St James' Church of England Primary School
Science Overview Sheet

Year 3 – Forces & Magnets

Rationale: Pupils should observe that magnetic forces can act without direct contact, unlike most forces, where direct contact is necessary (for example, opening a door, pushing a swing). They should explore the behaviour and everyday uses of different magnets (for example, bar, ring, button, horseshoe).

Pre-unit task: Knowledge Organiser Quizzes

Working Scientifically:

- Comparing how different things move and grouping them.
- Raising questions and carrying out tests to find out how far things move on different surfaces and gathering and recording data to find answers to their questions.
- Exploring the strengths of different magnets and finding a fair way to compare them.
- Sorting materials into those that are magnetic and those that are not.
- Looking for patterns in the way that magnets behave in relation to each other and what might affect this, for example, the strength of the magnet or which pole faces another.
- Identifying how these properties make magnets useful in everyday items and suggesting creative uses for different magnets..

Statutory Requirements:

- **Compare how some 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.**

Overview:

Lesson 1: Pushes and Pulls - I can identify the forces acting on objects.
Lesson 2: Faster and Slower- I can investigate how a toy car moves over different surfaces.
Lesson 3: Scrapyard Challenge- I can sort magnetic and non-magnetic materials. I can record my observations.
Lesson 4: Magnet Strength- I can investigate the strength of magnets.
Lesson 5: Magnetic Poles.- I can explore magnetic poles.
Lesson 6: Magnets - I can observe how magnets attract some materials.

Cross Curricular Links

Resources

• Toy car;• 5 boards covered with different surfaces (Ideas include sandpaper, a towel, tinfoil, lino, carpet, corrugated cardboard or bubble wrap); • Ruler. • Steel paper clips; • Bar magnets; • Iron filings; • Trays; • Pile of magnetic and nonmagnetic materials mixed together per group (some ideas include coins, iron nails, steel paper clips, pens, pencils, drinks cans, food tins, wooden spoons or plastic tubs).

Assessment

Most Children will: • Identify forces as pushes and pulls.• Describe friction as a force that slows objects down.• Feel the pulling force of a magnet.• Sort materials according to whether they are magnetic or not.• Participate in an investigation into magnet strength. • Identify the different poles of a bar magnet.

Less Able Children will: • Identify the type of force required to carry out an action.
• Investigate the force of friction produced by different surfaces. • Explain that magnets produce an invisible pulling force.

More Able Children will: • Make generalisations about the types of surfaces that produce the most or least friction. • Identify and describe the invisible magnetic field around a magnet.• Make generalisations about the types of materials that are attracted to magnets.