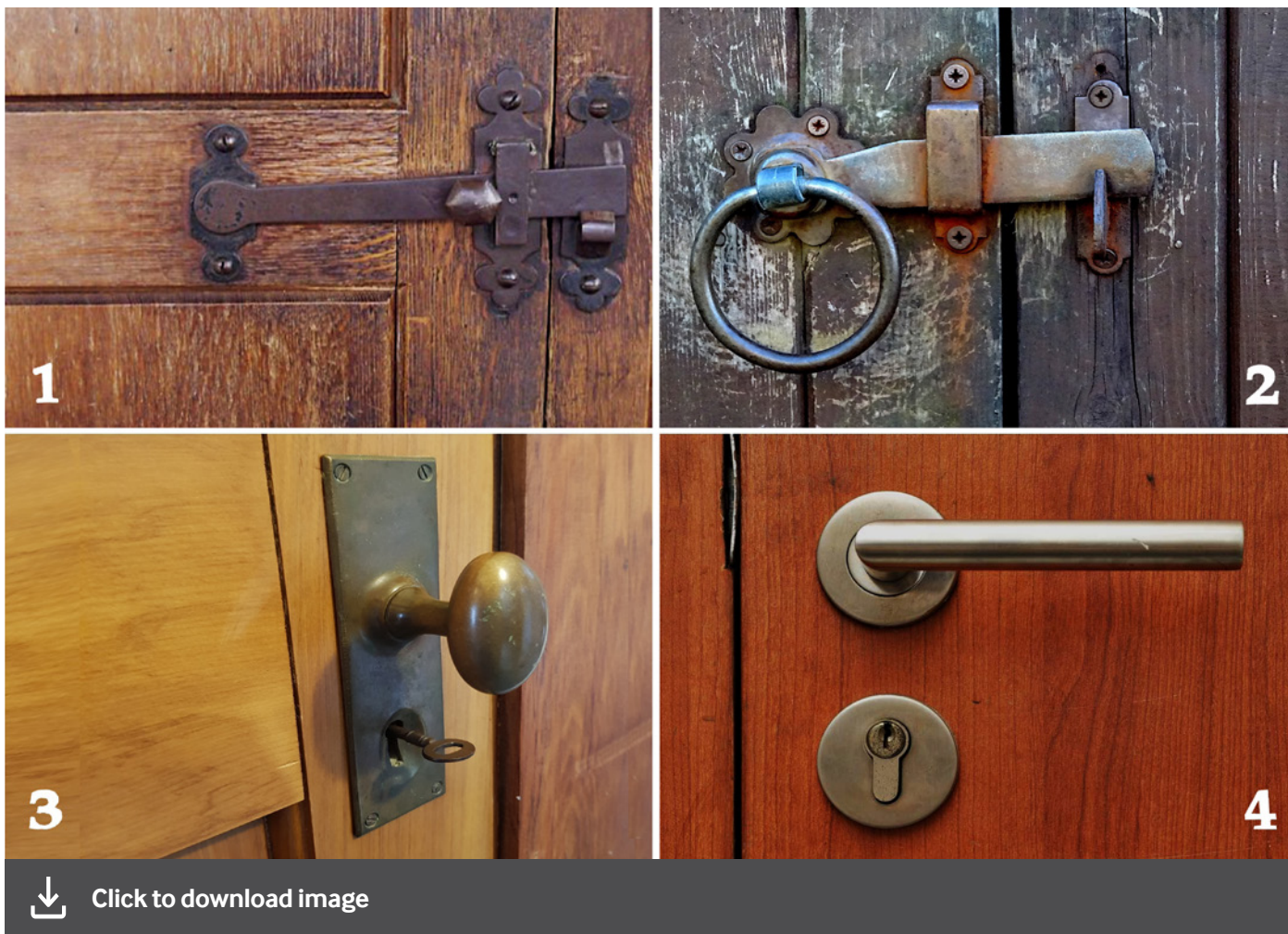


# Free resources

## Picture for talk



A picture can be a very good stimulus for children to engage in effective talk in science.

Using pictures is an inclusive approach which facilitates high levels of participation. Pictures can also be used as a starting point for enquiry. The discussions the children have will generate questions that they want to investigate.

Asking the children carefully chosen questions about the picture will support them with learning to:

- Construct explanations and link their ideas with evidence
- Make confident challenges to the ideas of others
- Explore scientific terminology and use it with genuine understanding

Pictures for talk in science activities are designed to be very open ended and usable with children of any age. The activities can be done as a quick ten-minute starter, or extended into a longer and more in-depth lesson.



## What to do

Download the image on page 11 by following the link and either display it on a whiteboard or give out printed copies. Ask the children to discuss, in groups of three, the following questions:

**What similarities and differences do you notice between the pictures numbered 1 to 4?**

**What would you need to do with your hand to open each of these doors?**

**Which door would be the easiest to open and which would be the hardest?**

**Why do you think this?**

The children might identify that they would need to do the following to open each door:

### **1. Pull the metal knob upwards to release the catch.**

Ask them to think about the positioning of the metal knob on the horizontal latch and what would happen if it had been put further to the left.

### **2. Rotate the metal ring anticlockwise.**

Ask them to think about the diameter of the metal ring and what difference it would make if it was bigger or smaller.

### **3. Twist the doorknob anticlockwise.**

Ask them to think about the difference it would make if the doorknob was bigger or smaller and to explain why they think this.

### **4. Push down on the handle.**

Ask them to think about what it would feel like if they held the part of the handle closest to the middle where it attaches to the door compared with holding it right at the end of the handle.

After the children have shared their ideas, explain that the type of engineer that designs door mechanisms is called a **mechanical engineer**. Ask them to think about and discuss why we need door handles, and why engineers and product designers might want to keep thinking about new designs.

### **Other questions to generate and promote thinking and explaining**

- What materials are each of the doors and handles made from? Why do you think these were chosen?
- Which type of handle do you think was most likely to have been used in the past? Which type do you think is the most recent invention? Why do you think this?
- How do door handles actually work? What do you think must be inside the structure of the door?
- If you could design a new type of door handle what would it look like? How would it work?

Note that the door mechanisms shown in the pictures are numbered 1-4 to give a very rough idea of how designs have changed over time, and this isn't to say that handles like the one shown in picture 4 were not used in earlier times, or that latches like the one shown in picture 1 are not made any more.

### **Follow-on ideas**

The learning from this picture for talk can support learning about forces (pushes, pulls, twists) and also about levers.

Children could observe all the different kinds of door opening mechanisms they can find in the school, at home, and around and about. In particular they could identify whereabouts in the mechanism a lever is being used, and what type of force they need to use in order to open the door. They could also find out more about door mechanisms by taking apart a door handle (ask local hardware shops if they would donate some spares or old ones).

➡ **Meet Rafsan Chowdhury, a mechanical engineer, by watching this video and looking at this slideshow from PSTT's A Scientist Just Like Me resources.**

The following resources support learning about levers:

➡ **Explorify activity: Have you ever moved position to get a see-saw to work better?**

➡ **A guide to common misconceptions about Levers, Gears and Pulleys, with ideas for classroom activities, by PSTT Fellows Jenni Monach and Bryony Turford**