



Understanding the Nature of Electricity Design Challenge

DESIGN CHALLENGE Notes:

This design challenge explores how electricity transmits

Problem: We need to be able to understand how electricity interacts in matter as it can be dangerous.

Challenge: Using a just basic understanding of electricity create an experiment that demonstrates how electricity creates heat.

Materials:

We need a computer for research

We need a whiteboard or big paper pads

We need wire coat hangers

We need a 9-volt battery

We need a heating element hotplate

Brainstorm:

1. What is heat?
2. Is heat a form of light?
3. Does heat radiate?
4. Is all heat hot?
5. Why does metal get hot?
6. What is a conductor? What is a resistor?

Design/Build:

1. Design an experiment to determine why friction makes things hot
2. Make sure you can determine EXACTLY how much energy is in that wire
3. Determine a way to test the conductivity of your "wire"

Test:

- What happens when you try your design?
- Did you have a failure? Why?
- Can we tell it is working? How?
- Did you notice the heat differences?

Evaluate:

- How will you record your results?
- How will you know it is working?
- What would you modify to test your results?
- What would you do differently?

Share:

- Record your tests on a chart.
- Which material gets hotter? What works better?
- Is this always true?
- How did you know?