The PHYSICS / EARTH SCIENCE lesson plan provides teachers and students with the opportunity to investigate the impact climate change is having on the environment through classroom activities.

**SUBJECT MATTER ( SCHOOL DISCIPLINE / LEARNING AREA)**– The PHYSICS / EARTH SCIENCE

**LESSON**- Energetic resources of the planet – renewable vs non renewable

**OBJECTIVE -** Integrating environment and climate change subconsciously to the learning outcome *Energetic resources of the planet – renewable vs non renewable* using digital games' web 2.0 tools. Thus, the students will be able to learn about *Energetic resources of the planet – renewable vs non renewable,* consciously while they are raising awareness on the environment and climate change subconsciously using digital games. These games can be applied to indoor and outdoor learning environments, distance and traditional (face-to-face) classrooms.

**Learning Objectives of the lesson:**
Upon completion of this lesson, students will be able to:
**- Know how to differentiate between renewable and non-renewable energy resources**
**- Classify resources as renewable or non-renewable**
**- Explore the advantages of renewable energy**
**-Understand the origins and uses of different energy resources**
**- Develop innovative solutions for renewable energy.**

**Learning outcomes and environmental awareness and climate change implications -** understand how human and physical processes interact to influence, and change landscapes, environments and the climate; and how human activity relies on effective functioning of natural systems by the identification of renewable and non-renewable energy resources that are

important in the environment, and also their effect upon climate change and environment. The outcome is to assess their impact on a local environment.

**Description of the game and activities and technical specs**: The digital game will consist of identifying and classifying types of energy resources, used to supply electricity, fuel, and heat needed to live day to day, as each source comes with environmental and sustainability issues. The purpose of the game is to enable students to discuss ethical and social issues on environment and climate.

**Key points for the teacher to underline:** the process of attaining energy from a resource, and how this affects the environment; teach students how to contrast the impacts of certain energy sources; how to identify energy sources and describe how they are used; how to convert sources of energy to useful forms; how to identify renewable and non – renewable resources ( definitions and differences).

## INSTRUCTIONS/ PROCEDURES

**Teacher- Question 1 – How do we get our energy ?**

The teacher explains the term „energy''- the capacity or ability to perform work, which is significant in causing anything to move within nature; and also what types of energy are there, where it comes from, why it is necessary, and how it is important in natural systems ( e.g. students are introduced to the five types of renewable energy resources by engaging in various activities to help them understand the transformation of energy (solar, water and wind) into electricity); explain about the many sources of energy human rely upon and how we convert them into forms that we can use for practical purposes.

**Activity 1**

The digital game is designed for the students to identify and match the names of the sources of energy: the Sun, water, biomass, fuels, wind etc.

**Web 2.0 tool digital game model**: word puzzle
https://learningapps.org/display?v=p6fi4ydok21

**Teacher – Question 2 –What are renewable and non – renewable energy resources?**

The teacher explains the difference between renewable and non-renewable sources, ways they use energy in everyday lives, and ways to conserve energy; explains how to assess the impact on society and the environment of the use of various renewable and non-renewable energy sources, and propose a plan to reduce energy consumption ( e.g.

**Activity 2**

This digital game is designed to challenge students to categorize a list of sources of energy (water, wind, coal, natural gas, etc.) into the correct categories of renewable and non-renewable energy.

Web 2.0 tool digital game model: group assignment
https://learningapps.org/display?v=pjywwvdpj22

**Teacher - Question 3 – What are the advantages and disadvantages of using renewable and non – renewable resources?**

The teacher explains positive and negative aspects of each energy resource ( environmental, social, economical, such as whether they are expensive to build, reliant on certain weather conditions or whether they have negative impacts on local wildlife ( e.g. for the renewable source solar energy the environmental advantages are: no carbon emission, no pollution or dirty air, the social / cultural advantages are: people can go in control of their own energy supply; the economic advantages are: becoming less expensive with better technology, while disadvantages can be: environmental- can be intermittent and unreliable; social / cultural – not every one; economic – storing energy from solar can also be expensive.)

**Activity 3**

The teacher will describe the following digital game – Explore the station labs! – there will be two teams of students, each of them exploring a station lab: one of non renewable energy resources, and the other of renewable energy resources. Each team interacts with labels as they try to identify the types of renewable or non-renewable resources. Students will follow the steps and complete their observations on their lab sheet, using the labels.

Web 2.0 tool digital game model: cloze text https://learningapps.org/display?v=p69j251ra21

**Follow -up discussion**

To check students' understanding of definitions of renewable and non-renewable resources.: To assess their intake of information to ensure they took notes and have an understanding of energy production, consumption, and conservation with respect to a variety of renewable and non-renewable sources;

**Assessment/ Evaluation**

Upon completion of the three activities, ask students to create a brochure that persuades people in their community to conserve energy.