

ES5 Grade 5: Environmental Sustainability: Energy

Content Area: **Generic Content Area**
Course(s): **Generic Course**
Time Period: **Generic Time Period**
Length: **45 days**
Status: **Published**

Established Goals/Standards

SCI.MS-ETS1-3	Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.
SCI.MS-ETS1-1	Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
SCI.MS-ETS1-4	Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.
SCI.MS-ETS1-2	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
SCI.MS-PS3-2	Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.
SCI.MS-PS4-2	Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.

Essential Questions

- How do we measure the amount of light we need in a classroom?
- How is electricity generated?
- How much energy do we use?
- Is there a way to use less energy?

Enduring Understanding

- Electricity is generated by spinning a magnet around conducting wires.
- Energy is neither created nor destroyed, it just changes form.

Content

Student groups are assigned a specific method of generating electricity and create a presentation. Generating methods include:

Hydrothermal
Geothermal
Fossil Fuel
Biomass
Solar

Wind
Nuclear
Tidal

Students learn how to use the equipment to conduct an energy audit of the classrooms. Students conduct audits.

Students learn how to create a bottle garden and grow kale, lettuce, etc. to feed worms.

Students learn about composting ~ how to maintain a productive compost pile.

Resources

Solar inventions based on Sunflower plants ~ Amazon Prime movie: Xploration Nature Knows Best season 2 episode 8. 16:30 to 20:46 panels follow the arc of the Sun all day, close at night. Brushes clean the panels while it is opening and closing.

YouTube videos about composting.

Google Drive directions for energy presentations