

Sustainable travel

PTV learning outcomes

- Students are aware of the opportunities to use public transport
- Students understand the personal and societal benefits of public transport
- Students are confident to use public transport
- Students know how to be safe on and around public transport

Duration

Sequences are intended to be delivered in 2–4 lessons.

Overview

In this sequence of learning, students design and pitch ideas for an app that informs users of the cost associated with various forms of transport.

The goal of the app is to give an indicator of the financial and environmental cost of different forms of transport to travel to the same location, building an understanding of the relatively cheaper cost and reduced environmental impact of utilising public transport options.



Curriculum alignment

Digital technologies Levels 5–6

VCDTCD031

Design a user interface for a digital system, generating and considering alternative design ideas

VCDTCD034

Explain how student-developed solutions and existing information systems meet current and future community and sustainability needs

Engage

Discuss the idea of an 'ecological footprint' with the students. What does it mean? A simple definition might be that each person or community has an impact on the environment, expressed in the amount of land required to sustain the use of natural resources. What demands do we make on nature by the way we live our lives? Look at <https://www.footprintnetwork.org/our-work/ecological-footprint/>.

We all have an impact on the environment around us based on our lifestyle and on the choices that we make about the way we live. Ask the students if they can think of lifestyle choices that would affect the environment. Facilitate a short discussion and explore two or three examples to model why the example offered has an impact on the environment (eg, littering can harm animals and their habitats because human rubbish doesn't biodegrade etc).

Ask the students to work in pairs to discuss as many ideas about the environmental impact of lifestyle or human behaviour choices as they can. Then ask each pair to share their ideas with the whole class. Is there a consensus emerging on what has the greatest impact on the environment?

Alternatively, students could create a simple lifestyle inventory relating to day-to-day life in their own families and consider generally the impact these aspects of lifestyle might have on the environment.

They can reflect on the food that they eat, fresh or packaged, plant or animal based. Is their home heated and air conditioned, does it use natural ventilation or is it insulated? They might consider the family use of electricity and gas, the appliances they have, and the amount and types of rubbish they generate each week. And they should list the kinds of transport they and their families use day to day and at holiday times – and what distances do they travel?

The students use their own lifestyle inventory to develop an understanding of the impact that they can have on the environment. Facilitate a discussion around which impacts might be greater than others, and how our use of transport especially is one of the areas that can have the biggest impact on the environment.



Explore

Students further explore issues of environmental impact of transport and use the Petrol Cost Calculator (<http://www.petrolcostcalculator.com.au/>) along with research on current fuel prices and the distance from their home to school, to calculate how much their daily trip to school currently costs.

Students can calculate the distance from home to school using Google Maps or Apple Maps. An alternative to using the Petrol Cost Calculator is to provide the students with the current cost of fuel and a predetermined distance that their car will travel per litre and have the students calculate the number of litres required to cover the distance to figure out the price.

Following this activity students can explore the carbon footprint related to use of a private vehicle with the carbon footprint calculator (<https://calculator.carbonfootprint.com/calculator.aspx?tab=4>) to calculate the approximate CO₂ emissions for that same trip, and discuss how this affects the environment. The carbon footprint is the amount of carbon dioxide released into the atmosphere by different human activities, including the use of transport.

Students can also investigate the costs associated with various forms of public transport in Victoria via the fares section of the Public Transport Victoria site (<https://www.ptv.vic.gov.au/tickets/fares/>) and compare the difference in the cost of a bus, train or tram to cover the same distance as the car ride, making a decision on which one is cheaper and which is better for the environment. Results can be shared with the class.

Explain

Not only do choices of transport have relative effects on the environment, transport can also be expensive for us depending on how we use it. The teacher poses the challenge to the students to design an app that will help people to understand and reduce both the financial costs of their travel and the impact their travel is having on the environment.

Through guided discussion students explore current app designs relating to transport and travel, such as Tram Tracker (<https://apps.apple.com/au/app/tramtracker/id317312510>), Public Transport Victoria (<https://itunes.apple.com/au/app/public-transport-victoria-app/id318696180?mt=8>) and Google Maps (<https://itunes.apple.com/au/app/google-maps-transit-food/id585027354?mt=8>) to reflect on design elements and to unpack how each app represents a trip for the user.

Throughout this discussion the teacher can highlight key aspects of design, such as providing a positive and satisfying user experience and designing a user interface that is clear, easy to understand and navigate, and visually appealing. Discuss with the students the concepts of accessibility, aesthetics, usability, features and functionality.

Students might access these apps via individual mobile devices such as smart phones or tablets. Alternatively teachers might step through the navigation of each app with the whole class.



Elaborate

The teacher presents the key elements of a design brief for the students to use in their thinking and planning. A design brief, put simply, is an outline that describes the objectives of the design, what it will look like, who the target audience is, how much it will cost to develop, the development schedule and any other considerations like the inclusion of particular colour schemes or logos.

The students can begin mapping their design ideas by asking:

- Who is the target audience?
- What is the objective of this design? What do you want the audience to get from the design?
- Are there issues to solve or particular challenges?
- How will you provide useful information and offer a positive user experience to the audience?

The students work in pairs or small groups to develop their design and to discuss how to pitch their idea to the class. They can also create simple visual depiction of their app design, labeling appropriately to explain and elaborate their thinking, such as the main menu of their app and perhaps a simple flow chart to show navigation and outcomes for the user.

Extension activity

Challenge the students to consider how increased use of public transport positively impacts peoples' commutes. As a class, consider the personal safety aspects of using public transport over private transport. Have students consider how they might enhance the use of their app by promoting the additional safety benefits of public transport use.

Evaluate

Students pitch their app idea to the class, and invite feedback from their peers and teacher. The feedback can encompass how the design ideas are working in relation to those key elements of accessibility, aesthetics, usability, features and functionality.

If time allows, students can go on to create a digital version of their app design.