Grindon Infant Science Medium Term Planning – Year 2 Building Circuits- Electricity

End of Unit Goals

Pupils will be able to:

- Identify appliances that run on electricity
- Recognise the need for a power source (mains, battery, rechargeable, renewable, etc) and a circuit to make an appliance work.
- Identify both the component and its symbol in a simple circuit.
- Build simple closed series circuits
- Know electrical safety

Prior Knowledge

Can identify materials such as metal / plastic (Materials Yr1) Know these materials have properties (Materials Yr1)
Can sort materials by these properties (Materials Yr1/2)
May know metals conduct electricity – use (Materials Yr2)
Know bulbs need electricity to work – torch (Light Yr1)

Skill Objectives

Explaining Science			Designing Experiments		
I use & remember science words during an activity	I use & remember science words over a short time	I use & remember science words I have used before	I use some science equipment correctly	I use a range of science equipment correctly	I select suitable equipment for the task
I use science to describe what is happening	I use science to describe & recall what I have seen	I begin to use science models to describe	I notice risk with help & can list some common dangers	I notice risk in my investigation & know common dangers	I predict obvious risk & act on safety suggestions
I add science word labels to diagrams	I add science labels & information (help) to diagrams	I add science labels & information to diagrams	I follow short demo, spoken & picture instructions	I follow short spoken & written instructions in order	I follow written instructions & write a simple method

Enquiry Types

Researching | Finding Patterns | Fair testing | Problem Solving

Key Vocabulary

Electricity, source, flow / transfer, circuit, closed / open, series, mains supply, battery, appliance, rechargeable, plug, socket, wire, bulb, buzzer, motor, conductive, nonconductive, component, switch, clips, symbol, risk, method, predict (prediction).

Important Scientists

Alessandro Volta (1745-1827) Italian scientist that invented the first battery in 1800 and so created the first electric circuit with a steady electric current. He gave his name to Voltage and the electric eel, *Electrophorus voltai*, is named after him.

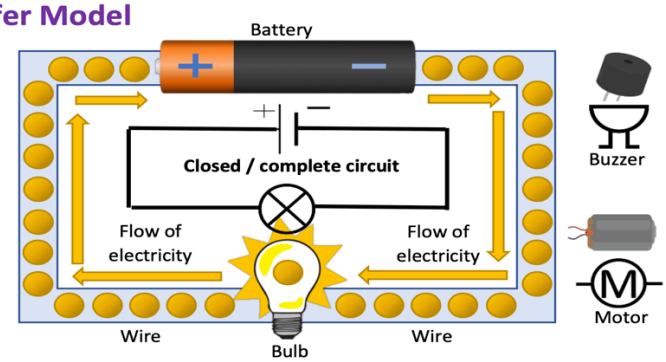
Stanley Whittingham (1941-) British-American scientist who invented the rechargeable Lithium-ion battery in 1977 that we currently use today in mobile phones, laptops and cars. Lithium batteries can hold much more energy than old lead-acid batteries.

Common Misconceptions

Wire is made of plastic. Different coloured wires work differently. Power comes out of the battery. Electricity is something we can see (like lightning). Electricity is power. Power comes out of the socket. Electricity can move in different directions in the wire. You only need one wire to connect the battery to the bulb.

Energy Transfer Model

Electricity **transfers energy** around the circuit to make components work.



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Session	Knowledge Objective	Skill Objective	Enquiry Opportunities	Extension Opportunities	SEND
1			Complete KWL Grid Explore and discuss skills and knowledge that will be covered in unit.		Preteach vocab using widgit Mixed groups
2	**What things need electricity?**	I can sort objects and give reasons for groups.	**Recap** Get chn to think back to when working in Y1 with torches and bulbs. Discuss. **Main** Watch video clip https://www.twinkl.co.uk/go/resource/electrical-and-non-electrical-appliances-animation-t-sc-1650545880 As a class look at/examine appliances (hair dryer, lamp, phone, torch etc) What is the same/different? Capture responses on sheet of paper. Sort into mains/battery 'powered'. (Electricity is 'power'/energy). Identify source. Identify appliances in the classroom. Sort mains/battery 'powered' **Plenary** If there was a power cut, what would still work? Discuss and give reasons why. Take notes of pupils responses when explaining. **Key Vocabulary** appliance, main supply, battery, electricity	Explain why they have sorted the appliances the way the have. We have sorted the appliances into _____ and _____ because _____.	Preteach vocab using widgit Mixed groups
3	**How do we use electricity safely?**	I can recognise risks with electricity.	**Recap** **What did we learn in the last session? Discuss.** **Main** https://www.switchedonkids.org.uk/electrical-safety-in-your-home Use above link to discuss where electricity comes from. Allow pupils to use Ipads to research and feedback to whole class. Allow time for pupils to explore the house image , looking at each room. Pupils to feed back after each room to class. Chn design a safety poster using knowledge gained from researching to inform year 1. Discuss slogans/words that might be used.		Mixed partners Provide with word bank

			Plenary Present posters to Year 1. **Key Vocabulary** Circuit, appliance, main supply, battery, wire, bulb, electricity		
4	**How can we make things work?** **What is a circuit?**	I can begin to name and connect components of a circuit. I can draw symbols.	**Recap** **Main** Practical Session Make a human circuit by passing balls (flashing balls) in a circle (this demonstrates flow/transfer of electricity). Discuss: What is happening? What happens when we stop? What do we think will happen if a bulb/battery is added to the circuit? **Plenary** Take a torch apart for chn to look at and connect it back up. What happens when the battery runs out? What makes bulb light up? Discuss the components. **Key Vocabulary** Circuit, battery, wire, bulb, electricity, flow/transfer	Explain the transfer of electricity.	Preteach vocab using widgit
5	Can you build a circuit?	I can use a range of science equipment correctly. I notice risk in my experiment.	**Recap** **Main** Demo: How to correctly connect components. Allow time to connect components correctly. Provide some circuit diagrams & allow chn to have a try with constructing the circuits Challenge chn to place Place symbol cards next to components. Can the chn begin to fix problems with help. Draws circuit diagram. Peers review to say if it will work or not. Connects to test. **Plenary** Was the circuit successful? Why? Was it unsuccessful? Why? Discuss. **Key Vocabulary** circuit, closed / open, series, mains supply, battery, wire, bulb, buzzer, motor, conductive, nonconductive, component, switch, clips, symbol, risk,	fix problem circuits (begins to use science understanding to help).	Preteach vocab using widgit
Useful Texts, Website & Resources www.switchedonkids.org https://www.youtube.com/watch?v=1Cq4v1ZXeRs- use to show circuit					

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https://www.youtube.com/watch?v=qxWI2MGT6Co – Who discovered electricity
Thomas Edision & The Invention of the Ligh Bulb- Megan Cooley Peterson
How it Works: Electricity- Victoria Williams