HERO-CON · SUPERHERO SCIENCE TEACHER GUIDE

If Superpowers Were Real: Invisibility

Activity pack to go with the TED-Ed video · About 50–55 minutes · Can be split across two days

Watch: If Superpowers Were Real: Invisibility (Joy Lin, TED-Ed)

About 5 minutes · ed.ted.com/lessons/if-superpowers-were-real-invisibility-joy-lin · If your facility blocks streaming, download or queue the video ahead of time.

The video asks whether invisibility is scientifically possible, and what problems an invisible person would actually run into. It connects directly to the Unmasked Science lessons on **light**: we see things only when light bounces off them and into our eyes.

Learning Objectives

Students will be able to:

- Explain how light lets us see objects
- Sort materials as transparent, translucent or opaque
- Use evidence from the video to explain why true invisibility is so hard
- Design a solution to a science problem their hero might face

Materials

- Video link (above)
- Pencil
- Student pages 3–6
- Optional: colored pencils or markers

Lesson Flow

Step	What students do
Warm-up · 5 min	Ask: *"Name one thing you can see through and one thing you can't. What's the difference?"*
Watch · 5 min	Show the video. Students can skim the vocabulary on page 3 first.
Check-in · 15 min	Part 1 Multiple Choice (page 3) and Part 2 Open Response (page 4)
Light Detective · 10 min	Part 3 (page 5): students sort objects around the room by how they handle light.
Design · 15 min	Part 4 (page 6): students pick an invisibility problem and design a fix for their hero.
Exit ticket · 5 min	One thing they learned about light, and one question they still have.

Optional Discussion: Being Seen

The video shows that being invisible would actually be pretty lonely: no one could see you, and you couldn't even see them. If it fits your group, ask: **"Invisibility sounds cool, but what would you miss? In real life, what helps someone feel seen and noticed?"**

Video © TED-Ed · Activities by BreakFree Education

Answer Key

Part 1 · Multiple Choice

1	**C** No one has made a moving person invisible from every angle. Scientists have only hidden small objects, from certain angles or in certain kinds of light.
2	**D** Footsteps (hearing), scent (smell) and bumping into someone (touch) can all give an invisible person away.
3	**B** Anything that lands on them, like rain, dust or lint, would outline their shape.
4	**B** To see, our eyes must **absorb** light. Invisible eyes would let light pass straight through, so the person would be blind.
5	**B** Doctors rely on seeing things like redness, swelling and bruising to understand an injury.

Part 2 · Open Response (sample answers)

1. **How close are we?** Scientists have made small objects seem to disappear from certain angles or in certain kinds of light, but no one has made a whole person invisible while they move.
2. **What gives them away?** Rain, dust, food or lint landing on them; footprints; sounds they make; their smell; people bumping into them. A strong answer names at least three and explains one.
3. **Why couldn't they see?** We see when the retina in our eyes absorbs light. If a person's eyes were invisible, light would pass right through instead of being absorbed, so they couldn't see.

Part 3 · Light Detective (examples)

Transparent	Translucent	Opaque
Clear window, clear plastic cup, water bottle	Frosted window, thin paper, tissue, plastic bag	Desk, wall, book, door, clothing

Invisible person: their body would be transparent, since light passes through it without being blocked or bounced back.

Part 4 · Design Challenge (what to look for)

- The fix clearly matches the problem they chose (for example, a visor that blocks light only at the eyes so the retina can absorb it).
- The explanation uses at least one science word: light, absorb, reflect, transparent or opaque.
- The student names a trade-off. For example, the visor makes their eyes visible, so they're not fully invisible anymore.

Invisibility: Check Your Understanding

Name _____ Date _____

Words to Know

Absorb: to take in light instead of letting it pass

Transparent: lets light pass straight through

Opaque: blocks light completely

Reflect: to bounce light back

Translucent: lets some light through, but blurry

Retina: the back of the eye that absorbs light so we can see

1 Multiple Choice Circle the best answer.

1. Which statement best describes where invisibility science is today?

(A) Scientists can make people fully invisible
(B) Only magicians know how to do it
(C) No one has made a moving person invisible from every angle
(D) It has never been studied

2. Your invisible hero sneaks into a room. What could give them away?

(A) The sound of their footsteps
(B) Their scent
(C) Brushing against someone
(D) All of the above

3. It starts raining on your invisible hero. What happens?

(A) The rain passes right through them
(B) Raindrops outline their shape, so people can spot them
(C) They become fully visible again
(D) The rain turns invisible too

4. For our eyes to see, the retina must _____ light.

(A) Reflect all of it
(B) Absorb it
(C) Create it
(D) Let it pass straight through

5. Why would a doctor have a hard time treating an invisible patient?

(A) They couldn't hear the patient
(B) They couldn't see injuries like redness or swelling
(C) The patient would move too fast
(D) Medicine doesn't work on invisible people

Invisibility: Explain Your Thinking

Name _____ Date _____

2 Open Response Answer in complete sentences. Use evidence from the video.

1. How close have scientists come to making something invisible? What still hasn't been done?

2. List at least three things that could make an invisible person noticeable or visible again. Then explain one of them.

3. Why would an invisible person probably not be able to see? Use the words light and absorb in your answer.

Light Detective

Name _____ Date _____

3 How Do Things Handle Light?

Invisibility is all about light. Everything around you either lets light through, lets some through, or blocks it. Look around your classroom and find examples of each.

Transparent
Light passes straight through. You can see clearly through it.

Translucent
Some light gets through, but what's behind it looks blurry.

Opaque
Blocks light. You can't see through it at all.

Transparent	Translucent	Opaque

1. If a person were truly invisible, which group would their body belong in? Why?

2. Your hero needs a suit that hides them in the dark but still lets them see. Which material would you use for the suit, and which for the eye area? Explain.

Design Challenge: Fix the Invisibility Problem

Name _____ Date _____

4 Every Power Has a Problem

The video showed that invisibility comes with real problems. Choose **one** problem and design a fix for your hero: a gadget, a suit, a new ability, or a sidekick.

- ☐ They can't see, because their eyes can't absorb light
- ☐ Rain, dust or food makes them visible
- ☐ People can still hear or smell them
- ☐ A doctor can't see their injuries

Sketch your fix here. Label the parts.

How does your fix work? Use at least one science word (light, absorb, reflect, transparent, opaque).

Every fix has a trade-off. What does your hero give up with this fix?

Exit Ticket

One thing I learned about light today:

One question I still have: