



Understanding the Physics of Electricity Design Challenge

DESIGN CHALLENGE Notes:

This design challenge explores how electricity actually works

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

Challenge: Using a just basic understanding of electricity create a system that models how electricity flows in wires.

Materials:

We need a computer for research

We need a whiteboard or big paper pads

We need a source of controllable water pressure

We need a series of hoses of different diameters

We need duct tape

We need warm NOT hot water

We need weights of various sizes

We need a scale weighing mass

Brainstorm:

1. What is current?
2. What is power?
3. Why does electricity travel in waves?
4. Do the waves of electricity travel in or around wires?
5. Why do wires have diameters?

Design/Build:

1. Design a n experiment to determine what amps, volts, currents and watts are
2. Make sure you can determine EXACTLY how much water/electricity is in that wire
3. Determine a way to add a resistor that does not short-circuit your "wire"

Test:

- What happens when you try your design?
- Dis 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 wire works better?
- Is this always true?
- How did you know?