

THIRD AND FOURTH – MAGNETISM AND ELECTRICITY

Teacher Guidelines:

- Pp. 96-106
- Exemplar 4 p. 42

Linkage:

- Materials - Properties and characteristics
- Light

Integration:

- Oral Language Development – English and Gaeilge
- SPHE
- History

Content Objective:

LEARN THAT MAGNETS CAN PUSH OR PULL MAGNETIC MATERIALS

Some suggested activities:

- Revise content from first and second class.
- Using a range of magnets:
Explore with the poles of two magnets. Hold them together so that they are attracted to each other. Hold them so they will repel each other.
- When did the magnets pull each other? When did they magnets push each other?

Some suggested investigations:

- Which is strongest magnet? How did the pupils investigate this in first and second class? Can they think of other ways to investigate this question? (see Teacher Guidelines exemplar 29 p106)

Content Objective:

EXPLORE HOW MAGNETS HAVE POLES AND INVESTIGATE HOW THESE POLES ATTRACT AND REPEL EACH OTHER.

Some suggested activities:

- What do you call each end of a magnet?
- What happens when two like poles are held together?
- What happens when two unlike poles are held together?
- Can you identify the poles on a wand magnet?

- Game: Car Tracks! (Toy cars with magnets attached to roof)

Content Objective:

EXPLORE THE RELATIONSHIP BETWEEN MAGNETS AND COMPASSES.

Some suggested activities:

- Brainstorm what compasses are used for. (Children's ideas)
- How do they work?
- What happens when you move a bar magnet around a compass? Hang a bar magnet from a piece of string. Magnet will align itself north-south. Check with compass. What happens when you hold another magnet near the suspended magnet?
- Place small bar magnet on polystyrene in bowl of water. Magnet will align itself north-south.
- Make a compass by stroking a straightened paper clip several times (c.25 times) in one direction with one pole of a magnet. Then test as in activity above using water and polystyrene.

Content Objective:

EXAMINE AND CLASSIFY OBJECTS AND MATERIALS AS MAGNETIC AND NON-MAGNETIC.

Some suggested activities:

- Refer to work undertaken in first and second class, using a wider range of materials.

Content Objective:

INVESTIGATE THAT MAGNETS ATTRACT CERTAIN MATERIALS THROUGH OTHER MATERIALS.

Magnets attracting materials through water, glass and plastic.

Some suggested activities:

- Can you take the paper clip out of a jar of water without getting your hands or the magnet wet?

Some suggested design and make:

- Magnetic boats
- Magnetic football game.

Content Objective:

OBSERVE THE EFFECTS OF STATIC ELECTRICITY

Plastic ruler, comb, glass rod.

Some suggested activities:

- Predict and test which materials in classroom will a charged balloon be attracted to.
- Hold two charged balloons together. What do you think will happen? Predict and test. Can we pick up pieces of paper with a plastic pen, pencil, ruler (wooden and plastic)
- Can Race – use charged balloons to make aluminium cans move.

Some suggested investigations:

- Does the number of rubs effect how far the can will travel?

Content Objective:

OBSERVE THE EFFECTS OF STATIC ELECTRICITY ON EVERYDAY THINGS IN THE ENVIRONMENT

Use of lightening conductor on buildings. Use of earthing strips for cars.

Some suggested activities:

- Hold charged balloon near stream of water flowing from tap. What happens to the water?
- Make a spark of lightening. (Put piece of plasticine in metal baking tray – Place baking tray on sheet of plastic. Rub tray on plastic vigorously using the plasticine as a handle. Lift tray by plasticine handle. Hold metal object against tray. Pupils should see a spark.) This will work best in a darkened room.
- Charge balloon. Hold metal object against balloon. Now see will balloon pick up pieces of paper. Link with earthing strips on cars etc.

Some suggested investigations:

- Which material (cotton/wool/nylon) when rubbed by balloon will pick up most pieces of paper?

Content Objective:

LEARN ABOUT ELECTRICAL ENERGY

Some suggested activities:

- Brainstorm with children: What is electricity?
What sorts of things use electricity? How does it make things work? How does electricity get to where it is needed?
- Refer p.98 Teacher Guidelines

Content Objective:

INVESTIGATE CURRENT ELECTRICITY BY CONSTRUCTING SIMPLE CIRCUITS.

Use wire, bulb and batteries. Experiment with simple switches. Design and make a marine warning system (e.g. buoy with light or buzzer lighthouse).

Some suggested activities:

- Constructing circuits
- See page 100 Teacher Guidelines for illustration of circuits.
- See Exemplar 26 p.102

Some suggested design and make:

- Lighthouse
- Clown's head with light up eyes
- Clown with spinning bowtie
- Torch

Content Objective:

EXAMINE AND GROUP MATERIALS AS CONDUCTORS (THOSE THAT CONDUCT ELECTRICITY) AND INSULATORS (THOSE THAT DO NOT ALLOW ELECTRICITY TO PASS THROUGH)

Some suggested activities:

- Construct incomplete circuit. Test materials to see if they are conductors or insulators of electricity.
- Include a simple switch e.g. a paperclip in the circuit
- See Exemplar 27 p.103

Content Objective:

BECOME AWARE OF THE DANGERS OF ELECTRICITY

Some suggested activities:

- Discuss with pupils the need for care when dealing with electricity
- View E.S.B. safety video