

Around The World

Overview

Plan a trip between global cities by exploring different routes and travel options. Compare choices like trains, boats, buses, and planes, and consider the trade-offs between speed, cost, convenience, and emissions.

Learning outcomes

- Learn about the different modes of transportation that can be used to get from point A to point B, understanding which have higher and lower emissions and why.
- Apply problem-solving and planning skills by designing a route under set constraints.
- Reflect on trade-offs related to speed, convenience, cost, and sustainability, and whether these may be positive or negative.

Proof to submit

- Completed route maps or lists showing all chosen modes of travel
- Class reflections (written, audio, or visual) on which routes seemed most fun, easiest, or lowest-emission.

Curriculum Connections

- Geography: Global cities, mapping, transportation networks, spatial thinking
- Mathematics: Distance, time, cost, estimation, data analysis
- Science: Energy, transportation emissions, environmental impacts
- Social Studies: Global connections, infrastructure and transportation choices

Materials

- Internet access for researching routes
- World map or mapping software (e.g., Google Maps, Rome2Rio, etc.)
- Chart of rough emissions per mode (provided in teacher resources)

Activity

Grades K to 6

As a class or in teams, students plan a trip between two global cities (e.g., Toronto to Tokyo). Their route must use at least two different modes of travel. After mapping their journey, they share which routes were fastest, lowest-emission, or most fun.

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Grades 7 to 12

Students work individually or in groups to plan a trip between two global cities (e.g., Toronto to Tokyo). Routes must include at least three different modes of travel, and no mode can be used for more than 7 hours at a time before switching. Students estimate travel time, cost, and emissions (using the chart provided) for their route, then present and compare results with peers. They also reflect on trade-offs across speed, convenience, cost, and sustainability, and discuss what is gained or lost beyond emissions (e.g., cultural connections, comfort, flexibility).

Optional Extension: What Kind of Vehicle Are You Taking?

High School: Take a closer look at the specific vehicles used in your route. For one or more modes of transportation, research what type of vehicle and energy source you would actually use. For example:

- Would your train be electric or diesel?
- Would your ferry or ship use marine diesel, LNG, or another energy source?
- Would your flight be a short-haul or long-haul aircraft?
- How might the specific vehicle or energy source affect its emissions?

Students can compare two possible options for the same part of their journey and explain how their choice would change the estimated carbon footprint.

Resources for teachers

Visit the [Live Net Zero Classroom Challenge website](#) for additional resources and information.

[Climate and Sustainability Responses in Transport Sub-Sectors and Modes](#)

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Estimated emissions per passenger-kilometre (gCO₂e/pkm)

Mode of transport	Approx. CO ₂ per passenger-km	Mode of transport	Approx. CO ₂ per passenger-km
Walking / Cycling	0 g	Cruise Ship	350 g
E-bike	6 g	Airplane (Domestic)	300 g
Motorcycle (Gas)	100 g	Airplane (Long-haul)	200 g
Car (Gas)	200 g	Disclaimer: These values are simplified and generalized for educational purposes. Real emissions vary widely depending on vehicle type, fuel source, occupancy, distance, and operating conditions.	
Car (Electric)	100 g		
Bus (Diesel)	80 g		
Bus (Electric)	25 g		
Subway (Electric)	25 g		
Streetcar / Light Rail	30 g		
Train (Electric)	40 g		
Train (Diesel)	100 g		
Ferry / Ship	250 g		