

Soil Power Lab: Renewable Energy Toolkit

1. Mud Battery Build Guide

Materials:

- 2 plastic cups or yogurt containers
- Alligator clips / wires
- LED bulb or mini digital clock
- Copper wire (or copper strip)
- Zinc strip or galvanized nail
- Garden soil (moist)
- Water, optional salt

Instructions:

1. Fill two cups with moist soil.
2. Insert copper wire into one side of each cup and zinc nail into the other.
3. Connect the zinc of one cup to the copper of the next with a wire.
4. Connect the ends to an LED or digital clock.
5. Watch it light up!

2. Solar Oven Step-by-Step Sheet

Materials:

- Pizza box or cardboard box with lid
- Aluminium foil
- Black paper or fabric
- Plastic wrap or clear plastic sheet

- Tape, scissors
- Plate, marshmallows, chocolate

Instructions:

1. Cut a flap in the lid (3 sides only).
2. Cover inside of flap with foil.
3. Line bottom with black paper.
4. Cover opening with plastic wrap.
5. Place food inside and angle flap toward sunlight.
6. Wait 30-60 minutes and observe.

3. Energy Discussion Prompt Cards

Use these questions to deepen conversations:

- How does mud make electricity?
- Why does black paper heat faster?
- Could we power a toy car with soil?
- What other ways does nature produce energy?

4. Soil Power Lab Data Recording Chart

Create a table with these columns:

- Date
- Weather (Sunny, Cloudy)
- Soil Type (Dry, Wet, Compost)
- LED Status (On/Off)
- Notes

Use it to track and compare results from different experiments!

5. Compost Tracker & Sun vs Mud Scoreboard

Bonus Pages:

- Compost Challenge Tracker:

Record types of scraps (banana, rice, paper) and monitor how fast they decay.

- Sun vs Mud Scoreboard:

Create a chart to compare power output and melting success. Let kids vote for best design!