

Didactic Scenario

1. Title

Electric energy

2. Keywords

energy, engineering, mathematics, physics, technology

3. Basic Information

STEAM Subject: Renewable energy sources- Electric energy

Typical interaction time with the instructional scenario in teaching hours for in-school work: 1 hour

General description of the scenario: Students will learn about the Sustainable Development Goals by watching a film. They discuss Goal 7: Clean and affordable energy, renewable energy sources and ways to save energy. They will learn to turn on an LED light.

<u>Phases</u>	<u>Stage</u>	<u>Time</u>
Motivation circle, warm up	preparation stage	15 minutes
Realization of the electric circuit	implementation stage	25 minutes
The activity of testing and presenting the electrical circuit	conclusion-evaluation stage	20 minutes

Age group: 8-10 years

Estimated difficulty level:

Very Easy	Easy	Moderate	Challenging	Very Challenging
		X		

Teaching resources

Material: led, batteries, battery holder, wires

School infrastructure: Interactive board, laptop, video projector

Additional material from external sources/online tools:

<https://www.youtube.com/watch?v=OhnW25dmDtQ>

https://www.youtube.com/watch?v=ry_9SU0eq9M&t=1s

Padlet, Kahoot

<https://create.kahoot.it/details/d6d216f2-b656-4a34-810c-61b1d00da3c0>

<https://padlet.com/angrot2006/energie-regenerabil-circuite-electrice-simple-yxwsxzsnybu>

Differentiated Instruction for students of differing abilities and learning styles in the same class: N/A

Developed by: Primary education professor Rotaru Angela, physics teacher

4. Educational Problem

Students will learn about sustainable development. They discuss Goal 7: Clean and affordable energy, renewable energy sources and ways to save energy. They will learn to turn on an LED light.

Students have studied renewable energy in science class, watched educational videos about energy sources, and know they can make a simple electrical circuit.

5. Learning Objective (-s)

1. Students will understand that the Sustainable Development Goals can be achieved if people want a healthier planet
2. In pairs, students make an electrical circuit to understand how an energy source works
3. To look for solutions for renewable energy sources
4. To have a responsible attitude towards the environment
5. Write a list of activities they can do to save energy

6. Phases of the Scenario

Phase 1

Title: Motivation circle, warm up

Indoor	Outdoor	Mixed
X		

Phase duration in minutes: 15 minutes

Detailed description of the scenario phase:

Students watch the film about the Sustainable Development Goals
The teacher leads the discussion on Objective 7: Clean and affordable energy, Ensuring everyone has access to affordable energy in a safe, sustainable and modern way. The demand for electricity is increasing; we as a society must be prepared and it is necessary to adapt. Sustainable energy actually means renewable energy.
After forming groups, by counting, the students are invited to make an electric mini-circuit.

Activity sheets: N/A

Phase 2

Title: Realization of the electric circuit

Indoor	Outdoor	Mixed
X		

Phase duration in minutes: 25 minutes

Detailed description of the scenario phase:

Students receive a worksheet (like the one below) and solve the proposed exercises. A student from the group presents the solution.

The correctness of the achievement is checked and noted.

Students are trained to make simple electrical circuits using 2 batteries, an LED, a battery holder and power wires

Step 1

Students receive 2 batteries, a battery holder, a light bulb.

Step 2

Show the students how to put the batteries in the holder.

Step 3

Put the black thread on the short leg and the red thread on the long leg.

Step 4

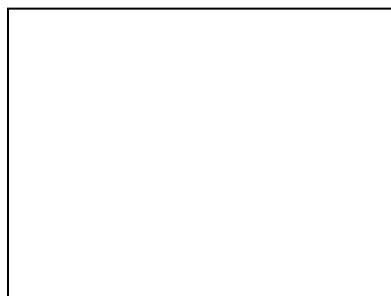
Check if all the students managed to light the light

Activity sheets:

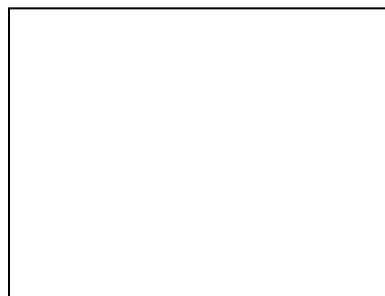
THE SIMPLE ELECTRICAL CIRCUIT

It represents, through a drawing, a simple closed and an interrupted (open) electric circuit.
Write down the component parts.

Simple closed electrical circuit



Simple open electrical circuit



Phase 3

Title: The activity of testing and presenting the electrical circuit

Indoor	Outdoor	Mixed
X		

Phase duration in minutes: 20 minutes

Detailed description of the scenario phase:

Students draw conclusions from the observations they made and present the resulting. Students receive the worksheet and solve the proposed exercises. A student from the group presents the solution.

The correctness of the achievement is checked and noted.

Activity sheets:

EXAMPLE

1. List the reasons why a light bulb does not light even though it has been correctly connected to the battery.

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2. Give examples of objects that work with electric batteries.

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3. Complete:

- The assembly consisting of the battery, wires and light bulb forms
- A light bulb illuminates if one of joins the bulb socket and of the battery, and the other connects of the light bulb and the other battery terminal.

7. Evaluation Methodology

Assessment of students' ability to make a functional electrical circuit and to present the materials used and the way of working.

8. Additional Resources for the teacher

N/A