January 31, 2010 (details included on submission form.)

### Closure:

At the end of the activity, bring the students back together as a group and discuss what they learned.

- \* Ask: *Why should anyone care about Global Warming?* (Because if there is too much global warming plant, animals, and people can't live).
- \* Ask: *Is it everyone's responsibility to care for the Earth?*
- \* *Tell them that caring for the Earth is considered stewardship.*
- \* Ask: *Does anyone know what Stewardship means?* (It's the careful and responsible management of something entrusted to one's care, or becoming a "Protector of the Planet").
- \* *Since we live on the Earth, is it everyone's responsibility to take care of the Earth?*