STE(A)M IDEAS FOR HIGH SCHOOL

Erasmus+ project FROM SCHOOL TO LIFE – MY KNOWLEDGE HELPS ME IN MY DAILY LIFE

Partners

Tamsalu Gymnasium, Estonia

1o EPAL KARDITSAS, Greece

Liceum Ogolnoksztalcace im. Tadeusza Kotarbinskiego w Sepolnie Krajenskim, Poland

Colegiul Tehnic Mihail Sturdza, Romania

BAGYURDU ANADOLU LISESI, Turkey

This brochure is an overview of the activities done during the project.

The list of activities is just to give you an idea and suggestions how to deal with STE(A)M in the classroom and outside of it to engage students and make studying enjoyable.

Traditional and alternative sources of energy- consumption and impact on the environment

- **In science/physics/geography**, students do research about

Wind energy

Solar energy

Hydroelectric energy

Wave and tidal energy

Biomass energy

Geothermal and hydrogen energy

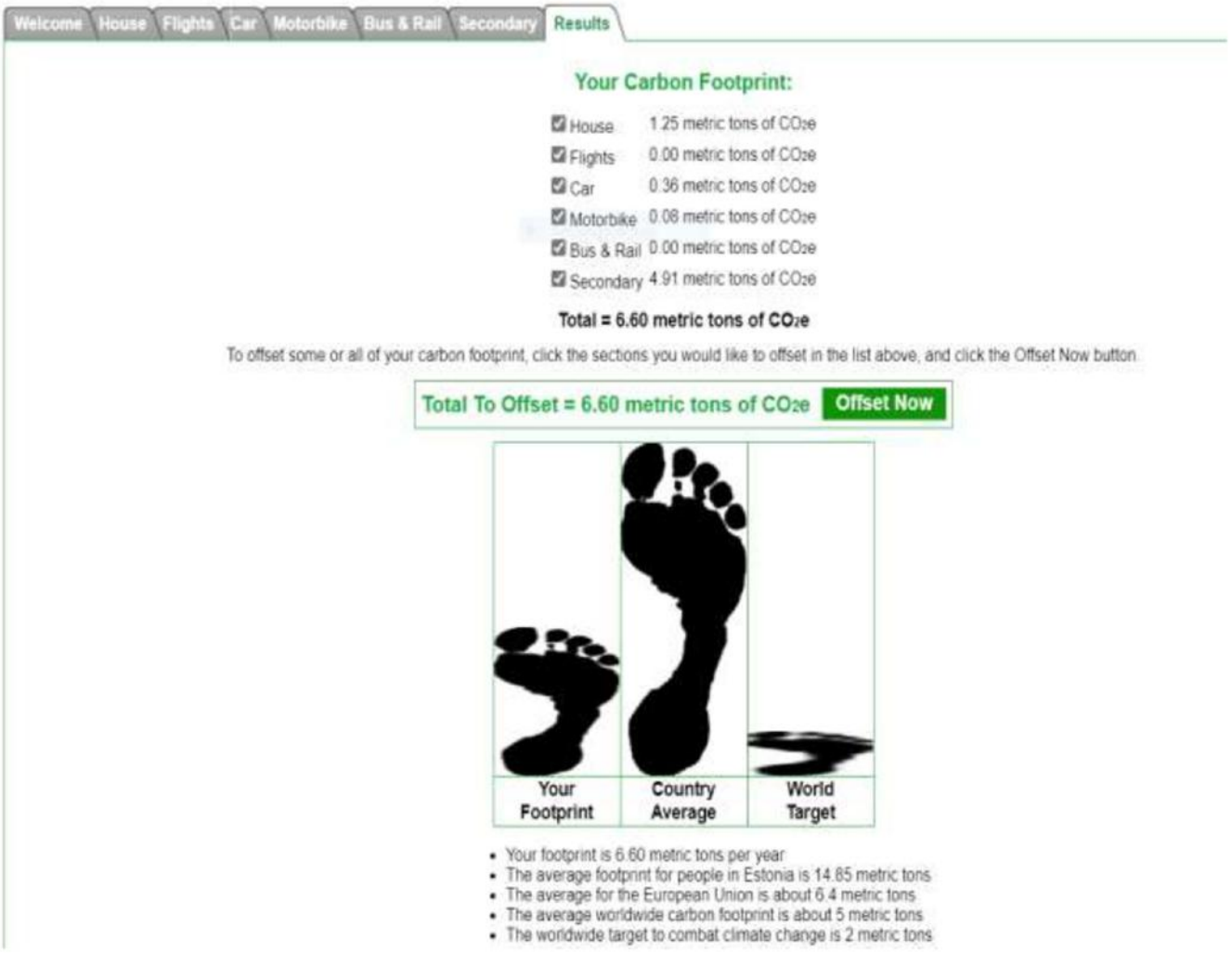
and do presentations which are followed by group discussions.

- **Local experts/ university lecturers** could be asked to give workshops

An online workshop

- **Project activity with carbon footprint calculator**

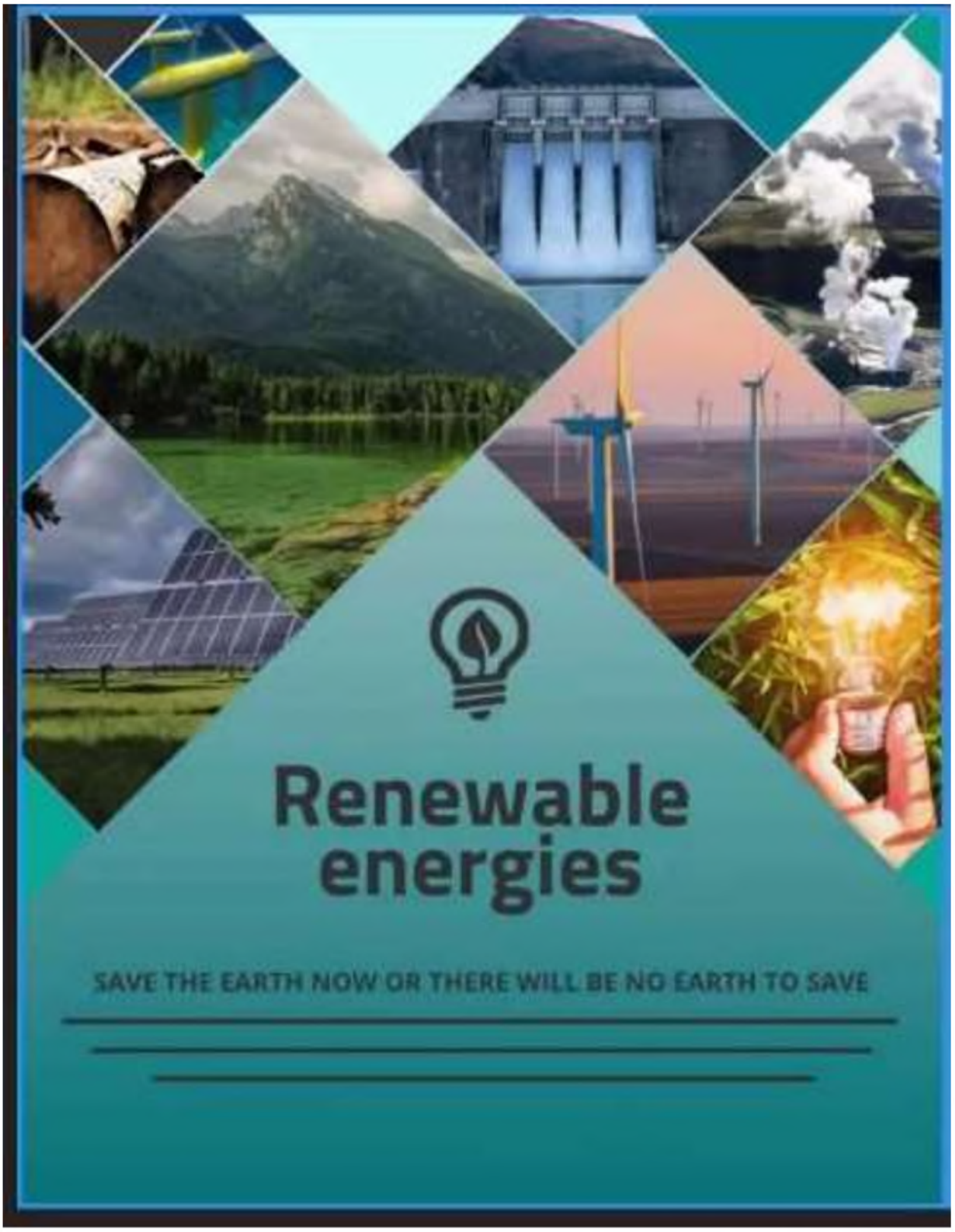
Students use an online carbon footprint calculator to see how individual/ family usage affects the environment.



Carbon footprint calculator – example

- **Students think of ways to raise people's interest in responsible energy consumption and use of alternative energy sources.**

They create models, posters or animations etc.



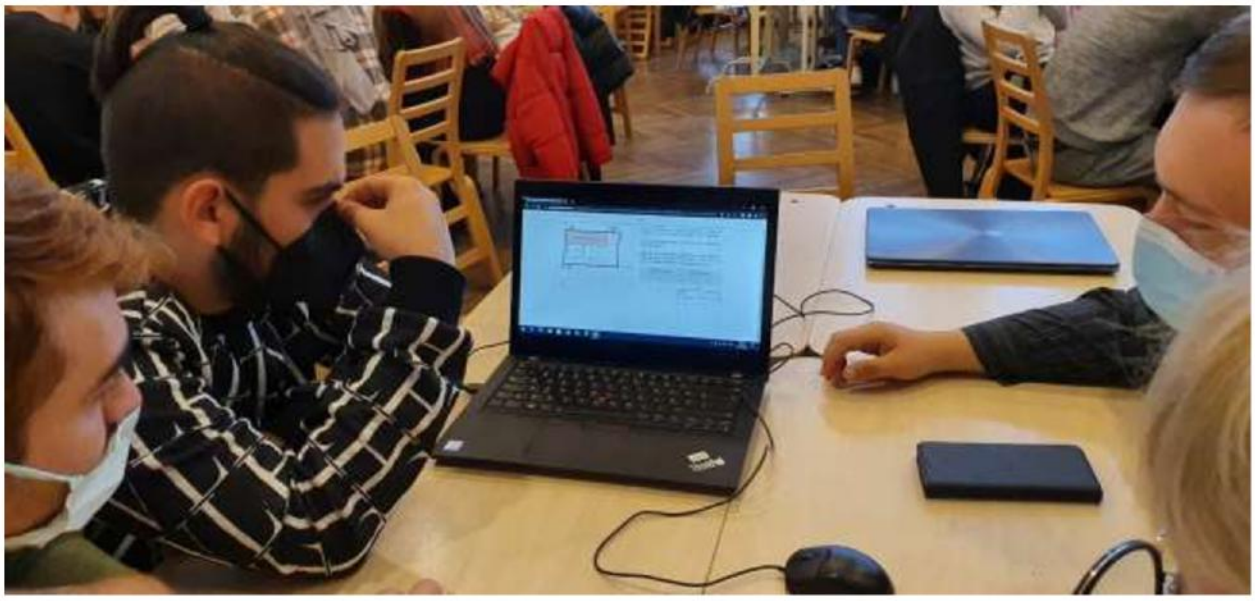
A poster by the Romanian team

A poster by the Greek team

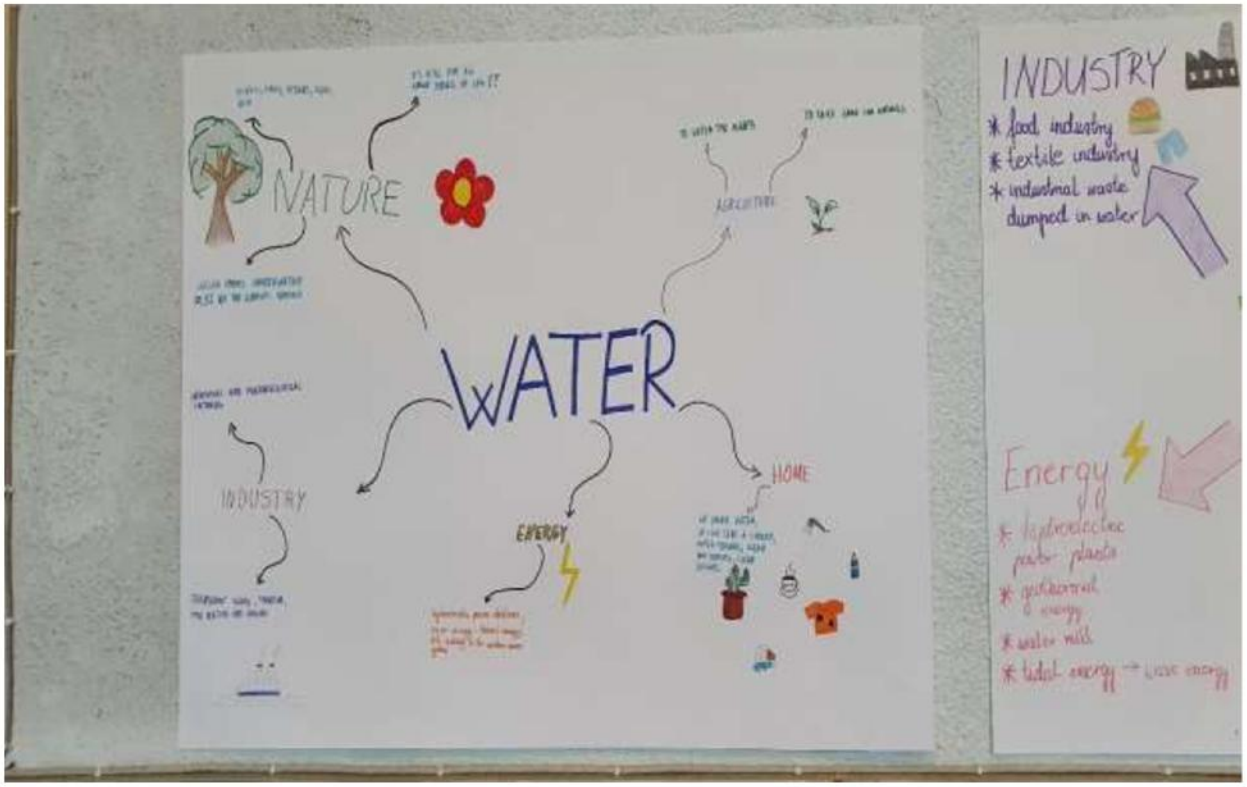
Water energy and STE(A)M

- **Water related tasks in different subjects – Maths, Physics, Art**

Paper Marbling



Maths tasks



Mindmaps

- **Using the Internet – virtual tours of power plants**
  Iru Power plant
  https://www.energia.ee/irutuur/?language=en

- **Water and symbolism in art, fiction, science fiction, science, religion**
  Students do project work and make presentations on water and symbolism in art, literature, film, religion etc.

A presentation by the Estonian team

Jan Matejko – Chrzest Mieszka I
(Christening of Mieszko I) (1889)
This painting shows one of the most important moment in polish history - Christening of Poland.
It had place in year 966.
In the background we can clearly see Lednica Lake.

A presentation by the Polish team

PHRASES WITH WATER

The word 'water' appears in many phrases, as a metaphor. Here are some of them:

- *'make a hole in the water'*: fail
- *'put the water in the gutter'*: lead an affair to the right way
- *'lose my waters'*: feel awkward due to a change
- *'be out of my waters'*: I do not know something I am dealing with
- *'like cold waters'*: of excellent beauty

A presentation of the Greek team

- In Turkish folk literature and folklore, water is the essence of the universe, as the beginning of the micro and macro cosmos; finds a place for itself in numerous genres, ranging from stories of Dede Korkut , folk tales, legends and fairy tales.

A presentation of the Turkish team

A presentation of the Romanian team

- **Design and build a hydro-mill**
  After working on the topic of hydro energy in class and some field trips students build a hydro mill (robotics).

- **Field trips to power plants and individual off-grid energy producers**

Enefit Green (Estonia)

Iru Power Plant (waste-to-energy)

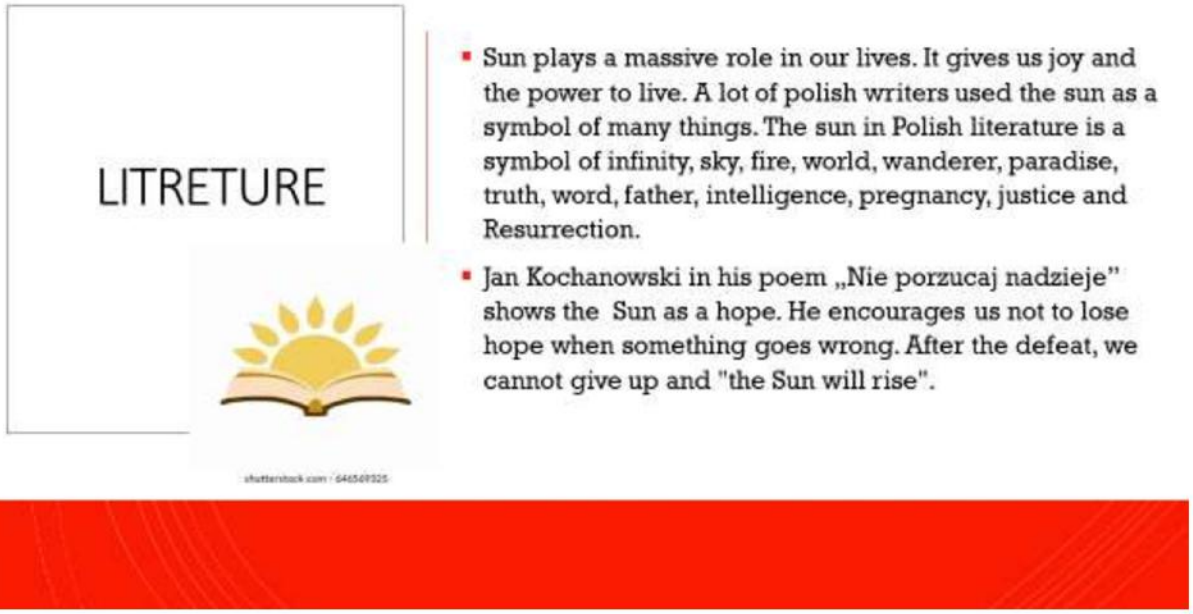
Linnamäe Hydro-electric Power Station

Off-grid energy production and storage in Clean Water Theme park in Estonia

Solar panels in Clean Water theme park in Estonia (production of energy for personal use)

Solar energy and STE(A)M

- **The sun and symbolism in art, fiction, science fiction, science, religion**
  Students do project work and make presentations on water and symbolism in art, literature, film, religion etc.



A presentation by the Polish team

- **"Home of the sun" by Kaljo Põllu**
- 1984
- Metsotinto technique

http://www.haus.ee/?c=teosed&l=et&id=16711&window=1&form=0

A presentation by the Estonian team

SUN IN ESTONIAN LITERATURE

The sun was often used as a symbol of fire in old Estonian cutlure.
It was believed to have magical powers.

A presentation by the Estonian team

Erasmus+

SUN IN ART

The sun symbol is one of the most ancient symbols in human evolution. Thousands of years ago, cultures across the globe depicted the sun as it appeared to the human eye, and according to its importance in their culture. They depicted suns using a variety of symbols and left behind many artefacts with these symbols. Crosses, circles, discs and rays are some of the most common themes.

Bronze Age Sun cross

The Sun of Macedonia

Egyptian winged Sun

Aztec Sun Stone

A presentation by the Greek team

A presentation by the Turkish team

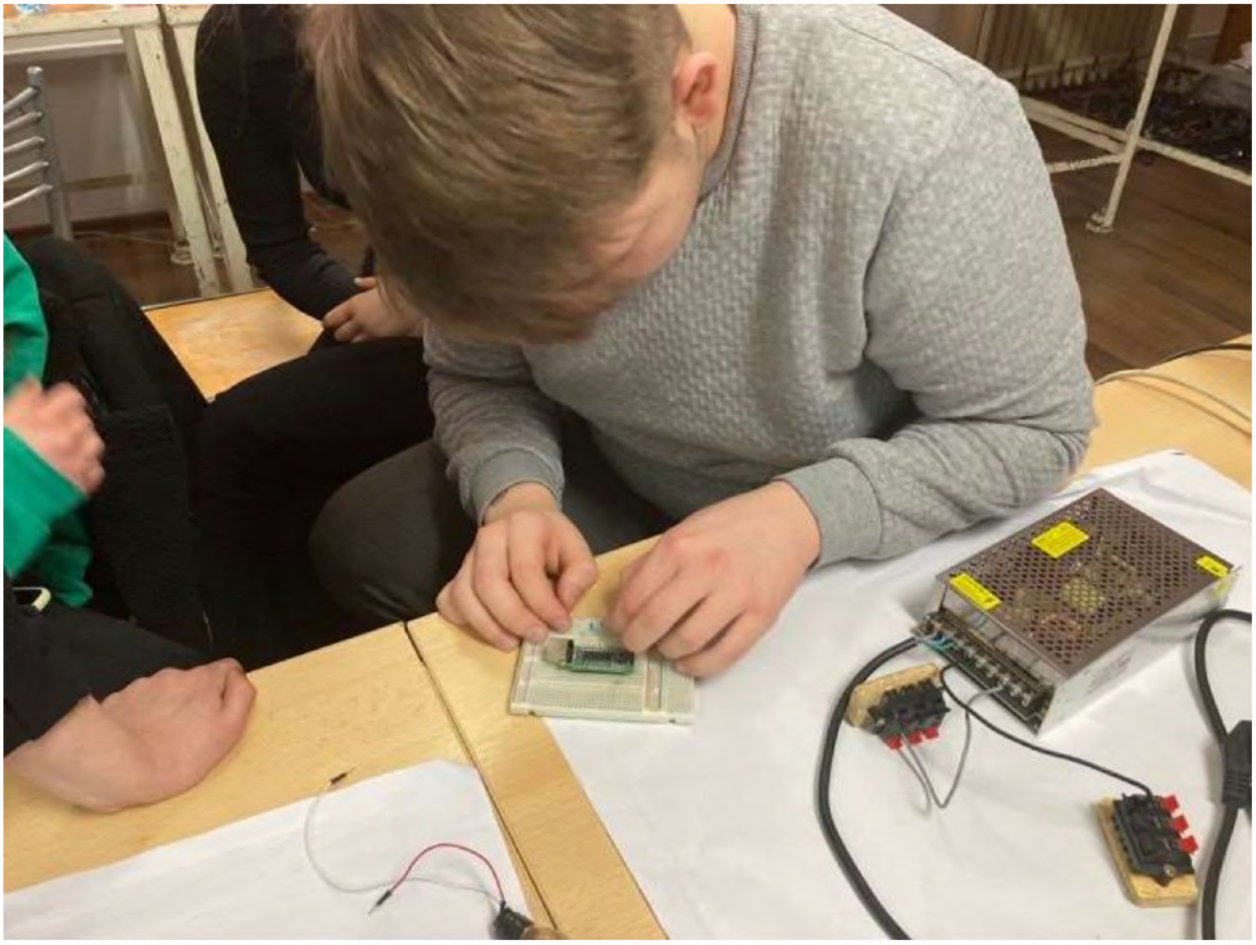
- **Field trips**
  Students see what they have learned in physics/science classes and have a hands-on experience.

A visit to the solar farm in Miroslava

A visit to the solar farm in Miroslava

- **Practical work with solar panels**
  In physics building a solar panel and testing how it works

Activities with solar panels



Activities with solar panels

- **Brainstorming – group work**
  Students work in groups and think of the advantages and disadvantages of solar energy and its use.

A poster designed in Iasi, Romania (group work)

Sustainable energy in the future – designing smart, green city models

Project-based learning

Students do research and make presentations/videos based on their research, which is followed, by group discussion and Q/A session.

A video by 1st EPAL

- **Posters**

Students design poster of sustainable cities in their art classes

A poster designed in Iasi, Romania (group work)

- **Field trips and practical workshops on site**

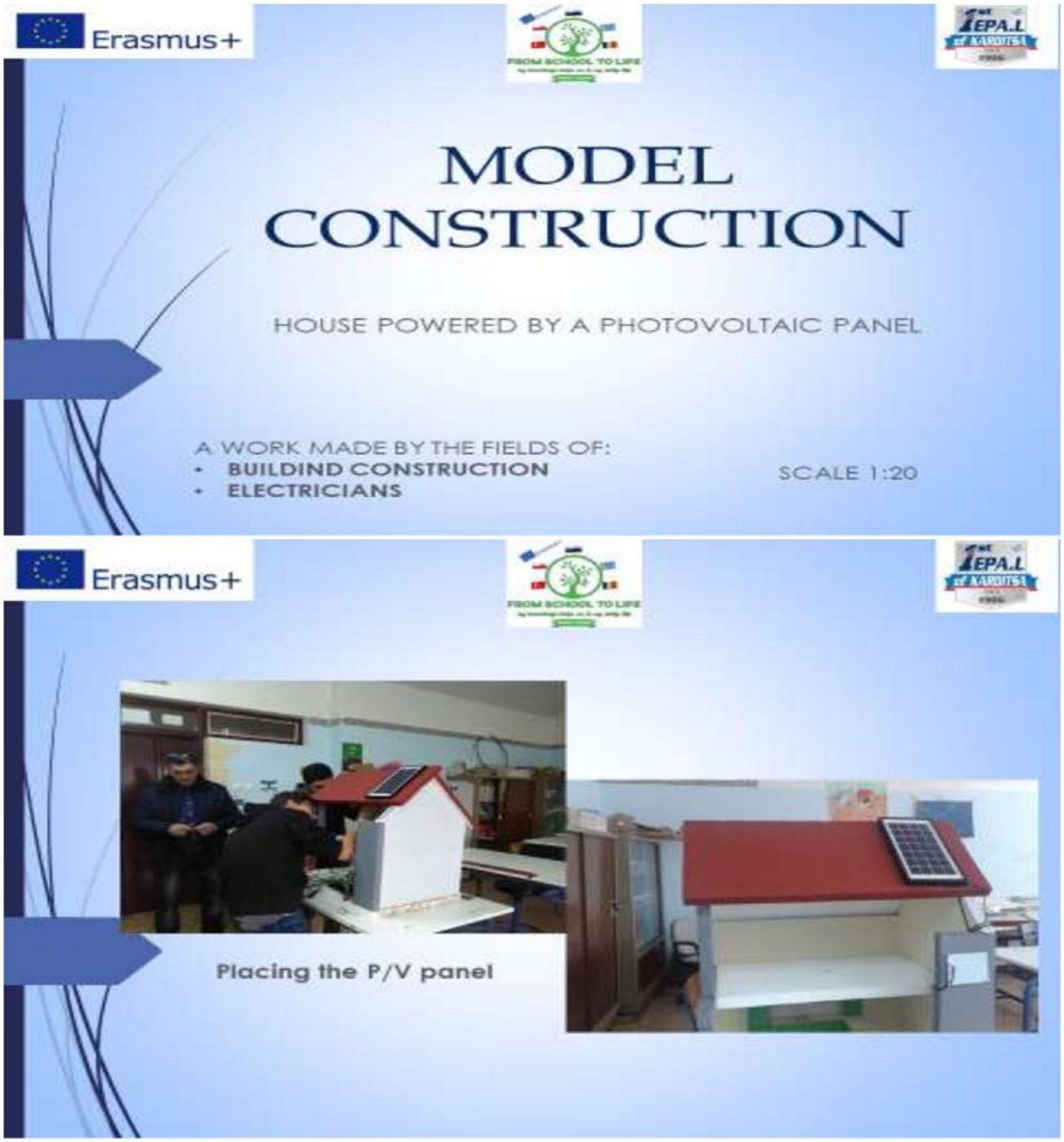
Building a sustainable house at the Centre of Environmental Education of Mouzaki

A solar cooker at the Centre of Environmental Education of Mouzaki

Testing the use of energy of household appliances at the Centre of Environmental Education of Mouzaki

A visit to the Biomass Factory

- **Building a model of a green sustainable city**
  Students use the knowledge gained from research, presentations and group work and build a model of a green sustainable city.



A presentation of the activity in Greece

A model of a green sustainable city

Acknowledgement:

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