

LESSON 14

Electric Light and Switch

30 minutes

Electricity and Simple Circuits

WHAT THIS LESSON DOES

As the teacher, guide your students through the basics of electricity and switches using Snap Circuits. Explain key concepts, assist with assembling components on the base grid, and ensure safety while they light up a lamp with a slide switch.

WHAT STUDENTS SHOULD BE ABLE TO DO

- Understand the basic principles of electricity and its everyday applications.
- Identify and explain the function of a switch in an electrical circuit.
- Construct a simple electrical circuit using Snap Circuits, demonstrating practical skills and safety awareness.
- Apply knowledge of electricity and circuits to explain why a light bulb lights up when connected to a battery and controlled by a switch.
- Develop problem-solving skills by troubleshooting and correcting any issues with the circuit to ensure the light bulb lights up.

BEFORE THE LESSON

- This is an unplugged, kit-based lesson: no devices, logins or website needed.
- Check each Snap Circuits set is complete and has working batteries in the holder. Test-build one circuit yourself so you can spot loose snaps quickly.
- Give each group a flat, stable surface with room to spread out the base grid.
- Have the block references to hand: battery holder B1, wire block 3, lamp L1, slide switch S1.

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HOW THE LESSON RUNS

Introduction to Electric Light and Switch

Prepare the Base Grid

Inserting Batteries

Place the battery holder (B1)

Place wire block (3)

Place the lamp block (L1)

Place the slide switch block (S1)

Lighting Up the Circuit

Exploration Time

TEACHING MOVES

1. Introduction to Electric Light and Switch. Anchor electricity in everyday examples pupils know: lights, phone charging, cooking. Then hold up the slide switch and ask what a switch does before you explain it.
2. Prepare the Base Grid. Have each group set the base grid flat and clear the space around it before any blocks come out, so nothing shifts mid-build.
3. Inserting Batteries. Walk the room and confirm every set has its batteries seated in the holder before starting. A dead or missing battery is the most common reason a circuit will not light.
4. Place the battery holder (B1). Teach the grid as a map first: letters are streets, numbers are roads, C4 is where they cross. Get everyone finding C4 before they snap in the holder.
5. Place wire block (3). Show that the wire block is the road electricity travels along, connecting C2 to E2. Check both ends have snapped down firmly.
6. Place the lamp block (L1). Place the lamp from C2 to C4 and name it as the bulb in the circuit. Press until it snaps; a lamp that only sits on top will not light.
7. Place the slide switch block (S1). Add the switch from E2 to E4 and compare it to a light switch on the wall. Pause here and have pupils check every block is snapped before the next step.
8. Lighting Up the Circuit. Ask pupils to slide the switch to ON together. Use the water-slide picture: battery pumps, wires are the slide, switch is the gate. If a lamp stays dark, treat it as a puzzle, not a failure.
9. Exploration Time. Let groups rebuild or extend their circuit. Move around asking pupils to explain how power gets from battery to lamp, and what the switch changes.

WHAT TO WATCH FOR

- Students may think: Pupils think placing a block on the grid is enough, without snapping it down, so the circuit stays dead. What to do: Show that each block must press until it clicks. Have them run a finger along and press every join before testing.
- Students may think: Pupils read the grid coordinates the wrong way round, mixing up the letter and the number. What to do: Reinforce the map idea: find the letter street first, then the number road, then the point where they meet. Point to C4 together as a check.
- Students may think: Pupils expect the lamp to light with the switch still in the OFF position. What to do: Have them slide the switch back and forth and watch the lamp respond, so they connect the switch action to the flow of electricity.

DIFFERENTIATION

- Emerging: Pre-place the battery holder for pupils who are struggling to find coordinates, then let them add the remaining blocks. Pair them with a partner who reads out each coordinate aloud as they place blocks together.
- Developing: Ask them to predict, before flicking the switch, whether the lamp will light and why. Have them talk you through their circuit, pointing to the battery, wire, lamp and switch in turn.
- Proficient: In exploration time, challenge them to rebuild the circuit in a different position on the grid so it still lights. Ask them to add or swap a component and explain what changes when they do.