Beech Hill Primary School Knowledge Organiser

Topic: Mechanisms	Year group	Term
Electrical systems-Fairground rides	Year 6	Summer 1 6 sessions

Background knowledge

Electrical systems include batteries, buzzers, switches and are used to enhance products. This builds on the children's knowledge of circuits and electricity from science (Yr 4/earlier in Yr 6). They will design and build their own miniature fairground rides.

What should I already know?

Simple circuits are made by connecting wires, a battery and another component
They should know basic components eg. Cells, wires, bulbs, switches, buzzers
A switch opens and closes a circuit.
Recognise symbols in a diagram of a simple circuit.

National Curriculum Objectives / Key Skills

- Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups
- Generate, develop, model and communicate their ideas through discussion, annotated sketches and diagrams.
- Create a prototype to model their circuits.

Make

- Select from and use a wider range of tools and equipment to perform practical tasks, such as cutting, shaping, joining and finishing, accurately
- Select from and use a wider range of materials and components, including construction materials, according to their functional properties and aesthetic qualities
- Apply their understanding of how to strengthen, stiffen and reinforce more complex structures

Evaluate

- Investigate and analyse a range of existing products
- Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- Understand and use electrical systems in their products, (for example series circuits incorporating switches, bulbs, buzzers and motors)
- I can use market research to inform my plans and ideas, evaluating and justifying choices
- I can plan my own design criteria thinking about purpose and audience, and present my design to others, explaining how it meets the criteria.
- I can make a plan, including making a prototype, and refine my plans along the way.

The Journey

1. WALT: Explore existing products; using buzzers etc. for example, buzzer games (operation etc) Then also look at the types of fairground ride they might be designing/prototypes. Plan design criteria for the product for a specific audience, based on research.
2. WALT: Increase our knowledge of electrical systems
    - Research Michael Faraday to find out the impact he had on technological development. Experiment with circuits and different components, researching how they can work together within one product
3. WALT: Design a product; -based on the design brief and communicate using diagrams. Present design to a partner/group justifying design/material choices.
4. WALT: Make my final product
5. WALT: Complete my product
6. WALT: Evaluate my product based on design criteria

• I can justify my choices about materials, tools and techniques to others. • I can make a product that uses electrical systems. • I can take feedback from others about my design and use it to suggest improvements. • I can present my findings to others. • Find out the impact of key individuals on our lives.	-receive peer feedback and suggest improvements.

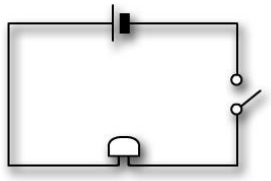
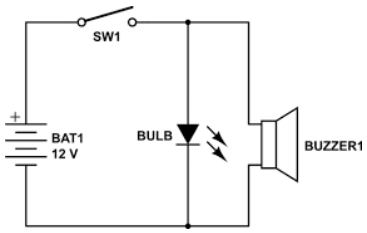
Outcomes

An overview of what children will know / can do

Working towards: I can create a product using a circuit.

Expected: I can design and make and evaluate a product using a circuit, with audience in mind.

Exceeding: I can create a detailed design, justify choices and refine my design along the way. I can suggest ways to improve my product.

Key Vocabulary	Timeline / Diagrams
Buzzer Bulb Cell Switch Circuit Prototype Ferris Wheel Merry Go Round Carousel	  

Key people / places

Michael Faraday ('Father of electricity')- He invented the first electric motor.
https://www.dkfindout.com/uk/science/famous-scientists/michael-faraday/

https://www.bbc.co.uk/teach/class-clips-video/science-ks2-discovering-the-work-of-Michael-Faraday/zj7f47h

Assessment questions / outcomes

Can you identify these symbols?
How is your product going to be suitable for your audience?
Did your product meet the design criteria?
What could you do to improve your product and why? How could you make those improvements?