SUPPORT MATERIALS

SURFING ON THE GOWER

Learners explore why people surf, the language surfers use and its effects on well-being. They are introduced to the science of surfboard design and how they work. They use this learning to design a surfboard. Learners explore sea (marine) pollution and have the opportunity to assess the quality of sea water from a local beach as if they are Blue Flag assessors. Then, write a Tweet/X to describe their findings.

CURRICULUM FOR WALES

Areas of Learning and Experience explored:

- Expressive Arts
- 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.
Means of taking water samples – small clean plastic bottles.
Means of testing water for nitrates, pH (acidity/alkalinity) – simple testing strips for seawater tropical fish tanks will suffice.

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.
- 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

WHY DO WE SURF THE WAVES?

Explain to learners that this task should help them to understand more about why people surf, the language surfers use and its effects on well-being.

Screen 3

Show the video 100ft World Record Wave, Garrett McNamara Surfing Nazare, Portugal (about 3 minutes) and ask learners to discuss the questions posed.

Focus questions

- How does Garrett McNamara feel about surfing?
- Have you ever tried surfing?
- If so, how did it make you feel? Where did you surf?
- If not, would you like to try it? Why?

Screen 4

Ask learners to look at the images and create a definition of surfing for somebody who does not know what it is.

Screen 5

Explain to learners that surfing has its own unique vocabulary and slang. A few of the most common terms in surfing language are given onscreen. Ask learners to discuss with a partner to try to complete the table and then to use the internet to find out whether they were correct.

Screen 6

This screen gives learners' thoughts about the benefits of surfing. Ask learners to consider these and discuss the questions posed.

Focus questions

- Which of these learners do you most agree with? Why do you think that?
- What other point could you add to these regarding the well-being benefits of surfing?

Screen 7

Invite learners to create a mind map to show the well-being benefits of surfing. Ask them to use the benefits already discussed and add any of their own ideas.

TASK 2

HOW CAN WE DESIGN A SURFBOARD?

Explain to learners that this task will support their understanding of surfboards and the science behind how they work. They will use this learning to design a surfboard.

Screen 3

Show the video: The Science Of Surfboards (about 3 minutes).

Ask learners to read the webpage: The Physics of Surfing - Let's Talk Science. Then, to discuss the questions posed.

Focus questions

- How have surfboards changed over the years to improve speed and performance?
- What are the four major forces acting on a surfboard riding a wave?
- How can the material, size, and type/shape of fins make a surfboard more hydrodynamic?
- How do you think surfing is similar to canoeing?
- How do you think snowboarding is similar to surfing?

Screen 4

Show the short introduction to paddle boarding: How to paddle board in 60 seconds for beginners (about one minute).

Screen 5

Invite learners to use the boxes to think about the similarities and differences between surfing and paddleboarding. Ask them to try to use their scientific knowledge from the previous videos and reading to help them. Then, to discuss the questions posed.

Focus questions

- Of the two activities, which do you think is easier to get good at quickly? Why do you think this?

Screen 6

Explain to learners that surfboards come in different shapes and sizes. What is ideal depends on factors such as the:

- skill level of surfer
- body size of surfer
- wave conditions.

Inform learners that they are going to use AI to find out more about key factors in surfboard size and shape. Then, complete the table on the next screen with some notes from their research.

Screen 7

Before researching, ask learners to think about:

- What will you use as a prompt for the AI? Why?

As they research, consider:

- Does this prompt give you the information you are looking for?
- Do you think the source is reliable/trustworthy? Why?

Ask learners to complete the table with their notes.

Screen 8

Show the video: The World's First Surfing Mice - The Radical Rodents (about two and a half minutes).

Screen 9

This screen introduces Harry, a mouse that wants to surf. Harry asks learners to design him a surfboard and gives some parameters as to what is needed.

Screen 10

Ask learners to consider their knowledge of ideal sizes and shapes for surfboards for humans and scale down, estimating Harry's size and weight. Then, to try to complete the table with ideas for Harry's surfboard. Ask learners to discuss the questions posed.

Focus questions

- What additional information would be useful to help you design Harry's ideal board?
- If you could ask Harry one question, what would it be? Why ask that?

Screen 11

Ask learners to draw a simple sketch of the board they personally would like to design for Harry and to label the sketch to show the details of shape, materials, size, etc. Then, to share their sketch with a partner, explaining the choices of material, shape, size and weight and discuss the questions posed.

Focus questions

- How are the two surfboard sketches similar?
- How are the two surfboard sketches different?
- Are all the choices you have made reasonable? Why?
- How do your sketched surfboards keep Harry's needs in mind?
- How could your surfboards be improved?

Then, to resketch Harry's surfboard with any improvements they have decided on from their discussions.

Screen 12

Invite learners to use the internet to research some surfboard designs and design their surfboard. Then, to share their design with a partner and explain to their partner why you chose the design you chose.

Screen 13

Ask learners to draw a life-sized diagram of Harry's surfboard design, label it with all its features from their earlier sketch.

Screen 14

Explain to learners that the rodents in the video have been trained to surf. Ask them to read the article: Meet the 'radical rodent' surfing mice. Thinking of possible cruelty to the rodents, ask learners to discuss the questions posed.

Focus questions

- How does Shane Wilmott train the mice?
- How cruel do you think it is to teach mice to surf? Why?
- How could you tell if the mice were happy when they are surfing?
- Should humans train animals to do things? Why? Why not?

TASK 3

HOW CLEAN ARE THE GOWER'S BEACHES FOR WATER SPORTS?

Explain to learners that this task should help them to understand more about sea (marine) pollution. They will have the opportunity to assess the quality of sea water from a local beach as if they are Blue Flag assessors.

Screen 3

Ask learners to discuss the questions posed to activate their knowledge and understanding about pollution.

Focus questions

- What do you think pollution is?
- Where have you seen pollution? What did it look like?
- Where was the pollution from? How do you know?
- What different types of pollution have you seen or heard about? What are they?

Screens 4-5

Invite learners to give some synonyms for pollution and type them in the box. The screen, on click, then gives them a few synonyms that they can compare with their own.

Screen 6

This screen gives a photograph of pollution. Ask learners to describe what they can see and type it in the box.

Screen 7

The image is given again, but this time learners are reminded of the synonyms from screen 5 and asked to think back to their own synonyms before reviewing their description of the image to improve it.

Screens 8-9

The first screen gives another image of pollution and asks learners to describe it. The next screen asks learners to compare their description with that of another pair. Then, to review their own description to improve it.

Screen 10

Here pollution is defined and the term 'pollutants' is introduced. Ask learners to discuss the question posed and list their ideas.

Focus question

- Which pollutants do you think might cause sea pollution?

Screen 11

This screen defines the two types of sea (marine) pollution as rubbish and chemical, explaining what each is and how it gets into the sea.

Screen 12

Invite learners to look at the map of Gower National Landscape and discuss the questions posed.

Focus questions

- Where do you think you would find the most pollution? Why?
- Where do you think you would find most rubbish pollution? What types of rubbish do you think you would find? Why?
- Where do you think you would find the most chemical pollution? What types of chemical pollution do you think you would find? Why?

Screen 13

This screen introduces the Blue Flag programme and describes what it is. It states that in 2023, Gower National Landscape had 3 Blue Flag beaches. Invite learners to discuss the question posed.

Focus question

- Which of Gower's beaches do you think won a Blue Flag in 2023?

Ask learners to check their ideas, by visiting Wales Coast Awards - Keep Wales Tidy, using the navigation tools on the map to discover the 3 beaches awarded a Blue Flag.

Screens 14-15

Explain to learners that in 2023, Wales had 25 Blue Flag beaches. However, since 2021, Wales has lost 20 Blue Flags. Ask learners to discuss the questions posed.

Focus questions

- Why do you think Wales has lost these Blue Flags? What might have caused this? Why?
- Thinking of the criteria for being awarded a Blue Flag (environmental, educational, safety, access), which criteria do you think the beaches might have failed on? Why?

The second screen tells learners that, in fact, many local authorities in Wales did not actually apply for a Blue Flag in 2022 and 2023 due to budget cuts and the time taken to complete an assessment. Therefore, although some beaches no longer have a Blue Flag they might well be just as good as before.

Screen 16

Explain to learners that the Blue Flag criteria for bathing water quality includes regular water sampling and analysis.

At least one sampling point should be where there are the most bathers. If there are potential sources of pollution, e.g. near streams, rivers, stormwater outlets, etc. additional sampling points are needed.

Water samples should be analysed for:

- bacteria (*E.coli and Streptococci*)
- colour, transparency and turbidity
- acidity/alkalinity.

In addition, water should be observed for physical objects, e.g. floatables - tar residues, wood, plastic articles, bottles, containers, glass, etc.

There should be no oil film on the surface and no odour detected.

At this point, you may need to check their understanding of faecal bacteria, turbidity and pH.

Screen 17

Explain to learners that they are going to a local beach to check the bathing water quality, as a Blue Flag assessor. Point out to them that they will not be able to test for bacteria as this is very difficult to do for seawater and requires a laboratory. However, they could test for nitrates as indicators of pollution from sewage or fertilisers, etc. Invite them to plan what they are going to do by discussing the questions posed.

Focus questions

- What water samples will you need to take?
- Where will you take your water samples from? Why?
- What analyses will you need to do on your water samples?
- How else are you going to test the quality of the seawater? What will you look for? How will you record what you see or smell?

Screen 18

Take learners to a beach to take their seawater samples and make their observations.

Screen 19

Either on the beach or back in school, ask learners to analyse their samples, then discuss the questions posed.

Focus questions

- What did you find out about the seawater quality of your local beach?
- How confident are you of your results? Why?

Invite learner to write a Tweet/X to tell others about the cleanliness of your local seawater. Remind them that they only have 280 characters.