

HUMAN INGENUITY
TOPIC: Electricity and Inventions



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OVERVIEW:

During this topic the children will learn all about electrical power. In our first week back we will be focusing on how electricity is created, how it gets to our homes and what it is used for. Following this, their invention challenge will be to design a circuit using the correct symbols and then test materials' ability to conduct electricity. Finally we'll design and build a working circuit that will form part of a robot.

Then we move on to learn about inventors and scientists such as: Alan Turing, Alexander Fleming, Charles Babbage, Rosalind Franklin, Thomas Edison, Tim Berners.

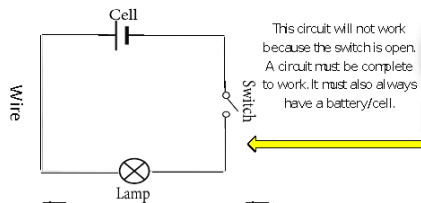
Supporting Texts:
 The Wild Robot – Peter Brown



Knowledge:

		BULB
		BUZZER
		MOTOR
		WIRES
		VOLTMETER
		BATTERY/CELL
		SWITCH

Electricity



This circuit will not work because the switch is open. A circuit must be complete to work. It must also always have a battery/cell.

COMMON APPLIANCES



An electrical conductor lets electricity pass through. They are often metals but it also includes water.

An electrical insulator does not let electricity pass through.

Current: this is the amount of electricity flowing through the circuit (a flow of electrons moving in a loop in the circuit). It is measured in amps.

Potential Difference: is the difference in electrical energy between two parts of a circuit. It is measured in volts. The bigger the voltage, the bigger the current.

DANGER! HIGH VOLTAGE!
 Electricity is everywhere so always be safe. Be careful of mains switches, open sockets and any signs to do with electricity. The human body is 80% water so it conducts electricity. If someone has had a shock always turn the electricity off first, then call for help!



- 1.) If you make the wires longer, the bulb will get dimmer. This is because there is more resistance.
- 2.) If you add more bulbs the bulbs get dimmer. This is because there is also more resistance.
- 3.) If you add more batteries, the bulbs will get brighter. This is because there is less resistance and a greater current.

Assessment:

Electricity

Mini-Quiz #1

Name: _____
 Date: _____

- 1) What is the symbol for a bulb?
 a) a circle with an M
 b) a circle with a cross
 c) a semi-circle
- 2) What happens to a bulb if you make the wires longer?
 a) the bulb gets dimmer
 b) the bulb gets brighter
 c) the bulb stops working
- 3) What happens to a motor when a switch is closed?
 a) the motor works
 b) the motor stops
 c) the motor slows
- 4) Which of these is an electrical insulator?
 a) a paper clip
 b) water
 c) rubber
- 5) What happens to a bulb if the switch is open?
 a) the bulb works
 b) the bulb stops working
 c) the bulb gets brighter
- 6) Which item is an electrical conductor?
 a) plastic bottle
 b) a book
 c) a nail
- 7) Humans conduct electricity because what percentage of our body is water?
 a) 60%
 b) 70%
 c) 80%
- 8) Which symbol is a circle with an M inside?
 a) motor
 b) wire
 c) battery
- 9) What happens if you add more bulbs to a circuit?
 a) the bulbs get brighter
 b) the bulbs get dimmer
 c) the bulbs stop working
- 10) What do you do if someone has been electrocuted?
 a) touch them
 b) turn off the electricity
 c) run a way to find help

Total Score
 ___ out of 10

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Key Science Knowledge:	Vocabulary:
<p><u>Forces and Electricity:</u> An introduction to forces and motion Week 1: Where does electricity come from? Week 2: How can we safely use electricity? Week 3: How do we draw circuit diagrams? Week 4: How do circuits work? Week 5: How can circuits be used in an invention? Week 6: Which scientists helped us to understand electricity?</p> <p><u>BIG QUESTIONS that we'll answer through experience...</u> <u>What is electricity?</u> <u>How to build an electrical circuit</u> <u>What are the components of a circuit?</u> <u>What are conductors and insulators?</u></p>	<p>Static, Current, Electricity, Circuit, Components, Battery, Buzzer Motor Conductor Insulator Alternating (AC) Direct (DC) Voltage Watts Volts Amps</p>
<p>DT: Create a robot that uses electrical power.</p>	