



TITLE: RENEWABLE ENERGY: BUILDING A SOLAR OVEN AND WIND TURBINE

GRADE LEVEL: 5TH AND 6TH GRADE

STEAM AREAS: SCIENCE, TECHNOLOGY, ENGINEERING

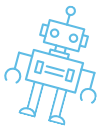
MATERIALS NEEDED:

- PIZZA BOX;
- ALUMINIUM FOIL;
- CLING-WRAP;
- NEWSPAPER;
- TAPE;
- BLACK PAPER;
- RULER;
- MARSHMALLOWS;
- HOT GLUE;
- SMALL MOTOR;
- LED, WOODEN FRAME, DRILL



OBJECTIVES:

- STUDENTS WILL UNDERSTAND THE BASICS OF RENEWABLE ENERGY AND ITS IMPORTANCE IN TACKLING CLIMATE CHANGE.
- THEY WILL BE ABLE TO BUILD A SOLAR OVEN AND A WIND TURBINE, DEMONSTRATING THEIR UNDERSTANDING OF HOW SOLAR AND WIND ENERGY WORKS.



PROCEDURE:

- START OFF THE LESSON BY DISCUSSING THE IMPORTANCE AND NECESSITY OF RENEWABLE ENERGY SOURCES TO COUNTER CLIMATE CHANGE. EXPLAIN HOW THESE SOURCES CAN PROVIDE CLEANER AND MORE SUSTAINABLE POWER, COMPARED TO TRADITIONAL ENERGY RESOURCES;
- EXPLAIN THE CONCEPT OF A SOLAR OVEN AND HOW IT UTILIZES SOLAR ENERGY BY TRAPPING HEAT. EXPLAIN THE MATERIALS REQUIRED FOR BUILDING A SOLAR OVEN - A PIZZA BOX, ALUMINUM FOIL, CLING WRAP, BLACK PAPER, RULER, AND MARSHMALLOWS;
- GUIDE STUDENTS THROUGH THE PROCESS OF BUILDING THE SOLAR OVEN. FIRST, INSTRUCT STUDENTS TO CUT A SQUARE FROM THE TOP OF THE PIZZA BOX AND COVER IT WITH ALUMINUM FOIL AND CLING WRAP. THEN, LET THEM LINE THE INSIDE OF THE BOX WITH BLACK PAPER TO ABSORB HEAT. TO INSULATE THE BOX, HAVE STUDENTS WRAP NEWSPAPER AROUND THE OUTSIDE. FINALLY, PLACE A MARSHMALLOW INSIDE AND POINT THE BOX TOWARD THE SUN;

Procedure:

- After the solar oven, introduce students to wind turbines. Explain how wind turbines use wind to generate electricity and discuss the materials needed for this project - hot glue, blades (which can be homemade), a small LED, and a motor;
- Guide students in the construction of the wind turbine. Have them securely attach the blades to the motor using hot glue. The motor should then be glued to a stable structure. Provide a demonstration of the wind turbine by having the wind spin the blades and power the LED;
- Finally, demonstrate how solar panels can supply electricity to make the wind turbines turn, thus creating a sustainable energy source system.

This procedure incorporates real-life applications, hands-on activities and strategic discussions to create a comprehensive lesson on renewable energy sources.

Assessment: Students will be evaluated on their constructed solar oven and wind turbine - their functionality and correct assembly. Understanding of renewable energy basics and application will also be tested.

References:

- <https://www.youtube.com/watch?v=Jv8Qsee9ESY>
- <https://www.qvmag.tas.gov.au/home>
- <https://www.homesciencetools.com/>