Plan de activitate

Titlu	**Learn to save electricity**
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Introducere	Saving electricity is crucial for sustainable development for numerous reasons. Firstly, lower electricity usage translates to reduced energy bills, which can lead to significant savings over time. This is especially important for households and businesses looking to manage their expenses more effectively. Youngsters need to learn early on effective ways of preserving electricity, becoming aware of the negligence they may manifest when wasting electricity. Moreover, students have to discover that by using less energy, communities can become less reliant on foreign energy sources, enhancing national energy security and stability. We have all lived since the beginning of the Russian invasion in Ukraine the energetic crise that implies constant increasing electricity prices all over Europe, generating discussions regarding an unhealthy dependence on imports and the necessity to produce more inexpensive electricity internally. Additionally, it is vital for students to realize that lowering electricity demand can help alleviate strain on the electrical grid, reducing the likelihood of blackouts and improving the overall reliability of energy supply. We are more and more dependent on technology and appliances in our everyday interactions and all of them use electricity to charge so the possibility of a worldwide blackout is a real threat that experts have been warning about. Finally, students will also understand that they will be responsible for their lives as well and that when demand for energy decreases, it creates a more favourable environment for the adoption and implementation of renewable energy sources, which are key to a sustainable future. Solar energy harnessed from sunlight using solar panels or photovoltaic cells can be used for generating electricity directly or for heating applications; wind energy- Wind turbines convert the kinetic energy of wind into electrical energy; hydropower produced by harnessing the energy of flowing water, typically from rivers or dams can be a significant source of electricity, especially in areas with substantial water resources.

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Rezultate	This lesson plans aim to make students aware of the challenges of saving electricity, preventing wastage at a global and local level and the alternative ways of reducing costs wen producing electricity Objectives or Learning Outcomes Students will be able to: • understand the importance of saving electricity. . learn how to save electricity • develop their research, presentation and digital skills. • make conscious choices related to electricity usage and production. • promote active citizenship.
Durata	150 minutes (3 50’ classes)
Metode	Resources: pictures presenting various instances of electricity waste; reading materials about renewable resources, PPT presentation, videos about how electricity is currently produced with benefits and drawbacks
Descrierea activității	Session 1 (50’): Students conduct research in small groups about electricity usage in general and particular at school. Then, students present their results as PPTs. Finally, students post their research on the official FB page that has been previously created. In the group discussions they will be required to identify situations that involve electricity waste and ways to reduce or eliminate it, listing them as well in a PPT that will also be uploaded to the official FB page. •The teacher projects different pictures related to electricity usage and asks students about activities that use electricity at school as well requesting them to also name instances of electricity waste as well and how they can be prevented. •The teacher writes students' ideas in a projected padlet. . The teacher sets up an official FB page entitled: Learn how to save electricity •The teacher asks students to establish the relationship between the waste rate and the electricity consumption as homework Session 2 (50’) . The teacher checks the students’ ideas regarding the relationship between the waste rate and the electricity consumption frontally then asks them to form groups

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	•Students form groups of 4/5 and the teacher asks students to research about currently producing energy, electricity usage, electricity waste and its prevention, alternative electricity resources. The teacher must refer them to reliable sources for this research providing some accurate links. •Students are asked to enlist ways of producing electricity with advantages and disadvantages, to suggest ways to reduce electricity consumption and waste and to devise a guide with the most efficient information about electricity for students Session3 (50') •Students present the results of their work to the others in the form of PPTs, followed by frontal discussions •The results are disseminated to the official FB page of the activity
Evaluare	**How is electricity curently produced?** It is produced through fossil fuels (the most common method globally) Power plants burn coal, natural gas, or oil to create steam, which drives turbines connected to generators. Nuclear Power: Nuclear reactors use fission—the splitting of atomic nuclei (typically uranium or plutonium)—to produce heat. This heat generates steam, which turns turbines and produces electricity. Hydropower: Water flowing from higher elevations to lower elevations is harnessed to turn turbines in hydroelectric dams. The kinetic energy of the flowing water is converted into mechanical energy, which is then converted to electricity. **What are alternative types of electricity?** Wind Power: Wind turbines capture the kinetic energy from wind. The wind turns the blades of the turbine, which spins a rotor connected to a generator that produces electricity. Solar Power: Solar panels (photovoltaic cells) convert sunlight directly into electricity. Geothermal Energy: This method utilizes heat from the Earth's interior. Hot water or steam from underground reservoirs is brought to the surface to drive turbines or generate electricity. Biomass: Organic materials, such as plant and animal waste, can be burned or converted into biofuels to produce electricity. Biomass plants often use the combustion process to generate steam for turbines. Tidal and Wave Energy: These methods harness the energy of ocean tides and waves to generate electricity. Turbines or other mechanisms convert the energy from moving water into electrical energy.

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What is electricity waste? Idle Power Consumption: Devices that remain plugged in but are not being actively used, such as chargers, appliances, and electronics, can still draw a small amount of power Lighting Waste: Leaving lights on in unoccupied rooms or using inefficient lighting solutions can lead to excessive electricity use without a corresponding benefit.
Power Factor Issues: In industrial settings, the power factor can lead to wasted electricity where the actual power used is less than the apparent power supplied, often caused by inductive loads like motors.
Overcooling or Heating: AC systems that run inefficiently, such as those set at unnecessarily low temperatures in summer or high temperatures in winter
Why is reducing electricity waste important? Reducing electricity waste is important for both economic and environmental reasons, as it leads to lower energy bills and reduced greenhouse gas emissions associated with electricity generation. Measures to reduce waste include using energy-efficient appliances, implementing smart home technologies, improving insulation, and promoting habits that minimize unnecessary power consumption.

What are the ways to reduce or stop electricity waste?

1. **Unplug Devices**: Disconnect chargers, appliances, and electronic devices when they are not in use
2. **Use Energy-Efficient Appliances**: Replace old appliances with ENERGY STAR-rated models that consume less electricity while providing the same level of performance.
3. **Install LED Lighting**: Switch to LED bulbs, which use significantly less energy and have a longer lifespan than incandescent or fluorescent bulbs.
4. **Implement Smart Thermostats**: Smart thermostats can automatically adjust heating and cooling based on occupancy and preferences, optimizing energy usage.
5. **Seal Leaks and Insulate**: Improve insulation in homes and buildings to reduce the need for heating and cooling.
6. **Use Timers and Sensors**: Install timers or motion sensors for lighting and appliances to ensure they are only on when needed.
7. **Regular Maintenance**: Service heating, ventilation, and air conditioning (AC) systems regularly to ensure they operate efficiently. Clean or replace filters as needed.
8. **Change Habits**: Encourage energy-saving behaviors such as turning off lights when leaving a room, using natural light during the day, and running appliances (like dishwashers and laundry machines) during off-peak hours.

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	9. **Optimize Usage of Electronics**: Set computers, televisions, and other electronics to sleep mode when not in use, and avoid leaving them on unnecessarily. 10. **Use Solar Power**: Consider installing solar panels to generate your own electricity, which can reduce reliance on the grid and lower energy costs over time.
Concluzii	The 3 50'classes dedicated to the importance of electricity in terms of production, waste and preventing waste are meant to raise students' awareness and knowledge regarding an important part of their life which has been dependant on electricity practically since birth. By realizing the implications of the way electricity is produced nowadays, both their advantages and disadvantages, the necessity to cut costs and come up with other more efficient productive ways as long as we all become aware of the instances of waste and how we can prevent it.