

CONNECT

Inclusive open schooling
with engaging and
future-oriented science



BEST PRACTICES

Description for the website:

Title: **Actions to reduce the carbon footprint**

This report presents an open schooling initiative about CONNECT - Horizon 2020 Science with and for Society, which was developed by the Energy Technological High School "Elie Radu" Ploiesti, teacher Novischi Angelica Valentina during the period (15/10 / 2022 to 15 /06 /2023). The activities included a science professional (not applicable). It was supported by Valahia University in Targoviste, Romania. This activity was previously presented at <https://connect-eu.exus.co.uk/ro/members/angi67/photos/> .

Care: Students were interested in finding out new information about pollution, they actively participated in the lessons on Carbon neutral proposed by the CONNECT project, a real-life problem "carbon footprint" was highlighted, each student made their own calculation and realized the importance of reducing it. The students who participated in the activities were in the eleventh grade the branch: technological, profile: technical, basic field: natural resources and environmental protection, qualification: ecological technician and environmental quality protection, 18 in number.

Know: Students used knowledge about environmental pollution through combustion reactions, identified where carbon dioxide emissions come from, from different activities: transport, energy production, agriculture and different industries. The competences that students practiced were: identified problems, applied knowledge about Earth's atmosphere and global warming, developed teamwork skills, played the role of journalist, politician, architect or construction engineer, developed calculation skills, considered different perspectives for reducing carbon dioxide emissions and proposed solutions through the role they played, have developed skills to consider the economic and social consequences of environmental pollution.

Do: At the end, the students prepared different materials: posters, drawing – green house, report made by the journalist, article proposed by the researcher (scientist), article proposed by the politician regarding laws that will be applied to reduce pollution. They carried out the activities in groups of 3 to 4 and were supported by families.

Findings related to the Open Schooling approach: The activity is framed in the curriculum to the qualification of the class that participated in the project.





It was very useful, the lessons were held during the green school week, students received rich and useful information through this project, they were also put in the situation to look for information and propose solutions to reduce the carbon footprint, to be involved and useful to society.

Open schooling could be useful and challenging for other teachers because each of us carries a carbon footprint and we need to act to reduce it. The teacher must be a positive role model for the students.

The results obtained by the students: Students were happily involved in activities, developed different skills, confidence in science, sought solutions to problems related to environmental pollution with carbon dioxide, provided positive feedback at the end of the activities. As an example, one student mentioned the following conclusion: "the carbon neutral approach is essential in combating climate change, it is important to recognize examples that demonstrate genuine commitment and concrete actions in reducing greenhouse gases."

Please select the most relevant photo about your initiative (which will be public and published under an open license on the website to represent the practice).



ABOUT the CONNECT institution that supported the school

ORGANIZATION	Valahia University of Targoviste
COUNTRY	Romania
Name of partner (contact person)	Novischi Angelica
Implementation period	Start date: 15/10/2022 End date: 15/06/2023

ABOUT THE INTERVIEWED TEACHER(S)

SCHOOL	Energy Technological High School "Elie Radu" Ploiesti
Names of TEACHERS (for certificates of good practice)	Novischi Angelica Valentina
Genre	female
DISCIPLINE (Science, Physics, Chemistry, Biology, ...)	chemistry





How many lessons were used in open schooling?	4
Title of the Open School Resource used	Carbon neutral
Type of scientific actions (structured or open-ended scenario)	1. Understanding the scientific context (1 Challenge) Apply Earth's atmosphere/carbon cycle to a new context (2 Carbon) Practice the skill "Consider different perspectives" (3 Game) 4. Coordination of scientific knowledge and skills in a performance evaluation
Curricular themes	√ Apply a scientific concept; √ Learn an investigative skill; √ Provides an authentic end-of-unit assessment; √ Show students how science affects their world; √ Students talk about science with their family.
ABOUT TEACHERS' STUDENTS	
Class	XI
Average age	17 years old
Total student participants	18
Total students who have completed scientific actions	18
SCIENTISTS INVOLVED:	
Name	-
Field	-

Questionnaire

01. How have you (teachers) used open school resources? Could you describe what you did in your lessons?

Student activities with scientists:

At the lessons were presented the materials proposed by the project, students were involved in activities proposed by the project, were asked to search for information on the Internet related to the topic: Carbon neutral, were grouped in teams and played different roles: scientific researcher, counselor for political party leader, architect or construction engineer, journalist and made different products: papers, leaflets, drawings, on this topic .

Student activities with families:

Together with the family, they calculated the carbon footprint of the household.





02. How have your students used the CONNECT resources? Do you have (or could you describe) examples of the best scientific action (for our website/awards)?

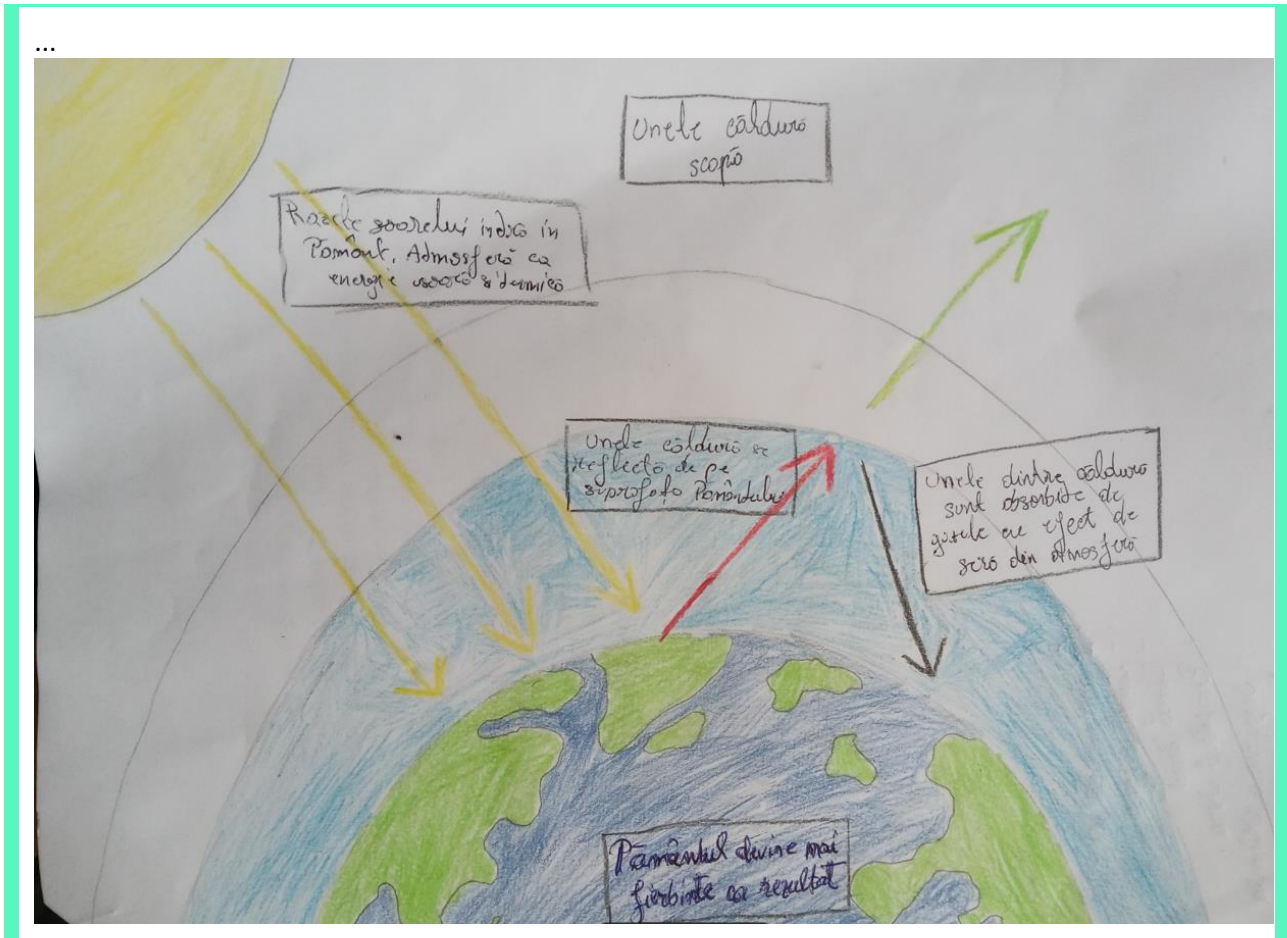
Any examples of why the students prepared?



Poate apăi: încălzire, aer condiționat, iluminat, întreținere, servonaj electronic, apă caldă
 Reducerea emisiilor de carbon: ajută la reducerea emisiilor de gaze cu efect de seră și
 protejează mediul.
 Fiabilitate: sunt fiabile și pot funcționa eficient timp de zeci de ani

Slide? Poster? Video? (Add some images if possible)





03. To what extent have the resources of scientific actions responded to your needs?

Needs related, for example, to school curricula:

The educational resources received and used through this project used knowledge of chemistry (Earth's atmosphere) and climate change, developed skills (students were asked to communicate ideas, to consider different perspectives). Students have developed attitudes and values regarding environmental protection and teamwork.

Student involvement:

Students were actively involved in the given tasks, collaborated in a team, searched for information on the internet, played different roles, were happily involved in this project.

Students' interest and confidence in science:

Through involvement in this project, students' confidence for science has increased.





04. How easy or difficult was it to use the resources of scientific actions?

Please add any specific issues related to materials, procedures, interactions, or curriculum:

The educational resources were easy to use.

05. What have been the benefits of open schooling for your students?

Describe the results achieved by students in their scientific actions related to:

KNOWLEDGE	Students developed knowledge of chemistry: combustion reactions, carbon dioxide emissions and climate change (greenhouse effect, Earth's atmosphere) etc. sought solutions to reduce the carbon footprint
SKILLS	Students developed skills in team communication, to draw up a project with a certain theme, to look for solutions to problems related to environmental pollution with carbon dioxide.
ATTITUDES	Students developed attitudes related to environmental protection and teamwork.

06. What were the challenges of using scientific actions for your students?

Select the main challenges students faced and exemplify:

- Difficult...
- Long...
- Boring...
- Other (Please specify): ...

07. What activities worked well within the curriculum?

What helped students achieve their learning goals:

Materials received and used through this project.

08. What activities did not work well within the curriculum?

Anything that could be done differently or avoided:

This is not the case.