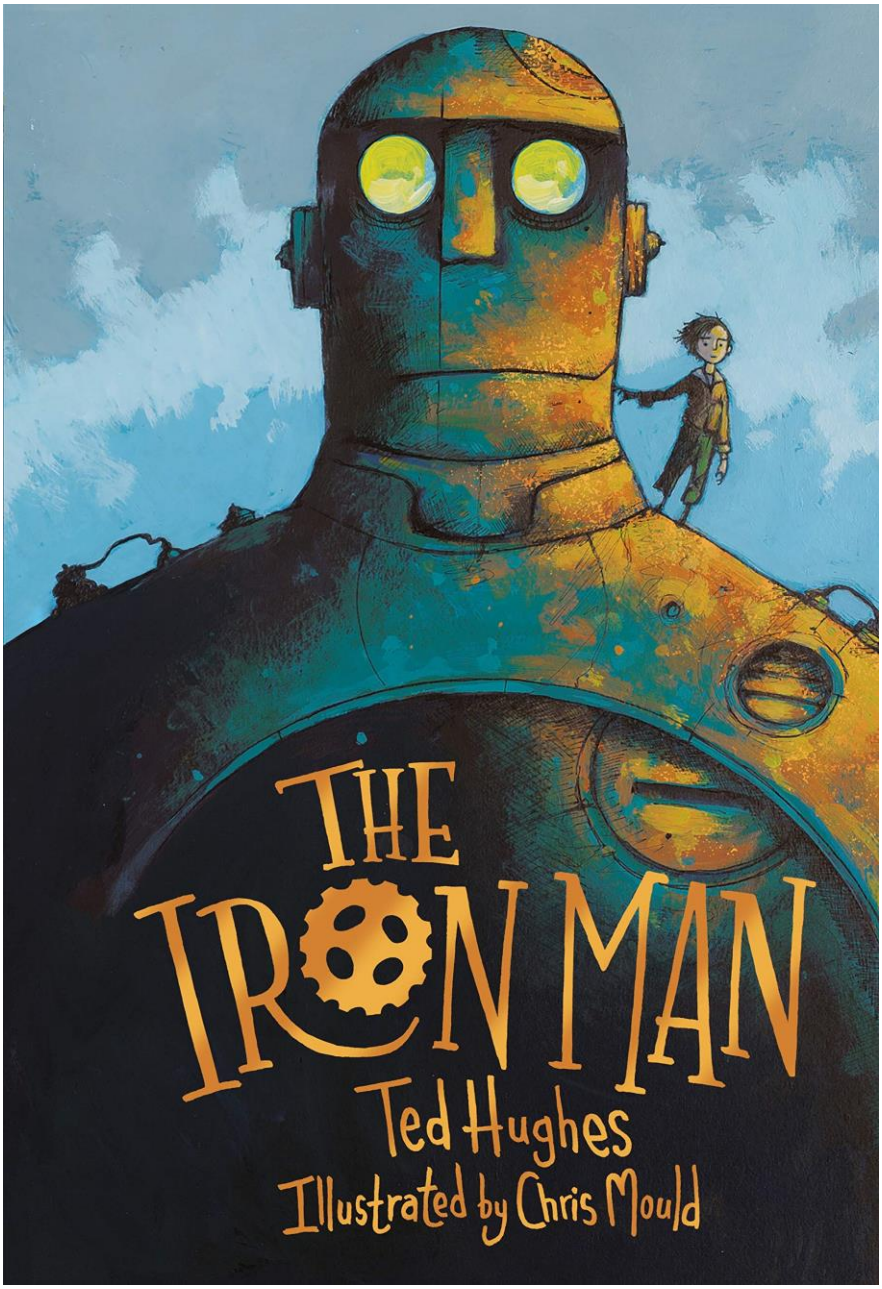
Hunslet Carr Primary School
Leeds

Year 4
Autumn
How do things work?



High Expectations, Caring, Positive Attitudes, Successful

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Intent: The Why Behind our Topic

Rationale

How do things work? will give children an in-depth insight into machines and how they works. This topic will give children the opportunity to develop their speech and language skills by using specific scientific vocabulary related to electricity and the workings of machines. This topic will focus on developing an understanding of how electricity works, the basic parts of an electrical circuit and how electricity is produced. It will also focus on how things move across surfaces and how force is applied to do this.

Key Curriculum Areas: History, Geography, Art, DT, PSHE

We will meet the S&L needs of our children by: *developing their use of language related to Sciences, providing opportunities for children to investigate how things work and explain this using key topic vocabulary, see word bank for topic related words.*

We will allow children to understand cultural differences and break down stereotypes by: *Recognising the difference between how thing work dependent on cultures and countries, discuss why this may be. How did things work in the past?*

We will meet the SEMH needs of our children by: *Discussing and promoting acceptance towards people of different backgrounds, cultures an religions. Exploring the role of certain machines and what needs they meet plus why/how they work the way they do.*

We will meet the socio-economic disadvantages of our children by: *Discussing how energy can be sustainable and by teaching electrical safety in any environment.*

Purposeful Outcome:

Most children will be able to *identify common appliances that run on electricity and construct a simple series electrical circuit as well as identify and name basic parts.*

Some children will be able to *recognise some common conductors and insulators, and associate metals with being good conductors.*

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Intent: Topic-developed NCS Requirements

Subject	NCS Requirements
Science	• identify common appliances that run on electricity • construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers • identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery • recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit • recognise some common conductors and insulators, and associate metals with being good conductors. • compare how things move on different surfaces • notice that some forces need contact between two objects, but magnetic forces can act at a distance
Art	• to create sketch books to record their observations and use them to review and revisit ideas • to improve their mastery of art and design techniques, including drawing, painting and sculpture with a range of materials [for example, pencil, charcoal, paint, clay] **Design their own iron man and create a sketch book to plan and improve their designs. Or practise a stitching technique to create a piece of clothing for a robot.**
DT	• 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 • select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately • 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]
History	• Look at significant historical scientists in the discovery of how the electricity e.g. Benjamin Franklin • Explore how things worked before electricity was discovered
Geography	• Describe and understand key aspect of human geography, including: types of settlement and land use, economic activity including trade links, and the distribution of natural resources including energy, food, minerals and water
Writing	**Talk for Writing Units:** For teacher to decide

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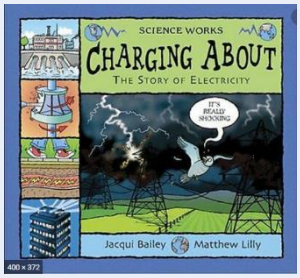
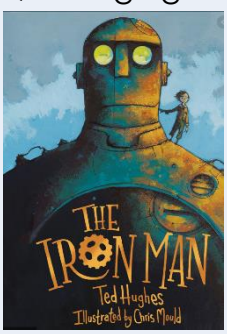
Implement: Topic-developed NCS Requirements

	Term Skeleton Coverage
Week 1:	**The key curriculum objectives will be met through:** **Science –** *Find out what the children already know about electricity, children will learn about appliances that work using electricity, will ask questions about how it works. Conduct an experiment to create a simple series electrical circuit, ask questions about why it worked/doesn't work. Children will also conduct an experiment to investigate common conductors and insulators. Children will compare how things move across a surface and how forces can differ.*
Week 2:	**Topic Week 2 – Art & DT:** *Learn about textiles and stitching, what does this mean? Practise before creating a design that includes an electrical circuit. Evaluate existing products and improve on them.*
Week 3:	**History & Geography:** *Children learn about the discovery of electricity and Benjamin Franklin, what made things work in the past before electricity? Also explore the geographical aspects of electricity and energy use. What impact does this have? What other ways are there to make energy to make things work?*
Experience:	Big Hero 6 film, how does the robot work? What purpose are they designed for?
Reading and Writing	**Class Books –** Iron Man, Charging About: The Story of Electricity   **Shared Reading** – Extracts from non-fiction texts, poems about electricity **Talk for Writing Units:** Decided by teacher

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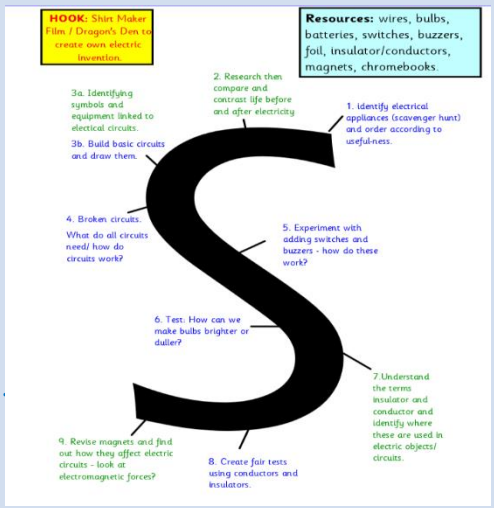
	Medium Term Plan
Week 1: .	**The key curriculum objectives will be met through:** **Science**  Hook - Dragon's Den Challenge: In teams, you need to design your OWN useful robot or machine! It MUST use electricity somehow. Thinking about all your electrical items, in pairs choose NINE of your favourite/most used items and write each one on a slip of paper. Research - What do you imagine life was like BEFORE we had electricity? Why? Compare and contrast Research symbols - For each picture I show you, draw the matching symbol on your whiteboards. Label and draw each circuit using accurate symbols? investigate what happens when we have a broken circuit... Act out a circuit Switch investigation- Does the position of the switch in a circuit make a difference? Create a circuit where the switch turns a light (or buzzer) on or off. CHALLENGE: Sort the objects into insulators and conductors. Test materials.
Experience:	Electricity scavenger hunt

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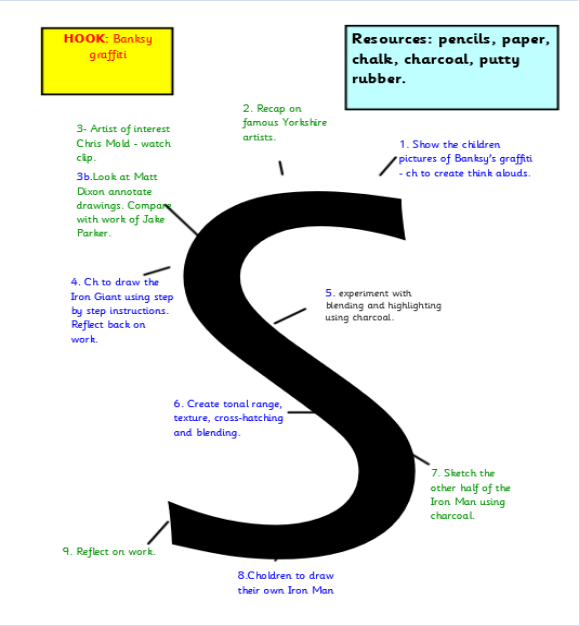
	Medium Term Plan
Week 2:	**The key curriculum objectives will be met through:** **Art and DT**  Hook – Banksy graffiti Show the children pictures of Banksy's graffiti - ch to create think alouds. Recap on famous Yorkshire artists. Artist of interest Chris Mold - watch clip. Look at Matt Dixon annotate drawings. Compare with work of Jake Parker. Ch to draw the Iron Giant using step by step instructions. Reflect back on work. Experiment with blending and highlighting using charcoal. Create tonal range, texture, cross-hatching and blending. Sketch the other half of the Iron Man using charcoal. Children to draw their own Iron Man Reflect on work.

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	Medium Term Plan
Week 3:	**The key curriculum objectives will be met through:** **<u>History and Geography</u>**
Experience:	

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Impact: Subject Leader and Teacher Evaluation

How do things work?

Teacher General Review of Topic:

Subject Specific Review of Topic:
History:

Geography:

Science:

Art:

DT:

Curriculum Coverage – Assessment Evaluation
History:

Geography:

Science:

Art:

DT: