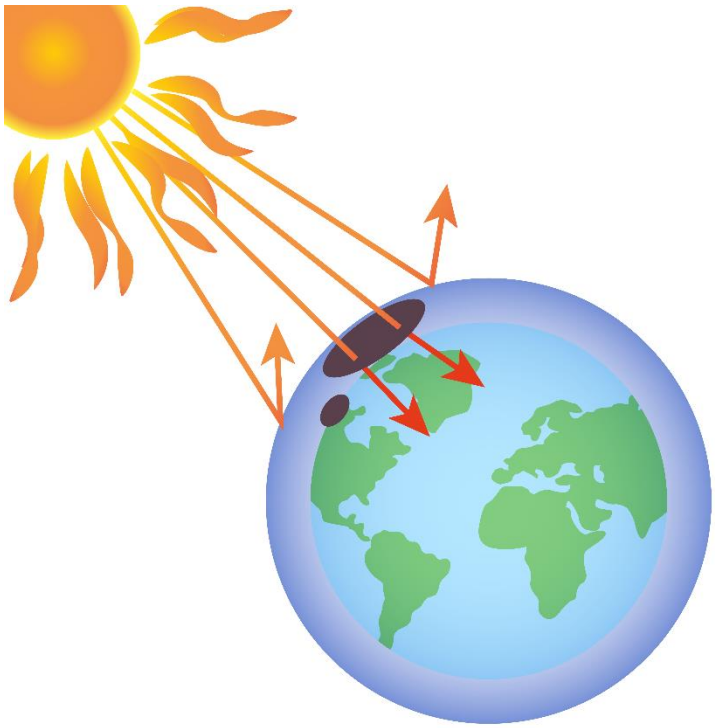
Lesson 5



WHY IS THE CLIMATE CHANGING? GLOBAL WARMING

Lesson objective: To find out the causes of climate change and identify the ways how to slow down the global warming.

Terms: climate warming, greenhouse effect, ozone hole, freon.

Materials required for the Eco workshops:

1. a bottle with a narrow neck, matches.

2. a large glass container, water, food coloring, ice, paper tape, pencil.

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1. Interactive task — 3 min.

Learning objective: To help children understand the signs of climate changing.

ACTIVITIES

Teacher: coordinates the pupils' activities.
Pupils: answer the discussion questions.

On the screen: cards with questions.
1. Why doesn't the brown bear hibernate?
2. Why is it getting harder for polar bears to find food?
3. Why can‘t the migrating birds find food after flying to warm climate countries?
4. Why are crop yields decreasing?
5. Why is it difficult to breathe in big cities?
6. Why are there more hurricanes lately?

After clicking on the question card again the answer is being displayed

2. Information (Audio/text) — 4 min.

Learning objective: To acquaint pupils with knowledge of how human activities affect the climate.

ACTIVITIES

Teacher: coordinates the pupils' activities
Pupils: observe the information on the screen.

On the screen: 3 photos with different time periods are displayed:
1. Pre-industrial period (until the 18th century).
2. The industrial period (from the 18th century to 1970)
3. Post-industrial period (from 1970 to the present day).

Notes: _____

3. Discussion 6 min.

Learning objective:

To develop pupils' abilities to draw conclusions based on arguments and experience.
To consolidate pupils' knowledge about human impact on climate change.

ACTIVITIES

Teacher: coordinates the activity.
Pupils: discuss all situations, draw generalized conclusions.

On the screen: cards with photos are displayed.

4. Information (Audio/text) 4 min.

Learning objective:

To acquaint pupils with smog.

ACTIVITIES

Teacher: coordinates activities.
Pupils: listen to information about smog.

On the screen: a picture of smog in the city is displayed. Information about smog and its causes is provided.

Notes: _____

5. Experiment

7 min.

Learning objective:

To help pupils understand the formation of smog, teach them to simulate this phenomenon using the simplest tools.
To develop cooperation skills while working in a group.

ACTIVITIES

Teacher: coordinates activities.
Pupils: watch the video and perform an experiment.

On the screen: a video and instructions of the experiment are displayed.

1. Take a bottle with a narrow neck. Blow hard into it and pull your lips back quickly.
2. Light a match, blow it out and drop it into the jar.
3. Blow into the bottle a few more times. Don't forget to pull your lips back quickly.

Materials recquired for the workshop: a bottle with a narrow neck and matches.

6. Discussion

5 min.

Learning objective:

To develop pupils' critical thinking and abilities to draw conclusions based on arguments and experience.

ACTIVITIES

Teacher: coordinates activities, opens question cards in sequence.
Pupils: answer questions about the greenhouse.

On the screen: a picture with a greenhouse is displayed and questions are being opened in sequence:
1. What is it?
2. What is it used for?
3. What is special about the temperature in the greenhouse?
4. Would you like to spend all your time in a greenhouse?

Notes: _____

7. Information (Audio/text) 4 min.

Learning objective: To provide pupils with knowledge about the greenhouse effect and its formation.

ACTIVITIES

Teacher: coordinates the pupils' activities.
Pupils: listen to information about the greenhouse effect.

On the screen: information about the greenhouse effect is provided:

We can compare the atmosphere to a giant greenhouse where the temperature is higher than outside. Such a heat accumulation effect is called the greenhouse effect. The climate has warmed due to it. Over a period of 100 years the average temperature of the Earth has risen by 0,5 degrees. It is expected to rise by another 1,4 degrees in the next 50 years.

Anyone who has been in a greenhouse knows that even with sub-zero temperatures outside it is cozy and warm enough inside. This is because the sun's rays reach the inside of the greenhouse but only a small amount of heat escapes back out. A similar situation exists in the Earth's atmosphere: certain gases (carbon dioxide, methane, water vapor) trap heat. The heat layer surrounding the earth is getting thicker every year as billions of tons of gases enter the atmosphere. Carbon dioxide is formed during combustion processes (burning oil, coal, gas). It is emitted by cars and airplanes, factory chimneys. Annual forest fires also have a negative impact.

8. Interactive task 3 min.

Learning objective: To demonstrate to students what are the main causes of the greenhouse effect on Earth.

ACTIVITIES

Teacher: coordinates the pupils' activities.
Pupils: perform an interactive task. Monitor changes of the picture and the thermometer and listen to information.

On the screen: a picture of the Earth is displayed. After clicking on it, objects that create a greenhouse effect appear.

Notes: _____

9. Discussion — 4 min.

Learning objective: To develop pupils' critical thinking and abilities to draw conclusions based on arguments and experience.

ACTIVITIES

Teacher: coordinates the students' activities.
Pupils: answer the given questions.

On the screen: 2 pictures with questions are displayed:

1. Do you like spending time in the sunlight?
2. Has this ever happened to you? Why does this happen?

10. Interactive task — 3 min.

Learning objective: To consolidate pupils' knowledge about the effects of damaged ozone layer on humans.

ACTIVITIES

Teacher: coordinates the pupils' activities.
Pupils: perform an interactive task - upload the pictures to the correct location (in sequence 1- sunglasses are missing, in sequence 2- sunscreen is missing).

On the screen: 2 sequences of pictures are displayed, the second image in each sequence is missing.

11. Information (Audio/text) — 4 min.

Learning objective: To acquaint pupils with ozone layer is and how the ozone hole is formed.

ACTIVITIES

Teacher: coordinates the students' activities.
Pupils: listen to information about ozone.

On the screen: information about ozone is presented.

12. Interactive task

3 min.

Learning objective: To consolidate pupils' knowledge about the formation of the ozone hole and its effects on humans.

ACTIVITIES

Teacher: coordinates the pupils' activities.
Pupils: do an interactive task - put the pictures in the correct order: total ozone, chemicals, ozone hole, sunburns.

On the screen: 4 images are displayed:

1. sunburns,
2. total ozone,
3. chemicals,
4. ozone hole.

13. Interactive task

3 min.

Learning objective: To consolidate pupils' knowledge about climate warming.

ACTIVITIES

Teacher: coordinates the pupils' activities.
Pupils: perform an interactive task - answer the test questions.

On the screen: 4 cards with questions and possible answers are displayed.

1. What vehicle would you choose to do the least harm to the Earth?

- ride an electric car or electric scooter.
- ⊙ walk or ride a bike. (correct)
- drive the family car.

2. What is the importance of the ozone layer?

- ⊙ protects everyone from the sun's ultraviolet rays. (correct)
- harmful to human health.
- warms the Earth.

3. What is smog?

- fog.
- ⊙ haze of pollutants in the air. (correct)
- Earth's atmospheric layer.

4. What is the greenhouse effect?

- structure for growing plants.
- ⊙ accumulation of heat in the atmosphere. (correct)
- ultraviolet rays from the sun.

14. Information (Video/audio/text) 4 min.

Learning objective: To acquaint pupils with global ocean level rise and melting of glaciers.

ACTIVITIES

Teacher: coordinates the puplis' activities.
Pupils: watch the video and listen to information about glaciers.

On the screen: a video about the melting of glaciers and information about the rise of the ocean level is displayed.

15. Experiment 20 min.

Learning objective: To teach pupils to use simple tools to demonstrate how ocean levels rise as glaciers melt.
To develop pupils' cooperation skills while working in a group.

ACTIVITIES

Teacher: coordinates the pupils' activities.
Pupils: watch video information on how the ocean level rise experiment is performed.

On the screen: video and instructions are displayed.

Materials recquired for the workshop: a large glass container, water, food coloring, ice, paper strip, pencil**.**

On the screen: questions are displayed.
1) Why did it happen?
2) Does the melting of icebergs in the sea contribute to sea level rise?
3) Does the melting of Earth's glaciers on land contribute to sea level rise?
4) What climate changes can melting glaciers cause?

Notes: _____

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