Marie Curie

LINKED CHALLENGE

To find out about things that cannot be seen

ACTIVITY OVERVIEW

Activity leader to explain that much of Marie Curie's work was dangerous and involved things that could not be seen. Due to the danger involved, the activities here are linked only to objects that are safe.

Watch the @Bristol (We the Curious) video using the QR code, then use different liquids and objects to explore which objects can seem invisible. (https://www.youtube.com/watch?v=UIovk_LgHRA)

Health and Safety: this works best with glass objects. If these are available to you, give children specific instructions on what to do if anything breaks.

Extension activity: using lemon juice, children to write secret messages onto white card/paper, then dry them with a hairdryer. Painting over with watercolour paints will reveal the hidden message. Children could explore this further with other citric fruit.

RESOURCES

Main Activity

Selection of liquids including different oils and glycerol

Rubber gloves

Clear beakers

Marbles, test tubes and other clear objects

Extension

Lemon/lemon juice

Paint brushes

White paper/card

Hairdryer

Watercolour paint

Lime, orange

KEY FACTS/SCIENCE

Main activity: As light passes from one material type into another, it changes speed. If light strikes the surface of a transparent object at an angle, it also changes direction and the object appears to bend. This is called refraction and together with some light reflection, it may allow us to see the edges of an object more clearly. Different objects/liquids have different refractive properties. If two materials have the same refractive properties, light passes straight through and things become harder to see or even appear to disappear!

Extension activity: the lemon juice is absorbed into the paper and is colourless. The juice contains carbon compounds which change into carbon when heated in air; the carbon reacts with oxygen (a process called oxidation) and produces a brown substance; this is a chemical reaction as new substances are formed and is an example of a non-reversible change.

QUESTIONS/FURTHER LEARNING

- Which liquid worked best and why do you think it did?
- Can you explain how this happens?
- Why do you think the messages are revealed when they are painted over?

https://www.youtube.com/watch?v=UIovk_LgHRA