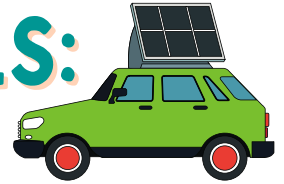


WHEELS AND SOLAR PANELS: UNVEILING THE SECRETS



Welcome to the exciting world of solar-powered transportation! In this activity, we will embark on a journey to explore the inner workings of the SunnySide Up solar car kits from Sunwindsolar.com. Through hands-on activities and engaging discussions, we will unravel the mysteries behind these innovative vehicles and discover how they harness the power of the sun to move.

STEAM CONNECTION

- Science (Solar energy)
- Technology (use of solar energy for motion)
- Engineering (Assembly & testing of cars)
- Math (Measurements)

Objectives

- Participants will be able to identify the critical components of the solar car.
- Participants will understand how each component contributes to the operation of the solar car.

Materials

- [SunnySideUp Solar Car](#)

Vocabulary

1. **Photovoltaic Cell:** [fō-tō-väl-'tā-ik] A device that converts light energy (photons) into electrical energy (voltage and current), commonly used in solar panels to generate electricity.
2. **Solar Panel:** A collection of photovoltaic cells connected together to capture sunlight and convert it into usable electrical energy.
3. **Solar Car:** A vehicle powered by electricity generated from sunlight, typically using a solar panel to charge a battery that powers an electric motor.
4. **Axle Shaft:** A rod or spindle that connects the wheels of a vehicle to its body, allowing them to rotate and transmit power from the motor.
5. **Pulley:** A wheel with a grooved rim and a rope, belt, or chain passing over it to change the direction or magnitude of a force applied to it.
6. **Elastic Band:** A stretchable loop made of elastic material, often used in solar cars to transfer mechanical energy from the motor to the wheels.
7. **Motor:** A device that converts electrical energy into mechanical energy, used in solar cars to drive the wheels and propel the vehicle forward.

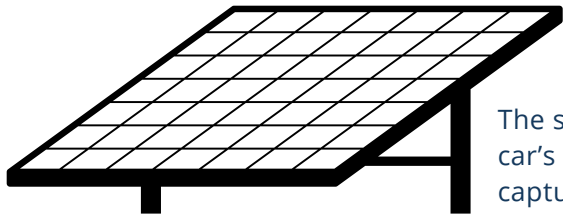
Introduction (5 minutes):

- Gather the students in a designated area where they can comfortably view the visual aids and interact with the solar car.
- Introduce the key components of the solar car: axle shaft, pulley, solar panel, wheel, elastic band, and motor.
- Display the visual aids and encourage students to identify each part of the solar car kits provided.
- Facilitate a discussion using cue cards to explain the purpose and function of each component, highlighting their roles in making the solar car operate.
- Allow students time to observe and visually find all of the parts of the solar car.

Solar Power

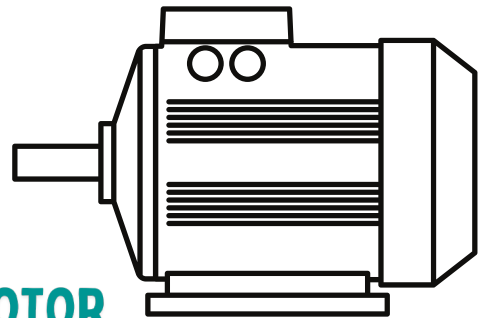
- Gather the students in a designated area where they can view the “Solar Power” poster.
- Introduce the key components of the poster, the Sun, and the Solar Panel.
- Facilitate a discussion using how the sun turns into energy to power the car.

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SOLAR PANEL

The solar panel is like the car's power source. It captures sunlight and turns it into electricity. Just as the sunlight gives us energy, the solar panel gives energy to the car.



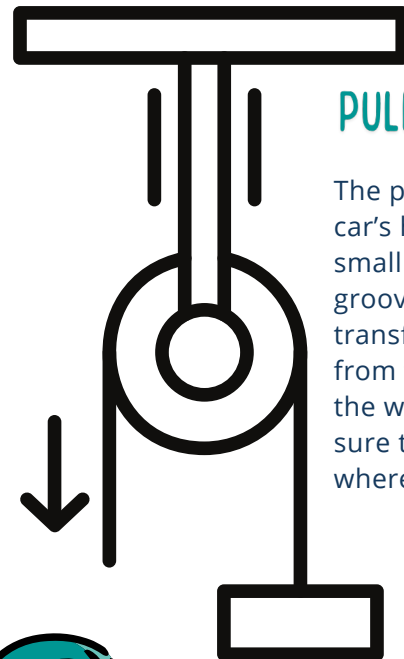
MOTOR

The motor is like the car's engine. It takes the electricity from the solar panel and uses it to make the wheels turn. Without the motor, the car wouldn't be able to move.



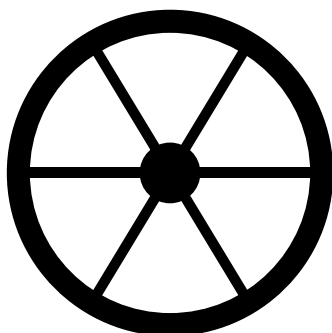
AXLE SHAFT

The axle shaft is like the car's backbone; it connects the motor to the wheels. When the motor turns, it makes the axle shaft turn, making the wheels spin.



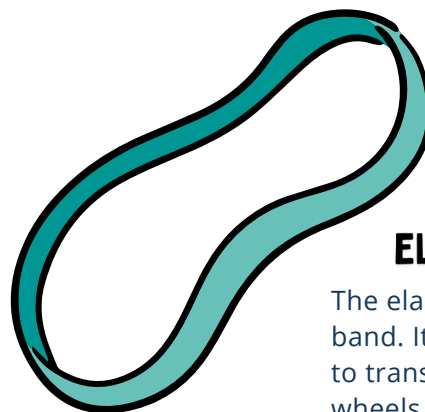
PULLEY

The pulley is like the car's helper. It's a small wheel with a groove that helps to transfer the power from the motor to the wheels. It makes sure the power goes where it needs to go.



WHEEL

The wheels are like the car's feet. They touch the ground and help the car move forward. When the motor turns, it makes the wheels spin, just like when we walk, our feet move us forward.



ELASTIC BAND

The elastic band is like the car's rubber band. It wraps around the pulley and helps to transfer energy from the motor to the wheels. It's stretchy, so it can store some energy and release it slowly to keep the car moving smoothly.

SOLAR POWER

A long time ago, even before dinosaurs roamed the Earth, the Sun started making energy deep inside it. This energy travels from the Sun to us as sunlight.

When the sunlight finally reaches us after a super fast trip, it has different kinds of light in it. Some we can't see, like ultraviolet light, some we can see, like the colors of a rainbow, and some we can feel as heat, like when you stand in the sun and feel warm.

On Earth's surface, for every square meter, it's like having a small amount of power, kind of like a tiny engine running.



EARTH

Our clock time is measured by the Earth's rotation: at noon we are facing the sun directly.



Solar panels have special parts called photovoltaic cells. These cells take sunlight and turn it into electricity. Imagine them like tiny power factories.

When sunlight hits these cells, it makes the electrons inside them excited. Some of these electrons get so excited that they jump around. This jumping creates a flow of electricity, like magic!

We can connect wires to these cells and use the electricity to power things, like a motor. The motor works by using magnets and coils to make things move. When the motor spins, it can make wheels turn, just like in a car.

When sunlight keeps shining on the solar panels, it keeps making electricity. So, as long as the sun is out, our gadgets can keep working!

