HOMESCHOOL SCIENCE

Name: _____ Date: _____

Making a Solar-Powered Irrigation System Model

You will build a model that uses solar energy to pump water and water plants—just like a real irrigation system!

OBJECTIVE

To understand how solar energy can be used to pump water and support plant growth.

MATERIALS

- Small solar panel (6V)
- Water pump (DC, 3–6V)
- Plastic cup or small container
- Clear tubing
- Drip emitter or small pin (to make tiny holes)
- Small tray or shallow box
- Soil
- Small plants or seeds
- Wires with alligator clips
- Scissors
- Hot glue gun or tape
- Cardboard or foam board (for base)
- Water

PROCEDURE

1. **Build the Base:** Use cardboard or foam board as the base for your model.
2. **Set Up the Water Source:** Fill the cup or container with water. Place the water pump inside.
3. **Connect the Tubing:** Attach one end of the clear tubing to the pump outlet.
4. **Make a Drip Line:** Poke small holes in the tubing using a pin, or attach a drip emitter. This will let water drip out slowly.
5. **Set Up the Plant Area:** Fill the tray with soil and plant your seeds or place small plants in the soil.
6. **Position the Drip Line:** Place the tubing over the plant area so the water drips onto the soil.
7. **Connect the Solar Panel:** Use alligator clip wires to connect the solar panel to the water pump (match + to + and − to −).
8. **Test It:** Place the solar panel in direct sunlight. The pump should start working and water should drip onto the plants.
9. **Adjust and Observe:** Adjust the tubing or drip rate if needed. Observe how your system works.

THE SCIENCE BEHIND IT

Solar panels convert sunlight into electrical energy. The electricity powers the water pump. The pump moves water through the tubing, and the drip system delivers water slowly to the plants. This helps plants get water efficiently without wasting it.

OBSERVATIONS

Record your observations below.

Time	Sunlight Condition	Is the Pump Working?	Water Dripping?	Notes
_____				
_____				
_____				

THINK & REFLECT

1. What happened when the solar panel was in the sun? _____
2. What happened when the solar panel was in the shade? _____
3. How does this system help save water? _____
4. Where could this type of system be used in real life? _____
5. What would you improve or change about your model? _____

ECO TIP: Using solar energy for irrigation can help farmers save water and reduce electricity use.