

Blanket Around the Earth

Understanding how the greenhouse effect works - and why it matters

The Earth has a natural blanket of gases around it. Without it, our planet would be frozen. But the blanket is getting thicker - and things are heating up.

In this activity you'll explore how that blanket works, what's changing it, and what that means for us.

1

What do you already know? | 5 min

On your own - no right or wrong answers

Read each statement. Circle **True**, **False**, or **Not sure**.

Statement	True	False	Not sure
The greenhouse effect is always harmful.	☐	☐	☐
Carbon dioxide is the only greenhouse gas.	☐	☐	☐
The Sun heats the Earth's surface directly.	☐	☐	☐
Human activities have changed the amount of greenhouse gases in the atmosphere.	☐	☐	☐
The greenhouse effect is a natural process.	☐	☐	☐
More greenhouse gases always means a warmer planet.	☐	☐	☐

2

Build the picture | 10 min

With a partner - cut out or number these cards in the right order

These steps describe the greenhouse effect - but they're jumbled up. **Number them 1–6** in the correct order.

A Some heat passes back out into space, but greenhouse gases trap some of it close to Earth.	B Sunlight passes through the atmosphere and reaches Earth's surface.	C The trapped heat warms the lower atmosphere - making Earth liveable.
D The warmed surface gives off heat energy (infrared radiation) back upwards.	E Human activities add more greenhouse gases - thickening the blanket and trapping more heat.	F The surface absorbs the sunlight and warms up.

3

The 'but...' moment | 10 min

With your partner - talk through each prompt, then share one with the group

Each sentence starts with something **true**. Your job is to complete the "**but...**" part.

True part	But... (complete this)
The Earth needs some greenhouse gases to survive...	
The greenhouse effect is a natural process...	
Carbon dioxide is only a tiny % of the atmosphere...	
Scientists have known about this for over 150 years...	

4

So what? | 10 min

As a group discussion

If someone had never heard of the greenhouse effect, what's the ONE thing you'd want them to understand?

Write it here:

What's one question you still have about climate change or the greenhouse effect?

Write it here:

Guidance for teachers and climate educators

30–40 mins · KS3 (ages 11–13) · Individual → Pairs → Group

Before you start

Print one pupil sheet per person. Stage 2 works best if pupils can physically cut out the cards - scissors optional but recommended. No prior knowledge needed from pupils.

Answers to Stage 1: 1 False · 2 False · 3 True · 4 True · 5 True · 6 True **Stage 2 order:** B → F → D → A → C → E

1 What do you already know? · 5 min · Individual

Hand out the pupil sheet. Give pupils a moment to read it before starting.

“Take your time with this - there are no wrong answers. Just circle what feels right to you right now.”

Let pupils work quietly. Don't comment on their choices at this stage - the reveal comes later.

-  **If needed:** If a pupil looks stuck or anxious: *“Just go with your gut - we're going to explore all of these together.”*

2 Build the picture · 10 min · Pairs

Ask pupils to find a partner. They should work through the six cards together.

“With your partner, put the cards in the order you think they happen - step 1 through to step 6.”

After 5–6 minutes, go through the answer (B→F→D→A→C→E) together as a group. Pause at step E to emphasise that this is where humans come in.

“The natural greenhouse effect has kept Earth warm for billions of years. Step E is where things have started to change - human activities have added more gases and thickened that blanket.”

-  **If needed:** If a pair is struggling to agree: *“It's fine to disagree - just pick an order and we'll talk it through.”*
-  **If needed:** For pupils who finish early: *“Can you explain in one sentence why step E changes everything?”*

3 The 'but...' moment · 10 min · Pairs → Group

Keep the same pairs. Read the first prompt aloud as a model before they start.

“The Earth needs some greenhouse gases to survive - but... what's the 'but' here? Talk to your partner.”

Give pairs 4–5 minutes to work through all four prompts, then open each one to the room. Suggested responses below - accept any thoughtful answer.

Prompt	Possible 'but...'
The Earth needs some GHGs to survive...	<i>but too many traps too much heat, pushing temperatures beyond what ecosystems can adapt to.</i>
The greenhouse effect is a natural process...	<i>but the speed and scale of change now is driven by human activity, not natural cycles.</i>
CO ₂ is only a tiny % of the atmosphere...	<i>but small concentrations have an outsized effect on how much heat is trapped.</i>
Scientists have known about this for 150+ years...	<i>but global emissions have continued to rise - so awareness alone hasn't been enough.</i>

-  **If needed:** If discussion is quiet: *“Which one surprised you most?”* - lower stakes than asking for an answer.

-  **If needed:** For a pupil who won't speak aloud: accept a written response or let them pass for now - return to their sheet at the end.

4

So what? · 10 min · Whole group

Ask pupils to complete both boxes on the pupil sheet individually first (2–3 minutes), then share.

“Take a moment to write - then we'll hear a few from around the room.”

Collect the 'one thing' responses - read a few aloud. Honour all answers. Then pivot to the questions: these are valuable and don't need to be answered now.

“These are real, hard questions. Scientists, governments and communities are still working on them. That's exactly why this stuff matters.”

-  **If needed:** Sentence starter if pupils are stuck: "One thing I'd say is..." or "I still wonder why..."
-  **If needed:** If group discussion feels overwhelming for some: offer the option to share in writing rather than aloud - collect sheets at the end.
-  **If needed:** For early finishers: "If you had to explain this using only a drawing, what would you draw?"

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