

Is it really getting hot? - investigating global warming

1	<p>Overall aims:</p> <ul style="list-style-type: none"> • Introducing the concepts of greenhouse effect, climate warming; • Enriching the knowledge about climate change • Developing fine motor skills • Developing sensitivity to human influence on climate change
2	<p>Vocabulary - keywords</p> <p>Ice, melting process, global warming, climate change</p>
3	<p>Sustainable abilities developed</p> <ul style="list-style-type: none"> • System thinking competency • Normative competency • Self-awareness competency
4	<p>Pillars of sustainability included</p> <ul style="list-style-type: none"> • socio-cultural; • ecological
5	<p>STEAM domains</p> <p>S, E, A, M</p>



6

Teaching methodologies/activity outline

Introduction

Discover what's in the ice cube - activity for kids

The teacher puts various small toys into the ice cube mold. Then he pours water and puts the prepared mold into the freezer. When the water turns into ice and the toys (objects) are trapped in it, the teacher takes the mold out of the freezer and shows the result to preschoolers. They pull out ice cubes together, each child chooses one ice cube:

Questions:

- What's hidden in your ice cube?
- How can I get rid of ice?

The teacher gives the children various kitchen utensils (also warm water and a dropper). The task of the children is to discover / take out a toy (object) from the ice.

Note for the teacher: A modification of this task can be frozen dinosaur eggs (especially when children show great interest in these reptiles). To do it, inflate the balloon and hold the air for about 30 seconds to stretch the balloon. Gently push the small dinosaur figure into the balloon, fill it with water, e.g. using a funnel, and tie it. Put the balloon in the freezer and wait. When the water freezes, cut the knot, detach the balloon and show the frozen egg to the children.

Main part

Questions:

- Which kitchen tools freed toys (items) from ice the fastest?
- What happened when warm water was dripping onto the ice cube?

The teacher informs: just as warm water dissolves the ice in our cubes, so the great icebergs on our planet are dissolved by the heat. Heat is also responsible for this melting. This phenomena is called „global warming” - what does it mean?

The teacher offers the children to watch a film about the greenhouse effect (film in Polish, duration: 4:35):

<https://www.youtube.com/watch?v=3oYYDXW1mMc>

Questions about the movie:

- What is an atmosphere and why is it so important?
- How have humans contributed to the increase in greenhouse gases?
- Why is the temperature on Earth rising?



Experiment showing the greenhouse effect

During the heating season, when it is frost outside, set the thermostats in the selected room to the maximum value - let the heat source supply the same amount of energy to the room all the time during the experiment. Prepare a room thermometer.

Step 1 - open the windows wide and after a few minutes (act quickly so as not to waste energy unnecessarily) measure the temperature of the air inside.

Step 2 - close the windows and read the temperature again after a few minutes.

The measurement will show an increase in temperature when the windows are closed.

Conclusion: when there is no heat leakage, the temperature rises.

Question:

- How do you understand the saying: pruning the branch you are sitting on?

Proposed explanation: when someone harms himself or herself, works to his own disadvantage, we colloquially say that he is cutting the branch on which he is sitting. It must end badly. Apparently clear, but when sawing, he keeps on sawing ... Why? Doesn't predict the consequences? He doesn't care?

We have a problem, because we humans are "cutting" the branch with increasing enthusiasm, that is, we are heading for a catastrophe. Is there any rescue? Stop "sawing" immediately. The stakes are high, because it is the future of almost 8 billion people and the next generations. We are all sitting on this "branch".

The teacher divides the children into groups and gives them art materials. He encourages children to draw a poster with an appeal to "stop sawing" and get everyone involved in efforts to stop climate change.

Summary

Presentation of artworks by individual groups.

Question:

- What can I do for the climate as a preschooler?

7**Expected learning outcomes****The child will be able to:**

- exercise precision and fine motor skills
- explain in his own words what the greenhouse effect is
- perform art work (design a poster)
- name actions that can be taken to prevent global warming



8	<p>Assessment</p> <p>Quiz - true / false, e.g.</p> <ul style="list-style-type: none"> • The atmosphere is the air around the earth • Carbon dioxide is one of the greenhouse gases; • Man is responsible for increasing the amount of greenhouse gases • There is nothing people can do about climate change etc.
9	<p>Equipment and materials to be used in learning unit (tools, ingredients etc)</p> <p>Water, ice molds, balloon, small toys (items), computer, projector, art supplies: crayons, paints</p>
10	<p>Kind of setting - lab, kitchen, outdoor etc.</p> <p>Classroom</p>
11	<p>References - source:</p> <ul style="list-style-type: none"> • https://premeditatedleftovers.com/naturally-frugal-mom/ice-cube-discovery-activity • https://littlebinsforlittlehands.com/frozen-dinosaur-eggs-ice-excavation-sensory-play/?epik=dj0yJnU9YTg0WERxM2lZcWdsbnB6cU92Zl9ROExoQlVMd1FucEcmCD0wJm49OVpwN0RIUjZKMUJlOXRLeM9JT3NkQSZ0PUFBQUFBR0s1cUxn • https://www.youtube.com/watch?v=3oYYDXW1mMc • Krämer M., Matematyka na zielono, Warszawa 2022. https://www.youtube.com/watch?v=zatcpQt6nmA

