

Climate Detectives- ESA (European Space Agency)

The children of the 4th grade participated in the educational program "Kids Detectives of the Climate" created by the European Space Agency (ESA) and coordinated for Greece by the European Space Education Resource Office (ESERO).

ESERO Greece aims "through a space trip to the classroom":

A) In the inclusion of Space sciences and STEM disciplines (Science, Technology, Engineering, Mathematics), both in Primary and Secondary Education, following innovative teaching and learning methods.

B) In an education that concerns all students and in breaking down the misconception that "science is only for geniuses".

C) In highlighting the importance of Space in modern society and economy.

The European Space Education Resource Office (ESERO) was officially established in Greece on November 29, 2021. The Greek ESERO Office is based at the Aristotle University of Thessaloniki (AUTH) and is a collaborative project between the European Space Agency (European Space Agency - ESA) and national partners, such as the Natural Sciences Laboratory Centers (EKFE), the Center for Digital Geographical Education, the Hellenic STEM Educational Association, the ATLAS Research Group of AUTH, etc.

It offers rich educational material for all levels of education: Space is an intrinsically fascinating and highly interesting subject, which can be integrated within a unified framework of STEM education. Children can explore the universe and acquire 21st century knowledge and skills.



Through the variety of educational materials offered, the possibility of integrating Space topics into the educational process is provided.

In the "Children's Climate Detectives" educational program, the children dealt with three thematic sections:

A. The Water Cycle:

1. The children watched the video of the water cycle activity by Paxi.

2. They did experiments with the water cycle: a) Observation: Evaporation of water in a closed bottle under the sun's rays and b) Observation: Creation of water vapor when placing a plant in a glass (as a greenhouse) under the sun's rays.

3. They made the water cycle into posters with paintings and collages.

The students thus learned how exactly this water cycle becomes necessary for sustaining life on the planet. They also understood the constant and eternal finite amount of water in all its forms as it exists on earth.

B. The Greenhouse Effect

1. The children watched the video Paxi: The Greenhouse Effect.

2. Observation of experiments: a) Temperature measurement in shade and sun, b) Observation of temperature change in a thermometer inside a bottle, in shade and sun, c) Observation of temperature change in a bottle with a plant in shade and sun.

3. Discussion on the causes of the creation of the greenhouse effect, the effects and the solutions to reduce the effect.

4. Creation of posters with suggestions for the solution of the problem.

C. The melting of ice

1. We studied the ice in the Arctic and Antarctic and watched ESA videos of ice melting over long periods of time from data collected by its satellites.



2. For the effects of melting ice on land and sea we did two experiments:

a) "Will the sea level change?" In the experiment we used ice cubes in water and on land and studied the rise of the water level and

b) "Will the temperature change?" In the experiment we investigated whether the Earth's temperature will increase when the ice melts. We used 2 shoe boxes. We covered the first with white cardboard and the second with black. We put a thermometer in each one, left it in the sun and after about 4 hours we observed the difference in temperature and realized the importance of the ice melting in further increasing the temperature of the planet and the effects on the lives of all beings.



Websites:

ESA <https://www.esa.int/>

ESERO <https://esero.gr/>

Climate Detectives <https://climatedetectives.esa.int/el/>

Video:

Planet Detectives : <https://youtu.be/zpbHCjEXs-U>

The Paxi Water Cycle <https://youtu.be/yVQEsIsalgY>

The Paxi Greenhouse Effect <https://youtu.be/LL4Y2lSWzIk>

1st Primary School of Nea Ionia Attica, Greece

4th Grade

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