WHAT ARE THE BEST WAYS TO TRAVEL?

SUPPORT MATERIALS

If you need further support on specific aspects of outdoor learning these materials can enhance the engaging experiences you are providing. They can support you as you design, plan and implement your curriculum. Outdoor learning is a great way to develop learners' integral skills (creativity and innovation, critical thinking and problem-solving, personal effectiveness, planning and organising). You will want to focus on why learning matters and ensure you are meeting your learners' needs.
These materials show a path that could be taken through the activity. This is not meant to be prescriptive. You should adapt your approach depending on your learners' needs and interests and your local area.

OVERVIEW

Learners consider recent journeys they have made and explore the history of train travel. They design a vehicle for the future and consider the waste products of travel and possibilities for decreasing carbon dioxide levels. Learners explore global warming, food miles and farming data before making a presentation to encourage people to buy locally produced food. They explore how transport can affect their locality, finding out local opinions and gathering data to consider how transport affects local wildlife. Learners consider how Wales is trying to improve travel and transport through a range of policies and strategies and develop a campaign to change people's choices and behaviour in terms of travel and transport. They follow a problem-solving process to understand the issue, plan, deliver and then reflect on the campaign.

CURRICULUM FOR WALES

Areas explored:

- Health and Well-being
- Humanities
- Languages, Literacy and Communication
- Mathematics and Numeracy
- Science and Technology

Activity also incorporates aspects of cross-curricular skills outlined in the LNF and DCF.

RESOURCES

Internet enabled device and internet access.
Food packaging from home.
Hwb account (Office 365) or https://sway.office.com/.
Common British birds' identification guides or apps for sight and sounds.

DOING THE ACTIVITY

- Most tasks require learners to work in pairs or groups.
- Encourage learners to share their ideas, and through open questioning, explain and justify their ideas when possible. Focus questions have been suggested to guide learners through the tasks.
- Some tasks might be more effective if pairs or groups of learners have access to an internet enabled device.
- When taking learners outdoors, it is essential that the Countryside Code is adhered to and any relevant risk assessments have been carried out with risks mitigated.

TASK 1

HOW IS TRANSPORT CHANGING?

Explain to learners that this task should help them to understand how and why people travel and how travel has developed in the past and might progress in the future.

Screen 3

Inform learners that you want them to explore the last three journeys they went on. Invite them to consider the questions posed and to use the map to support their discussions. You will need to 'View larger map' to see the map scale'.

Focus questions

- Where did you go from/to? Use the map to find the routes you took.
- What was the distance of each of your journeys?
- What mode(s) of transport did you use? Why?
- Why did you take each journey?

Screen 4

Ask learners to look at the images of a train from 1804 and 2023 and to consider the questions posed and record all of their ideas.

Focus questions

- What is similar about the trains?
- What has changed over 219 years?

Screens 5-6

Inform learners that in 1804, Richard Trevithick, a mining engineer, developed a rail-mounted steam locomotive to travel over newly laid tracks from Penydarren Ironworks, near Merthyr Tydfil, to Abercynon. This was the first working railway steam locomotive. Ask learners to read Trevithick's description of the journey and to discuss the questions posed.

Focus questions

- What fuel was used to power Trevithick's train?
- How was the fuel used to power the train?
- What energy transfers are used to power the train?
- Why do you think it was important for an ironworks to have such a train?

Encourage learners to read the information about the speed of the train being nearly 5mph in 1804, around 60mph a hundred years later, to the current fastest bullet train in the world with top speeds of up to 217 miles per hour.

Screen 7

Explain to learners that we can create a timeline to show the development of trains from 1804 to the present day. The timeline shows images from 1804, 1963 and 2023. Invite learners to use the internet to search for images of trains that might fill in the gaps in the timeline and to discuss the questions posed.

Focus questions

- Why have you chosen these years?
- What is changing?
- What do you notice about changes to the shape, materials used and energy source?
- Why have these changes happened?

Screen 8

Explain to learners that in 2012, it was announced commuter lines in the south Wales valleys would be electrified. The £1 billion project involved 180km of new track. Ask learners to read the information provided, answer the question posed and to list as many advantages of electrified trains as they can.

Focus questions

- Why should we move from diesel to electrified trains?

You could ask learners to share their ideas with the class.

Screen 9

Invite learners to use Chat GPT to check their list of the advantages of electrified trains and to consider the questions posed.

Focus questions

- What are the similarities between your advantages and Chat GPT's?
- What are the differences between your advantages and Chat GPT's?
- Do you agree with all of the advantages given by Chat CPT? Why?

Screen 10

Invite the learners to read the information about the Oystermouth Railway, deemed to be the world's first railway to carry fare-paying passengers, which it did from 1807. You could ask them to watch an old film about the history of the train on this link here (about 1 minute).

Screen 11

Explain to learners that you now want them to create a timeline for a different form of transport, e.g. cars, scooters, bikes, aeroplanes, etc. and to consider the questions posed.

Focus questions

- What's the earliest image you can find that will be at the start of your timeline?
- Which modern image will go at the end of your timeline?
- Which two or three images will represent the key developments between these?
- What is changing? What do you notice about the changes in the shape, materials used, and energy source?

Screens 12-13

Inform learners that you want them to think about how transport will develop in the future. Ask them to draw how they think it will look, with some labels pointing out key features. Encourage learners to consider these aspects: size, shape, materials, technology, functions, fuel and safety and to add any other ideas they feel are required. Invite learners to share their design with others to gain feedback and to amend their design accordingly. They should prepare to present their futuristic vehicle to others, remembering to talk about...

- how it works
- what it is made from
- why you think it is a good vehicle for the future.

Screen 14

Finally, ask learners to present their design of a future vehicle.

TASK 2

WHAT ARE THE IMPACTS OF TRANSPORT?

Explain to learners that this task will support their understanding of the impacts of transport. They will consider the waste products of travel, increasing carbon dioxide levels and the impact of food miles.

Screens 3-4

Ask learners to list as many types of transport as they can and to sort them into three groups depending on the travel distance. Encourage them to use the interactive Venn diagram to record their ideas and to discuss the questions posed and to be ready to justify their reasoning.

Focus questions

- Which means of transport is the best to use for each travel distance? Why?

You could ask learners to share their ideas with the class.

Screen 5

Explain to learners that moving from one place to another requires energy and that energy can only be transferred from one form to another – it cannot be made. Ask learners to discuss the questions posed.

Focus questions

- When you walk, where does the energy come from?
- Where does a bus get energy from to move?
- When we transfer energy from fuels through chemical reactions, waste products are given off.
  - What waste products are given off when we burn petrol or diesel?
  - What waste products are given off from our bodies when we walk?

Inform learners that they can check their answers on the internet or from books.

Screen 6

Invite learners to watch the video (about 3 minutes) and consider the questions posed.

Focus questions

- Why is the amount of carbon dioxide (CO_2) in the atmosphere increasing?
- Why do we need to decrease the amount of carbon dioxide in the atmosphere?
- How could we decrease the amount of carbon dioxide in the atmosphere?

You could ask learners to share their ideas with the class.

Screen 7

Inform learners that they are going to explore consumer habits. Ask them to look at the packaging from two or three of the items they eat and to consider and discuss the questions posed.

Focus questions

- Where did the items come from? Were they produced locally, or did they come from further afield or even another country?
- Where were they packaged?
- How were they packaged? Where was the packaging made?
- How far have the items travelled? How did you work this out?
- What methods of transport do you think were used to get the food and its packaging from the producer to your kitchen? What impacts might this have?

Screen 8

Explain to learners that all food makes a journey from where it is grown or produced to when you buy it and get it home. How far food has travelled is known as its 'food miles'.

Invite learners to complete the interactive activity by filling in the blanks so that the text makes sense.

The answers are as follows:

1. energy
2. global warming
3. air pollution
4. food miles
5. locally.

Screen 9

Invite learners to read the following key statistics for farming in Wales from 2022.

- 90% of the land area is given over to farming
- total profit from all farming businesses per year is about £305 million
- agriculture, fishing and forestry accounts for 1.8% of total employment
- 86% of agricultural land is used for grazing livestock
- crops and horticulture represent about 2% of all farms.

Screens 10-11

Ask learners to keep in mind the information about global warming, food miles and the data about farming. Using this information, invite learners to design and make a Sway to encourage others to buy locally produced food.

Provide learners with the following instructions to help them create a Sway.

- Login to your Hwb account, access Office 365 and find and open Sway. Or click here to access Sway: Sway
- Click Create new.
- A Sway card will appear, now add a title to your Sway. Try 'buy locally produced food'.
- Click Background image. Sway will begin to search for images relating to your title. These will be displayed on the right-hand side. Click the category that suits your title. Choose an image and drag and drop on to your title card. You can search for videos in the same way.
- Now click Play... Sway will use algorithms based on graphic design to suggest the appearance.
- Practise changing the graphic design.
- Click on + to add other images with text to include what you have found out buying locally produced food.

Ask learners to share their Sway with the class.

TASK 3

HOW DOES TRANSPORT AFFECT THE LOCAL AREA?

Explain to learners that this task will explore how transport can affect their locality. They will find out local opinions and gather data.

Screens 3-5

Explain to learners that transport can affect the local area in a variety of ways. Provide them with the following examples and ask learners to sort them using the Venn diagram. Explain that three main areas (economy, communities, environment) can be used to think about how transport affects the local area and invite them to sort the ways transport affects the local area using the Venn diagram, considering the questions posed.

- Local businesses
- Communities connected
- Jobs created
- How an area looks/sounds/feels
- Tourism
- Destruction of wildlife habitats
- Air and noise pollution.

Focus questions

- Which of the ways from the list do you think are most important to people who live in the local area? Why?
- What could you do to find out the views of others?
- How could you share your findings?
- Are there any important factors not highlighted already? If so, what are they?

You could ask learners to share their ideas with the class.

Screens 6-7

Explain to learners that you want them to find out about local opinions. Ask them to create a questionnaire to find out which ways transport affects the local area are most important to people who live there and to discuss the questions posed.

Focus questions

- What format will you use for your questionnaire? Why?
- Will it be hard copy or digital? Why?
- What are the key questions you need to ask? Why do you think that?
- What new information could you gather? How do you know that?
- How will you make use of the responses you receive? Why would you use them in this way?

Invite learners to develop and distribute the questionnaire and to collate their findings.

Encourage them to compare their findings to others in the class.

TASK 4

HOW DOES TRANSPORT AFFECT WILDLIFE?

Explain to learners that this task will explore how transport can affect local wildlife.

Screens 3-4

Inform learners that you want them to consider how transport affects wildlife. Explain that Britain has more than 247,000 miles of road – which could wrap around Earth almost 10 times! Over 80% of land is within half a mile of a road.

In 2020, Dr Sophia Cooke, a Cambridge University ecologist published the findings of a study that looks at how roads affect birds. The study found that most breeds of bird (63%) were significantly affected by roads.

Invite learners to read through the table with these findings on screen. Ask learners to create a chart or a graph to display Dr Sophia Cooke's findings. Invite them to answer the questions posed and then to follow the Excel instructions.

Focus questions

- Which type of chart or graph do you think would be most appropriate? Why?

Excel instructions

- Import the data into an Excel spreadsheet.
- Highlight the table and click on 'Recommended charts'.
- Select 'All charts'.
- Scroll through to find the best way of showing the data.

Screen 5

Explain to learners that Dr Sophia Cooke says the biggest surprise was that nearly half of the species were seen more often close to roads. Ask them to use these sentence starters to discuss the questions posed with a partner.

- It could be that.....
- Perhaps...
- Possibly...
- Is it possible that...
- Maybe...
- What if...

Focus questions

- Why do you think some species of birds such as gulls and finches seem to be plentiful near roads?
- Why do you think some species of birds such as the Greylag goose and warblers seem to be scarce near roads?

Screen 6

Explain to learners that you want them to choose one species of bird mentioned in the study. Ask them to carry out online research to find out more about this species and why it might be more or less likely to be seen close to roads, discussing the questions posed.

Focus questions

- Which search engine or AI will you use? Why?
- What are the key search terms/prompts to use? What do you want to find out?
- What type of websites will be the best to look at, why?

Invite learners to make a poster or infographic about the species of bird they researched.

Screens 7-8

Inform learners that they are going to carry out a bird survey near a road to see whether their findings are similar to those of Dr Sophia Cooke. Explain to them that they will need to be able to identify the birds they see or hear. Learners could use identification guides or apps to help them and should discuss the questions posed.

Focus questions

- What birds do we expect to see or hear? What do they look/sound like?
- How can we find out what other birds might be there? What do they look/sound like?
- What are we going to record, e.g. number of birds, number of species of birds, number of each species of bird? Why?
- How can we record what we see? Which is the best way?

Invite learners to go outside and carry out their survey.

Screen 9

When back in class, ask learners to collate their findings and discuss the questions posed.

Focus questions

- Which birds did you see/hear near the road?
- Were the birds you saw/heard as you expected? Why?
- Why do you think the birds were near the road?

TASK 5

HOW IS WALES TRYING TO CHANGE TRAVEL AND TRANSPORT?

Inform learners that this task will help them consider how the Welsh Government is trying to improve travel and transport through a range of policies and strategies.

Screens 3-5

Inform learners that in September 2023, the Welsh Government introduced a 20 mile per hour (mph) speed limit on many roads in cities, towns and villages across Wales. The changes were applauded by many and criticised by others leading to an ongoing debate.

Invite learners to read the six views that different people have shared in online discussions. Ask them to create a ‘ladder of agreement’ with these six viewpoints. They should put the one they most agree with at the top and the one they most disagree with at the bottom. The other four statements will need to be put in order between them, from agree to disagree.

Inform learners that they should be prepared to justify their top and bottom choices and share their ideas with other pairs. Encourage them to consider whether everybody agrees or not and why.

Remind learners that these views are people's **opinions** – not necessarily **facts**. Invite them to consider the questions posed.

Focus questions

- Which opinions do you think you should fact-check? Why have you chosen them?

Before fact-checking from the internet...

- Which search engine or AI will you use? Why?
- What are the key search terms/prompts to use?
- What type of websites will be the best to look at, why?

When evaluating information from the internet...

- How reliable do you think the information is?
- Could the information be biased? Why do you think that?

Screen 6

Ask learners to find their local area on the data map by typing its name in the 'Search location name' box. Invite learners to click on the eye symbol to turn off all other filters. Ask them to click on the eye symbol to show the roads that have become 20mph roads and to discuss the questions posed.

Focus questions

- Which roads are affected by the 20mph speed limits in your local area?
- Why do you think these roads have been chosen?
- What impacts do you think reducing the speed limit to 20mph might have? Why?

Screen 7

Inform learners that a public health study estimated that the 20mph default speed limit in Wales could result, every year in:

- 40% fewer collisions
- 6 to 10 lives saved
- 1,200 to 2,000 people avoiding injury.

The change would also:

- make streets safer for playing, walking and cycling
- encourage more people to walk, wheel or cycle
- makes our communities safer
- improve health and wellbeing
- reduce noise pollution.

Invite learners to consider this information and the questions posed.

Focus questions

- What data would you need to test these predictions?
- Over what time period would you need data for? Why?

Screens 8-9

Inform learners that in 2019, the Welsh Government was not meeting targets on reducing air pollution.

- Nitrogen dioxide (NO_2) levels were above legal limits in residential areas such as Newport and Port Talbot.
- As a result, the speed limit was changed on the M4 motorway from 70mph to 50mph in some parts of south Wales.
- It was decided that a 50mph speed limit would be the best way of improving the air quality in the shortest time possible.

Invite learners to look at the annual average nitrogen dioxide concentrations near Port Talbot for 2018, 2019 and 2020 and to consider the questions posed.

Focus questions

- Do you think we can claim that the 50mph speed limit at Port Talbot is effective in reducing air pollution? Why do you think that?
- What happened in 2020 that may have affected these results?
- What extra information would be useful for us to determine the effectiveness of the 50mph speed limit? Why?
- How could we apply this extra information to the data so that it is more reliable?

Screen 10

Inform learners that 'Llwybr Newydd: the Wales transport strategy 2021' has three main priorities:

1. Bring services to people in order to reduce the need to travel.
2. Allow people and goods to move easily from door to door by accessible, sustainable and efficient transport services and infrastructure.
3. Encourage people to make the change to more sustainable transport.

Ask learners to choose one of these priorities and discuss with a partner the questions posed. They should be prepared to explain their reasoning.

Focus questions

- What needs to happen so that this priority can be met?
- How might the priority impact on the environment, communities and the economy? Why?

Screen 11

Ask learners to watch the video (about 3 minutes), about the Welsh National Transport Strategy and discuss the questions posed.

Focus questions

- Why is it important to ensure everyone is included when developing a transport policy?
- How could you amend your ideas on your chosen priority to ensure inclusivity? Why would these amendments make your ideas more inclusive?

You could ask learners to share their ideas with the class.

TASK 6

HOW CAN WE CHANGE CHOICES AND BEHAVIOURS?

Learners develop a campaign to change people's choices and behaviour in terms of travel and transport. They follow a problem-solving process to understand the issue, plan and reflect on the campaign.

Screen 3

Explain to learners that they are going to develop a campaign to change people's choices and behaviour in terms of travel and transport.

Each group will need to consider whether to just have one main focus, (e.g. food miles, buying locally, air pollution, global warming, conserving wildlife, maintaining successful communities, preventing road deaths, etc.) or more than one focus. However, the most effective campaigns are clear and call for simple direct action.

Screen 4

Explain to learners that there are six stages of change that people go through when making a lasting change in behaviour. Invite learners to read about the six stages and thinking of their target audience to consider the questions posed.

Focus questions

- What type of people will you target in your campaign? (e.g. school friends, family, neighbours, whole school, local councillors, county councillors, Assembly Members, Members of Parliament, local people, Welsh people, people in the UK and beyond)
- Why have you selected these people?
- Where do you think these people are in terms of the six stages?
- Which stage are most people in? How do you know? What do you think is the best way to target these people? Why?

Screen 5

Inform learners that they will use the following problem-solving process to develop their campaign.

- Identify the problem
- Understand the problem
- Consider solutions
- Devise an action plan
- Carry out the action plan
- Reflect – evaluate outcomes and processes

Screen 6

Invite learners to frame their campaign in terms of the problem to be solved by completing the sentence:

My campaign will aim to change the choices and behaviour of ..... in terms of travel and transport, through focusing on ..... .

Screen 7

Explain to learners that the first step they need to consider is understanding the problem. Invite them to consider the questions posed in their group.

Focus questions

- What are you trying to do?
- What do you know about the focus of the campaign?
- How can you restate the focus in your own words?
- How can you draw a picture or a diagram that might help you understand the focus?
- Do you have enough information about the focus of your campaign?
- What else do you need to know? Why? How will you find out?
- Who is the audience for your campaign? What will the audience need to know and understand?

Screens 8-9

Inform learners that the next step in the process is to consider solutions and devise a plan. Invite them to brainstorm ideas about how they could change their selected audience's choices and behaviour in terms of travel and transport.

Explain that to help them decide on the best idea they could use these strategies:

- Guess and check or trial and error
- Make an orderly list
- Eliminate possibilities
- Consider special cases
- Use direct reasoning
- Look for patterns in the ideas suggested
- Draw a picture or mind map
- Solve a simpler problem or just one idea
- Use a model
- Work backwards
- Use your imagination to develop some creative ideas around your ideas.

Invite learners to select the best idea and plan how they will change people's choices and behaviour in terms of travel and transport.

Ask them to share their plan with another group and to ask them to:

- Say which parts of the plan they think will work
- Suggest how it could be improved.

Invite groups of learners to make use of this feedback and make any amendments they think are needed to improve their plan.

Screen 10

Ask learners to follow their plan to try to change people's choices and behaviour in terms of travel and transport. Encourage them to change their plan as they carry it out if any part of it does not work.

Screen 11

Inform learners that you want them to reflect on their outcomes by discussing the questions posed.

Focus questions

- How well have we changed people's choices and behaviour in terms of travel and transport? How do we know?
- Which stage (Contemplation, Preparation, Action, Maintenance, Termination) have we moved people to? How can we tell?
- What could we do next to keep people at that stage?
- What could we do next to move people to the next stage?

Screen 12

Inform learners that finally, you want them to reflect on their actual plan. Ask them to take time to look back at what they have done and consider what worked well and what didn't work so well.

Explain that doing this will enable them to predict relevant strategies to use to solve future problems. Encourage learners to discuss the questions posed.

Focus questions

- Which parts of the plan worked?
- Which parts of the plan didn't work as well? Why?
- How could we change the plan to make it work better?