

Brough Primary School – Curriculum Intention Plan 2024 - 2025



Subject: Science Year Group: Year 3/4		Area of learning: Forces and Magnets (Year A)
Links to previous work/Remember when	<ul style="list-style-type: none"> This is the first time children have directly encountered forces within their science work. They will already of course be quite expert in using forces in their everyday life and while at play. In Y1/2 children studied materials and properties and their uses. Children may have encountered magnets while at play and may be aware of attraction and repulsion as forces in magnets. Some time should be spent discussing what the children do know and can say about forces before embarking upon the targeted learning. <p><u>Working Scientifically</u></p> <ul style="list-style-type: none"> asking simple questions and recognising that they can be answered in different ways observing closely, using simple equipment performing simple tests identifying and classifying using their observations and ideas to suggest answers to questions gathering and recording data to help in answering questions. 	
Term	Year 3/4	Key Skills to be taught
Autumn 2024 What the children should know at the end of this series of lessons		<ul style="list-style-type: none"> Compare how things move on different surfaces Notice that some forces need contact between two objects, but magnetic forces can act at a distance Observe how magnets attract or repel each other and attract some materials and not others Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials Describe magnets as having two poles Predict whether two magnets will attract or repel each other, depending on which poles are facing <p><u>Working Scientifically</u></p> <ul style="list-style-type: none"> Asking relevant questions and using different types of scientific enquiries to answer them Setting up simple practical enquiries, comparative and fair tests Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions

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	<ul style="list-style-type: none"> Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions Identifying differences, similarities or changes related to simple scientific ideas and processes Using straightforward scientific evidence to answer questions or to support their findings
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Vocabulary

Force, push, pull, move, movement, investigation, fair test, dependent variable, independent variable, control variable, gravity, gravitational pull, force of gravity, magnet, magnetic material, poles, north, south, magnetic force, attract, repel, friction, distance.

Sequence of learning	Learning Objectives/Outcomes	Suggested lesson outline
<p>1</p> <p>Use Explorify what's going on 'Featured gymnastics' to start a conversation – see question prompts.</p>	<p>Learning objective:</p> <p>I can compare how different things move on different surfaces.</p> <p>Key knowledge:</p> <p>We can't see forces but they are an important part of life. Forces act on us all of the time. Because humans understand forces we can build houses that don't fall down and chairs that don't collapse. The simplest forces and a push and a pull. Different amounts of force is needed to move different objects.</p> <p>Enquiry Type:</p>	<p>Recap – What do you already know about forces? Complete the pre-learning activity thinking about what forces are, examples of forces, what a magnet is and what magnets are used for.</p> <p>Simple Forces</p> <p>Use the presentation and a bit of people science, to help the children understand pushes and pulls and that these forces require contact between the two objects.</p> <p><i>Children complete a partner sorting activity on paper identifying pushes and pulls. After that, children sort the objects from the start of the lesson into objects that required little force to move and objects that require lots of force to move. Children could then go on and finish with the challenge exercise which asks them to list three pushes and 3 pulls as examples of forces they know.</i></p>

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	Observing closely using simple equipment.	
2a&b	<p>Learning objective:</p> <p>I can plan and carry out a fair test to compare how an object moves on different surfaces.</p> <p>Key knowledge:</p> <p>A fair test is a controlled investigation carried out to answer a specific question. In a fair test two or more things are compared. For a fair test to be fair, we need to ensure only one thing is changed – the independent variable; other things are kept the same – control variables; and something is observed or measured – the dependent variable.</p>	<p>Recap – Can you remember what a force is? Give an example.</p> <p>Investigation & fair testing</p> <p>Introduce key terminology of fair testing and discuss the investigation question. Discuss available surfaces and the need to design a way to ‘push’ the protractor so it is the same each time.</p> <p><i>Children complete the fair test planning sheet and the design activity for their push. Children then carry out their investigation in a separate lesson if required, recording their results in a suitable way. (table) Finally children use the prompts on the presentation to guide them through writing a conclusion to outline their results and the reasons for them.</i></p> <p>Enquiry Type:</p> <p>Asking relevant questions and using different types of scientific enquiries to answer them. Setting up simple practical enquiries, comparative and fair tests. Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment. Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</p>
3 Use Explorify the odd one out 'marvellous s magnets'	<p>Learning objective:</p> <p>I can explore how magnetic forces can act at a distance.</p>	<p>Recap – Can you remember what a force is? Give an example. Remind children that we can't see forces but they act on us all of the time. Recap simple forces and that contact between the two objects is required.</p>

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<p>as a discussion starter.</p>	<p>Key knowledge: Simple forces require contact between the two objects. Some forces (magnetism, gravity) act at a distance. Gravity is a distant force that pulls things towards the centre of the Earth, Magnets can also act without contact between the objects. Magnets have a north and south pole.</p> <p>Enquiry Type: Making systematic and careful observations.</p>	<p>Forces at a distance Use the presentation to guide the children through the difference between simple forces and forces that can act at a distance. This class clip can be used for magnets. https://www.bbc.co.uk/bitesize/topics/znmmn39/articles/zhj9r2p#zgnxxbk Remind the children of the work they did in KS1 when they learnt that there are many different types of materials. Not all of them are magnetic.</p> <p><i>Children explore horse shoe, bar and ring magnets to see how their magnetic forces act at a distance. A magnet can pull a magnetic object towards it. They complete three diagrams for three different magnetic objects and write an explanation of what they have seen using attract/attraction and the correct one of push/pull.</i></p>
<p>4</p>	<p>Learning objective: I can compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet.</p> <p>Key knowledge: Magnets are everywhere, they close bags and doors, they are in most electronic devices, in anything that has a motor, televisions, computers, microwave ovens etc. The Earth is a giant magnet. Magnets are usually made from iron or steel. Many scientists think birds are able to find their</p>	<p>Recap – Think about one fact about magnets from the last lesson. Recap magnetic forces acting at a distance.</p> <p>Magnets and magnetic materials Discuss the uses of magnets. How many are the children able to guess at? Discuss the magnetic facts from the presentation. Move on to examine magnetic materials. Ensure the children understand that only metals with iron in are magnetic.</p> <p><i>Children find different materials in the classroom and test them to see if they are magnetic or not. This may need some guidance because the children should write the material name, not the object name on the record sheet.</i></p>

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	<p>way home using the Earth's magnetic field.</p> <p>Enquiry Type:</p> <p>Making systematic and careful observations.</p>	
5	<p>Learning objective:</p> <p>I can predict whether two magnets will attract or repel each other, depending on which poles are facing.</p> <p>Key knowledge:</p> <p>When you put two magnets together, like poles repel and unlike poles attract.</p> <p>Enquiry Type:</p> <p>Making systematic and careful observations.</p>	<p>Recap – Think about one fact about magnets from the last lesson. Recap magnetic forces acting at a distance. What type of material was magnetic?</p> <p>Magnets together</p> <p>When two magnets are together, they create pushing and pulling forces on each other. These forces are strongest at the ends of the magnets.</p> <p><i>Children place two magnets together in the different ways from the presentation and record what they find. Children complete the challenge sheet, identifying advantages and disadvantages if everything was magnetic.</i></p>
6	<p>Learning objective:</p> <p>To demonstrate what has been learnt about forces and magnets.</p>	<p>ASSESSMENT LESSON</p> <p><i>Children complete a short formative assessment task to judge what they have learnt and retained about this topic.</i></p>

Learning Outcome/product

During this unit of work, children will explore simple pushes and pulls as an introduction to forces. They will explore how the texture of an object or the surface it is on can affect how the object moves. They will then explore pushes and pulls further by investigating different magnets and how they can pull (attract) and push (repel) at a distance without contact.

Assessment records	List only those children who have not achieved the expected outcomes.

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