

ILLUSION CONFUSION

Presented by Arkansas Discovery Network

Periscopes

Key student learning

- Light travels in straight lines.
- Light is reflected by mirrors.
- Periscopes allow us to see events and objects previously obscured.
- Periscopes work by using multiple mirrors.

Materials list

- Periscope template
- 1 mirror approx. 100 mm x 100 mm, 1 mirror approx. 50 mm x 100 mm (both can be cut from a single sheet of mirror polystyrene, e.g. from www.mutr.co.uk)
- Tape
- Scissors

Practicalities

You may choose to have the students construct the periscope in one piece to demonstrate the standard arrangement, then get them to discuss how they could see behind them.

Open-ended investigation

For a more inquiry-based activity, challenge the children to build a periscope that they can use to see behind them.

Discussion

Look at the picture of the man with the periscope on next page.

What do you think the soldier is doing?

Why do you think a periscope might be useful to him?

Why are periscopes useful?

What is happening to the light?

What position do you need to put the periscope in to make the image the right/wrong way up? Why?

Extensions

- How can you look behind you and still see an upright image?
- You may want to combine this line of questioning with exploratory work on lenses.
- Can you make a reflector that will bounce a beam of light directly back to you, wherever you stand in the room, without moving it?
- Relate this to radar reflectors on ships and the one on the Moon's surface (see next page).
- What is the tallest you can make the periscope? Can you look on the school roof? Can you find any lost footballs?



The Arts & Science Center

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Links to everyday life

The first Apollo mission to the Moon left a small panel of mirrored ‘corner’ reflectors (each made of **three mirrors set at right angles**), which reflect back laser light directed at them from Earth. This gives us very precise measurements of how far away the Moon is from the Earth.

The first Apollo mission to the Moon left a small panel of mirrored ‘corner’ reflectors

In the First World War periscopes were used to safely look over the top of the trenches.

PS.7.8.6, PS.7.8.7, PS.7.8.8, PS.7.8.9, PS.7.8.10, PS.7.8.11, PS.7.8.12, PS.7.8.13, PS.7.8.14

