

**THE WINTERTON FEDERATION MEDIUM TERM PLAN SCIENCE Spring 2 YEAR 3**

| <b>Forces</b>    | <b>Learning Objective</b>  | <b>Activity – Switched On Science</b>   | <b>STEM Activities</b> | <b>Success Criteria</b>  |
|------------------|--|---|------------------------|--|
| <b>Session 1</b> | <p>To observe the forces that magnets produce.</p> <p>To report and present findings from enquiries.</p> | <p>Show the BBC video clip below on pushes and pulls. Make a list on their whiteboards of all the pushes and pulls they can see in the video.</p> <p><a href="http://www.bbc.co.uk/learningzone/clips/pushesandpulls-no-narration/2435.html">www.bbc.co.uk/learningzone/clips/pushesandpulls-no-narration/2435.html</a> Pair up: Consolidate and review the understanding of everyday force. Ask them to recognise some more pushes and pulls in objects that are in contact with each other. Use pictures and photographs, or ask them to think of other pushes and pulls they might have come across on their way to school. Extend learning by asking which two objects are in contact with each other. Discuss this and make a table of their ideas either as a class or in pairs. Get into groups: Explain that they are going to look at magnetic forces and develop skills of investigating. Provide a variety of magnets. Make sure the magnets are not labelled with north and south poles and are strong enough for the children to feel their effect. Ask them to investigate and record what happens when they are brought together, and to annotate their results using the terms ‘attract’ and ‘repel’ and ‘strong’ and ‘weak’. The children can use ‘Bringing magnets together’ on page 36 of their Activity resource book to record their findings.</p> |                        | <p>I can explain the difference between a contact and a non-contact force.</p> <p>I can plan comparative and fair tests, and collect accurate results.</p> <p>I can use the results of my tests to explain some properties of magnets.</p> |
| <b>Session 2</b> | <p>To observe the forces that magnets produce.</p> <p>To report and present findings from enquiries.</p> | <p>Present a collection of magnets. Ask them to jot down the ways in which they might be the same and how they might be different. Gather their answers together. Then ask them to come up with some simple ways of testing their ideas. Whole class teaching: Explain to the children that they are going to develop skills in investigating as they find out more</p>   |                        | <p>I can explain the difference between a contact and a non-contact force.</p> <p>I can plan comparative and fair tests, and collect accurate results.</p> <p>I can use the results of my tests to explain some properties of magnets.</p> |

|                  |  |   |  |   |
|------------------|--|---|--|---|
|                  |  | <p>about the properties of magnets. Use as many of the investigations below as needed. Think carefully about which of your class groups will carry out each one. If your class has come up with something else they wish to test, enable them to do so. Are different magnets equally strong? Are bigger magnets stronger than smaller magnets? Which materials can a magnetic force pass through? How do magnets behave towards each other? How far does the magnetic force spread away from a magnet?</p> <p>Encourage the children to come up with their own way of planning and carrying out a fair test, only giving them help when needed. Ask them to make careful observations, present these in the best way and explain what their results show. The children can use the 'My investigation plan' activity sheet to shape their practical work (Activity resource book, pages 37 and 38).</p> |  |   |
| <b>Session 3</b> | <p>To name some materials that magnets can attract and some they cannot.</p> <p>To list at least ten uses of magnets in everyday life.</p> | <p>Have an assortment of materials and magnets.</p> <p>Make predictions as to which materials are attracted to magnets. Why do you think this?</p> <p>Test the predictions and record results.</p>  |  | <p>I can name the three metals that can be made into a magnet.</p> <p>I can explain the difference between a magnetic and a non-magnetic material.</p> <p>I can list ten uses of magnets.</p>   |
| <b>Session 4</b> | <p>To explain what a magnetic pole is and what it can do.</p> <p>To predict whether two magnets will attract or repel each other.</p>      | <p>Give the children a bar magnet and some paperclips. Ask them to find out where the magnet seems to pull them the strongest.</p> <p>Discuss and establish that the magnetic attraction is strongest at the two ends of the magnet. Also discuss that the magnetic force is equally strong at both ends. Show the children a compass. It helps if you have quite a large one – they can see it more easily.</p> <p>Explain to the children that the compass has a magnet spinning on a pivot. Show them what</p>   |  | <p>I can explain what the poles of a magnet are and some of their properties.</p> <p>I can describe the Earth's magnetic field and explain what it does to magnets</p> <p>. I can predict what will happen when like and unlike poles of a magnet are brought together.</p> |

|                  |   |   |  |  |
|------------------|---|---|--|--|
|                  |   | <p>happens when the compass needle moves and then comes to rest – explain that it seems always to stop facing the same direction. At this stage, don't mention the idea of poles. Instead, simply explain that for the compass to work, the needle must be able to move freely.</p> <p>Group practical: Ask different groups to devise and test various ways of suspending a magnet so that it moves freely. They might come up with the idea of suspending a magnet on a thread or floating it on a small paper boat on water. Encourage them to think about which equipment they will need for their investigation.</p>   |  |  |
| <b>Session 5</b> | <p>To explain what a magnetic pole is and what it can do.<br/>To predict whether two magnets will attract or repel each other</p> | <p>Explain we are now going to investigate what happens when the poles of two magnets are brought together. Ask them for their predictions. Record on 'The magnetic rule' activity sheet (Activity resource book, page 41).</p> <p>Label the poles of a bar magnet N and S and suspend it from a thread. Encourage them to investigate what happens when the poles of another bar magnet are brought up close to the poles of the first magnet in different ways. Work scientifically, record what they predict will happen in each case and note down what they observe. Ask them if they can come up with a scientific rule that describes what they see. Ask them to present their results in a sensible way. They could repeat their investigation with horseshoe or other shaped magnets to find out if the same rule applies. Discuss in pairs the rules they have come up with and gather the class rules on the classroom whiteboard. Emphasise that 'Like poles repel and unlike poles attract'.</p> <p>Group learning: Watch the film 'Opposites attract' and discuss as a class.</p> |  | <p>I can explain what the poles of a magnet are and some of their properties.<br/>I can describe the Earth's magnetic field and explain what it does to magnets<br/>I can predict what will happen when like and unlike poles of a magnet are brought together</p> |

