

Conductors & Insulators

Conductivity Court with Craftling

Learning target

Choose conductors or insulators for a stated job.



Before you begin

Use the reference page and discussion prompts on their own, or open the optional browser adventure. No earlier lesson or physical kit is required.

For online play: use an internet-connected current browser with local storage enabled. Read the three-part Gemling briefing, answer the quick check, and apply the evidence at three checkpoints. Retry feedback supports review; results are not a secure test or gradebook.

Use for teacher-led review, science centers or partner practice. Independent readers may need support with the vocabulary below. The design target is grades 3-5; choose support based on the learner.

Vocabulary and concepts to discuss

Heat transfer; electrical conduction; insulation; purpose-specific selection

Open Conductivity Court - direct lesson link

Scan the QR code or use the clickable link. This guide is usable offline; the adventure runs on an external educational website.



Conductors & Insulators - key ideas

1. The first clues

Thermal conductors transfer heat more readily; thermal insulators slow it. Electrical conductors allow electric current to pass more readily than electrical insulators.

2. How the clues connect

Heat and electrical tests answer different questions. Many metals conduct both, but use the relevant supplied record for the design.

3. Our evidence record

Our heat record shows a metal handle warming quickly and a wooden handle warming more slowly. A separate low-voltage circuit record shows metal conducting. We read records rather than perform live electrical tests.

Keep the science accurate

Compare properties through fair tests. Strength, hardness and flexibility are not interchangeable; no live electrical testing required.

Apply the evidence

Use a specific observation from this lesson to explain one choice. Point to a clue, then connect that clue to a scientific idea.

Curriculum reference: <https://www.nextgenscience.org/dci-arrangement/2-ps1-matter-and-its-interactions>

Talk through the evidence

1. Which handle slows heating in the record?

Expected answer: Wooden handle

Reasoning: Our heat record shows a metal handle warming quickly and a wooden handle warming more slowly. A separate low-voltage circuit record shows metal conducting. We read records rather than perform live electrical tests.

2. Which test answers an electrical-conduction question?

Expected answer: The circuit record

Reasoning: Heat and electrical tests answer different questions. Many metals conduct both, but use the relevant supplied record for the design.

3. Are thermal and electrical properties the same measurement?

Expected answer: No

Reasoning: Thermal conductors transfer heat more readily; thermal insulators slow it. Electrical conductors allow electric current to pass more readily than electrical insulators.

4. Why select the wooden handle for this heat task?

Expected answer: It warmed more slowly in the test

Reasoning: Our heat record shows a metal handle warming quickly and a wooden handle warming more slowly. A separate low-voltage circuit record shows metal conducting. We read records rather than perform live electrical tests.

Guide the discussion

Ask learners to name the evidence that supports their answer. If an answer differs, revisit the matching key idea on page 2 and invite a revised explanation.

Online rewards: this lesson grants one fixed digital Expedition Discovery. Five saved digital Gemling friends become available only after all six distinct subject lessons are complete, in any order. Digital rewards do not establish physical ownership.