Machines That Move

by Bronwyn Tainui

Overview

This book explains how machines move, using vivid photographs and easy-to-read diagrams. The simple text outlines the common elements that enable trucks, ships, and planes to move. (Big idea: Scientists study how things move and work.)

Suggested purposes

This book supports the following **comprehension strategies:**
- making and confirming predictions MP
- drawing conclusions. DC

It supports the following **non-fiction strategy:**
- using diagrams to visualise direction and movement.

Key vocabulary

The vocabulary that is focused on includes:
- Anchor words – *machines, move, parts, work*
- Content words – *bulldozer, engine, land, plane, propeller, ship, sky, tracks, truck, water, wheels*
- High-frequency words – *all, an, has, have, that, they, what*

Features of the text

- Non-fiction features:
  - cover flap, which provides support for identifying the big ideas and anchor words
  - the topic, which expands on pages 14 and 15 of the anchor book *Being a Scientist*
  - preview question on the back cover
  - repetitive use of question marks to focus the explanatory text structure
  - captions and labels
  - layout (photographs of machines adjacent to diagrams)
  - labels and arrows which highlight the location of important parts
  - simple diagrams
  - use of coloured arrows to indicate movement
  - picture glossary
- Word study:
  - initial consonant blends – "pl-", "fl-", "tr-", "pr-"
  - digraph sounds – "th", "sh", "wh"
- Verbs – *sail, fly, turn, spin, make, push, move*
- Repetitive sentence structure to give concise information ("A ... has an engine." "The engine makes the ..." "The ... moves the ...")

Setting the scene

If you have already introduced the topic using the whole-class lesson plan and the anchor book *(Being a Scientist)*, you can review the discussion and show the students pages 14 and 15 of the anchor book.

Talk about different machines. Explain that some machines help people and things to travel. We see machines on the land, the sea, and in the air.

- Ask the students to share their knowledge of machines.
  - *What machines might you see on a road?*
  - *What machines might you see in the air?*
  - *What machines might you see on water?*
- Write the students' responses on the board under the heading "Moving Machines".

ELL support

Matching movement to words can support ELL students' comprehension and memory. Research suggests that students learn better when they use both their muscles and their minds. When the students act out commands or words, they can demonstrate understanding of the language before being able to speak it.

Introducing the book

Front cover – **(Making predictions)** Discuss the photograph. *What is this machine? What is it doing?* Read aloud the title and the author's name. MP

Back cover – **(Making predictions)** Read aloud the preview question. Discuss the students' predictions. MP

Using the flap – Read aloud the sentence, and (if relevant) remind the students that they have read this in *Being a Scientist.* Read aloud the anchor words on the other side of the flap. Tell the students that they can point out the words when they find them in the book. Ask them to leave the flap open as they read.

Title page – Read the title. Discuss the photograph. *What is this machine? What does it do?*

The first reading

MP **Pages 2 and 3** – **(Making predictions)** Discuss the photograph. *How do these machines move?* Read page 2. *What "different parts" does the author mean?* (engine, wheels, tracks) Read page 3. Notice whether the students use their knowledge of the blends "tr-", "pl-", "fl-", "sk-" and the digraph "sh" to decode content words.

Pages 4 and 5 – Discuss the photograph. Point out the label. Tell the students that labels give us information. *What does this label tell us? What is the label showing? Where is the truck's engine? Where do you think the truck is going? How can you tell that the truck is moving fast?* MP **(Making predictions)** Encourage the students to respond to the question on page 4. Discuss the diagram on page 5. *What do the red arrows show? What does the green arrow show?* Explain that diagrams are used to provide information visually. A diagram must be clear so that people can understand it. *What makes this diagram easy to understand?*

Pages 6 and 7 – Discuss the photograph. *Where is the engine? Would you like to ride a bulldozer? Why? What* MP *would it be like?* **(Making predictions)** Encourage the students to respond to the question on page 6. Discuss the diagram on page 7. *What do the red arrows show? What does the green arrow show? Why would the bulldozer move more slowly than the truck?* **(Drawing conclusions)** DC *How are tracks different from wheels?*

Pages 8 and 9 – Discuss the photograph. *Where is the ship's engine? Why do you think it is there?* **(Making predictions)** MP Encourage them to respond to the question on page 8. Discuss the diagram on page 9. *What do the red arrows show? What does the green arrow show? How are these two movements different?* (The propeller moves in a circle; the ship moves in a straight line.) **(Drawing conclusions)** DC *Is the movement of a propeller different from the movement of wheels and tracks?* (No – they move in circles.)

Pages 10 and 11 – Discuss the photograph. *Where are the plane's engines?* (on the wings) *Why do you think they are there?* Discuss the diagram on page 11. *What do the red arrows show?* **(Drawing conclusions)** *What does the* DC *green arrow show? How is this machine different from a ship, truck, or bulldozer?*

Page 12 – **(Drawing conclusions)** Review what the students have learned. *How are these machines the same?*

(They all have engines.) *How are they different?* (Their engines are in different places. Some engines push in the same direction as the machine moves; some push in the opposite direction.)

Vocabulary activity

Focus word: parts

1. Turn to page 2. Read: *They have different parts that work together.*

2. *Say "parts" with me.*

3. Remind the students that some scientists help us to understand how machines work. A part is a piece that fits together with other pieces. Together, those pieces make up a whole machine. For example, an engine and wheels are some of the parts that make up a truck. *What are some other parts of a truck?* (steering wheel, gears, brakes)

4. Explore the meanings of "part":
   - Explain that "part" always refers to one of several things that make up a whole thing. For example, parts of a chair (legs, seat, back), parts of the body (feet, hands, face), and parts in a play (different characters).

   - Explain that "part" can have other meanings. Taking something apart or parting it means to separate or divide it. Take a ballpoint pen apart. *I'm going to take it apart so that we can look at the different parts.* Discuss and demonstrate how the parts fit together. Explain that if one part is missing, the pen doesn't work well.

   - Explain that "part" can also describe two people going separate ways. *When you say goodbye to a friend and go a different way. You part from each other.*

5. Do the following activities:
   - Have the students work in pairs to find an object in the classroom. They can then name or label its parts. Listen as the students work, then choose a few to share their ideas. Encourage them to use the word "part".

   - Throughout the day, point out when the students are parting from one another (setting up to play a game; leaving a partner or group; moving desks to create space).

6. *What is the word we've been learning that means a piece that fits with other pieces? Say "parts" with me.*

ELL activity

Language objective: Vocabulary development

- Reread the book with the students. *What machines did you read about? How do these machines move? What do they all have?* (an engine)

- *Let's look at the truck.* Turn to pages 4 and 5. *The truck has an engine. What does the engine do so the truck can move? Look at the pictures to help you.* Encourage the students to talk about the wheels and how the engine makes the wheels turn around.

- Read page 5 together. Ask the students to stand up and "turn around" as they say "turn around". Before they sit down, repeat the sentence: *The engine makes the wheels turn around.*

- Repeat this activity for each machine. (bulldozer: tracks turn around; ship: propeller spins; plane: engines push)

- To assess their comprehension, ask individual students to demonstrate the movement of each machine.

- *Show me what the propeller on a ship does. What do the tracks on a bulldozer do?* Ask the students to say the action while doing it.

- Support the students to say the action using a complete sentence. "The engine makes the propeller spin."

Ideas for revisiting the text

1. Review and check

- Listen as the students reread the text. Observe their fluency and decoding strategies.

- Review the anchor and content words. Check that the students know what each word means and how it is used in context.

2. Stop and learn

a. Decoding/word attack activities

Practising onset and rime
- Write "fly" on the board. Ask the students to practise saying it.

- Have them find other words in the text that rhyme with "fly". Use these to begin a word family (sky, by).

- Write "sky" and "by" on the board.

- Identify the letters that make the words rhyme. Point out that "y" sounds like "i".

- Encourage the students to think of other words that rhyme with "fly". Continue building up the word family (try, spy, cry, fry, dry, shy, my).

Practising changing singular to plural
- Write "machine" on the board. Ask the students to practise saying it.

- *How would the word change if there were more than one machine? How would you spell it?*

- Write "machines" on the board. Explain that this is called a plural. *A plural names more than one thing.* Explain that "machine" is singular because it names just one machine.
- Emphasise the difference in the words. Ask the students to say each word and to look at each other as they say them.
- Write "part" and "parts" on the board. *How are these words different?*
- Have the students watch each other say "part" and "parts".
- Write other words from the book on the board, such as truck, ship, and bulldozer. *How would you say there is more than one machine?*

BLM – Making words plural
    The students can circle the plural words and write them in the spaces provided.

b. Comprehension activities

- Talk about the diagrams. Discuss the features that show movement (arrows). Tell the students that they are going to help you draw a diagram that shows "cause and effect". The diagram will use words and arrows to show how one things causes another. *What must a machine have before it can move?* Write "engine" on the board and draw an arrow. *What does the engine do?* Write "makes the wheels, tracks, or propeller move" and draw another arrow. Have the students describe what happens next and write this down. Have the students work through the diagram to see if it explains how one thing causes another to happen.

BLM – Reading and completing sentences
    The students can use the cause-and-effect flowchart to show how a machine moves. Have them finish the sentences, then write why they would travel on a ship or bulldozer.

c. Writing activity

Ask the students to design a new machine. Have them follow the steps below:
- Name the machine.
- Label its parts.
- Use captions to explain how the machine moves.
- Write the machine's purpose.

3. Suggestions for further activities

- Collect pictures of machines and make a mural.
- Take a walk around the neighbourhood and look for machines. Take photos to keep as a record.
- Look at an engine in a car or a truck. Ask an expert to name and describe some of the parts.