Lesson 22

energy-forces

Light: natural and artificial sources, and how we see

Lesson at a glance

Open by closing eyes briefly and asking where the classroom light comes from, and whether anyone could see with no light at all. Pupils sort natural vs artificial sources on a short classroom light hunt using printed cards, then predict and test materials with a torch against a white screen as transparent, translucent or opaque. Results and one natural plus one artificial source go into the Investigation Journal. Close with display-only talk on evidence and why we need light to see.

Learning objectives

- Sort light sources into natural and artificial
- Test materials as transparent, translucent or opaque
- Explain that we need light to see

Before the bell — prep

Print one light-source card set per group (sun, stars, candle, lamp, torch, screen, IWB, bike light). Gather torches, white screens or paper, and test samples: clear plastic, tissue, baking paper, thin fabric, cardboard, foil, plus desk word cards. Dim the room slightly if you can.

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Materials

Item	Qty	Per	Source	Low-cost substitute
torch	1	group	school kit	one or two class torches used in a station-turn sequence while the rest of the class watch and answer prediction questions, or the torch on a supervised classroom tablet
white screen or large sheet of white paper	1	group	classroom	a clear section of pale wall or the back of a large whiteboard
clear plastic sample (cut from a clear document wallet)	1	group	classroom	clear plastic from clean food packaging (smooth, no sharp edges)
tissue paper sample	1	group	classroom	a thin paper napkin
baking paper sample	1	group	supermarket	greaseproof paper or thin tracing paper
thin fabric scrap	1	group	classroom	an old clean handkerchief or thin tea towel corner
cardboard sample	1	group	classroom	a piece of cereal-box card
aluminium foil sample	1	group	supermarket	the shiny side of a crisp packet rinsed and dried
light-source cards (sun, fire or candle, stars, electric lamp, torch, phone or tablet screen, interactive whiteboard, bicycle light)	1	group	classroom	write the eight names on scrap paper or sticky notes
sorting trays or floor labels for Natural and Artificial	2	group	classroom	two sheets of paper labelled Natural and Artificial
word cards transparent, translucent and opaque (with sample phrases clear bright patch, soft glow, dark patch)	1	group	classroom	three sticky notes with the words and sample phrases
Investigation Journal page	1	pupil	classroom	plain paper listing: each material; screen look; transparent/ translucent/opaque; one natural source; one artificial source

Safety watch-point

Never look straight at the sun. Never shine torches at eyes or faces—point only at the screen; walk with torches off between stations.

Teaching moves

- **Two kinds of light source:** Project only the two key points. Teach natural and artificial now; hold transparent/translucent/opaque for the torch sequence. Ask whether a switched-off torch counts as a source right now (no). If eyes-send-out-light appears, keep the Stage 3 idea: light comes from a source, hits things, and enters our eyes.
- **Natural or artificial?:** Keep the sorting rule on the board. Model the candle first (people light it, so artificial). Groups hunt indoors and sort real sources plus cards into Natural and Artificial trays. Revoice sun-through-window as still natural, and candle as artificial. End with a 1–2 minute journal jot of one natural and one artificial source.
- **Words for the torch test, then predict:** Hold up clear plastic, tissue and cardboard and chorally name transparent, translucent, opaque by screen look. Leave those anchors visible. Vote on baking paper, thin fabric and foil using clear bright patch / soft glow / dark patch; ask one why each time. Do not reveal results—leave the shiny-foil idea live for the test.
- **Torch test: what lets light through?:** Model cardboard once aloud: predict, hold flat a hand-span from the screen, observe dark patch, conclude opaque. Then groups or a station-turn test the set matching screen look to word cards. Same torch distance, material flat, look at the screen not into the beam. If torches are scarce, run turns and gather a full class list on the board before recording.
- **Record what the light did:** Project material → screen look → one word. Pupils finish ticks and complete the journal fields, copying any missed materials from the board list. If someone writes shiny for foil, send them back to the screen and the word cards. Early finishers sketch where opaque and transparent materials help in school.
- **Make sense and tidy:** Display-only science talk: revoice pupil evidence that we need light to see, sort natural vs artificial, and match screen looks to T/T/O. Return to a wrong-footed foil prediction—shiny can bounce light, but this test asked what passes through. Collect torches off, clear trays and walkways.

What it should show

Natural cards: sun and stars. Artificial: candle/fire, lamp, torch, phone/tablet, IWB, bicycle light. Clear plastic: bright clear patch (transparent). Tissue and baking paper: soft glow (translucent). Thin fabric: often translucent, nearly opaque if thick. Cardboard and foil: dark screen (opaque). Foil surprises groups who predicted it would let light through because it is shiny.

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Misconceptions & interventions

- **The moon is a light source / makes its own light.** — Park it gently: we check sources that give out light today. If needed later, note the moon reflects the sun's light rather than making its own.
- **Our eyes send out light so we can see.** — Keep the simple idea: light comes from a source, hits things, and enters our eyes. Link back to the dark-room question—without a source we cannot see.
- **Foil will let light through because it is shiny.** — Leave the prediction live, then point them at the screen after the test: shiny can bounce light, but today's job is what passes through—foil leaves a dark patch, so it is opaque.

Differentiation

Emerging	Developing	Proficient
• Sort four cards first (sun, lamp, torch, candle) with the board rule visible. • Keep the three desk word cards and sample phrases in reach; match screen look before naming the science word.	• Add light sources spotted on the hunt that are not on the printed cards and justify each sort. • Complete full journal rows for every material from own tests or the class board list.	• Choose a classroom object for a window, a lampshade, or a blackout blind and say why using transparent, translucent or opaque. • Sketch where opaque materials help privacy or darkness and where transparent ones let daylight in.

Cross-curricular hook

Link to Irish rural history: rushlights, then candles and oil lamps, then electric bulbs—same job, changing artificial sources.