Lesson 2.1: Making magnets

Textbook : Pages 11—13
Activity Book : Pages 11—15 (Activities 2.1 and 2.2)

Essential learning points	Specific learning objectives in My Pals are Here!
• Only magnetic materials can be made into magnets. • The stroke method is one way to make a magnet. • A magnet can lose its magnetism or become weaker if it is dropped many times, heated over a flame or hammered many times. • Magnets made using electricity are called electromagnets. • The electromagnet is a magnet only when it is connected to a battery or a source of electricity.	• Observe that only magnetic materials can be made into magnets • Describe the steps involved when making a magnet using the stroke method • Recognise that a permanent magnet can lose its magnetism or become weaker if it is not properly cared for • State the definition of an electromagnet • Construct the set-up to make an electromagnet using the electrical method • Show an understanding that an electromagnet is a magnet only when it is connected to a battery or a source of electricity

Information Technology (IT)

Use of the Internet to gather information about the two different ways to make magnets

Engage (1st E) Use of two magnet-making tricks

Purpose: To engage the pupils using two magnet-making tricks
Resources: Textbook, items shown in Activities 2.1 and 2.2

1. Ask the pupils to read page 11 of the Textbook, which is a story about making magnets.
2. Based on the story, ask for a pupil to volunteer to try picking up staples with a nail. Some questions to elicit the other pupils' responses include:
   - Why is the nail unable to pick up the staples? (Answer: The nail is not a magnet, thus it is not able to attract and pick up the staples.)
   - What are the ways to make the nail into a magnet? (Answer: Answers vary but there are four possible ways to make magnets, the stroke method, the electrical method, the induction method and the heating or hammering method.)
3. After using a magnet to stroke the nail, ask for a pupil to volunteer to try picking up staples with the nail again. Some questions to elicit the other pupils' responses include:
   - Why is the nail able to pick up the staples now? (Answer: The nail has become a magnet, thus it is able to attract and pick up the staples.)
   - Besides the stroke method, what is the other way that you will learn to make the nail into a magnet? (Answer: Answers vary but the other way that pupils will learn to make magnets is the electrical method.)
4. Show the pupils a set-up of an electromagnet. Without closing the circuit, try to pick up a paper clip with the nail in the set-up and pose the following question:
   - Why is the nail unable to pick up the paper clip? (Answer: The nail is not a magnet, thus it is not able to attract and pick up the paper clip.)
5. After closing the circuit, try to pick up a paper clip with the nail in the set-up and pose the following question:
   - Why is the nail able to pick up the paper clip now? (Answer: An electric current is flowing through the coil of electrical wire around the nail, causing it to become a magnet. Thus, the nail is able to attract and pick up the paper clip.)
6. State that the pupils will explore the two different ways that they have seen to make an iron nail into a magnet during today's lesson.

Explore (2nd E) Guided inquiry

Purpose: To experience how magnets are made using the stroke method and the electrical method
Resources: Textbook, Activity Book, items shown in Activities 2.1 and 2.2

1. Ask the pupils to turn to Activity 2.1. Guide them to:
   - Carry out the procedure
   - Group into pairs to discuss and fill in their best possible answers with the help of pages 11—12 of the Textbook
2. Ask the pupils to turn to Activity 2.2. Guide them to:
   - Carry out the procedure
   - Group into pairs to discuss and fill in their best possible answers with the help of page 13 of the Textbook

Feature of Science inquiry

Question (Q4)
Pupils engage with an event, phenomenon or problem when they accept given question.

Evidence (Evi2)
Pupils give priority to evidence when they are directed to collect certain data.

Explanation (Exp2)
Pupils construct explanations when they are guided in process of formulating explanation from evidence.