Co-funded by the European Union
Erasmus+
NATIONAL AGENCY FOR EUROPEAN EDUCATIONAL PROGRAMMES AND MOBILITY

Exploring renewable energy sources!

SUBJECT AREAS:

Natural sciences

ACTIVITY DESCRIPTION:

Sustainability, innovation, collaboration, critical thinking, communication, action and advocacy.

OBJECTIVES:

Students will understand renewable energy sources and their importance in sustainability.

MATERIALS:

Visual aids (posters, videos) illustrating renewable energy sources, articles or case studies on renewable energy, writing materials for students, computers or tablets with internet access.

GRADE/LEVEL:

Upper Elementary School (12-14)

DURATION:

Preparation time: 1 hour

Activity time: 40- 60 min.

PLACE:

Classroom

AUTHOR:

SYNTHESIS Center for Research and Education

INTRODUCTION:

In this lesson, students will embark on an exploration of renewable energy, delving into sustainable alternatives to conventional fossil fuels. Renewable energy sources hold immense promise in mitigating climate change and fostering a cleaner, more sustainable future for our planet. From harnessing solar and wind power to tapping into geothermal resources, renewable technologies offer innovative solutions to our energy needs while reducing harmful emissions.

BACKGROUND:

The background for the lesson on renewable energy involves introducing secondary education students to the concept of sustainable energy sources and their importance in addressing environmental challenges. This includes highlighting the need to transition from fossil fuels to renewable energy sources to mitigate climate change and reduce greenhouse gas emissions. Additionally, setting the context for exploring renewable energy involves discussing the benefits of renewable energy, such as sustainability, energy independence, and economic growth.

Procedure:

1. Introduction (10 minutes):

Discuss the concept of renewable energy and its significance in reducing environmental impact.

Present visual aids showing examples of renewable energy sources.

2. Instruction (15 minutes):

Provide an overview of different types of renewable energy sources, such as solar, wind, and hydroelectric power.

Discuss the benefits of renewable energy, including sustainability and reduced carbon emissions.

3. Guided Practice (20 minutes):

Divide students into small groups and assign each group a specific renewable energy source to research.

Instruct students to research their assigned energy source and discuss its advantages and limitations.

FUN FACTS:

- *Did you know that wind turbines can rotate at speeds of up to 200 miles per hour? That's enough to generate electricity to power thousands of homes!*
- *Solar energy is the most abundant energy resource on Earth, with enough sunlight hitting the planet in one hour to power the world for an entire year.*
- *Hydroelectric power, generated from flowing water, has been used for centuries, with the earliest water wheels dating back to ancient Greece and Rome.*
- *Biomass energy, derived from organic materials like wood and agricultural waste, has been used for cooking and heating purposes for thousands of years and is now being harnessed to generate electricity.*
- *Geothermal energy taps into the Earth's heat stored beneath the surface, providing a constant and reliable source of power in regions with volcanic activity.*

ASSESSMENT:

4. Formative Assessment (10 minutes):

Have each group present their research findings to the class.

Encourage class discussion on the potential of renewable energy to address climate change.

EVALUATION:

Teachers may observe students' engagement and participation during discussions and activities, noting their ability to comprehend and apply renewable energy concepts. Formative assessment techniques, such as questioning and peer discussions, provide opportunities for students to articulate their understanding and clarify any misconceptions. Performance tasks, including group presentations and case study analyses, allow for the assessment of critical thinking skills and the synthesis of information related to renewable energy.