



Big Pedal 2021

Amazing air investigation

Level three



Objectives

To learn which modes of transport produce the most air pollution. To discover what is causing air pollution around your school or in your local area.

Extension: to make and test a prediction about the levels of air pollution in two different locations.

Session plan

Ask the children to consider which modes of transport produce the most air pollution. Share information on how much carbon dioxide is emitted by various modes of transport (see pupil's worksheet for graphic ranking modes of transport from most to least sustainable).

Ask students to think of two locations for a transport count. They need to pick one location they think will have cleaner air and one they think will have dirtier air. Ask them to make predictions about which of the locations is likely to have higher levels of air pollution.

Choose a time period for both the mode of transport counts (eg five mins). Take the students out to the locations following your school's safe field trip guidelines. Please follow local coronavirus guidance.

Students will use the tally chart to record how people pass by in that time.

NB Students calculating emission levels will need to estimate how many people were on the bus and mark a tally for each passenger. This is because bus emissions are based on kilograms of CO₂/mile per passenger.

Return to the classroom. Ask students to use counts and emission data to calculate the air pollution levels in each location. Ask students which mode of transport is polluting the most in each location. Ask students which location has the cleanest/dirtiest air.

At home adaptation: For children completing this activity indoors, videos are available of traffic passing two different locations (one rural, one urban).

www.youtube.com/watch?v=9PEu7a1QK_M

www.youtube.com/watch?v=cMQJQEPbzOM



Time needed

30 mins (indoor)
60 mins (outdoor)



Resources needed

Pencil and paper, device to watch video (indoor)



Solo/Group activity

Solo at home
Group in class

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Aim

- To discover what is causing air pollution around your school or local area.
- To predict the difference in air pollution in two different locations.
- To think about what modes of transport produce the most/least air pollution.

Hypotheses

- Which mode of transport do you think you will see most in each location and why?
- Which mode of transport do you think you will see least in each location and why?
- Which location do you think will have the most air pollution and why?

Method

Conduct a count in each of your two chosen locations. Carry out the count for the same amount of time in each location. If a bus passes by, try and count all the passengers as accurately as you can.

When you get back inside, calculate the emissions for walking, cycling, car and bus using the emissions data at the bottom of the next page.

Mode of transport	Location A		Location B	
	Count	CO2 Emissions	Count	CO2 Emissions
Person walking, jogging, running, scooting or using a wheelchair				
Person cycling				
Car or van				
Bus (number of passengers)				
Other large vehicle (eg tractor, lorry)				

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Conclusions

Which mode of transport passed by most frequently during your investigation?

Which mode of transport do you think makes the most air pollution in each location?

Which of these modes of transport do you think is best for the environment?

Can you rank the modes of transport based on how much they are polluting in each location?

We based our bus emission calculations on emissions per passenger per mile. Why do you think we did that?

How would the picture have changed if you had looked at the emissions per mile per bus (rather than emissions per passenger per mile)?

What's the best way to get to school?



Walking



Cycling



Train



Bus



Car share



Drive and park

Most sustainable



Least sustainable

Cars emit 0.30 kilograms of CO₂/ mile.

Buses emit 0.18 kilograms of CO₂/mile per passenger.

Trains emit 0.08 kilograms of CO₂/mile per passenger.

Please note: Carbon emissions can vary according to specific types of vehicle, such as a small or large car. The figures used above are based on certain averages and you can use them as the starting point for further investigation.

Source: Department of Transport, 2020