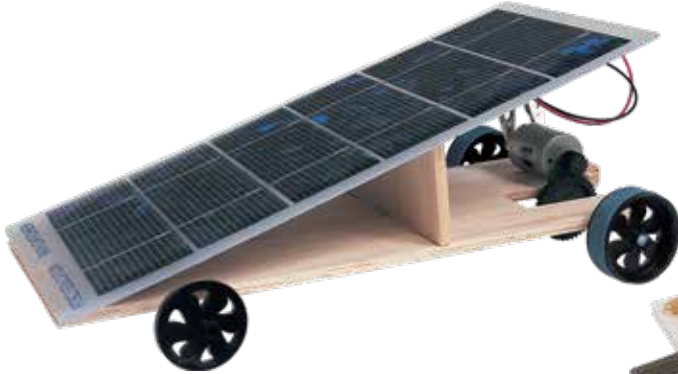


Ray Catcher®

Grades 6+ | Students Served: 30

MIDDLE LEVEL

HIGH SCHOOL



Essential Questions


How do solar cells convert the sun's energy into electricity?

What are the disadvantages of solar power?

How can solar power be used in future inventions?

Career Connections:

- Scientific Researcher
- Solar Power Plant Operator
- Photovoltaic Panel Installer
- Electrician

 Cancer and reproductive harm – www.P65Warnings.ca.gov

STEM Connections

Science

- Photovoltaics
- Force and motion
- Energy and power

Technology

- Systems
- Problem solving
- Social impacts

Engineering

- Technological design
- Data analysis and predictions
- Electric power

Math

- Ratios
- Graphing data
- Measurements

Sample Activity

Solar Problem Solver

Challenge

Students construct a Ray Catcher, race their vehicles, and then make modifications to improve vehicle performance.

- After Ray Catchers are constructed, students will record each vehicle's speed over a 20-meter distance.
- Students are then challenged to improve the vehicle's performance. The first step of this process involves students submitting a list of proposed modifications for factors such as:
 - Gear ratios.
 - Angles and positions of the solar panel.
 - Wheel traction and friction reduction.
 - Vehicle aerodynamics and vehicle mass.
 - Solar collectors or reflectors.
- A time frame of three to five days can be provided for students to experiment, record observations and data, and rebuild their vehicle to improve performance. Timed races are held again, and scores can be given based on a percent-improvement rubric.

Discussion

Were the times of the classes improved in the second race compared to the first race? What changes were made?

