Lesson 2.2
What Objects Do Magnetic Forces Act On?
Lesson Overview

Students investigate objects on which a magnetic force can act. Students first make predictions, then work in groups to test their predictions. Using this evidence, students analyze the data to draw conclusions about the kinds of things that are or are not acted on by magnetic forces. Students work in groups of four to write a conclusion about magnetic force, which the class then discusses. Students are introduced to the reference book, *Handbook of Forces*, and some common text features found in this type of text. The purpose of this lesson is to deepen students’ understanding of magnetic force and introduces them to the use of reference books as an important science practice.

**Anchor phenomenon:** The floating train rises, floats above the track, then later falls back to the track.

**Investigative phenomenon:** A magnet causes some objects, but not others, to move without touching them.

**Students learn:**

- Non-touching forces can act between magnets and some, but not all, other objects.
- A reference book contains information on several related topics and is usually not read from beginning to end.
- A table of contents lists topics in the order they appear in a book.
- A glossary is like a small dictionary with definitions for several important words in a book.
Students are introduced to the unit’s reference book and its features and are given an opportunity to briefly explore the text.

Instructional Guide

1. **Introduce the unit’s reference book.** Hold up a copy of *Handbook of Forces* and let students know that it is a kind of book called a reference book.

   A reference book has lots of information about many related topics. Unlike our first book, *Forces All Around*, a reference book isn’t meant to be read all the way through at one time. Usually, readers use reference books to find more information about a specific topic.

2. **Distribute one copy of *Handbook of Forces* to each pair of students.**

3. **Project or hold up a copy of the book and read aloud the introduction.** Explain that the first section of a reference book is usually an introduction to the book, even if it isn’t titled “Introduction.” Read aloud the section on page 4, “What Is a Force?,” and point out the bolded words on the page.

4. **Introduce the glossary.**

   The glossary is like a small dictionary for the book. When you are reading, if you come to a bold word that you don’t recognize or that you can’t remember, it’s a great idea to hold your place in the book and then turn to the glossary. Let’s do that now for the word exert.

5. **Model using the glossary to understand the phrase magnetic force.** Have students turn to the glossary on page 30 and read the definition for the word magnetic force.

6. **Invite students to explore the book.** In this first encounter, allow partners to free-explore the book. In future lessons, students will be assigned to read specific sections of the book.

7. **Conclude the lesson.** Let students know that they will have multiple opportunities to revisit this book over the course of the unit.
Reading: Handbook of Forces

Students are introduced to the unit’s reference book and its features and are given an opportunity to briefly explore the text.

Instructional Guide

1. **Introduce the unit’s reference book.** Hold up a copy of *Handbook of Forces* and let students know that it is a kind of book called a reference book.

   Un libro de referencia tiene mucha información sobre muchos temas relacionados. A diferencia de nuestro primer libro, *Fuerzas que nos rodean*, un libro de referencia no está diseñado para ser leído hasta el final de una vez. Usualmente, los lectores usan libros de referencia para encontrar más información sobre un tema específico.

2. **Distribute one copy of Handbook of Forces to each pair of students.**

3. **Project or hold up a copy of the book and read aloud the introduction.** Explain that the first section of a reference book is usually an introduction to the book, even if it isn’t titled “Introduction.” Read aloud the section on page 4, “What Is a Force?,” and point out the bolded words on the page.

4. **Introduce the glossary.**

   El glosario es como un diccionario pequeño para el libro. Cuando estén leyendo, si encuentran una palabra escrita con letras oscuras que no reconocen o que no pueden recordar, una idea excelente es marcar esa página del libro con un dedo y luego ir al glosario. Practiquemos con la palabra *ejercer*.

5. **Model using the glossary to understand the phrase magnetic force.** Have students turn to the glossary on page 30 and read the definition for the word *magnetic force*.

6. **Invite students to explore the book.** In this first encounter, allow partners to free-explore the book. In future lessons, students will be assigned to read specific sections of the book.

7. **Conclude the lesson.** Let students know that they will have multiple opportunities to revisit this book over the course of the unit.