AI for Green Transition and Sustainability

Classroom activity: Two Faces of AI — sustainability gain vs. digital footprint

Objective: identify a real AI application that supports sustainability in the learners' own sector, weigh its environmental benefit against the environmental cost of running it, and justify a balanced verdict.

Time: 75 minutes

Grouping: teams of 3–4 learners

Materials: internet access, the one-page worksheet (benefit / cost / verdict), and optionally a generative AI tool (e.g. a chatbot).

Instructions:

Framing (10 min). Introduce the double character of AI with one quick example, e.g. an app that optimises solar output but runs on energy-hungry data centres.
Choose a case (10 min). Each team picks a real AI application relevant to their trade (energy, engineering, construction, IT, agriculture, marketing…).
Research the gain (15 min). What does it optimise, monitor or save? Describe the sustainability benefit in concrete terms.
Research the cost (15 min). List the environmental costs of running this AI (energy, water, hardware, rebound). Teams may use a generative AI tool to draft the list, then verify it critically — this doubles as a prompting and fact-checking exercise.
Verdict (10 min). Complete the benefit-vs-cost table and choose: clearly worth it / it depends / not convincing. Justify with evidence.
Share & debate (15 min). Each team gives a 2-minute verdict; the class discusses where opinions differ and why.

Teacher closes by linking the discussion to a key idea: a technology is never green or not green in the abstract — it depends on how, where and why it is used.

Exit ticket:

"One AI application I would recommend for sustainability, and one condition that has to be met for it to be worth its footprint."

Reflection question

Did using an AI tool in step 4 itself have an environmental cost — and was it justified here?

Sector variations

Energy: renewable-generation forecasting. Engineering: generative / lightweight design. Construction: AI safety monitoring or material estimation. IT: efficient code and data-centre cooling. Agriculture: precision irrigation. Marketing: content generation and its footprint. Remind learners that published figures vary widely and change quickly — reward balanced, evidence-based judgement over certainty.

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