

AI and the Environment

Does using AI have a carbon footprint? A discussion catalyst where AI maps its own environmental cost live, and students debate the trade-off: useful tool versus energy use.

Teacher note

This lesson keeps the question balanced: AI can be useful, but it is not cost-free. Data centres use electricity, cooling, hardware, and water depending on location and system design.

Any numbers AI gives must be verified. Figures change by model, data centre, electricity source, cooling method, query type, and date.

1 40-minute discussion flow

Teacher-led. Students weigh a real technology-versus-environment trade-off.

0–5 min Hook

Ask: “When you ask AI a question, what physical things might happen somewhere else?”

5–15 min Live AI map

Run the footprint prompt and list energy, cooling, chips, data centres, and emissions.

15–25 min Verify

figures

Students identify which numbers need sources and what is uncertain.

25–40 min Debate

When is AI use worth the environmental cost?

☐ Class understands the lesson is balanced: useful tool, real cost.

2 Run the live footprint prompt

Perplexity is useful because it can show sources. ChatGPT, Claude, or Gemini can help explain the map.

COPY-PASTE LIVE CLASS PROMPT

Does using AI have an environmental cost? What uses energy, how much, and what could reduce it?

Explain for Grades 9-12. Keep it balanced. Separate:

1. What physically uses energy when someone uses AI
2. What the environmental costs may include
3. What numbers or estimates are known
4. What numbers are uncertain or debated
5. What could reduce the footprint
6. What students should verify before quoting any figure

Give sources for any specific numbers.

TEACHER MOVE

Before showing the answer, ask students to predict: electricity, cooling, servers, chips, internet networks, and model training. Then compare with AI's answer.

☐

Class ran the live prompt and mapped the AI footprint.

3 Map what creates the footprint

AI feels invisible, but it runs on physical infrastructure.



Electricity

Servers process prompts and generate answers. Bigger models and longer tasks usually need more computation.



Cooling

Data centres need cooling so machines do not overheat. Cooling can use electricity and, in some places, water.



Hardware

Chips, servers, buildings, and networks have manufacturing and maintenance impacts before a student ever types a prompt.

THOUGHT BULB

“Digital” does not mean “impact-free.” It means the impact is often hidden from the person using the tool.

4 Verify before quoting figures

This is the science-and-media-literacy part of the lesson.

Claim type	Why it needs checking	What source to look for	Class decision
“One AI query uses ___ energy.”	Depends on model, answer length, hardware, system load, and method of estimate.	Research paper, company report, energy study, reliable tech/environment outlet.	Do not quote without source and date.
“AI uses water.”	Cooling method and local climate matter. Not every data centre is the same.	Data centre report, company sustainability report, local water/cooling explanation.	State carefully with context.
“AI can reduce emissions.”	AI may optimise systems, but it can also increase demand.	Case study, verified project, independent analysis.	Ask: compared to what?

FIGURE-CHECK PROMPT

Here is an AI answer about AI's environmental footprint:
[paste answer]

Make a verification table:

1. Specific figure or claim
2. Source given
3. Date of source
4. What assumptions affect the number
5. Whether it is safe to quote in class
6. How to word it carefully

Do not invent missing sources.

CAUTION BOARD

A single dramatic number can mislead. Always ask: what model, what task, what energy source, what date, and compared to what?

☐ Class identified which figures need verification before being quoted.

5 Debate the trade-off

The goal is not “AI good” or “AI bad.” The goal is judgement.

Side A: AI may be worth using

It can help students understand difficult topics faster.

It can save time when used for planning, accessibility, translation, or feedback.

It may help optimise energy, transport, agriculture, science, or disaster response.

Side B: AI use has costs

It uses data centres, electricity, cooling, hardware, and networks.

Easy access may encourage unnecessary or wasteful use.

The environmental cost is often hidden from the user.

DEBATE RULE

Good debate sentence: “AI may be worth it when _____, but not when _____.”

☐ Class debated the trade-off with both benefits and costs.

6 Page 3 question: when is it worth it?

This is the heart of the class kit.

AI use	Likely worth it?	Why / why not?	Smarter use rule
Asking AI to explain a hard science concept before studying.	Often yes	It can improve understanding if checked against textbook.	Ask a clear prompt, then verify.
Generating 20 versions of a joke just because you are bored.	Maybe not	Low value compared with cost.	Use fewer prompts or skip.
Helping a visually impaired student access text.	Strong case	Accessibility benefit may be high.	Use purposefully and efficiently.
Using AI to avoid thinking or learning.	No	Cost without real learning benefit.	Use AI to understand, then do the work yourself.

THOUGHT BULB

Environmental judgement is not only “use less.” It is also “use better”: clear prompts, useful tasks, less waste, and verified outputs.

☐ Class created at least one rule for when AI use is worth it.

7 Discussion questions

Choose 3–5 depending on time.

CLASS DISCUSSION

1. Why do digital tools feel “free” even when they use real resources?
2. Is one useful AI prompt different from ten careless prompts?
3. Should students think about energy cost before using AI? How much?
4. When could AI’s benefits outweigh its environmental cost?
5. What should companies do to reduce AI’s footprint?
6. What should users do to reduce wasteful AI use?

BALANCED CLOSER

AI is not magic and not evil. It is a powerful tool with physical costs. The smarter question is: when is the use valuable enough?

8 **Four-page class kit preview**

Use this as a printable lesson structure.

Page 1 • Hook + Setup

AI feels invisible

Students predict what physical resources AI uses: electricity, cooling, data centres, hardware, internet networks.

Page 2 • Live Footprint Map

Ask AI about AI

Teacher runs the live prompt. Class separates energy uses, environmental costs, uncertain estimates, and reduction ideas.

Trade-off debate

Students compare useful AI uses with careless uses and create a “use AI when...” rule.

My AI energy rule

Students complete: “AI is worth using when _____, but I should avoid using it when _____.”

9 Exit ticket

End with one personal judgement rule.

AI is worth using when...

AI is worth using when _____, but I should avoid using it when _____.

CLASS CLOSER

AI has an environmental footprint. A smart user asks better prompts, wastes fewer prompts, checks figures, and uses the tool for tasks that matter.

☐ Students completed the “when is it worth it?” exit ticket.

Teacher wrap

Final board line: **“AI is useful, but not cost-free. Use it when the value is real.”**

☐ Class mapped what creates AI’s environmental footprint.

☐ Class treated figures carefully and verified before quoting.

☐ Class made a balanced rule for when AI use is worth it.