ELANLINKS
Pobl · Natur · Dŵr
People · Nature · Water

Ymddiriedolaeth Cwm Elan
Elan Valley Trust

heritage treftadaeth
ARIENNIR GAN Y LOTERI LOTTERY FUNDED

ELAN LINKS EDUCATIONAL RESOURCE PACK

INTRODUCTION

THE ELAN VALLEY

The Elan Valley is 70 square miles of dams, reservoirs and rugged Welsh landscapes. The dams offer a wonderful year-round backdrop for visitors, and walkers have access to 80 miles of designated rights of way, whether looking for a leisurely stroll or a challenging hill hike, there are many scenic walks and trails to cater for all.

The dams, reservoirs and 73-mile aqueduct of the Elan Valley were built a hundred years ago to supply desperately needed clean water to Birmingham. It was an epic feat of civil engineering set within an area of outstanding natural beauty.

Today, the dams and reservoirs provide a lasting amenity in their own right for visitors to enjoy as well as safeguarding the natural habitats of numerous species of flora and fauna.

The 70 square miles of moorland, bog, woodland, river and reservoir are of national importance for their diversity of lower plants (mosses, liverworts and lichens) and the Estate is the most important area for land birds in Wales.

Most of the Elan Estate is covered by 12 separate Sites of Special Scientific Interest. Within the Estate is the Claerwen National Nature Reserve, 800 hectares of upland plateaux with gently rolling hills covered with acid grassland and in parts, blanket bog on a mantle of peat. Grazing has been reduced on the reserve to protect species like bog mosses, bog rosemary, cotton grasses and heather. This bleak upland provides breeding or feeding ground for scarce birds like the dunlin and golden plover.

The Estate has been awarded an International Dark Sky Park Award and is filled with a wealth of nocturnal wildlife which thrives under these very dark skies.

The Elan Valley has been a place with a long and varied history. 4,000 years ago, Stone Age people made Elan their home within the forests of oak, birch and hazel. Later arrivals included the Celts and Romans. Elan's resources have attracted mining interests of copper, lead and zinc through the ages and remnants of these mines can still be seen today.

The Elan Valley has been used by the British Military through both World Wars to test munitions and equipment. In fact, in 1942, secret tests were carried out by the War Ministry involving Barnes Wallis. These and other secret trials resulted in the 'bouncing bomb' being perfected. Some remains of the dam used for these trials, at Nant y Gro, are still evident today.

WHY DEVELOP ACTIVITIES FOR THE ELAN VALLEY?

The Elan Valley, as described earlier, has a wealth of natural beauty and heritage. Whether it is the creation of the dams and reservoirs that can still be visited today, hill farming, nature or people, the abundant heritage is truly appreciated and resources such as this play a part in promoting and securing it.

By educating our children, and their families, we hope to help protect the habitat by developing a mutual respect for our landscape so that it can be preserved for future generations. These classroom activities aim to inform learners of the importance of respecting the Elan Valley and introduce them to the habitat and its history.

HOW DO THE ACTIVITIES FIT WITH THE CURRICULUM?

The activities have been designed to fit with both the English and Welsh National Curricula. As a whole, they cover a range of subject areas and each activity gives opportunities for leaners to find out about, and apply, knowledge, understanding and skills from a range of subject and subject areas.

They have been written with a focus on learners in Years 6 and 7. This would allow schools to use the pack within both primary and secondary phases, or even as transition activities as learners move from primary to secondary school.

The activities focus on improving learners' skills of problem solving, critical thinking, collaboration, communication, creative thinking and research. They require learners to be metacognitive, take responsibility for their own learning and have embedded cross-curricular skills of literacy, numeracy and digital competence. This approach allows learners to fulfil the four purposes of Curriculum for Wales and supports the aims of the National Curriculum in England.

The activities aim to stimulate learners' curiosity, so that they will be more engaged and therefore better motivated to succeed. They are based around questioning because this is the driving force behind improving learners' higher-order thinking, with high quality questions leading to high quality talk. Therefore, all the activities are designed around a series of tasks with suggested focus questions for learners to lead them through the task. As effective collaboration is key to developing higher-order thinkers, all the activities require pairs or small groups of learners to work together to discuss and answer the posed questions.

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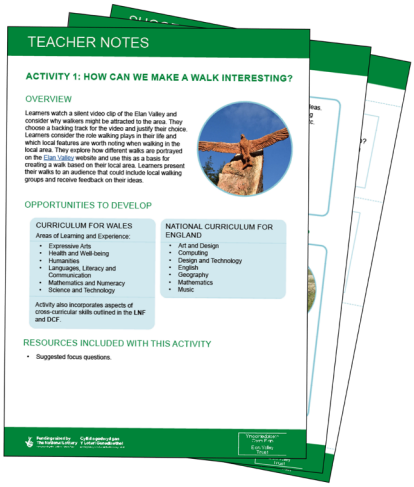
OVERVIEW OF ACTIVITIES

1. How can we make a walk interesting?



Learners watch a silent video clip of the Elan Valley and consider why walkers might be attracted to the area. They choose a backing track for the video and justify their choice. Learners consider the role walking plays in their life and what local features are worth noting when walking in the local area. They explore how different walks are portrayed on the Elan Valley website and use this as a basis for creating a walk based on their local area. Learners present their walks to an audience that includes local walking groups and receive feedback on their ideas.

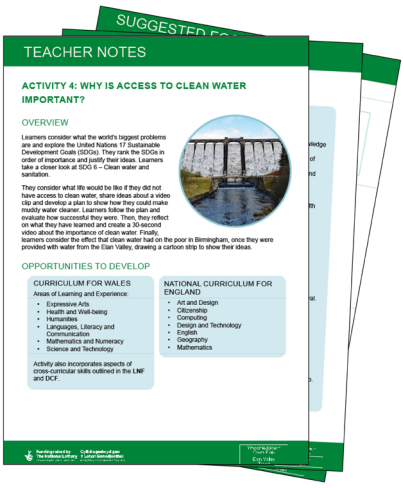
2. What can we find out about water in our homes?

Learners explore where and how water enters and leaves their home and consider where this water comes from and where it goes afterwards. They are encouraged to search for evidence to support their ideas, consider what they know about the water cycle and carry out research to find out more information. Learners develop success criteria for a good presentation, working collaboratively to create a one-minute presentation of their choosing, delivering it to the class. They receive peer feedback and reflect on what they have learned about the water cycle and making presentations.

3. Where does my water come from and where does it go?

In Activity 2, learners considered where the water used in their home comes from and where it goes after it leaves their home. This was explored in a general, ‘big picture’ sense and involved learners finding out more about the water cycle and how this links to the water entering and leaving their home. This activity takes a more specific approach, encouraging learners to find out the source of the water that supplies their home and how it reaches their home and where the water is treated after it leaves their home.

4. Why is access to clean water important?



Learners consider what the world’s biggest problems are and explore the United Nations 17 Sustainable Development Goals (SDGs). They rank the SDGs in order of importance and justify their ideas. Learners take a closer look at SDG 6 – Clean water and sanitation. They consider what life would be like if they did not have access to clean water, share ideas about a video clip and develop a plan to show how they could make muddy water cleaner. Learners follow the plan and evaluate how successful they were. Then, they reflect on what they have learned and create a 30 second video about the importance of clean water. Finally, learners consider the effect that clean water had on the poor in Birmingham, once they were provided with water from the Elan Valley, drawing a cartoon strip to show their ideas.

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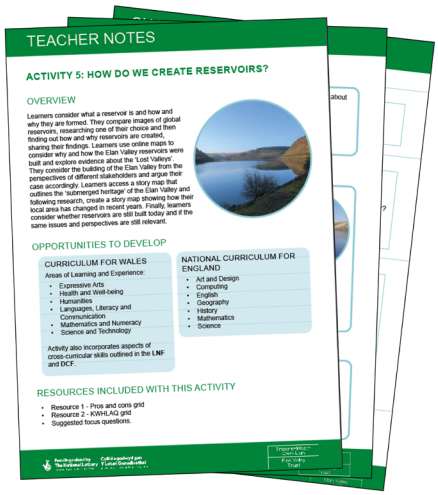
5. How do we create reservoirs?

Learners consider what a reservoir is and how and why they are formed. They compare images of global reservoirs, researching one of their choice and then finding out how and why reservoirs are created, sharing their findings. Learners use online maps to consider why and how the Elan Valley reservoirs were built and explore evidence about the 'Lost valleys'. They consider the building of the Elan Valley from the perspectives of different stakeholders and argue their case accordingly. Learners access a story map that outlines the 'submerged heritage' of the Elan Valley and following research, create a story map showing how their local area has changed in recent years. Finally, learners consider whether reservoirs are still built today and if the same issues and perspectives are still relevant.


TEACHER NOTES

ACTIVITY 5: HOW DO WE CREATE RESERVOIRS?

OVERVIEW

OPPORTUNITIES TO DEVELOP

CURRICULUM FOR WALES

NATIONAL CURRICULUM FOR ENGLAND

RESOURCES INCLUDED WITH THIS ACTIVITY

6. Why is it important not to waste water?

Learners consider reasons for saving water and decide which they think is the most important. They estimate and measure out a cubic metre, collate different activities that use water at home, exploring how many times each activity can be done to use one cubic metre of water. Using online resources, learners find out the cost of using a cubic metre of water, estimating how much each activity costs in a year. They plan how to work this out, gathering information from home and developing estimates for the yearly cost. Learners consider why and how people change their behaviour, before creating a detailed plan of how they might save water at home by changing the behaviour of friends and family. Finally, learners work collaboratively to develop an invention that saves water.

7. How do we have an effect on our environment?

Learners consider how things around them have changed and the possible reasons for these changes and what we mean by a 'new development'. They explore the local area to identify places or spaces where a new development could take place, considering what effects such a development might have on the living things in that environment and creating an environmental report to show how the area will be affected. Learners consider how their local historic environment has been preserved through use of maps, online tools and fieldwork. They explore the Elan Valley environment, weighing up why this area needs to be looked after and protected and consider how humans could be a risk. Finally, learners reflect on the tasks they have completed, creating a poster highlighting the importance of the Elan Valley to visitors and encouraging them to preserve the natural and historic environment.


TEACHER NOTES

ACTIVITY 7: HOW DO WE HAVE AN EFFECT ON OUR ENVIRONMENT?

OVERVIEW

OPPORTUNITIES TO DEVELOP

CURRICULUM FOR WALES

NATIONAL CURRICULUM FOR ENGLAND

RESOURCES INCLUDED WITH THIS ACTIVITY

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8. How might climate change affect the Elan Valley?

Learners list different types of weather and consider what the weather is likely to be at different times of the year and the difference is between ‘weather’ and ‘climate’. They consider the climate where they live and carry out further research and explore their thinking about what ‘climate change’ actually means and why it is such an important issue. Learners consider the effects of climate change and explore evidence suggesting that the average global temperature is increasing rapidly. They explore how this might be a cause of more frequent ‘extreme weather’ events and what impact this might have on the Elan Valley. Learners find out about the importance of peat bog restoration in mitigating the effects of climate change. They consider other effects of climate change and the possible impacts of rising sea levels, globally and in the UK.

9. Why do we build dams?

Learners explore their understanding of the word ‘dam’ and consider why we build dams. They use images of the Elan Valley dams and online maps and resources to consider why the dams have been built where they are. Learners use the outdoor environment to build a dam across flowing water, considering the effects of the dam on flowing water. They access a news article and explore whether humans are the only animals to build dams, before finally, researching and considering how and why beavers build dams.

10. How can we celebrate our environment through art?

Learners explore images of the Elan Valley and collate a list of descriptive words. They consider old and modern paintings of the Elan Valley, choosing a favourite and explaining why. Learners consider a poem based on the Elan Valley and text about a famous poet visiting the area, before watching a video of a chainsaw artist creating an Elan Valley sculpture trail. Finally, they are challenged to develop an artistic celebration of the area around the school and where they live. Groups create something unique and collaborate to decide how best to display their work around the school.


TEACHER NOTES

ACTIVITY 10: HOW CAN WE CELEBRATE OUR ENVIRONMENT THROUGH ART?

OVERVIEW

Learners explore images of the Elan Valley and collate a list of descriptive words. They consider old and modern paintings of the Elan Valley, choosing a favourite and explaining why. Learners consider a poem based on the Elan Valley and text about a famous poet visiting the area, before watching a video of a chainsaw artist creating an Elan Valley sculpture trail. Finally, they are challenged to develop an artistic celebration of the area around the school and where they live. Groups create something unique and collaborate to decide how best to display their work around the school.

OPPORTUNITIES TO DEVELOP

CURRICULUM FOR WALES

Areas of Learning and Experience:

- Expressive Arts
- Health and Well-being
- Humanities
- Languages, Literacy and Communication
- Science and Technology

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

NATIONAL CURRICULUM FOR ENGLAND

- Art and Design
- Computing
- English
- Geography
- History

RESOURCES INCLUDED WITH THIS ACTIVITY

- Suggested focus questions.

RESOURCES REQUIRED TO UNDERTAKE THIS ACTIVITY

- Internet enabled device and internet access
- Maps of the local area if available.

TEACHER NOTES

ACTIVITY 1: HOW CAN WE MAKE A WALK INTERESTING?

OVERVIEW

Learners watch a silent video clip of the Elan Valley and consider why walkers might be attracted to the area. They choose a backing track for the video and justify their choice. Learners consider the role walking plays in their life and which local features are worth noting when walking in the local area. They explore how different walks are portrayed on the Elan Valley website and use this as a basis for creating a walk based on their local area. Learners present their walks to an audience that could include local walking groups and receive feedback on their ideas.

OPPORTUNITIES TO DEVELOP

CURRICULUM FOR WALES

Areas of Learning and Experience:

- 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**.

NATIONAL CURRICULUM FOR ENGLAND

- Art and Design
- Computing
- Design and Technology
- English
- Geography
- Mathematics
- Music

RESOURCES INCLUDED WITH THIS ACTIVITY

- Suggested focus questions.

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RESOURCES REQUIRED TO UNDERTAKE THIS ACTIVITY

- Internet enabled device and internet access
- Earphones for Task 2
- Downloaded free OS app (with adverts) from Apple - OS Maps: Walking & Bike Trails on the App Store or Google - OS Maps: Walking & Bike Trails – Apps on Google Play and/or paper based OS maps of the local area if available.

USEFUL LINKS

Where possible, encourage learners to search for and access information independently. However, these links might be useful for some of the tasks.

- Google Maps
- National Library of Scotland – Side by side georeferenced maps viewer with layer swipe (historical maps)
- Elan Valley – Explore on Foot
- Ordnance Survey - Guide to OS Maps symbols
- Free app from Apple – OS Maps: Walking & Bike Trails on the App Store or Google – OS Maps: Walking & Bike Trails – Apps on Google Play.

DOING THE ACTIVITY

- Most tasks require learners to work in pairs or groups. Encourage learners to share their ideas and through open questioning, to explain and justify their ideas when possible.
- How you approach Task 1 will depend on where your school is situated in relation to the Elan Valley and should be approached accordingly.
- Ensure that each group has access to an internet enabled device.
- The suggested focus questions, relating to each task, can be given to learners as they start each task or used by the teacher.

TASK 1: WHY MIGHT THE ELAN VALLEY BE POPULAR WITH WALKERS?

Explain to learners that the Elan Valley is a river valley, situated in Powys, Wales and is sometimes referred to as the 'Welsh Lake District'. It covers 70 square miles (180 km^2) of lake and countryside. You might show learners the area on a map.

Ask small groups of learners to access the following link Elan Valley and to watch the video clip playing on the website. Invite them to consider and list the reasons why this area might be a popular destination for people who like walking.

Suggested focus questions:

- What do you know about the Elan Valley? How do you know these things?
- What features of the Elan Valley are shown in the video?
- What do you think about the Elan Valley area shown on the video clip? Why?
- Why do you think this area is popular for people who enjoy walking?

TASK 2: HOW CAN MUSIC ENHANCE A VIDEO CLIP?

Ask groups of learners to think about and discuss why the video clip has no sound and to share their ideas. Invite them to search for and find a suitable piece of music as a backing track to the video clip. Each group could play their backing track over the video clip and explain why they think the music fits well with the clip.

Suggested focus questions:

- Why do you think the video clip has no sound?
- How might a backing track improve the video clip? Why would this improve it?
- What sort of music might be suitable? Why do you think that?
- What music have you chosen as a backing track? Why?
- Which group chose the most suitable backing track for the video? Why do you think that?

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TASK 3: WHERE DO WE WALK TO?

Ask pairs of learners to consider when and where they walk and to share their ideas. Prompt them to think about the different places they walk, the reasons for walking instead of using another means of travel, whether they enjoy walking and why, etc.

Suggested focus questions:

- Where do you walk to in a typical day?
- What places would you rather not walk to? Why?
- How far is too far to walk? Why do you think that?
- What distance do you think that is? Why?
- What is the greatest distance you have ever walked? How do you know that?
- When might you choose to walk instead of going in a car, for example? Why?
- How does it feel when you have to walk when you really don't want to?
- What are the good things about walking? Why do you think these are good?
- What are the not so good things about walking? Why?

TASK 4: WHERE IS THERE TO WALK IN THE ELAN VALLEY?

Ask the groups to scroll down the web page and to access the 'Walk' tab. This can also be accessed directly on this link: Elan Valley – Explore on Foot.

Invite learners to explore the web page and the nine different walks that it outlines. Encourage them to make a note of the features of each walk that are outlined and general points made on the page. Ask learners to feedback their ideas and to explain why they think these features are highlighted. You could also prompt them to suggest which of the walks they would choose to go on and to explain why.

Suggested focus questions:

- What information does the web page contain?
- What do you think it explains about the countryside code and safety?
- What does it tell you about each of the walks? Why do you think it gives you this information?
- What do you think the purpose of the interactive maps is? Why?
- How useful do you think the maps are? Why?
- What information is provided by the graphs? Why do you think this?
- Which of these walks looks the most interesting? Why?

TASK 5: WHAT MIGHT WE SEE ON A WALK IN THE ELAN VALLEY?

There are nine different walks on the webpage used in the previous task. Ask small groups of learners to choose one of the walks and to pick a point on the walk where they believe there will be a variety of things to see in terms of the landscape. Invite them to 'look around' at their chosen point and describe exactly what they can see when they look north, south, east and west. Ensure each group choses a different walk. They can zoom in on the map and use the key to OS maps at: Ordnance Survey - Guide to OS Maps symbols. Select learners to describe one of the views from each of the walks.

Suggested focus questions:

- What information does the map give you? How do you know?
- Looking at the OS key, which symbols do you already know about? How do you know about these?
- From your chosen point on the walk, what could you see when you look north/ south/east/west? How do you know this?
- Which elements of the landscape wouldn't you be able to see from your chosen point on the walk? Why wouldn't you be able to see them?

TASK 6: WHERE IS THERE TO WALK TO WHERE WE LIVE?

Ask learners to think about and discuss the things they like and enjoy about the area they live in and also the things that are interesting to see. Prompt them to consider things such as parks, wildlife, rivers, views, historical monuments or buildings, houses where well-known people were born or lived, etc.

They could note their ideas and supplement them with further research, including interviewing family members and friends. Ask learners to access a Google map or use an OS map of the area around the school (paper-based or from the free app from Apple – OS Maps: Walking & Bike Trails on the App Store or Google – OS Maps: Walking & Bike Trails – Apps on Google Play) to check they haven't missed anything of note.

Once learners have built up a comprehensive list of ideas you could take them on walks of the area around the school and where they live so that they all see the listed things and where they are in relation to the school and each other. Encourage learners to make simple sketch maps during the walks and to note specific features on them, using a key as Google or OS maps.

Suggested focus questions:

- What do you like and enjoy about this area? Why?
- What things are interesting to see and do in this area? Why are they interesting?
- What well known features and landmarks are in the area? How do you know this?
- What well known people are from around here? Where were they born? Where did they live? How do you know?
- What historical buildings and monuments are there in the area? What do you know about them? How?
- How will you make a sketch map on the walk? Why do it like that?
- How will you make a note or key of important features on the sketch map?

TASK 7: WHAT LOCAL WALKING ROUTES CAN WE CREATE?

Explain to small groups of learners that you want them to create a walk that is based on the local area. Remind them of the walks outlined in the Elan Valley and their lists of local features and landmarks and their sketch maps.

Learners could access digital maps of the area, including those with aerial views, imagery, street view, etc. and also make use of hard copy local maps if available. Invite them to use all the information and resources they have to develop and create a 'local walking route' for visitors to the area. These might have a starting and finishing point, overall distance, level of difficulty, features to look out for during the walk and so on. Learners might be prompted to create these digitally, including hyperlinks to notable features on the walk, etc.

Learners could present their walking routes in a school assembly, for example, and invite local walking groups and people involved in local tourism to be in the audience. These people might be invited to provide feedback to the learners.

Suggested focus questions:

- How will you create your 'local walking route'? Why do it like this?
- What maps will you use? Why?
- What information will you include? Why?
- How will you work out the distance of the walk? Why is this a good way of doing it?
- How will you make sure your walk is the best? Why will this make it the best?
- How will you present your walking route to the audience? Why like this?
- How will you use their feedback to improve your walking route? Why will that improve it?

OPPORTUNITIES TO DEVELOP IN DETAIL

CURRICULUM FOR WALES

Statements of what matters:

Expressive Arts

- Exploring the expressive arts is essential to developing artistic skills and knowledge and it enables learners to become curious and creative individuals.
- Responding and reflecting, both as artist and audience, is a fundamental part of learning in the expressive arts.
- Creating combines skills and knowledge, drawing on the senses, inspiration and imagination.

Health and Well-being

- Developing physical health and well-being has lifelong benefits.

Humanities

- Our natural world is diverse and dynamic, influenced by processes and human actions.

Languages, Literacy and Communication

- Understanding languages is key to understanding the world around us.
- Expressing ourselves through languages is key to communication.

Mathematics and Numeracy

- Geometry focuses on relationships involving shape, space and position, and measurement focuses on quantifying phenomena in the physical world.

Science and Technology

- Design thinking and engineering offer technical and creative ways to meet society's needs and wants.

LNF

Literacy

- **Listening:** Developing vocabulary; Listening as part of collaborative talk.
- **Speaking:** Clarity and vocabulary; Purpose; Collaborative talk; Questioning.
- **Writing:** Vocabulary, spelling, grammar; Planning and organising for different purposes, audiences and context; Proofreading, editing and improving.

DCF

- **Citizenship:** Identity, image and reputation; Digital rights, licensing and ownership.
- **Interacting and collaborating:** Collaboration, Storing and sharing.
- **Producing:** Sourcing, searching and planning digital content; Creating digital content; Evaluating and improving digital content.

NATIONAL CURRICULUM FOR ENGLAND

Art and Design

Computing

Design and Technology

- Design; Make; Evaluate.

English

- Spoken language; Reading.

Geography

- Locational knowledge; Place knowledge; Human and physical geography; Geographical skills and fieldwork.

Mathematics

- Measurement; Geometry – position and direction.

Music

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SUGGESTED FOCUS QUESTIONS

TASK 1

Why might the Elan Valley be popular with walkers?

- What do you know about the Elan Valley? How do you know these things?
- What features of the Elan Valley are shown in the video?
- What do you think about the Elan Valley area shown on the video clip? Why?
- Why do you think this area is popular for people who enjoy walking?

TASK 2

How can music enhance a video clip?

- Why do you think the video clip has no sound?
- How might a backing track improve the video clip? Why would this improve it?
- What sort of music might be suitable? Why do you think that?
- What music have you chosen as a backing track? Why?
- Which group chose the most suitable backing track for the video? Why do you think that?

TASK 3

Where do we walk to?

- Where do you walk to in a typical day?
- What places would you rather not walk to? Why?
- How far is too far to walk? Why do you think that?
- What distance do you think that is? Why?
- What is the greatest distance you have ever walked? How do you know that?
- When might you choose to walk instead of going in a car, for example? Why?
- How does it feel when you have to walk when you really don't want to?
- What are the good things about walking? Why do you think these are good?
- What are the not so good things about walking? Why?

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TASK 4

Where is there to walk in the Elan Valley?

- What information does the web page contain?
- What do you think it explains about the countryside code and safety?
- What does it tell you about each of the walks? Why do you think it gives you this information?
- What do you think the purpose of the interactive maps is? Why?
- How useful do you think the maps are? Why?
- What information is provided by the graphs? Why do you think this?
- Which of these walks looks the most interesting? Why?

TASK 5

What might we see on a walk in the Elan Valley?

- What information does the map give you? How do you know?
- Looking at the OS key, which symbols do you already know about? How do you know about these?
- From your chosen point on the walk, what could you see when you look north/south/east/west? How do you know this?
- Which elements of the landscape wouldn't you be able to see from your chosen point on the walk? Why wouldn't you be able to see them?

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TASK 6

Where is there to walk to where we live?

- What do you like and enjoy about this area? Why?
- What things are interesting to see and do in this area? Why are they interesting?
- What well known features and landmarks are in the area? How do you know this?
- What well known people are from around here? Where were they born? Where did they live? How do you know?
- What historical buildings and monuments are there in the area? What do you know about them? How?
- How will you make a sketch map on the walk? Why do it like that?
- How will you make a note or key of important features on the sketch map?

TASK 7

What local walking routes can we create?

- How will you create your 'local walking route'? Why do it like this?
- What maps will you use? Why?
- What information will you include? Why?
- How will you work out the distance of the walk? Why is this a good way of doing it?
- How will you make sure your walk is the best? Why will this make it the best?
- How will you present your walking route to the audience? Why like this?
- How will you use their feedback to improve your walking route? Why will that improve it?

ACTIVITY 2: WHAT CAN WE FIND OUT ABOUT WATER IN OUR HOMES?

OVERVIEW

Learners explore where and how water enters and leaves their home and consider where this water comes from and where it goes afterwards. They are encouraged to search for evidence to support their ideas, consider what they know about the water cycle and carry out research to find out more information. Learners develop success criteria for a good presentation, working collaboratively to create a one-minute presentation of their choosing, delivering it to the class. They receive peer feedback and reflect on what they have learned about the water cycle and making presentations.

Please note: this activity has been designed so that it can be followed by Activity 3. This activity gives a 'big picture' overview and Activity 3 takes a more specific approach, encouraging learners to find out the source of the water that supplies their home, possibly the Elan Valley, how it reaches their home and where the water is treated after it leaves their home.

OPPORTUNITIES TO DEVELOP

CURRICULUM FOR WALES

Areas of Learning and Experience:

- Expressive Arts
- Health and Well-being
- Humanities
- Languages, Literacy and Communication
- Science and technology

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

NATIONAL CURRICULUM FOR ENGLAND

- Art and Design
- Computing
- English
- Geography
- Science

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RESOURCES INCLUDED WITH THIS ACTIVITY

- Resource 1 – QuADS grid
- Suggested focus questions.

RESOURCES REQUIRED TO UNDERTAKE THIS ACTIVITY

- Internet enabled device and internet access
- Maps of the local area if available.

USEFUL LINKS

Where possible, encourage learners to search for and access information independently. However, these links might be useful for some of the tasks.

- Google Maps
- BBC Bitesize – What is the water cycle?
- National Geographic Education – Water Cycle.

DOING THE ACTIVITY

- Most tasks require learners to work in pairs or groups. Encourage learners to share their ideas and through open questioning, to explain and justify their ideas when possible.
- Ensure that each group has access to an internet enabled device.
- The suggested focus questions, relating to each task, can be given to learners as they start each task or used by the teacher.

TASK 1: WHERE DOES WATER COME INTO OUR HOMES AND WHERE DOES IT LEAVE?

Ask individual learners to draw a simple outline of their home on a sheet of A3 paper if possible. Invite them to add details to their drawing to show, for example, where and how water enters and leaves their home, where water is used in the home, etc. You might need to provide some initial suggestions to encourage them, for example, out of the tap or shower, when you pull the bath plug or flush the toilet, etc. At this point you are looking to activate the prior knowledge and understanding of learners about how water is supplied to homes, how it moves around the home and how waste water leaves the home.

Suggested focus questions:
Think about the water you use at home:

- Where does the water come into your home? Why do you think that?
- How does it come into your home? How do you know that?
- How do you think water gets to different parts of your home?
- Where does the water leave your home? How do you know that?
- How does the water leave your home? Why do you think that?

TASK 2: WHERE DOES OUR WATER START AND END ITS JOURNEY?

In this task, we are looking to explore what learners know and understand about the journey made by water before it reaches our homes and after it leaves our homes. Use open questions to encourage learners to explore these journeys and to explain where they think the journey starts and ends.

Ask individual learners to annotate their drawings from Task 1, by adding details to show where they think the water coming into their home starts its journey and where this journey ends after the water leaves their home. Use the idea of ‘and before that?’ and ‘and after that?’ to encourage learners to consider their understanding of the journey of water and to explore whether they make links to the water cycle. Prompt them to draw their ideas and to add arrows to show direction and text to explain their thinking. Invite pairs or small groups of learners to share their drawings and explain them to their peers.

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As an additional task, you could take learners into the school grounds and the local area to search for evidence of the supply and removal of water, e.g., drains, pipes, manhole covers, etc. You could also ask them to repeat this process outside their home and report findings.

Suggested focus questions:

- Where do you think the water was before it reached your home? How did it get to your home? How do you know that?
- Where do you think it was before that? Why do you think that?
- Where was the water at the beginning of its journey to your home? How do you think it got there? Where might it have been before that?
- Where do you think water goes after it leaves your home? How does it get there? Why do you think that?
- Where do you think it goes next? How do you know?
- Where do you think the water ends up? Does it go anywhere else? Why do you think that?

TASK 3: WHAT DO WE KNOW ABOUT THE WATER CYCLE?

Tasks 1 and 2 provided opportunities for learners to explore their ideas about the journey water makes to and from our homes. To build on these ideas, invite pairs of learners to use think-pair-share to consider what they know about the water cycle.

Tell learners that they will work in small groups and at the end of this task they will be required to make a one-minute presentation to explain to others about the water cycle. Ask small groups of learners to think about and discuss how they would like to present their ideas, as this will determine what information they search for and gather. Invite them to use Resource 1 (QuADS grid) as a structure to search for and access relevant information about the water cycle that will help them develop a presentation.

Some useful sites might include:

- BBC Bitesize – What is the water cycle?
- National Geographic Education – Water Cycle.

An online image search for ‘water cycle’ will also provide access to a range of diagrams and further reading possibilities.

Suggested focus questions:

- What do you know about the water cycle? How do you know these things?
- What does your partner know? How is this different from what you think?
- What sort of presentation will you make? Why?
- What information will you search for? Why?
- What search terms will you use? Why?
- How will you know if the information you find is reliable?

TASK 4: HOW WILL WE PRESENT OUR IDEAS ABOUT THE WATER CYCLE?

Invite learners to work together as a team to develop their presentation. Encourage them to consider what their success criteria for a good presentation are at the start of the development process and to keep these in mind and use them as a guide as they develop the presentation.

Ensure learners have a free rein in their choice of how to present their ideas about the water cycle and provide the necessary support. Encourage them to consider the purpose of the presentation and their audience and to think about how they will use appropriate vocabulary to ensure clarity. Some might choose a PowerPoint or Prezi presentation, for example, whereas others might create an animation, video or role play presentation.

Invite each group to explain their success criteria and to present their ideas to the audience in one minute. Ask all the audience members to peer assess each presentation using two stars and a wish. A small selection of these might be given as verbal feedback or they could be recorded on sticky notes and given to the group presenting afterwards.

Suggested focus questions:

- What are your success criteria for a good presentation? Why?
- Which of these criteria is the most important? Why?
- How will you use the information you gathered to develop the presentation?
- How will you make sure the presentation is only one minute long?

TASK 5: WHAT HAVE WE LEARNED ABOUT THE WATER CYCLE AND MAKING PRESENTATIONS?

Ask small groups of learners to reflect on the tasks they have completed and to think about and discuss what and how they have learned about the water cycle and making presentations. Invite some of them to share their ideas with the class and encourage discussion about differences and similarities in learning experiences.

Suggested focus questions:

- What have you learned from completing the tasks? How did you learn these things?
- What do you understand better after completing the tasks? How do you know that?
- How has your understanding of the water cycle changed?
- What went well with your presentation? How do you know?
- Which parts of the feedback you received were most useful? Why?
- How will you improve your next presentation? Why will that improve it?

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OPPORTUNITIES TO DEVELOP IN DETAIL

CURRICULUM FOR WALES

Statements of what matters:

Expressive Arts

- Creating combines skills and knowledge, drawing on the senses, inspiration and imagination.

Health and Well-being

- Developing physical health and well-being has lifelong benefits.
- Our decision-making impacts on the quality of our lives and the lives of others.
- How we engage with social influences shapes who we are and affects our health and well-being.

Humanities

- Enquiry, exploration and investigation inspire curiosity about the world, its past, present and future.
- Our natural world is diverse and dynamic, influenced by processes and human actions.

Languages, Literacy and Communication

- Understanding languages is key to understanding the world around us.
- Expressing ourselves through languages is key to communication.

Science and Technology

- Being curious and searching for answers is essential to understanding and predicting phenomena.
- Matter and the way it behaves defines our universe and shapes our lives.

LNF

Literacy

- **Listening:** Developing vocabulary; Listening as part of collaborative talk.
- **Reading:** Reading strategies; Understanding, response and analysis.
- **Speaking:** Clarity and vocabulary; Purpose; Collaborative talk; Questioning.
- **Writing:** Vocabulary, spelling, grammar; Planning and organising for different purposes, audiences and context; Proofreading, editing and improving.

DCF

- **Citizenship:** Identity, image and reputation; Digital rights, licensing and ownership.
- **Interacting and collaborating:** Communication; Collaboration; Storing and sharing.
- **Producing:** Sourcing, searching and planning digital content; Creating digital content; Evaluating and improving digital content.

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NATIONAL CURRICULUM FOR ENGLAND

Art and Design

Computing

English

- Spoken language; Reading; Writing.

Geography

- Human and physical geography; Geographical skills and fieldwork.

Science

- Properties and changes of materials.

RESOURCE 1

QUADS GRID

Question	Answer	Details	Source

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SUGGESTED FOCUS QUESTIONS

TASK 1

Where does water come into our homes and where does it leave?

Think about the water you use at home:

- Where does the water come into your home? Why do you think that?
- How does it come into your home? How do you know that?
- How do you think water gets to different parts of your home?
- Where does the water leave your home? How do you know that?
- How does the water leave your home? Why do you think that?

TASK 2

Where does our water start and end its journey?

- Where do you think the water was before it reached your home? How did it get to your home? How do you know that?
- Where do you think it was before that? Why do you think that?
- Where was the water at the beginning of its journey to your home? How do you think it got there? Where might it have been before that?
- Where do you think water goes after it leaves your home? How does it get there? Why do you think that?
- Where do you think it goes next? How do you know?
- Where do you think the water ends up? Does it go anywhere else? Why do you think that?

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TASK 3

What do we know about the water cycle?

- What do you know about the water cycle? How do you know these things?
- What does your partner know? How is this different from what you think?
- What sort of presentation will you make? Why?
- What information will you search for? Why?
- What search terms will you use? Why?
- How will you know if the information you find is reliable?

TASK 4

How will we present our ideas about the water cycle?

- What are your success criteria for a good presentation? Why?
- Which of these is the most important? Why?
- How will you use the information you gathered to develop the presentation?
- How will you make sure the presentation is only a minute long?

TASK 5

What have we learned about the water cycle and making presentations?

- What have you learned from completing the tasks? How did you learn these things?
- What do you understand better after completing the tasks? How do you know that?
- How has your understanding of the water cycle changed?
- What went well with your presentation? How do you know?
- Which parts of the feedback you received were most useful? Why?
- How will you improve your next presentation? Why will that improve it?

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ACTIVITY 3: WHERE DOES MY WATER COME FROM AND WHERE DOES IT GO?

OVERVIEW

In Activity 2, learners considered where the water used in their home comes from and where it goes after it leaves their home. This was explored in a general, 'big picture' sense and involved learners finding out more about the water cycle and how this links to the water entering and leaving their home. This activity takes a more specific approach, encouraging learners to find out about the source of the water that supplies their home and how it reaches their home and where the water is treated after it leaves their home.

OPPORTUNITIES TO DEVELOP

CURRICULUM FOR WALES

Areas of Learning and Experience:

- 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**.

NATIONAL CURRICULUM FOR ENGLAND

- Art and Design
- Computing
- Design and Technology
- English
- Geography
- History
- Mathematics

RESOURCES INCLUDED WITH THIS ACTIVITY

- Suggested focus questions.

RESOURCES REQUIRED TO UNDERTAKE THIS ACTIVITY

- Internet enabled device and internet access.

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USEFUL LINKS

Where possible, encourage learners to search for and access information independently. However, these links might be useful for some of the tasks.

- Welsh Water/Dŵr Cymru – Water
- Severn Trent Water
- Semrush Blog – 14 Influential Infographic Examples To Inspire You
- Welsh Water/Dŵr Cymru – Waste water treatment
- ARC GIS story maps – The water journey
- Glascoed People and Places – The Reservoir
- Severn Trent – News – New pipes to provide reliable water supply for Newtown
- BBC News – Welsh Water: Sewage dumped in waterways for 600,000 hours
- BBC News – River pollution: Sewage spill prevention will hit water bills.

DOING THE ACTIVITY

- Most tasks require learners to work in pairs or groups. Encourage learners to share their ideas and through open questioning, to explain and justify their ideas when possible.
- The suggested focus questions, relating to each task, can be given to learners as they start each task or used by the teacher.

TASK 1: WHERE DOES THE WATER USED IN MY HOUSE COME FROM?

Ask pairs of learners to use think-pair-share to consider what they know about where the water used in their home comes from. Encourage them to think about and discuss which area of the country the water might be stored (e.g. the Elan Valley) and how it might be stored.

Suggested focus questions:
Think about the water you use at home:

- Where does this water come from? Why do you think that?
- Which area does it come from? How do you know? Where is this on the map?
- How do you think the water is stored? Why do you think that?
- How do you think it gets from there to your home?

TASK 2: WHAT CAN WE FIND OUT ABOUT OUR WATER SUPPLY?

Explain to learners that this is a group research task, to find out where the water that supplies their homes, street, estate, school, village, etc, comes from. Encourage them to use their own ideas to search for information, however, contacting the relevant water authority Welsh Water/Dŵr Cymru – Water or Severn Trent Water either by email or telephone might also be worth pursuing.

Also, invite them to locate the reservoir their water is supplied from on a map if possible. They can use online or paper-based maps to search for reservoirs.

Encourage learners to access a range of infographics and consider which ones they think are the best and why. They could search online and access links such as Semrush Blog – 14 Influential Infographic Examples To Inspire You.

Following this, invite learners to search for and access information and to create an infographic to show others what they have found out. This might include statistics about the reservoir their water is supplied from, a map to show where the reservoir is and information about how the water is transported from the reservoir to their homes. Ask each group to present their infographic to share findings.

Suggested focus questions:

- How will you find out where your water is supplied from? Why will you do it like this?
- What are you expecting to find out? Why?
- What do you think will be the best source of information? Why?
- Where is the water resource on the map? How did you find it?
- What information will you include on your infographic? Why?

TASK 3: WHAT CAN WE FIND OUT ABOUT OUR WASTE WATER?

Ask the same small groups of learners to find out where the waste water from their homes or the school goes when it disappears down the plughole or the toilet. This information is available online.

Encourage learners to locate the waste water treatment plant that serves their homes or the school and prompt them to find this on a map and to consider how the water travels from there to the plant.

Suggested focus questions:

- Where do you think the waste water goes after it leaves your home? How does it get there? Why do you think that?
- What do you think happens to it there? Why?
- What happens to the water after that? How do you know?

TASK 4: HOW DOES THE JOURNEY OF WATER FROM RESERVOIR TO TREATMENT PLANT FIT INTO THE WATER CYCLE?

Ask small groups of learners to think about and discuss the question asked in the title of the task. Encourage them to look at their work on the water cycle in Activity 2 or to find an online representation of the water cycle.

Invite them to consider and explain where in the cycle their house might fit and to share their ideas with the class.

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Suggested focus questions:

- What is the water cycle? How do you know?
- What are the different parts of the cycle?
- What happens in each part? Why do you think that?
- Where and how does your home fit into this cycle? How do you know?

TASK 5: WHAT ARE THE POSSIBLE ISSUES WITH WASTE WATER?

Ask learners if they are aware of news stories about waste water or sewage being released into rivers and the sea. Encourage them to share what they know and where they heard or saw this information.

Ask small groups of learners to read the articles on these links BBC News – Welsh Water: Sewage dumped in waterways for 600,000 hours and BBC News – River pollution: Sewage spill prevention will hit water bills and to search for other similar news items.

Invite them to sum up their ideas and research and to provide feedback to the class that includes the causes of the problems and what is being done to find solutions to these problems.

Suggested focus questions:

- What do you know about sewage and waste water being released into rivers and the sea? How do you know these things?
- What did you learn from the two news stories you looked at?
- What are the main problems with waste water and sewage?
- What is being done to solve these problems?
- What else could be done in your opinion? How would this help?

OPPORTUNITIES TO DEVELOP IN DETAIL

CURRICULUM FOR WALES

Statements of what matters:

Expressive Arts

- Responding and reflecting, both as artist and audience, is a fundamental part of learning in the expressive arts.
- Creating combines skills and knowledge, drawing on the senses, inspiration and imagination.

Health and Well-being

- Developing physical health and well-being has lifelong benefits.

Humanities

- Enquiry, exploration and investigation inspire curiosity about the world, its past, present and future.
- Our natural world is diverse and dynamic, influenced by processes and human actions.

Languages, Literacy and Communication

- Understanding languages is key to understanding the world around us.
- Expressing ourselves through languages is key to communication.

Mathematics and Numeracy

- Geometry focuses on relationships involving shape, space and position, and measurement focuses on quantifying phenomena in the physical world.

Science and Technology

- Being curious and searching for answers is essential to understanding and predicting phenomena.
- Matter and the way it behaves defines our universe and shapes our lives.

LNF

Literacy

- **Listening:** Developing vocabulary; Listening as part of collaborative talk.
- **Reading:** Reading strategies; Understanding, response and analysis.
- **Speaking:** Clarity and vocabulary; Purpose; Collaborative talk; Questioning.
- **Writing:** Vocabulary, spelling, grammar; Planning and organising for different purposes, audiences and context; Proofreading, editing and improving.

DCF

- **Citizenship:** Identity, image and reputation; Digital rights, licensing and ownership.
- **Interacting and collaborating:** Communication; Collaboration; Storing and sharing.
- **Producing:** Sourcing, searching and planning digital content; Creating digital content; Evaluating and improving digital content.

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NATIONAL CURRICULUM FOR ENGLAND

Art and Design

Computing

Design and Technology

- Design; Make; Evaluate.

English

- Spoken language; Reading; Writing.

Geography

- Locational knowledge; Place knowledge; Human and physical geography; Geographical skills and fieldwork.

History

Mathematics

- Measurement; Geometry – position and direction.

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SUGGESTED FOCUS QUESTIONS

TASK 1

Where does the water used in my house come from?

Think about the water you use at home:

- Where does this water come from? Why do you think that?
- Which area does it come from? How do you know? Where is this on the map?
- How do you think the water is stored? Why do you think that?
- How do you think it gets from there to your home?

TASK 2

What can we find out about our water supply?

- How will you find out where your water is supplied from? Why will you do it like this?
- What are you expecting to find out? Why?
- What do you think will be the best source of information? Why?
- Where is the water resource on the map? How did you find it?
- What information will you include on your infographic? Why?

TASK 3

What can we find out about our waste water?

- Where do you think the waste water goes after it leaves your home? How does it get there? Why do you think that?
- What do you think happens to it there? Why?
- What happens to the water after that? How do you know?

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TASK 4

How does the journey of water from reservoir to treatment plant fit into the water cycle?

- What is the water cycle? How do you know?
- What are the different parts of the cycle?
- What happens in each part? Why do you think that?
- Where and how does your home fit into this cycle? How do you know?

TASK 5

What are the possible issues with waste water?

- What do you know about sewage and waste water being released into rivers and the sea? How do you know these things?
- What did you learn from the two news stories you looked at?
- What are the main problems with waste water and sewage?
- What is being done to solve these problems?
- What else could be done in your opinion? How would this help?

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ACTIVITY 4: WHY IS ACCESS TO CLEAN WATER IMPORTANT?

OVERVIEW

Learners consider what the world's biggest problems are and explore the United Nations 17 Sustainable Development Goals (SDGs). They rank the SDGs in order of importance and justify their ideas. Learners take a closer look at SDG 6 – Clean water and sanitation.

They consider what life would be like if they did not have access to clean water, share ideas about a video clip and develop a plan to show how they could make muddy water cleaner. Learners follow the plan and evaluate how successful they were. Then, they reflect on what they have learned and create a 30-second video about the importance of clean water. Finally, learners consider the effect that clean water had on the poor in Birmingham, once they were provided with water from the Elan Valley, drawing a cartoon strip to show their ideas.

OPPORTUNITIES TO DEVELOP

CURRICULUM FOR WALES

Areas of Learning and Experience:

- 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**.

NATIONAL CURRICULUM FOR ENGLAND

- Art and Design
- Citizenship
- Computing
- Design and Technology
- English
- Geography
- Mathematics

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RESOURCES INCLUDED WITH THIS ACTIVITY

- Resource 1 - SDG sort cards
- Suggested focus questions.

RESOURCES REQUIRED TO UNDERTAKE THIS ACTIVITY

- Internet enabled device and internet access.
- Flipchart paper
- 1 transparent bottle of clean water
- A few transparent bottles of muddy water.

USEFUL LINKS

Where possible, encourage learners to search for and access information independently. However, these links might be useful for some of the tasks.

- United Nations – Sustainable Development Goals launch in 2016
- World Vision – 20 litre challenge: Suzy versus Anyaka
- Vovacast – World vision dirty water (YouTube video)
- Unesco – SDG Resources for Educators - Clean Water and Sanitation
- Inspire Education – Victorians: the filthy rich and the filthy poor (YouTube video).

DOING THE ACTIVITY

- Most tasks require learners to work in pairs or groups. Encourage learners to share their ideas and through open questioning, to explain and justify their ideas when possible.
- Ensure that each group has access to an internet enabled device.
- The suggested focus questions, relating to each task, can be given to learners as they start each task or used by the teacher.

TASK 1: WHAT ARE THE WORLD'S BIGGEST PROBLEMS?

Ask small groups of learners to think about and discuss what the biggest problems facing the world currently are. Invite them to list the problems and to highlight what they see as the most important problem to solve, sharing their thinking with the class.

Suggested focus questions:

- What are the main problems facing people in the world today? How do you know?
- How might these problems affect you in the future? Why do you think that?
- Which of these problems is the most important to solve? Why?

TASK 2: WHAT ARE SUSTAINABLE DEVELOPMENT GOALS (SDGS)?

Explain to learners that on January 1st 2016, the United Nations introduced an ambitious set of goals to banish a whole host of social issues by 2030. In total there were 17 Sustainable Development Goals (SDGs) that were seen as a to-do list for the people and the planet.

United Nations – Sustainable Development Goals launch in 2016.

Tell learners that two of these SDGs were:

- Zero hunger
- Life below water.

Ask small groups of learners to consider what the other 15 goals might be and to share their ideas. Then, provide the learners with Resource 1 (SDG sort cards) and ask them to think about and discuss which they think are the most important. Encourage them to prioritise the SDGs and rank them in order of importance, for example, using a diamond ranking grid.

Suggested focus questions:

- What do you think the 'No poverty' and 'Life below water' SDGs are about? Why?
- What could we do to help achieve those two goals? Why would this help?
- What do you think the other 15 SDGs might be? Why do you think that?
- Which of the 17 SDGs do you think are the most important for us to achieve? Why?
- What could you do to help achieve these goals? Why would this help?

TASK 3: WHAT DO WE KNOW ABOUT SDG 6 – CLEAN WATER AND SANITATION?

Explain to learners that they are going to take a closer look at SDG 6 – Clean water and sanitation.

Invite learners to explore what 20 litres of water might look like practically and how heavy it might be. For example, you could provide them with 1L, 2L and 4L containers used for milk or juice and ask them to measure out 20 litres.

Show learners the video clip on this link: World Vision – 20 litre challenge: Suzy versus Anyaka. Ask them to think about and discuss their ideas about what they saw in the clip and to share them with the class.

Suggested focus questions:

- What do you think about the video clip?
- How difficult do you think it would be to carry 20 litres of water?
- If you had to do this every day, how might it affect your life?
- What problems could it cause? Why do you think that?

TASK 4: HOW IMPORTANT IS ACCESS TO CLEAN WATER?

Ask pairs of learners to consider what life would be like if they did not have access to clean water. Show them the video clip on this link Vovacast – World vision dirty water (YouTube video) (referenced in Unesco – SDG Resources for Educators - Clean Water and Sanitation) and ask them to share their ideas about the video.

Show the learners two transparent bottles, one of clean water and one of muddy water. Invite small groups to create a plan to show how they could make the muddy water cleaner. This could be done using flipchart paper, for example, so that each plan can be attached to the wall. Learners could then be encouraged to look at the plans of other groups and add comments using sticky notes to suggest how the plan might be improved.

Each group might then be provided with a bottle of muddy water and asked to follow their plan to 'clean' the water. Learners might provide feedback about how successful they were and how they might improve the process if they were to repeat it.

Suggested focus questions:

- What would be the problems for your family if you only had access to dirty water?
- How would this change your lives? Why?
- What did you think about the video clip?
- What was the main message the video giving us? Why do you think that?
- How do you think you could clean the muddy water? Why would this work?
- Is your plan a good one? Why?
- What did you think of the other plans you looked at? Which was the best? Why?
- How successful were you at cleaning the muddy water?
- What would you do differently next time? Why?

TASK 5: WHAT HAVE WE LEARNED ABOUT NEEDING CLEAN WATER?

Ask small groups of learners to reflect on the tasks they have completed and to think about and discuss what they have learned about the need for clean water.

If possible, it would be useful to take learners outside to the nearest body of water, e.g. a pond, stream, lake in a local park, etc. and ask them to consider how they would transport water from this source to their home if that was the only access they had to a water source.

Invite small groups of learners to plan and create a 30-second video about the importance of clean water. Encourage discussions about what makes an effective video clip and to keep these ideas in mind when they plan and create their videos.

Again, each group could show their video clip and their peers could provide feedback using ‘What Went Well (WWW)‘and ‘Even Better If (EBI)’.

Suggested focus questions:

- What have you learned about the importance of people having access to clean water? How did you learn these things?
- How would you move water from there to your home? Why would that be the best way? Who had the best idea? Why?
- What makes an effective video clip? Why do you think that?
- What messages do you want to convey in your 30-second video? Why?
- How will you do this? Why do it like that?

TASK 6: HOW DID THE ELAN VALLEY WATER 'SAVE' VICTORIAN BIRMINGHAM?

Explain to learners that the Industrial Revolution began in Britain in the 1700s and caused numerous problems. People (including children) were exposed to horrendous working conditions in the factories and mines including long hours of work (12-16 hour shifts), low wages that barely covered the cost of living, dangerous and dirty conditions and workplaces with little or no worker rights. In addition, they faced equally horrible living conditions in industrial towns and cities - characterised by overcrowding, poor sanitation, spread of diseases, and pollution.

Also, inform learners that in 1892, Birmingham City Council was granted royal permission for a 'compulsory purchase' of land within the Elenydd area. This land was for the construction of reservoirs, dams and filter stations to collect, clean and direct drinking water to Birmingham. Show learners the video Inspire Education – Victorians: the filthy rich and the filthy poor.

Ask learners to sum up their life in poverty in Victorian Birmingham as a cartoon strip showing life before clean water and life after being given access to clean water.

Suggested focus questions:

- What have you learned about life in poverty in Victorian times?
- Imagine you were living in poverty in Victorian Birmingham:
  - What do you think your day would have been like?
  - What sort of work do you think you would have done? Why?
  - What types of things might you have eaten? How do you know?
  - What might you have drunk?
  - How many people might have lived in your house? Why do you think that?
  - How often would you have washed? Why?
  - What would have happened to your toilet waste? How do you know?
  - How do you think having access to clean water might have changed your life?

OPPORTUNITIES TO DEVELOP IN DETAIL

CURRICULUM FOR WALES

Statements of what matters:

Expressive Arts

- Exploring the expressive arts is essential to developing artistic skills and knowledge and it enables learners to become curious and creative individuals.
- Responding and reflecting, both as artist and audience, is a fundamental part of learning in the expressive arts.
- Creating combines skills and knowledge, drawing on the senses, inspiration and imagination.

Health and Well-being

- Our decision-making impacts on the quality of our lives and the lives of others.
- How we engage with social influences shapes who we are and affects our health and well-being.

Humanities

- Our natural world is diverse and dynamic, influenced by processes and human actions.

Languages, Literacy and Communication

- Languages connect us.
- Expressing ourselves through languages is key to communication.

Mathematics and Numeracy

- Measurement focuses on quantifying phenomena in the physical world.

Science and Technology

- The world around us is full of living things which depend on each other for survival.

LNF

Literacy

- **Listening:** Developing vocabulary; Listening as part of collaborative talk.
- **Reading:** Reading strategies; Understanding, response and analysis.
- **Speaking:** Clarity and vocabulary; Purpose; Collaborative talk; Questioning.
- **Writing:** Vocabulary, spelling, grammar; Planning and organising for different purposes, audiences and context; Proofreading, editing and improving.

DCF

- **Citizenship:** Identity, image and reputation; Digital rights, licensing and ownership.
- **Interacting and collaborating:** Collaboration; Storing and sharing.
- **Producing:** Sourcing, searching and planning digital content; Creating digital content; Evaluating and improving digital content.

NATIONAL CURRICULUM FOR ENGLAND

Art and Design

Citizenship

Computing

Design and Technology

- Design; Make; Evaluate.

English

- Spoken language; Reading.

Geography

- Locational knowledge; Place knowledge; Human and physical geography; Geographical skills and fieldwork.

Mathematics

- Measurement.

RESOURCE 1

SDG SORT CARDS

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SUGGESTED FOCUS QUESTIONS

TASK 1

What are the world's biggest problems?

- What are the main problems facing people in the world today? How do you know?
- How might these problems affect you in the future? Why do you think that?
- Which of these problems is the most important to solve? Why?

TASK 2

What are Sustainable development Goals (SDGs)?

- What do you think the 'No poverty' and 'Life below water' SDGs are about? Why?
- What could we do to help achieve those two goals? Why would this help?
- What do you think the other 15 SDGs might be? Why do you think that?
- Which of the 17 SDGs do you think are the most important for us to achieve? Why?
- What could you do to help achieve these goals? Why would this help?

TASK 3

What do we know about SDG 6 – Clean water and sanitation?

- What do you think about the video clip?
- How difficult do you think it would be to carry 20 litres of water?
- If you had to do this every day, how might it affect your life?
- What problems could it cause? Why do you think that?

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TASK 4

How important is access to clean water?

- What would be the problems for your family if you only had access to dirty water?
- How would this change your lives? Why?
- What did you think about the video clip?
- What was the main message the video giving us? Why do you think that?
- How do you think you could clean the muddy water? Why would this work?
- Is your plan a good one? Why?
- What did you think of the other plans you looked at? Which was the best? Why?
- How successful were you at cleaning the muddy water?
- What would you do differently next time? Why?

TASK 5

What have we learned about needing clean water?

- What have you learned about the importance of people having access to clean water? How did you learn these things?
- How would you move water from here to your home? Why would that be the best way? Who had the best idea? Why?
- What makes an effective video clip? Why do you think that?
- What messages do you want to convey in your 30-second video? Why?
- How will you do this? Why do it like that?

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TASK 6

How did the Elan Valley water 'save' Victorian Birmingham?

- What have you learned about life in poverty in Victorian times?
- Imagine you were living in poverty in Victorian Birmingham:
  - What do you think your day would have been like?
  - What sort of work do you think you would have done? Why?
  - What types of things might you have eaten? How do you know?
  - What might you have drunk?
  - How many people might have lived in your house? Why do you think that?
  - How often would you have washed? Why?
  - What would have happened to your toilet waste? How do you know?
  - How do you think having access to clean water might have changed your life?

TEACHER NOTES

ACTIVITY 5: HOW DO WE CREATE RESERVOIRS?

OVERVIEW

Learners consider what a reservoir is and how and why they are formed. They compare images of global reservoirs, researching one of their choice and then finding out how and why reservoirs are created, sharing their findings. Learners use online maps to consider why and how the Elan Valley reservoirs were built and explore evidence about the 'Lost Valleys'. They consider the building of the Elan Valley from the perspectives of different stakeholders and argue their case accordingly. Learners access a story map that outlines the 'submerged heritage' of the Elan Valley and following research, create a story map showing how their local area has changed in recent years. Finally, learners consider whether reservoirs are still built today and if the same issues and perspectives are still relevant.

OPPORTUNITIES TO DEVELOP

CURRICULUM FOR WALES

Areas of Learning and Experience:

- 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**.

NATIONAL CURRICULUM FOR ENGLAND

- Art and Design
- Computing
- English
- Geography
- History
- Mathematics
- Science

RESOURCES INCLUDED WITH THIS ACTIVITY

- Resource 1 - Pros and cons grid
- Resource 2 - KWHLAQ grid
- Suggested focus questions.

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RESOURCES REQUIRED TO UNDERTAKE THIS ACTIVITY

- Internet enabled device and internet access
- Maps of the local area if available.

USEFUL LINKS

Where possible, encourage learners to search for and access information independently. However, these links might be useful for some of the tasks.

- Google Maps
- Frontiers – Understanding Differences Between Lakes and Reservoirs
- Britannica – Reservoir
- National Geographic – Reservoir
- Elan Valley – Reservoir and Dams
- Elan Valley – Building of the Dams
- Elan Valley – The Lost Valleys
- ArcGIS StoryMaps – Submerged Heritage
- Oxford Mail – Homes could be lost because of new Thames Water reservoir - you have your say
- Derby Telegraph – New reservoir plans for Derbyshire as Severn Trent tries to supply water to growing population.

DOING THE ACTIVITY

- Most tasks require learners to work in pairs or groups. Encourage learners to share their ideas and through open questioning, to explain and justify their ideas when possible.
- Ensure that each group has access to an internet enabled device.
- The suggested focus questions, relating to each task, can be given to learners as they start each task or used by the teacher.

TASK 1: WHAT IS A RESERVOIR?

Ask pairs of learners to consider what a reservoir is and encourage them to think about how and why they are formed.

Suggested focus questions:

- What is a reservoir? Why do you think that?
- What does a reservoir look like? How do you know?
- How are reservoirs made? Why do you think that?

TASK 2: WHAT DO RESERVOIRS HAVE IN COMMON?

Invite learners to search for and access images of reservoirs from around the world. Encourage them to note the similarities and differences between reservoirs and to feed their ideas back to the class.

Ask learners to carry out some research about one reservoir of their choice and to find out statistics about it including when and why it was built, how it was built, how big it is, etc.

Suggested focus questions:

- What are the differences between the reservoirs you have found out about?
- How are they similar?
- What reservoir have you chosen to find out about? Why?
- What have you found out about this reservoir?
- Why was it built? When?
- How was it built? Why?

TASK 3: HOW AND WHY ARE RESERVOIRS CREATED?

Invite small groups of learners to carry out research to find out how and why reservoirs are created and to share their findings.

Links such as Frontiers – Understanding Differences Between Lakes and Reservoirs, Britannica – Reservoir and National Geographic – Reservoir might be useful to point out.

Ask learners to complete a Pros and cons grid (Resource 1) to weigh up the positive and negative impacts of creating reservoirs.

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Suggested focus questions:

- Why do you think reservoirs are created?
- What information have you found?
- Who decides that a reservoir should be created? Why do you think that?
- In what different ways are reservoirs created? How do you know?
- How difficult is it to create a reservoir? Why do you think that?
- Who is involved?
- What are the positives of creating reservoirs? Why are these things positive?
- What are the negatives? Why?

TASK 4: WHY AND HOW WAS THE ELAN VALLEY BUILT?

Show learners the Elan Valley on a digital map or invite them to access an online map and ask them to consider why they think the Elan Valley was built to form the different reservoirs, taking brief feedback.

Invite small groups to find out more information about why the Elan Valley was built. Provide learners with a hard copy or digital version of Resource 2 (KWHLAQ grid) and ask them to use this to structure their research. Encourage learners to access the Reservoir and Dams and Building of the Dams pages on the Elan Valley website. Prompt each group of learners to fully explore the information they find and ask each group to provide feedback about a different aspect of the research. For example, groups could feedback on when and how the work began; the purpose-built village for workers; the different phases of construction; the aqueduct; the Garreg Ddu submerged dam, etc.

Limit feedback to one minute per group to ensure they consider how to present the information in a concise manner.

Suggested focus questions:

- Why do you think the Elan Valley dams were built?
- How will you use the KWHLAQ grid for your research?
- What questions will you ask? Why?
- How will you look for answers to your questions?
- What did you find out about the reservoirs and dams?
- What surprised you? Why?
- How will you make sure your feedback is only a minute long? What are the most important things to say in your feedback? Why?

TASK 5: WHAT DO WE THINK ABOUT THE 'LOST VALLEYS'?

Ask small groups of learners to access The Lost Valleys page on the Elan Valley website. And to spend a few minutes thinking about and discussing the information presented.

Provide a brief summary of what has been explored so far within the tasks, by asking learners to contribute their ideas. You could record ideas on a whiteboard, for example. This should clarify that the reservoirs, dams and aqueduct were built over a century ago to supply desperately needed clean water to Birmingham. It was an incredible engineering achievement involving thousands of workers, but did involve flooding some of the valleys and causing people to lose homes and suffer as a consequence.

Explain to learners that, in small groups, they will each be asked to represent a different stakeholder in the process of constructing the Elan Valley reservoirs and dams.

For example, you could have five groups representing the following stakeholders:

- Financial investors
- Birmingham Council
- Construction company
- Local homeowners and residents
- Local unemployed people.

Invite each group to look at the building of the Elan Valley site from their own group's perspective. One member of each group will need to be chosen as the voice of the group and be prepared to make the case for their group and to answer any questions from the other groups.

Suggested focus questions:

- Which group are you representing?
- What difference will building the Elan Valley site make to you? Why?
- What are the advantages of the project? How do these benefit you?
- What are the possible issues with the project?
- How do you feel about these issues?

TASK 6: WHAT HAVE WE LOST LOCALLY?

Explain to learners the idea of what a story map is and ask groups to access the Submerged Heritage story map. Invite them to think about and discuss what the map shows, what story it is telling and how it does this. Encourage them to share their ideas with the class.

Set the learners an out of school task to gather information from family and friends about what has been lost in the area where they live or around the school. They could discuss buildings, communities, languages, culture, etc. Encourage them to record some interviews and to make notes and gather evidence that can be brought into school and shared.

When learners have shared their information within groups, they could be encouraged to share findings across the class and either be challenged to create a group story map or possibly collaborate to develop a whole class story map to show how their locality has changed over time, what has been lost and what has been gained.

Suggested focus questions:

- Who will you ask about how your area has changed? Why ask these people?
- Who will know the most? Why do you think that?
- What questions will you ask them? Why?
- How will you ensure that the interviews focus on buildings, communities, languages and culture?
- How will you keep a record of the information you find?
- Why would recording people be a good idea?
- How will you use the information you have to create a story map?

TASK 7: DO WE STILL BUILD RESERVOIRS?

Ask learners to think about and discuss whether they think we still build reservoirs today and whether they are still needed. They could share ideas with the class and asked to explain their thinking.

Invite groups of learners to access and read the following two newspaper reports.

- Oxford Mail – Homes could be lost because of new Thames Water reservoir – you have your say
- Derby Telegraph – New reservoir plans for Derbyshire as Severn Trent tries to supply water to growing population

Encourage learners to consider whether the issues and arguments they considered in the ‘Lost Valleys’ task would still be relevant today and to share their ideas. Invite them to consider how each of the stakeholders would feel about such developments and to create something for the public that would convince them of their ideas. For example, learners might create a poster, write a letter to the local council, make a podcast for local radio, etc. that sets out their point of view.

Suggested focus questions:

- Do you think reservoirs are still being built today? Why do you think that?
- Why might we need reservoirs today?
- What were the two newspaper articles about?
- What is different about these developments compared with what happened in the Elan Valley? What is similar?
- How would each of the stakeholders feel about such developments today?
- Imagine you are one of the stakeholders. What could you create to support your views? What would convince the public? Why would this convince them?
- How will you develop your ideas? What could you produce to show your ideas?

OPPORTUNITIES TO DEVELOP IN DETAIL

CURRICULUM FOR WALES

Statements of what matters:

Expressive Arts

- Responding and reflecting, both as artist and audience, is a fundamental part of learning in the expressive arts.
- Creating combines skills and knowledge, drawing on the senses, inspiration and imagination.

Health and Well-being

- Developing physical health and well-being has lifelong benefits.
- How we process and respond to our experiences affects our mental health and emotional well-being.
- Our decision-making impacts on the quality of our lives and the lives of others.
- How we engage with social influences shapes who we are and affects our health and well-being.

Humanities

- Enquiry, exploration and investigation inspire curiosity about the world, its past, present and future.
- Events and human experiences are complex, and are perceived, interpreted and represented in different ways.
- Our natural world is diverse and dynamic, influenced by processes and human actions.
- Human societies are complex and diverse, and shaped by human actions and beliefs.
- Informed, self-aware citizens engage with the challenges and opportunities that face humanity, and are able to take considered and ethical action.

Languages, Literacy and Communication

- Understanding languages is key to understanding the world around us.
- Expressing ourselves through languages is key to communication.
- Literature fires imagination and inspires creativity.

Mathematics and Numeracy

- The number system is used to represent and compare relationships between numbers and quantities.

Science and Technology

- Being curious and searching for answers is essential to understanding and predicting phenomena.
- Design thinking and engineering offer technical and creative ways to meet society's needs and wants.
- Matter and the way it behaves defines our universe and shapes our lives.
- Forces and energy provide a foundation for understanding our universe.

LNF

Literacy

- **Listening:** Developing vocabulary; Listening as part of collaborative talk.
- **Reading:** Reading strategies; Understanding, response and analysis.
- **Speaking:** Clarity and vocabulary; Purpose; Collaborative talk; Questioning.
- **Writing:** Vocabulary, spelling, grammar; Planning and organising for different purposes, audiences and context; Proofreading, editing and improving.

DCF

- **Citizenship:** Identity, image and reputation; Digital rights, licensing and ownership.
- **Interacting and collaborating:** Communication; Collaboration; Storing and sharing.
- **Producing:** Sourcing, searching and planning digital content; Creating digital content; Evaluating and improving digital content.

NATIONAL CURRICULUM FOR ENGLAND

Art and Design

Computing

English

- Spoken language; Reading; Writing.

Geography

- Human and physical geography; Geographical skills and fieldwork.

History

Mathematics

- Number; Measurement.

Science

- Properties and changes of materials.

RESOURCE 1

PROS AND CONS GRID

PROS	CONS

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RESOURCE 2

KWHLAQ GRID

K	W	H	L	A	Q
What I **KNOW**…	What I **WANT** to know…	**HOW** do I find out?	What have I **LEARNED**?	What **ACTION** will I take?	What new **QUESTIONS** do I have?

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SUGGESTED FOCUS QUESTIONS

TASK 1

What is a reservoir?

- What is a reservoir? Why do you think that?
- What does a reservoir look like? How do you know?
- How are reservoirs made? Why do you think that?

TASK 2

What do reservoirs have in common?

- What are the differences between the reservoirs you have found out about?
- How are they similar?
- What reservoir have you chosen to find out about? Why?
- What have you found out about this reservoir?
- Why was it built? When?
- How was it built? Why?

TASK 3

How and why are reservoirs created?

- Why do you think reservoirs are created?
- What information have you found?
- Who decides that a reservoir should be created? Why do you think that?
- In what different ways are reservoirs created? How do you know?
- How difficult is it to create a reservoir? Why do you think that?
- Who is involved?
- What are the positives of creating reservoirs? Why are these things positive?
- What are the negatives? Why?

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TASK 4

Why and how was the Elan Valley built?

- Why do you think the Elan Valley dams were built?
- How will you use the KWHLAQ grid for your research?
- What questions will you ask? Why?
- How will you look for answers to your questions?
- What did you find out about the reservoirs and dams?
- What surprised you? Why?
- How will you make sure your feedback is only a minute long? What are the most important things to say in your feedback? Why?

TASK 5

What do we think about the 'Lost Valleys'?

- Which group are you representing?
- What difference will building the Elan Valley site make to you? Why?
- What are the advantages of the project? How do these benefit you?
- What are the possible issues with the project?
- How do you feel about these issues?

TASK 6

What have we lost locally?

- Who will you ask about how your area has changed? Why ask these people?
- Who will know the most? Why do you think that?
- What questions will you ask them? Why?
- How will you ensure that the interviews focus on buildings, communities, languages and culture?
- How will you keep a record of the information you find?
- Why would recording people be a good idea?
- How will you use the information you have to create a story map?

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TASK 7

Do we still build reservoirs?

- Do you think reservoirs are still being built today? Why do you think that?
- Why might we need reservoirs today?
- What were the two newspaper articles about?
- What is different about these developments than what happened in the Elan Valley? What is similar?
- How would each of the stakeholders feel about such developments today?
- Imagine you are one of the stakeholders. What could you create to support your views? What would convince the public? Why would this convince them?
- How will you develop your ideas?

ACTIVITY 6: WHY IS IT IMPORTANT NOT TO WASTE WATER?

OVERVIEW

Learners consider reasons for saving water and decide which they think is the most important. They estimate and measure out a cubic metre, collate different activities that use water at home, exploring how many times each activity can be done to use one cubic metre of water. Using online resources, learners find out the cost of using a cubic metre of water, estimating how much each activity costs in a year. They plan how to work this out, gathering information from home and developing estimates for the yearly cost. Learners consider why and how people change their behaviour, before creating a detailed plan of how they might save water at home by changing the behaviour of friends and family. Finally, learners work collaboratively to develop an invention that saves water.

OPPORTUNITIES TO DEVELOP

CURRICULUM FOR WALES

Areas of Learning and Experience:

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

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

NATIONAL CURRICULUM FOR ENGLAND

- Art and Design
- Computing
- Design and Technology
- English
- Mathematics
- Science

RESOURCES INCLUDED WITH THIS ACTIVITY

- Resource 1 – Talking heads
- Resource 2 – Changing behaviour
- Suggested focus questions.

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RESOURCES REQUIRED TO UNDERTAKE THIS ACTIVITY

- Internet enabled device and internet access.
- Example of a household water rates bill if possible.

USEFUL LINKS

Where possible, encourage learners to search for and access information independently. However, these links might be useful for some of the tasks.

- Welsh Water/Dŵr Cymru
- Severn Trent Water
- Welsh Water/Dŵr Cymru – Measured bills
- Food and Agriculture Organization of the United Nations – Youth and United Nations Global Alliance (YUNGA)
- The Global Goals for Sustainable Development – Rohit Fenn, Bangalore India
- Roheit Fenn – Google Science Fair 2012: Summary (YouTube video).

DOING THE ACTIVITY

- Most tasks require learners to work in pairs or groups. Encourage learners to share their ideas and through open questioning, to explain and justify their ideas when possible.
- Ensure that each group has access to an internet enabled device.
- The suggested focus questions, relating to each task, can be given to learners as they start each task or used by the teacher.

TASK 1: WHY SHOULD WE SAVE WATER?

Most learners will have been told not to waste water.

Provide small groups of learners with Resource 1, either digitally or as hard copy. Invite them to consider the reasons for saving water in the speech bubbles and to decide which they think is the most important reason and to explain why as part of their feedback to the whole class. Encourage them to add their own ideas as further speech bubbles if they make suggestions.

Suggested focus questions:

- Why do you think we should save water?
- Which talking head idea do you agree with the most? Why?
- Are there any you don't agree with? Why?
- What other speech bubbles would you add? Why?

TASK 2: HOW MUCH WATER IS A CUBIC METRE?

Explain to learners that our water is supplied by water companies such as Welsh Water/Dŵr Cymru and Severn Trent Water.

The water companies charge people for the number of cubic metres (m^3) of water they use. Ask groups of learners to firstly, estimate how long a metre is and to then think about what a 'cubic metre' might look like. Encourage learners to show and explain their ideas, before inviting them to measure out a cubic metre or to use blocks or boxes etc. to build a cubic metre, so they can see what it looks like.

Using no hands up (encourages everyone to think of an answer in case they are chosen), ask learners to name different activities that use water at home and collate a list, e.g. baths, toilet flushes, drinks of water, showers, washing machine loads, etc. Invite them to estimate how many times each activity can be done to use one cubic metre of water.

You could give learners a rough idea of the answers after their estimates. Baths – 12, showers – 28, 12 loads of washing, 11 toilet flushes and around 3,000 glasses of water or cups of tea/coffee.

Suggested focus questions:

- What did the cubic metre look like? Was it bigger or smaller than you thought it would be? Why?
- What do you use water for at home?
- How many times could you bath/shower before using a cubic metre (m^3)? Why do you think that?
- How many glasses of water or cups of tea/coffee could be drank? How do you know?
- How many times could the washing machine be used? How did you work that out?
- Which of the answers surprised you the most? Why?

TASK 3: HOW MUCH DOES IT COST TO USE WATER?

Ask learners to access the website of the water authority that supplies their home and to find out how much it charges to use a cubic metre ($1m^3$) of water.

- Welsh Water/Dŵr Cymru – Measured bills
- Severn Trent Water.

Please note: For the purpose of this task it might be easier to use the Welsh Water/ Dŵr Cymru link as this also provides a useful video showing the supply and removal of water and how it fits into the water cycle – the charges are also easier to understand than the Severn Trent charges.

Explain to learners that for the activities that use water, outlined earlier in the task, you want them to estimate how much each of these costs in a year. To do this they will need to work out how many showers, baths, toilet flushes, washing machine loads and cups of tea/coffee are used or consumed in their home in a year.

Invite groups of learners to plan how they will work this out, what information they will need and how to get that information. Give them a few days to ask family questions and gather information before asking them to develop their estimates in class and work out the approximate costs.

All metered water is charged as water in + water out. For Welsh Water/Dŵr Cymru this would currently be £1.4526 + £1.9534 = £3.406 per cubic metre.

Learners would need to work out how many showers each person in their house takes in a week and add them up for the total. This would then be multiplied by 52 for the yearly total and divided by 28 as this is what the water company suggests is the number of showers that can be taken per cubic metre of water. The final answer would then be multiplied by £3.406 for the yearly estimated cost.

Suggested focus questions:

- How much do you think the water company will charge for a cubic metre of water? Why do you think that?
- What did you learn from the video on the water company website?
- How will you estimate the number of showers/baths taken in your home in a year? What information will you need? Why? How will you gather that information?
- When you know this how will you work out how many cubic metres of water this is?
- How will you estimate the cost? Why do it like that?
- How will you estimate the washing machine loads used or the number of toilet flushes?
- What will be the most difficult activity to estimate? Why? How will you do it? Why like that?

TASK 4: HOW CAN WE PERSUADE PEOPLE TO USE LESS WATER?

Provide learners with an example of how someone has tried to change your behaviour in some way. For example, being tidier around the house, spending less time online or being on time more often.

Ask pairs of learners to think about and discuss examples of when people try to persuade them to change their behaviour. Encourage learners to share ideas and to explain why they think people might want these behaviours to change.

Explain to learners that this task is about creating a detailed plan of how they might save water at home by changing the behaviour of friends and family.

Organise the learners into five groups and provide them with Resource 2, either digitally or as hard copy.

Talk learners through the first part of the sheet, explaining that many of our global problems are a result of human behaviour and to solve these problems, people will need to change their behaviour. Invite learners to discuss these ideas and to share their thoughts.

Tell learners that Resource 2 outlines five different ways that we can promote behaviour change. Ask the groups to read all five ways so they have an overall picture, before allocating each group with one of the ways of changing behaviour.

Invite each group to consider the 'way' they have been given and to make a list of suggestions of how they might be able to put this into action with their family and friends. Ask each group to share their ideas with the class and allow for feedback and discussion.

Invite individual learners to consider all the ideas they have covered so far in the task and to develop a detailed plan of how they will encourage their family and friends to change their behaviour to save water. Encourage them to make use of all five ways of changing behaviour outlined in Resource 2.

Suggested focus questions:

- When has someone tried to persuade you to change some of the things you do? How did they do it? Did it work? Why?
- Why did they want you to change what you were doing? Was this fair? Why?
- How are some global problems caused by our behaviour? Why do you think that?
- What will need to happen if we want to solve these problems?
- What do you think about the suggested ways of changing behaviour? Why?
- Do you think they will work? Why?
- Which way of changing behaviour has your group been given? What will you suggest for how you could use this with friends and family?
- How will you create a detailed plan to change the behaviour of friends and family so that they use less water?
- What will you include in the plan? Why? Which thing is most likely to work? Why do you think that?

TASK 5: WHAT CAN WE INVENT TO SAVE WATER?

Explain to learners that in this task they will work in groups to develop an invention that saves water. Initially, invite them to list in order the ways they think that the most water is used at home and school in everyday life.

Ask learners to access and read the article on this link – The Global Goals for Sustainable Development – Rohit Fenn, Bangalore India and to feedback their thoughts about his invention.

You could also ask them to access a video clip of Rohit explaining his invention on this link – Roheit Fenn – Google Science Fair 2012: Summary.

Set learners the challenge of creating an invention that will help us to use less water than we currently use. Each group might be given time to present their invention, which might include drawings, descriptions or even a prototype or model if possible.

Suggested focus questions:

- When do we use the most water? Why do you think that?
- In what other ways do we use a lot of water?
- What did you think of Rohit's toilet invention? Why?
- What other things could we invent to save water?
- What will your group develop as an invention? Why?
- How will this save water?
- How will you present your invention? Why?

OPPORTUNITIES TO DEVELOP IN DETAIL

CURRICULUM FOR WALES

Statements of what matters:
Expressive Arts

- Exploring the expressive arts is essential to developing artistic skills and knowledge and it enables learners to become curious and creative individuals.
- Responding and reflecting, both as artist and audience, is a fundamental part of learning in the expressive arts.
- Creating combines skills and knowledge, drawing on the senses, inspiration and imagination.

Health and Well-being

- Developing physical health and well-being has lifelong benefits.
- How we engage with social influences shapes who we are and affects our health and well-being.

Languages, Literacy and Communication

- Understanding languages is key to understanding the world around us.
- Expressing ourselves through languages is key to communication.

Mathematics and Numeracy

- The number system is used to represent and compare relationships between numbers and quantities.
- Geometry focuses on relationships involving shape, space and position, and measurement focuses on quantifying phenomena in the physical world.
- Statistics represent data, probability models chance, and both support informed inferences and decisions.

Science and Technology

- Being curious and searching for answers is essential to understanding and predicting phenomena.
- Design thinking and engineering offer technical and creative ways to meet society's needs and wants.
- The world around us is full of living things which depend on each other for survival.
- Matter and the way it behaves defines our universe and shapes our lives.
- Forces and energy provide a foundation for understanding our universe.

LNF

Literacy

- **Listening:** Developing vocabulary; Listening as part of collaborative talk.
- **Reading:** Reading strategies; Understanding, response and analysis.
- **Speaking:** Clarity and vocabulary; Purpose; Collaborative talk; Questioning.
- **Writing:** Vocabulary, spelling, grammar; Planning and organising for different purposes, audiences and context; Proofreading, editing and improving.

DCF

- **Citizenship:** Identity, image and reputation; Digital rights, licensing and ownership.
- **Interacting and collaborating:** Communication; Collaboration; Storing and sharing.
- **Producing:** Sourcing, searching and planning digital content; Creating digital content; Evaluating and improving digital content.

NATIONAL CURRICULUM FOR ENGLAND

Art and Design

Computing

Design and Technology

- Design; Make; Evaluate; Technical knowledge.

English

- Spoken language; Reading; Writing.

Mathematics

- Number; Measurement; Geometry; Statistics.

Science

- Properties and changes of materials.

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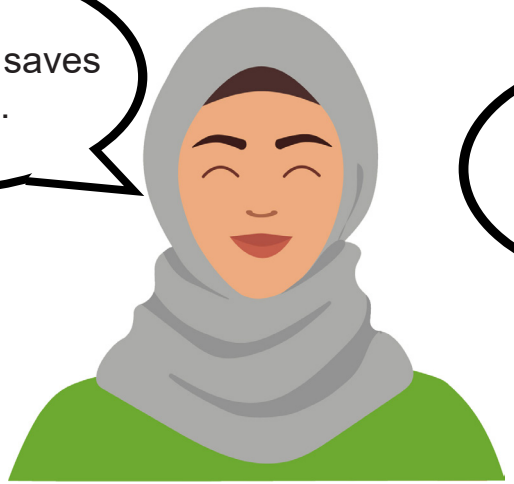
RESOURCE 1

TALKING HEADS

We use water every day – it is needed in almost everything we do...

Food cannot grow without water...

Saving water saves energy...



Water protects our ecosystems and wildlife...

Using less water means saving more money...

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RESOURCE 2

CHANGING BEHAVIOUR

People need to believe they can make a difference in the world.

Many social and environmental problems are caused by unhealthy or unsustainable human behaviour.

To help solve these problems, most people need to change or adapt their behaviour.

It is clear that simply raising awareness is not enough to change behaviour.

So what can we do?

There are many ways of promoting behaviour change.

How could we make use of these?:

Focus on specific, achievable behavioural change

Prioritise activities which target very clear and specific behaviour change (e.g. 'turn off the tap when brushing your teeth' rather than 'save water').

Challenge current behaviour and tackle barriers to action

Encourage people to look at their current behaviour and think about how it could be changed. Everyone has excuses for why they don't behave in a particular way; lack of time, lack of money, not knowing what to do… the list goes on.

Encourage people to voice these excuses and then find ways around them.

Make a public commitment

People are far more likely to do something if they agree to do it in front of witnesses or in a written statement – why not take advantage of this?

Monitor change and celebrate success

Behaviour change is hard work! Revisit tasks regularly to monitor achievement and reward continued success in an appropriate way.

Lead by example

Family and friends respect you, care about what you think and want to make you proud. If you want them to embrace the behaviour you are encouraging, then you must lead by example and make those changes yourself.

The ideas used in this Resource sheet are based on ideas from the Youth and United Nations Global Alliance (YUNGA) Water Challenge Badge.

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SUGGESTED FOCUS QUESTIONS

TASK 1

Why should we save water?

- Why do you think we should save water?
- Which talking head idea do you agree with the most? Why?
- Are there any you don't agree with? Why?
- What other speech bubbles would you add? Why?

TASK 2

How much water is a cubic metre?

- What did the cubic metre look like? Was it bigger or smaller than you thought it would be? Why?
- What do you use water for at home?
- How many times could you bath/shower before using a cubic metre? Why do you think that?
- How many glasses of water or cups of tea/coffee could be drank? How do you know?
- How many times could the washing machine be used? How did you work that out?
- Which of the answers surprised you the most? Why?

TASK 3

How much does it cost to use water?

- How much do you think the water company will charge for a cubic metre of water? Why do you think that?
- What did you learn from the video on the water company website?
- How will you estimate the number of showers/baths taken in your home in a year? What information will you need? Why? How will you gather that information?
- When you know this how will you work out how many cubic metres of water this is?
- How will you estimate the cost? Why do it like that?
- How will you estimate the washing machine loads used or the number of toilet flushes?
- What will be the most difficult activity to estimate? Why? How will you do it? Why like that?

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TASK 4

How can we persuade people to use less water?

- When has someone tried to persuade you to change some of the things you do? How did they do it? Did it work? Why?
- Why did they want you to change what you were doing? Was this fair? Why?
- How are some global problems caused by our behaviour? Why do you think that?
- What will need to happen if we want to solve these problems?
- What do you think about the suggested ways of changing behaviour? Why?
- Do you think they will work? Why?
- Which way of changing behaviour has your group been given? What will you suggest for how you could use this with friends and family?
- How will you create a detailed plan to change the behaviour of friends and family so that they use less water?
- What will you include in the plan? Why? Which thing is most likely to work? Why do you think that?

TASK 5

What can we invent to save water?

- When do we use the most water? Why do you think that?
- In what other ways do we use a lot of water?
- What did you think of Rohit's toilet invention? Why?
- What other things could we invent to save water?
- What will your group develop as an invention? Why?
- How will this save water?
- How will you present your invention? Why?

ACTIVITY 7: HOW DO WE HAVE AN EFFECT ON OUR ENVIRONMENT?

OVERVIEW

Learners consider how things around them have changed and the possible reasons for these changes and what we mean by a 'new development'. They explore the local area to identify places or spaces where a new development could take place, considering what effects such a development might have on the living things in that environment and creating an environmental report to show how the area will be affected. Learners consider how their local historic environment has been preserved through use of maps, online tools and fieldwork. They explore the Elan Valley environment, weighing up why this area needs to be looked after and protected and consider how humans could be a risk. Finally, learners reflect on the tasks they have completed, creating a poster highlighting the importance of the Elan Valley to visitors and encouraging them to preserve the natural and historic environment.

OPPORTUNITIES TO DEVELOP

CURRICULUM FOR WALES

Areas of Learning and Experience:

- 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**.

NATIONAL CURRICULUM FOR ENGLAND

- Art and Design
- Computing
- Design and Technology
- English
- Geography
- Mathematics

RESOURCES INCLUDED WITH THIS ACTIVITY

- Resource 1 – Priority seesaw
- Suggested focus questions.

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RESOURCES REQUIRED TO UNDERTAKE THIS ACTIVITY

- Internet enabled device and internet access
- Maps of the local area if available.

USEFUL LINKS

Where possible, encourage learners to search for and access information independently. However, these links might be useful for some of the tasks.

- Google Maps
- Historic Wales
- Historic England
- Elan Valley.

DOING THE ACTIVITY

- Most tasks require learners to work in pairs or groups. Encourage learners to share their ideas and through open questioning, to explain and justify their ideas when possible.
- How you approach Task 1 will depend on where your school is situated in relation to the Elan Valley and should be approached accordingly.
- Ensure that each group has access to an internet enabled device.
- The suggested focus questions, relating to each task, can be given to learners as they start each task or used by the teacher.

TASK 1: HOW HAVE THINGS AROUND US CHANGED?

Ask pairs of learners to consider how things around them have changed as far as they can remember. They might be prompted to think about inside and outside their home, the area they live in, the journey to school, the school and its grounds, etc.

Encourage learners to consider the reasons for these changes and who or what might have been responsible for the changes.

Suggested focus questions:

- What changes have you noticed around you in the last few years?
- How has your home changed? Why?
- How has outside your home and the area near your home changed? Why? Who or what was the reason for the changes?
- How has the school changed since you have been here? Why?
- How have the school grounds changed? Why were these changes made? Who made them?
- How has the area around the school changed?

TASK 2: HOW WOULD A NEW DEVELOPMENT CHANGE THE ENVIRONMENT?

Ask learners to think about and discuss what we mean by a 'new development' in our local area and to share their ideas. Ensure learners understand that a development might entail a change to infrastructure such as a new road or a new building such as a supermarket, etc.

Take learners for a walk around the area local to the school and invite them to identify places or spaces where a new development could take place. This could be a piece of waste ground, a local park, empty shops or houses, etc. Invite them to consider what effects a new development might have on the living things in that environment. They could identify or find out about the plants and animals living there and consider the homes that could be affected.

Explain to learners that any major development has to publish an environmental report to show how the area will be affected. Invite learners to create an environmental report for their chosen place. They could include photographs, illustrate food chains that could be affected, consider how infrastructure might need updating, etc.

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Suggested focus questions:

- What do you think a 'new development' in the local area means? Why do you think that?
- What new developments have there been recently? How do you know?
- How did people react to these developments? Why?
- What spaces did you find where a new development could take place? Why do you think this a good space for a development?
- What lives in this area? What plants and animals did you find? What might happen to them? Why?
- How would local people be affected? Why do you think that?
- Would there need to be more roads built? Why?
- What will you include in your environmental report? Why?

TASK 3: HOW HAVE WE PRESERVED OUR HISTORIC ENVIRONMENT?

Explain to learners that as a society, we usually try to look after our most treasured historical places and things. Ask learners to consider which local historical sites, buildings and monuments they know of and to share their ideas.

The following links, provide learners with access to maps of where they live and where the school is located, that can be used to find examples of historical sites that have been preserved, for example, monuments, listed buildings, quarries, WW2 crash sites, etc.

- Historic Wales
- Historic England.

Encourage learners to access the relevant link and to explore the local area map to see what aspects of the historical environment has been preserved. They could list some of their findings and consider which sites they have been to or know about.

As a follow up activity, learners could be taken around the local area and take photographs of their findings and add these to a local area map in the classroom.

Suggested focus questions:

- What historical sites do you know about locally? How do you know about these?
- Which old buildings and monuments do you know about? How?
- What historical things did you find on the link you accessed? Which of these do you know about? How?
- Which have you been to? When? Why?

TASK 4: WHY DO WE NEED TO LOOK AFTER THE ELAN VALLEY ENVIRONMENT?

Explain to learners that you now want them to explore the Elan Valley and to consider why this area needs to be looked after and protected.

Learners might access the link in Task 3 Historic Wales to look at the Elan Valley from a historical perspective and also use the Elan Valley website to explore it from an environmental perspective.

Ask learners to list the things in the area that need to be protected. Invite groups of learners to use Resource 1 (priority seesaw) to prioritise the things on their list in terms of how important it is to protect it and give reasons why. Each group might then be asked to feedback what they think are the three most important things to protect and to explain their reasoning.

Suggested focus questions:

- What historical things did you find in the Elan Valley?
- Why do you think these things should be protected? How can we protect them? Why would this work?
- What are the environmental things about the Elan Valley that need to be protected? Why do you think they need protecting?
- What do you think are the most important things to protect? Why?

TASK 5: HOW COULD PEOPLE BE A RISK TO THE ELAN VALLEY ENVIRONMENT?

Ask small groups of learners to think about and discuss how humans could be a risk to the Elan Valley and to share their ideas. Collate a class list of responses of the different ways suggested. You could encourage learners to rate the relative importance of these risks using, for example, dot voting, to develop a list of risks in order of priority.

Suggested focus questions:

- Why do people visit the Elan Valley? How could they be a risk?
- What damage could they cause? Why do you think that?
- How could their actions be a problem for the environment?
- What danger might there be for the historical environment?
- Thinking of these risks, which are the most important to prevent? Why?
- Which are the least important? Why do you think that?

TASK 6: HOW CAN WE HELP VISITORS PRESERVE THE ELAN VALLEY ENVIRONMENT?

Ask small groups of learners to reflect on the tasks they have completed and to think about and discuss what they have learned about the need to protect areas such as the Elan Valley.

Invite learners to create a poster that will highlight the importance of the Elan Valley to visitors and will encourage them to preserve the natural and historic environment.

Each group could display their posters and their peers could provide peer feedback on sticky notes using 'two stars and a wish' or the posters could be displayed around school to be viewed by parents and carers.

Suggested focus questions:

- What is the main purpose of the poster?
- Which audience is the poster aimed at? Why?
- What are the most important things to highlight on the poster? Why do you think that?
- How will you highlight these things?
- What makes a good and interesting poster? Why do these things work?
- How will you make sure your poster is like this?
- What messages do you want to convey in your poster? Why?
- How will you do this? Why do it like that?

OPPORTUNITIES TO DEVELOP IN DETAIL

CURRICULUM FOR WALES

Statements of what matters:
Expressive Arts

- Exploring the expressive arts is essential to developing artistic skills and knowledge and it enables learners to become curious and creative individuals.
- Responding and reflecting, both as artist and audience, is a fundamental part of learning in the expressive arts.
- Creating combines skills and knowledge, drawing on the senses, inspiration and imagination.

Health and Well-being

- Developing physical health and well-being has lifelong benefits.

Humanities

- Our natural world is diverse and dynamic, influenced by processes and human actions.

Languages, Literacy and Communication

- Understanding languages is key to understanding the world around us.
- Expressing ourselves through languages is key to communication.

Mathematics and Numeracy

- Geometry focuses on relationships involving shape, space and position, and measurement focuses on quantifying phenomena in the physical world.

Science and Technology

- Design thinking and engineering offer technical and creative ways to meet society's needs and wants.

LNF

Literacy

- **Listening:** Developing vocabulary; Listening as part of collaborative talk.
- **Speaking:** Clarity and vocabulary; Purpose; Collaborative talk; Questioning.
- **Writing:** Vocabulary, spelling, grammar; Planning and organising for different purposes, audiences and context; Proofreading, editing and improving.

DCF

- **Citizenship:** Identity, image and reputation; Digital rights, licensing and ownership.
- **Interacting and collaborating:** Collaboration, Storing and sharing.
- **Producing:** Sourcing, searching and planning digital content; Creating digital content; Evaluating and improving digital content.

NATIONAL CURRICULUM FOR ENGLAND

Art and Design

Computing

Design and Technology

- Design; Make; Evaluate.

English

- Spoken language; Reading; Writing.

Geography

- Locational knowledge; Place knowledge; Human and physical geography; Geographical skills and fieldwork.

Mathematics

- Measurement; Geometry – position and direction.

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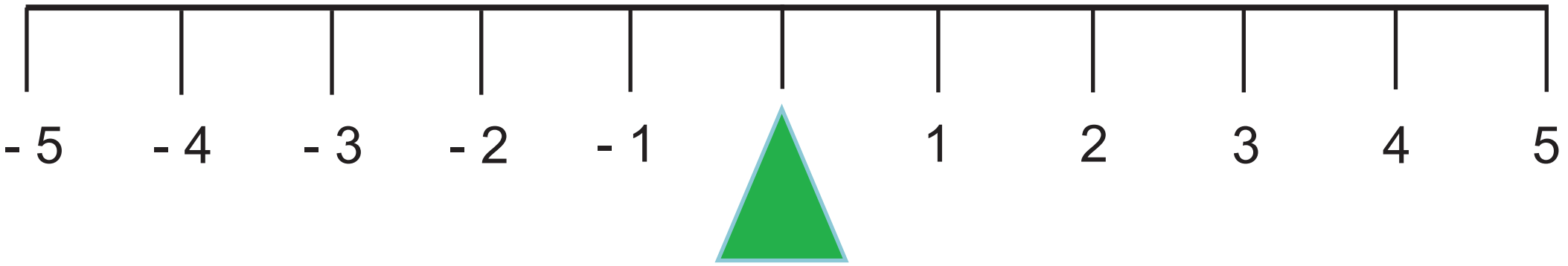
RESOURCE 1

PRIORITY SEESAW



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SUGGESTED FOCUS QUESTIONS

TASK 1

How have things around us changed?

- What changes have you noticed around you in the last few years?
- How has your home changed? Why?
- How has outside your home and the area near your home changed? Why? Who or what was the reason for the changes?
- How has the school changed since you have been here? Why?
- How have the school grounds changed? Why were these changes made? Who made them?
- How has the area around the school changed?

TASK 2

How would a new development change the environment?

- What do you think a ‘new development’ in the local area means? Why do you think that?
- What new developments have there been recently? How do you know?
- How did people react to these developments? Why?
- What spaces did you find where a new development could take place? Why do you think this a good space for a development?
- What lives in this area? What plants and animals did you find? What might happen to them? Why?
- How would local people be affected? Why do you think that?
- Would there need to be more roads built? Why?
- What will you include in your environmental report? Why?

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TASK 3

How have we preserved our historic environment?

- What historical sites do you know about locally? How do you know about these?
- Which old buildings and monuments do you know about? How?
- What historical things did you find on the link you accessed? Which of these do you know about? How?
- Which have you been to? When? Why?

TASK 4

Why do we need to look after the Elan Valley environment?

- What historical things did you find in the Elan Valley?
- Why do you think these things should be protected? How can we protect them? Why would this work?
- What are the environmental things about the Elan Valley that need to be protected? Why do you think they need protecting?
- What do you think are the most important things to protect? Why?

TASK 5

How could people be a risk to the Elan Valley environment?

- Why do people visit the Elan Valley? How could they be a risk?
- What damage could they cause? Why do you think that?
- How could their actions be a problem for the environment?
- What danger might there be for the historical environment?
- Thinking of these risks, which are the most important to prevent? Why?
- Which are the least important? Why do you think that?

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TASK 6

How can we help visitors preserve the Elan Valley environment?

- What is the main purpose of the poster?
- Which audience is the poster aimed at? Why?
- What are the most important things to highlight on the poster? Why do you think that?
- How will you highlight these things?
- What makes a good and interesting poster? Why do these things work?
- How will you make sure your poster is like this?
- What messages do you want to convey in your poster? Why?
- How will you do this? Why do it like that?

ACTIVITY 8: HOW MIGHT CLIMATE CHANGE AFFECT THE ELAN VALLEY?

OVERVIEW

Learners list different types of weather and consider what the weather is likely to be at different times of the year and the difference is between 'weather' and 'climate'. They consider the climate where they live and carry out further research and explore their thinking about what 'climate change' actually means and why it is such an important issue.

Learners consider the effects of climate change and explore evidence suggesting that the average global temperature is increasing rapidly. They explore how this might be a cause of more frequent 'extreme weather' events and what impact this might have on the Elan Valley. Learners find out about the importance of peat bog restoration in mitigating the effects of climate change. They consider other effects of climate change and the possible impacts of rising sea levels, globally and in the UK.

OPPORTUNITIES TO DEVELOP

CURRICULUM FOR WALES

Areas of Learning and Experience:

- 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**.

NATIONAL CURRICULUM FOR ENGLAND

- Art and Design
- Computing
- English
- Geography
- Mathematics
- Science

RESOURCES INCLUDED WITH THIS ACTIVITY

- Resource 1 – KWHL grid
- Suggested focus questions.

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RESOURCES REQUIRED TO UNDERTAKE THIS ACTIVITY

- Internet enabled device and internet access
- Maps of the local area if available.

USEFUL LINKS

Where possible, encourage learners to search for and access information independently. However, these links might be useful for some of the tasks.

- BBC Bitesize – What is the difference between weather and climate?
- National Oceanic and Atmospheric Administration (NOAA) – What's the difference between climate and weather?
- Met Office – Climate zones
- Time and date – Climate & Weather Averages in Great Britain, England, United Kingdom
- Met Office – What is climate change?
- Al Jazeera English – Expect more extreme weather, warn UK climate scientists (YouTube video)
- NASA – The Effects of Climate Change
- Elan Valley
- Microsoft Sway
- Natural Resources Wales – New LIFE for Welsh Raised Bogs
- Wales Online – How muddy bogs could end up being Wales' secret weapon against wildfires and climate change
- Forest Research – Climate change factsheet: Peatlands, Forestry and Climate Change
- Elan Valley – Healthy Bogs
- Met Office – Effects of climate change
- Climate Central – Coastal Risk Screening Tool.

DOING THE ACTIVITY

- Most tasks require learners to work in pairs or groups. Encourage learners to share their ideas and through open questioning, to explain and justify their ideas when possible.
- Ensure that each group has access to an internet enabled device.
- The suggested focus questions, relating to each task, can be given to learners as they start each task or used by the teacher.

TASK 1: WHAT DO WE MEAN BY CLIMATE?

Ask groups of learners to list the different types of weather they know and to share their ideas, collating a class list. You might encourage them to consider what the weather is likely to be at different times of the year and why, for example, people go abroad for holidays.

Invite learners to consider what the difference is between 'weather' and 'climate' and to write a definition for each that explains their thinking. Learners might need to carry out research to explore their understanding and links such as:

- BBC Bitesize – What is the difference between weather and climate?
- National Oceanic and Atmospheric Administration (NOAA) – What's the difference between climate and weather?

Suggested focus questions:

- What different types of weather do you know about? How do you know about these?
- Which of them happens most frequently where you live? Why do you think that is?
- What weather do you know about but have never seen? How do you know about them? How do you know they are real?
- What do you think 'climate' is? Why do you think that?
- How do you think climate is different to weather? How do you know that?
- What key words will you include in your definitions of climate and weather? Why?

TASK 2: WHAT IS OUR CLIMATE?

Ask pairs of learners to consider what they think the climate is where they live and to share their ideas. Invite small groups to use Resource 1 (KWHL grid) to support their research into finding out about the climate of where they live.

You might want to prompt learners to find out about 'climate zones' – Met Office – Climate zones and look for average weather statistics for their area - Time and date – Climate & Weather Averages in Great Britain, England, United Kingdom. Many search results provide more complex information about weather and climate but these sites provide accessible information and allow learners to search for average weather statistics for their area.

Suggested focus questions:

- What do you think the climate is like where you live? Why do you think that?
- How would you describe your winter, spring, summer and autumn to someone from another country?
- How will you use the KWHL grid?
- What questions will you ask? Why?
- Where will you look for information? Why?

TASK 3: WHAT DO WE KNOW ABOUT CLIMATE CHANGE?

Explain to learners that 'climate change' is a phrase most young people will have heard about through the TV, social media, family discussions, etc. Ask pairs of learners to consider what they think 'climate change' actually means and why they think it is such an important issue. Encourage learners to share their ideas as a basis for discussion.

Suggested focus questions:

- When have you heard the phrase 'climate change'?
- What do you think 'climate change' is? Why do you think that?
- What have you heard people say about climate change?

TASK 4: WHAT ARE THE EFFECTS OF CLIMATE CHANGE?

Explain to learners that when the climate of somewhere changes, this is likely to have an effect on the natural and physical environments, i.e. the plants and animals that live there, how they interact and the conditions under which they live.

Explain to learners that data about weather and climate is collected daily all over the world and the analysis of this data leads to some very complex results and graphs that only experts can draw inferences and conclusions from. However, we are all able to look at the evidence and develop a basic understanding.

If possible, show learners the Met Office page accessed via this link – Met Office – What is climate change? – alternatively ask them to access the link in small groups. Show them the first graph of the global temperature change from 1850 to 2022 and ask pairs to think about and discuss what the graph is showing and to share their ideas.

Secondly, show learners the UK annual temperature diagram (like a bar code) further down the page. Encourage them to study the diagram and the information shown and to share ideas about what they think it is telling us.

There is information on this page about the causes of climate change but we are concentrating here on providing evidence to show learners that the average global temperature is increasing and is doing so rapidly.

Suggested focus questions:

- What do you think the graph is showing us? Why do you think that?
- What is the 'story' of the graph? How do you know?
- What do you think the diagram shows? Why?
- What other information is shown with the diagram?
- What conclusions could you draw from the evidence you have seen?

TASK 5: HOW COULD CLIMATE CHANGE AFFECT OUR ENVIRONMENT?

Remind learners that they looked at how the world is warming up in the previous task. Explain to them that this has started having an effect on the climate and is likely to continue doing so in the future unless something changes.

One of the main effects of climate change is more frequent 'extreme weather' events. You could ask learners to access online videos that report on recent extreme weather events, e.g. Al Jazeera English – Expect more extreme weather, warn UK climate scientists (YouTube video) as a stimulus for discussion.

According to NASA The Effects of Climate Change, "The potential future effects of global climate change include more frequent wildfires, longer periods of drought in some regions, and an increase in the wind intensity and rainfall from tropical cyclones".

Ask small groups of learners to explore the Elan Valley website and to consider what the impact might be if the following events happened:

- Wildfires
- Long dry spells with no rain
- Long wet spells with more rain than usual and high winds.

Ideally, have at least two groups looking at each event and feeding back their ideas to the class in a short (30-second) presentation.

Suggested focus questions:

- What do you think would happen to the Elan Valley if it didn't rain for a long time?
- How would the plants and animals be affected? Why?
- What would happen to the reservoirs? Why do you think that?
- What might the consequences of these changes to the reservoirs be? Why?
- How do you think wildfires might affect the environment? How do you know?
- What would happen if there were long periods of wet weather with some high winds?
- What problems might long periods of wet weather cause? Why do you think that?

TASK 6: HOW ARE WE TRYING TO COMBAT CLIMATE CHANGE IN THE ELAN VALLEY?

Explain to learners that there are many ways used to try and combat climate change. One of these ways is peat bog restoration. Invite learners to research and find out what a peat bog is and how peat has been used historically. You could ask them to develop a MS Sway to show what they have found out to others.

Once learners understand what a peat bog is, ask them to find out about how the restoration of peat bogs might reduce the effects of climate change. Useful sites might include: Natural Resources Wales – New LIFE for Welsh Raised Bogs, Wales Online – How muddy bogs could end up being Wales' secret weapon against wildfires and climate change, Forest Research – Climate change factsheet: Peatlands, Forestry and Climate Change.

Then, ask learners to consider what the Elan Valley is doing about restoring bogs by reading from: Elan Valley – Healthy Bogs.

They could then complete their Sway to show to others how peat bog restoration might help to mitigate climate change.

Suggested focus questions:

- What is a peat bog?
- How has peat been used historically? Why might this have impacted on climate change?
- How can we restore peat bogs?
- What effects could restoring peat bogs have on climate change or its impacts?
- What other positive effects might be seen if we restore peat bogs?

TASK 7: HOW ELSE COULD CLIMATE CHANGE AFFECT THE ENVIRONMENT?

Invite small groups of learners to access the Met Office online article - Effects of climate change and to find the first diagram, showing the drivers of climate change, changes to the climate system and impacts of climate change. Ask them to think about and discuss what the diagram shows and whether there is any information that is new to them, sharing their ideas.

Highlight that 'Rising sea levels' is shown as a change to the climate system and encourage learners to explore the data provided on the link in the article and to feedback their ideas about what it shows.

Explain to learners that there are vast quantities of data generated about rising sea levels and how these might affect places and people in the future. The data is used to develop models of what might or is likely to happen in the future if sea levels rise. Invite learners to access the world map on this link Climate Central – Coastal Risk Screening Tool and to click on 'Choose map'. This will allow them to explore 'Water level' as an option, on a map that can be dragged and zoomed, showing the areas around the world at greatest risk to rises in sea levels. Invite learners to consider which areas are most at risk and also to find the UK and explore what might happen to different areas.

Suggested focus questions:

- What do you think the diagram shows? Why do you think that?
- What new things have you learned from the diagram?
- What information did you find on the 'Rising sea levels' link? What did you learn? How?
- What is the main message of this information? How do you know?
- Which areas of the world are at the greatest risk to rising water levels? How do you know?
- What surprised you about the information on the map? Why?
- Which areas of the UK look to be at most risk? Is this what you expected? Why?
- What risk is there to the area where you live? Why? How do you know?
- What might happen to the areas at greatest risk? Why do you think that?

TASK 8: HOW WOULD WE REACT TO CLIMATE CHANGE AFFECTING US?

Ask small groups of learners to consider what the impact of rising sea levels might be on communities living in areas at risk and how it could affect their lives.

Provide learners with the following scenario:

- You live in a small community being forced to move because it will soon be flooded.
- Families are only given a few days warning but have to pack up belongings ready to move in a week.
- Families are asked if they can move in with relatives or friends many miles away for a few weeks or they can be housed in hotels.
- You will probably never be able to come back to live here.

Invite learners to create a record of their final week before leaving, e.g. this could be a blog, vlog, diary, story, etc. Encourage them to share how they and their family are feeling, their thoughts about leaving, the future, not being able to return, etc.

Suggested focus questions:

- What do you think the impact would be of rising sea levels for areas at risk? Why?
- How would you feel if you lived in a high-risk area? Why?
- What task you have been asked to complete? How will you approach this task? Why?
- How will you present your ideas? Why?
- In this situation, what would be the main problems you would face? Why do you think that?
- How would you solve these problems? Why would this work?
- How would the move affect your life?
- What would be the worst thing about moving? Why?
- What might be the positive things about moving? Why would these be positive?

OPPORTUNITIES TO DEVELOP IN DETAIL

CURRICULUM FOR WALES

Statements of what matters:

Expressive Arts

- Exploring the expressive arts is essential to developing artistic skills and knowledge and it enables learners to become curious and creative individuals.
- Responding and reflecting, both as artist and audience, is a fundamental part of learning in the expressive arts.
- Creating combines skills and knowledge, drawing on the senses, inspiration and imagination.

Health and Well-being

- Developing physical health and well-being has lifelong benefits.
- How we process and respond to our experiences affects our mental health and emotional well-being.
- Our decision-making impacts on the quality of our lives and the lives of others.
- How we engage with social influences shapes who we are and affects our health and well-being.

Humanities

- Enquiry, exploration and investigation inspire curiosity about the world, its past, present and future.
- Events and human experiences are complex, and are perceived, interpreted and represented in different ways.
- Our natural world is diverse and dynamic, influenced by processes and human actions.
- Human societies are complex and diverse, and shaped by human actions and beliefs.
- Informed, self-aware citizens engage with the challenges and opportunities that face humanity, and are able to take considered and ethical action.

Languages, Literacy and Communication

- Understanding languages is key to understanding the world around us.
- Expressing ourselves through languages is key to communication. Literature fires imagination and inspires creativity.

Mathematics and Numeracy

- Geometry focuses on relationships involving shape, space and position, and measurement focuses on quantifying phenomena in the physical world.

Science and Technology

- Being curious and searching for answers is essential to understanding and predicting phenomena.
- The world around us is full of living things which depend on each other for survival.
- Matter and the way it behaves defines our universe and shapes our lives.
- Forces and energy provide a foundation for understanding our universe.

LNF

Literacy

- **Listening:** Developing vocabulary; Listening as part of collaborative talk.
- **Speaking:** Clarity and vocabulary; Purpose; Collaborative talk; Questioning.
- **Writing:** Vocabulary, spelling, grammar; Planning and organising for different purposes, audiences and context; Proofreading, editing and improving.

DCF

- **Citizenship:** Identity, image and reputation; Digital rights, licensing and ownership.
- **Interacting and collaborating:** Collaboration, Storing and sharing.
- **Producing:** Sourcing, searching and planning digital content; Creating digital content; Evaluating and improving digital content.

NATIONAL CURRICULUM FOR ENGLAND

Art and Design

Computing

English

- Spoken language; Reading; Writing.

Geography

- Locational knowledge; Place knowledge; Human and physical geography; Geographical skills and fieldwork.

Mathematics

- Measurement; Geometry – position and direction.

Science

- Living things and their habitats; properties and changes of materials.

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RESOURCE 1

KWHL GRID

K	W	H	L
What I **KNOW**…	What I **WANT** to know…	**HOW** do I find out?	What have I **LEARNED**?

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SUGGESTED FOCUS QUESTIONS

TASK 1

What do we mean by climate?

- What different types of weather do you know about? How do you know about these?
- Which of them happens most frequently where you live? Why do you think that is?
- What weather do you know about but have never seen? How do you know about them? How do you know they are real?
- What do you think 'climate' is? Why do you think that?
- How do you think climate is different to weather? How do you know that?
- What key words will you include in your definitions of climate and weather? Why?

TASK 2

What is our climate?

- What do you think the climate is like where you live? Why do you think that?
- How would you describe your winter, spring, summer and autumn to someone from another country?
- How will you use the KWHL grid?
- What questions will you ask? Why?
- Where will you look for information? Why?

TASK 3

What do we know about climate change?

- When have you heard the phrase 'climate change'?
- What do you think 'climate change' is? Why do you think that?
- What have you heard people say about climate change?

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TASK 4

What are the effects of climate change?

- What do you think the graph is showing us? Why do you think that?
- What is the 'story' of this graph? How do you know?
- What do you think this diagram shows? Why?
- What other information is shown with this diagram?
- What conclusions could you draw from the evidence you have seen?

TASK 5

How could climate change affect our environment?

- What do you think would happen to the Elan Valley if it didn't rain for a long time?
- How would the plants and animals be affected? Why?
- What would happen to the reservoirs? Why do you think that?
- What might the consequences of these changes to the reservoirs be? Why?
- How do you think wildfires might affect the environment? How do you know?
- What would happen if there were long periods of wet weather with some high winds?
- What problems might long periods of wet weather cause? Why do you think that?

TASK 6

How are we trying to combat climate change in the Elan Valley?

- What is a peat bog?
- How has peat been used historically? Why might this have impacted on climate change?
- How can we restore peat bogs?
- What effects could restoring peat bogs have on climate change or its impacts?
- What other positive effects might be seen if we restore peat bogs?

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TASK 7

How else could climate change affect the environment?

- What do you think the diagram shows? Why do you think that?
- What new things have you learned from the diagram?
- What information did you find on the 'Rising sea levels' link? What did you learn? How?
- What is the main message of this information? How do you know?
- Which areas of the world are at the greatest risk to rising water levels? How do you know?
- What surprised you about the information on the map? Why?
- Which areas of the UK look to be at most risk? Is this what you expected? Why?
- What risk is there to the area where you live? Why? How do you know?
- What might happen to the areas at greatest risk? Why do you think that?

TASK 8

How would we react to climate change affecting us?

- What do you think the impact would be of rising sea levels for areas at risk? Why?
- How would you feel if you lived in a high risk area? Why?
- What task you have been asked to complete? How will you approach this task? Why?
- How will you present your ideas? Why?
- In this situation, what would be the main problems you would face? Why do you think that?
- How would you solve these problems? Why would this work?
- How would the move affect your life?
- What would be the worst thing about moving? Why?
- What might be the positive things about moving? Why would these be positive?

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ACTIVITY 9: WHY DO WE BUILD DAMS?

OVERVIEW

Learners explore their understanding of the word ‘dam’ and consider why we build dams. They use images of the Elan Valley dams and online maps and resources to consider why the dams have been built where they are. Learners use the outdoor environment to build a dam across flowing water, considering the effects of the dam on flowing water. They access a news article and explore whether humans are the only animals to build dams, before finally, researching and considering how and why beavers build dams.

OPPORTUNITIES TO DEVELOP

CURRICULUM FOR WALES

Areas of Learning and Experience:

- Expressive Arts
- Health and Well-being
- Humanities
- Languages, Literacy and Communication
- Science and Technology

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

NATIONAL CURRICULUM FOR ENGLAND

- Computing
- Design and Technology
- English
- Geography
- History
- Science

RESOURCES INCLUDED WITH THIS ACTIVITY

- Resource 1 – Talking heads
- Resource 2 – Minecraft Image 1
- Resource 3 – Minecraft Image 2
- Suggested focus questions.

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RESOURCES REQUIRED TO UNDERTAKE THIS ACTIVITY

- Internet enabled device and internet access
- Maps of the local area if available.

USEFUL LINKS

Where possible, encourage learners to search for and access information independently. However, these links might be useful for some of the tasks.

- Google Maps
- Elan Valley Past and Present – Elan Valley Dams
- Elan Valley – The Dams
- Industrial Tour – Elan Valley Dams & Reservoirs
- Alluring World – Elan Valley Reservoirs
- Sciencing – How to Build a Dam for a School Project
- Let's talk science – Design & Build a Dam
- The Guardian – First wild beaver in Wales in years caught felling trees in garden
- The Wildlife Trusts – Beavers
- National History Museum – Record numbers of beavers are being introduced to the UK
- Woodland Trust – Beaver.

DOING THE ACTIVITY

- Most tasks require learners to work in pairs or groups. Encourage learners to share their ideas and through open questioning, to explain and justify their ideas when possible.
- How you approach Task 4 will depend on where your school is situated in relation to a local source of flowing water and should be approached accordingly.
- Ensure that each group has access to an internet enabled device.
- The suggested focus questions, relating to each task, can be given to learners as they start each task or used by the teacher.

TASK 1: WHAT IS A DAM?

Ask learners to think about and discuss what they understand about the word ‘dam’. They might be prompted to put the word into a sentence and to explore in what different contexts they have heard the word used.

Suggested focus questions:

- What does the word ‘dam’ mean to you? Why?
- Make up a sentence that includes the word dam? Why have you chosen this sentence?
- In what ways have you heard the word used?
- Where have you seen a dam?
- What was the purpose of the dam? How do you know that?

TASK 2: WHY DO WE BUILD DAMS?

Explain to learners that you want them to consider why humans build dams and to write down what they think is the main reason. Provide small groups with Resource 1 (Talking heads), either digitally or as hard copy. Invite learners to consider the reasons for building dams in the speech bubbles and to decide which they agree with the most and least. Encourage them to discuss whether the reason they wrote down is covered in any of the speech bubbles.

Suggested focus questions:

- Why do you think humans build dams?
- What is the main reason? Why do you think that?
- Which of the ideas in the speech bubbles do you agree with the most? Why?
- Which do you agree with the least? Why?
- How have you changed your opinion about why we build dams after doing this task? Why?

TASK 3: WHY WERE THE ELAN VALLEY DAMS BUILT?

Provide small groups of learners with Resource 2 and Resource 3, either digitally or as hard copy. Explain to learners that they are images of Minecraft models of one of the Elan Valley dams. Invite learners to search for images of the Elan Valley dams and to identify which of the dams is represented in the Minecraft models. They should be prompted to find images without support but could be directed towards sites such as these if required.

- Elan Valley Past and Present – Elan Valley Dams
- Elan Valley – The Dams
- Industrial Tour – Elan Valley Dams & Reservoirs
- Alluring World – Elan Valley Reservoirs.

Encourage learners to also explore maps of the Elan Valley and having seen images to consider why the dams have been built where they are.

Suggested focus questions:

- What do the images of the Minecraft models show? How do you know?
- Where will you find images of the Elan Valley dams? How do you know?
- Which of the dams is represented by the Minecraft models? Why do you think that? How strong is your evidence?
- Why do you think the dams were built exactly where they are?

TASK 4: HOW COULD WE BUILD A DAM?

Ideally, this task needs to take place outdoors within a local environment as learners need to engage with real materials in an authentic context. However, it is understood that not all schools have access to a local source of flowing water such as a small stream.

If possible, take learners to a small source of flowing water and challenge them to use materials they can see laying around to build a dam across the water. Encourage them to explore different materials and ways of constructing a dam and to consider the effects of the dam on the flow of water.

This task is designed as a practical exploration of how dams are built and how they affect a water source. If access to a suitable source of water is not available, other options could be explored. For example, there might be an area of the school grounds that could be adapted, a local nursery or one attached to the school might have an outdoor water play area that could be visited or there is a possibility of building a model dam in the classroom.

The following sites provide an example – Sciencing – How to Build a Dam for a School Project and Let's talk science – Design & Build a Dam. However, there are also several online videos that show how to build a dam in the classroom as part of a project.

Please note: Any dam built in a flowing stream **must** be fully deconstructed at the end of the task otherwise it could have severe repercussions on wildlife.

Suggested focus questions:

- What is the purpose of your dam? How will you do this?
- What materials will you use to build the dam? Why?
- How successful was the dam? How do you know/
- Which materials were the best for building the dam? Why?
- What are real dams made from? How do you know? Why do they use these materials?
- What effect did your dam have on the flow of the water?
- How could you control the flow of the water? Why would this work?

TASK 5: WHAT OTHER ANIMALS BUILD DAMS?

Tell learners that you will show them the first sentence of a newspaper report from April 2023. Show learners the following sentence, for example, on a whiteboard.

"Creeping through the darkness, the midnight vandal fells yet another tree with 'machete-like' skill."

Ask pairs of learners to think about and discuss who or what the 'midnight vandal' might be and to share their ideas. Invite them to access the following link The Guardian – First wild beaver in Wales in years caught felling trees in garden and to read the whole article and share their thoughts about it.

Encourage learners to think about and discuss why you've shown them an article about beavers and to consider what other animals they know of that might build dams and to share their ideas.

Suggested focus questions:

- Who or what might the 'midnight vandal' be? Why do you think that?
- Why do you think they are cutting down trees at night?
- What did you learn from reading the newspaper article?
- What other animals might build dams? How do you know that? Why might they build dams?

TASK 6: WHY AND HOW DO BEAVERS BUILD DAMS?

Ask small groups of learners to carry out research to find out more about how and why beavers build dams. Encourage them to search for informative websites and video clips, for example:

- The Wildlife Trusts – Beavers
- National History Museum – Record numbers of beavers are being introduced to the UK
- Woodland Trust – Beaver.

There are two research questions:

- Why do beavers build dams?
- How do beavers build dams?

Each group might be tasked with answering one of the two research questions in a 30-second presentation.

Suggested focus questions:

- What research questions are you going to answer? How will you search for information? Why like this?
- How will you know if the information you find is reliable? Why do you think that?
- What have you learned about beavers?
- Why do beavers build dams? How do you know that?
- What will you include in your short presentation? Why?

OPPORTUNITIES TO DEVELOP IN DETAIL

CURRICULUM FOR WALES

Statements of what matters:

Expressive Arts

- Creating combines skills and knowledge, drawing on the senses, inspiration and imagination.

Health and Well-being

- Developing physical health and well-being has lifelong benefits.
- How we process and respond to our experiences affects our mental health and emotional well-being.
- Our decision-making impacts on the quality of our lives and the lives of others.

Humanities

- Enquiry, exploration and investigation inspire curiosity about the world, its past, present and future.
- Events and human experiences are complex, and are perceived, interpreted and represented in different ways.
- Our natural world is diverse and dynamic, influenced by processes and human actions.

Languages, Literacy and Communication

- Understanding languages is key to understanding the world around us.
- Expressing ourselves through languages is key to communication.
- Literature fires imagination and inspires creativity.

Science and Technology

- Design thinking and engineering offer technical and creative ways to meet society's needs and wants.
- The world around us is full of living things which depend on each other for survival.

LNF

Literacy

- **Listening:** Developing vocabulary; Listening as part of collaborative talk.
- **Speaking:** Clarity and vocabulary; Purpose; Collaborative talk; Questioning.
- **Writing:** Vocabulary, spelling, grammar; Planning and organising for different purposes, audiences and context; Proofreading, editing and improving.

DCF

- **Citizenship:** Identity, image and reputation; Digital rights, licensing and ownership.
- **Interacting and collaborating:** Collaboration, Storing and sharing.
- **Producing:** Sourcing, searching and planning digital content; Creating digital content; Evaluating and improving digital content.

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NATIONAL CURRICULUM FOR ENGLAND

Computing

Design and Technology

- Design; Make; Evaluate.

English

- Spoken language; Reading; Writing.

Geography

- Locational knowledge; Place knowledge; Human and physical geography; Geographical skills and fieldwork.

History

Science

- Living things and their habitats; Forces.

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RESOURCE 1

TALKING HEADS - WHY DO WE BUILD DAMS?

Dams are built to store water.

Dams are built to control floods.

Dams are built to supply water.

Dams are built to help generate hydroelectric power.

Dams are built to create artificial lakes.

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RESOURCE 2

MINECRAFT IMAGE 1

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RESOURCE 3

MINECRAFT IMAGE 2

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SUGGESTED FOCUS QUESTIONS

TASK 1

What is a dam?

- What does the word ‘dam’ mean to you? Why?
- Make up a sentence that includes the word dam? Why have you chosen this sentence?
- In what ways have you heard the word used?
- Where have you seen a dam?
- What was the purpose of the dam? How do you know that?

TASK 2

Why do we build dams?

- Why do you think humans build dams?
- What is the main reason? Why do you think that?
- Which of the ideas in the speech bubbles do you agree with the most? Why?
- Which do you agree with the least? Why?
- How have you changed your opinion about why we build dams after doing this task? Why?

TASK 3

Why were the Elan Valley dams built?

- What do the images of the Minecraft models show? How do you know?
- Where will you find images of the Elan Valley dams? How do you know?
- Which of the dams is represented by the Minecraft models? Why do you think that? How strong is your evidence?
- Why do you think the dams were built exactly where they are?

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TASK 4

How could we build a dam?

- What is the purpose of your dam? How will you do this?
- What materials will you use to build the dam? Why?
- How successful was the dam? How do you know?
- Which materials were the best for building the dam? Why?
- What are real dams made from? How do you know? Why do they use these materials?
- What effect did your dam have on the flow of the water?
- How could you control the flow of the water? Why would this work?

TASK 5

What other animals build dams?

- Who or what might the 'midnight vandal' be? Why do you think that?
- Why do you think they are cutting down trees at night?
- What did you learn from reading the newspaper article?
- What other animals might build dams? How do you know that? Why might they build dams?

TASK 6

Why and how do beavers build dams?

- What research questions are you going to answer? How will you search for information? Why like this?
- How will you know if the information you find is reliable? Why do you think that?
- What have you learned about beavers?
- Why do beavers build dams? How do you know that?
- What will you include in your short presentation? Why?

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ACTIVITY 10: HOW CAN WE CELEBRATE OUR ENVIRONMENT THROUGH ART?

OVERVIEW

Learners explore images of the Elan Valley and collate a list of descriptive words. They consider old and modern paintings of the Elan Valley, choosing a favourite and explaining why. Learners consider a poem based on the Elan Valley and text about a famous poet visiting the area, before watching a video of a chainsaw artist creating an Elan Valley sculpture trail. Finally, they are challenged to develop an artistic celebration of the area around the school and where they live. Groups create something unique and collaborate to decide how best to display their work around the school.

OPPORTUNITIES TO DEVELOP

CURRICULUM FOR WALES

Areas of Learning and Experience:

- Expressive Arts
- Health and Well-being
- Humanities
- Languages, Literacy and Communication
- Science and Technology

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

NATIONAL CURRICULUM FOR ENGLAND

- Art and Design
- Computing
- English
- Geography
- History

RESOURCES INCLUDED WITH THIS ACTIVITY

- Suggested focus questions.

RESOURCES REQUIRED TO UNDERTAKE THIS ACTIVITY

- Internet enabled device and internet access
- Maps of the local area if available.

USEFUL LINKS

Where possible, encourage learners to search for and access information independently. However, these links might be useful for some of the tasks.

- Google Maps
- Art UK – The Little Chapel in Elan Valley
- Art Pal – View of Elan Valley Mid Wales
- Supercosmic Art – Elan Valley
- Poetry Atlas – Coombe Ellen by William Lisle Bowles
- Powys Digital History Project – Shelley in the Elan Valley
- Simon O'Rourke – Home is Where the Art is
- Simon O'Rourke – Elan Valley Sculpture Trail
- BBC Bitesize – Exploring different types of poetry.

DOING THE ACTIVITY

- If possible, this activity would be greatly enhanced by a visit to the Elan Valley. The subjects of paintings, poems, sculpture trail could all be experienced first-hand.
- Most tasks require learners to work in pairs or groups. Encourage learners to share their ideas and through open questioning, to explain and justify their ideas when possible.
- Ensure that each group has access to an internet enabled device.
- The suggested focus questions, relating to each task, can be given to learners as they start each task or used by the teacher.

TASK 1: HOW WOULD WE DESCRIBE THE ELAN VALLEY?

Show learners images of the Elan Valley from an internet image search. Alternatively, invite learners to search for online images of the Elan Valley.

Ask learners to write a short list of words to describe what they have seen, challenging them to think of words that nobody else will use. Collate a shared list of words for all the class to see, with each learner having contributed at least one word.

Suggested focus questions:

- What did you see in the images of the Elan Valley?
- What different types of images did you see?
- Which was your favourite image? Why?
- How would you describe what was in this image?
- What words will you include in your list? Why?

TASK 2: HOW HAVE ARTISTS PORTRAYED THE ELAN VALLEY?

Explain to learners that the Elan Valley has a long history of artists visiting and portraying the area.

For example, old paintings, such as the 19th century, 'The Little Chapel in Elan Valley' by William R Stone; 20th century paintings such as 'View of Elan Valley Mid Wales' by Winifred Francis and current modern paintings by artists such as Nia Ellis 'Elan Valley'.

Invite small groups of learners to consider these and other paintings of the Elan Valley and to choose a favourite painting. Encourage them to say what they like about the painting and to explain why.

Suggested focus questions:

- What paintings of the Elan Valley have you looked at?
- How are modern paintings different to older paintings? Why do you think that is?
- Which is your favourite painting? Why?
- How would you describe this painting?
- What do you like about the painting? Why?

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TASK 3: HOW HAVE WRITERS PORTRAYED THE ELAN VALLEY?

Explain to learners that writers have also visited and written about the Elan Valley for many years. William Lisle Bowles (1762 – 1850) who was highly thought of by Coleridge and Wordsworth wrote a well-known poem called 'Coombe Ellen' by William Lisle Bowles.

You could show learners an extract of the poem or ask them to read a short extract and consider what it means. It would be interesting to point out that the title is an English derivation of 'Cwm Elan' where the poem was written.

Explain that a famous poet, Percey Bysse Shelley, was impressed with the Elan Valley during visits and wanted to buy a house in the area. The following link, Shelley in the Elan Valley from the Powys Digital History Project, provides an interesting outline of this time in the area. Learners might be invited to review the web pages on this link and to develop a brief summary of why Shelley liked the area, for example.

Suggested focus questions:

- How well did you understand the part of the 'Coombe Ellen' poem?
- What was being described? Why do you think that?
- What were your favourite words or phrases? Why?
- Why do you think Shelley liked Cwm Elan?
- How did he describe it? Why do you think he used those words?

TASK 4: WHAT OTHER ARTISTS HAVE PORTRAYED THE ELAN VALLEY?

Show learners the video clip of Simon O'Rourke the chainsaw artist on this link Home is Where the Art is.

Ask learners to comment on what they have seen in the clip and invite them to access this link, Elan Valley Sculpture Trail showing how Simon and his partners created the Elan Valley sculpture trail using chainsaws. Encourage them to explore the site and to share their ideas about what they have seen.

Suggested focus questions:

- What did you think about the video clip of the chainsaw carving? Why?
- Is this art? Why do you think that?
- What has been included on the Elan Valley sculpture trail? Why do you think they included these things?
- What would you include in a trail of the area where you live? Why?

TASK 5: HOW CAN WE CELEBRATE OUR AREA THROUGH ARTISTIC MEDIA?

Explain to learners that you want the class to create an artistic celebration of the area around the school and where they live.

Remind them of the different art forms they have explore in previous tasks and ask small groups to consider what artistic contribution they might make. For example, some might create a drawing, painting or collage, whereas others might want to create a photographic montage or a short video.

Some learners could write different types of poetry, e.g. see this link Exploring different types of poetry - for ideas. Other learners might want to create sculptures from modelling clay, for example, as part of a sculpture trail around the school.

Ensure that each group creates something unique and that the groups collaborate to decide how best to display their work around the school. They might invite local artists into school to look at their exhibition and also invite a local newspaper or radio station to cover the event.

Suggested focus questions:

- How will you contribute to the artistic celebration of your area? Why have you chosen to do this?
- What will you create? Why?
- Who in your group will do what? Why?
- How will you display your final creations?
- Who could you invite to see the artistic celebration?
- How will you use their feedback? How will this improve your next creation?
- Why would it be good to have local media covering this event?

OPPORTUNITIES TO DEVELOP IN DETAIL

CURRICULUM FOR WALES

Statements of what matters:

Expressive Arts

- Exploring the expressive arts is essential to developing artistic skills and knowledge and it enables learners to become curious and creative individuals.
- Responding and reflecting, both as artist and audience, is a fundamental part of learning in the expressive arts.
- Creating combines skills and knowledge, drawing on the senses, inspiration and imagination.

Health and Well-being

- Our decision-making impacts on the quality of our lives and the lives of others.
- How we engage with social influences shapes who we are and affects our health and well-being.

Humanities

- Enquiry, exploration and investigation inspire curiosity about the world, its past, present and future.
- Events and human experiences are complex, and are perceived, interpreted and represented in different ways.
- Our natural world is diverse and dynamic, influenced by processes and human actions.

Languages, Literacy and Communication

- Understanding languages is key to understanding the world around us.
- Expressing ourselves through languages is key to communication.
- Literature fires imagination and inspires creativity.

Science and Technology

- Being curious and searching for answers is essential to understanding and predicting phenomena.
- Design thinking and engineering offer technical and creative ways to meet society's needs and wants.

LNF

Literacy

- **Listening:** Developing vocabulary; Listening as part of collaborative talk.
- **Reading:** Reading strategies; Understanding, response and analysis.
- **Speaking:** Clarity and vocabulary; Purpose; Collaborative talk; Questioning.
- **Writing:** Vocabulary, spelling, grammar; Planning and organising for different purposes, audiences and context; Proofreading, editing and improving.

DCF

- **Citizenship:** Identity, image and reputation; Digital rights, licensing and ownership.
- **Interacting and collaborating:** Communication; Collaboration, Storing and sharing.
- **Producing:** Sourcing, searching and planning digital content; Creating digital content; Evaluating and improving digital content.

NATIONAL CURRICULUM FOR ENGLAND

Art and Design

Computing

English

- Spoken language; Reading; Writing.

Geography

- Locational knowledge; Place knowledge; Human and physical geography; Geographical skills and fieldwork.

History

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SUGGESTED FOCUS QUESTIONS

TASK 1

How would we describe the Elan valley?

- What did you see in the images of the Elan Valley?
- What different types of images did you see?
- Which was your favourite image? Why?
- How would you describe what was in this image?
- What words will you include in your list? Why?

TASK 2

How have artists portrayed the Elan Valley?

- What paintings of the Elan Valley have you looked at?
- How are modern paintings different to older paintings? Why do you think that is?
- Which is your favourite painting? Why?
- How would you describe this painting?
- What do you like about the painting? Why?

TASK 3

How have writers portrayed the Elan Valley?

- How well did you understand the part of the 'Coombe Ellen' poem?
- What was being described? Why do you think that?
- What were your favourite words or phrases? Why?
- Why do you think Shelley liked Cwm Elan?
- How did he describe it? Why do you think he used those words?

TASK 4

What other artists have portrayed the Elan Valley?

- What did you think about the video clip of the chainsaw carving? Why?
- Is this art? Why do you think that?
- What has been included on the Elan Valley sculpture trail? Why do you think they included these things?
- What would you include in a trail of the area where you live? Why?

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TASK 5	
How can we celebrate our area through artistic media?	• How will you contribute to the artistic celebration of your area? Why have you chosen to do this? • What will you create? Why? • Who in your group will do what? Why? • How will you display your final creations? • Who could you invite to see the artistic celebration? • How will you use their feedback? How will this improve your next creation? • Why would it be good to have local media covering this event?

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HYPERLINKS

LINKS USED WITHIN ACTIVITIES

Activity 1

OS Maps: Walking & Bike Trails on the App Store
https://apps.apple.com/gb/app/os-maps/id978307846

OS Maps: Walking & Bike Trails – Apps on Google Play
https://play.google.com/store/apps/details?id=uk.co.ordnancesurvey.osmaps

Google Maps
https://www.google.co.uk/maps/@53.5560192,-3.0539776,14z?entry=ttu

National Library of Scotland – Side by side georeferenced maps viewer with layer swipe (historical maps)
https://maps.nls.uk/geo/explore/side-by-side/swipe/#zoom=5.0&lat=56.0000&lon=-4.0000&layers=1&right=ESRIWorld

Elan Valley – Explore on Foot
https://elanvalley.org.uk/explore/walking/

Ordnance Survey
https://getoutside.ordnancesurvey.co.uk/guides/guide-to-os-map-symbols/

Elan Valley
https://elanvalley.org.uk/

Activity 2

Google Maps
https://www.google.co.uk/maps/@53.5560192,-3.0539776,14z?entry=ttu

BBC Bitesize - What is the water cycle?
https://www.bbc.co.uk/bitesize/topics/z6p6qp3/articles/z3wpp39

National Geographic Education - Water Cycle
https://education.nationalgeographic.org/resource/water-cycle/

Activity 3

Welsh Water/Dŵr Cymru – Water
https://www.dwrcymru.com/en/our-services/water

Severn Trent Water
https://www.stwater.co.uk/home/?adobe_mc_sdid=SDID%3D3F75A55477E4DA46-217C145570F9583F%7CMCORGID%3D2514401053DB27B70A490D4C%40AdobeOrg%7CTS%3D1690988269

Semrush Blog - 14 Influential Infographic Examples To Inspire You
https://www.semrush.com/blog/infographic-examples/?kw=core_bu_82&cmp=Core12_SRCH_DSA_Blog_Core_BU_BING&label=dsa_pagefeed&Network=o&Device=c&utm_content=&kwid=dat-2333507271648916:loc-188&cmpid=412591844&agpid=1307319654896571&BU=Core&extid=&adpos=&msclkid=8bf548856a471e383b742cdf2f6a9605&utm_source=bing&utm_medium=cpc&utm_campaign=Core12_SRCH_DSA_Blog_Core_BU_BING&utm_term=core_bu_82

Welsh Water/Dŵr Cymru – Waste water treatment
https://corporate.dwrcymru.com/en/community/education/teaching-resources/primary-resources/waste-water

ARC GIS story maps – The water journey
https://storymaps.arcgis.com/stories/7cc6914b568d46139947f999a8d20be8

Glascoed People and Places - The Reservoir
http://glascoed.com/the_reservoir.html

Severn Trent – News - New pipes to provide reliable water supply for Newtown
https://www.stwater.co.uk/news/news-releases/newpipestoprovidereliablewatersupplyfornewtown/

BBC News - Welsh Water: Sewage dumped in waterways for 600,000 hours
https://www.bbc.co.uk/news/uk-wales-65156560

BBC News - River pollution: Sewage spill prevention will hit water bills
https://www.bbc.co.uk/news/uk-wales-65107512

Activity 4

United Nations – Sustainable Development Goals launch in 2016
https://www.un.org/sustainabledevelopment/blog/2015/12/sustainable-development-goals-kick-off-with-start-of-new-year/#:~:text=The%2017%20SDGs%20build%20on%20the%20eight%20MDGs%2C,sustainability%3B%20and%20develop%20a%20global%20partnership%20for%20development

World Vision – 20 litre challenge: Suzy versus Anyaka
https://www.worldvision.com.au/global-issues/work-we-do/climate-change/20-litre-challenge-suzy-versus-anyaka

Vovacast – World vision dirty water (YouTube video)
https://www.worldvision.com.au/global-issues/work-we-do/climate-change/20-litre-challenge-suzy-versus-anyaka

Unesco – SDG Resources for Educators - Clean Water and Sanitation
https://en.unesco.org/themes/education/sdgs/material/06

Inspire Education – Victorians: the filthy rich and the filthy poor (YouTube video)
https://en.unesco.org/themes/education/sdgs/material/06

Activity 5

Google Maps
https://www.google.co.uk/maps/@53.5560192,-3.0539776,14z?entry=ttu

Frontiers - Understanding Differences Between Lakes and Reservoirs
https://kids.frontiersin.org/articles/10.3389/frym.2020.513858

Britannica – Reservoir
https://www.britannica.com/technology/reservoir

National Geographic – Reservoir
https://education.nationalgeographic.org/resource/reservoir/

Elan Valley – Reservoir and Dams
https://elanvalley.org.uk/heritage/reservoir-dams/

Elan Valley – Building of the Dams
https://elanvalley.org.uk/heritage/reservoir-dams/building-of-the-dams/

Elan Valley – The Lost Valleys
https://elanvalley.org.uk/heritage/reservoir-dams/the-lost-valleys/

ArcGIS StoryMaps – Submerged Heritage
https://storymaps.arcgis.com/stories/e3c9548c2769411db9677f7c1e44e75a

Oxford Mail - Homes could be lost because of new Thames Water reservoir - you have your say
https://www.oxfordmail.co.uk/news/19882248.homes-lost-new-thames-water-reservoir---say/

Derby Telegraph - New reservoir plans for Derbyshire as Severn Trent tries to supply water to growing population
https://www.derbytelegraph.co.uk/news/local-news/new-reservoir-plans-derbyshire-severn-7706855

Activity 6

Welsh Water/Dŵr Cymru
https://www.dwrcymru.com/

Severn Trent Water
https://www.stwater.co.uk/home/?adobe_mc_sdid=SDID%3D58BF83F8177AD674-5D9B3FC7B88DB4C0%7CMCORGID%3D2514401053DB27B70A490D4C%40AdobeOrg%7CTS%3D1690990391

Welsh Water/Dŵr Cymru - Measured bills
https://www.dwrcymru.com/en/help-advice/measured-bills

Food and Agriculture Organization of the United Nations – Youth and United Nations Global Alliance (YUNGA)
https://www.fao.org/yunga

The Global Goals for Sustainable Development – Rohit Fenn, Bangalore India Elif Bilgin, Turkey
http://cdn.worldslargestlesson.globalgoals.org/2016/11/Rohit-Changemakers-Take-Action2-2-4.pdf

Roheit Fenn - Google Science Fair 2012: Summary (YouTube video)
https://www.youtube.com/watch?v=GjMPLL8n4Kc

Activity 7

Google Maps
https://www.google.co.uk/maps/@53.5560192,-3.0539776,14z?entry=ttu

Historic Wales
https://historic-wales-rcahmw.hub.arcgis.com/

Historic England - Championing England's heritage
https://historicengland.org.uk/

Elan Valley
https://elanvalley.org.uk/

Activity 8

BBC Bitesize - What is the difference between weather and climate?
https://www.bbc.co.uk/bitesize/topics/z849q6f/articles/zcpybqt

National Oceanic and Atmospheric Administration (NOAA) - What's the difference between climate and weather?
https://www.noaa.gov/explainers/what-s-difference-between-climate-and-weather

Met Office - Climate zones
https://www.metoffice.gov.uk/weather/climate/climate-explained/climate-zones

Time and date - Climate & Weather Averages in Great Britain, England, United Kingdom
https://www.timeanddate.com/weather/@2648147/climate

Met Office - What is climate change?
https://www.metoffice.gov.uk/weather/climate-change/what-is-climate-change

Al Jazeera English - Expect more extreme weather, warn UK climate scientists (YouTube video)
https://www.youtube.com/watch?v=MXVVYu8XX8w

NASA – The Effects of Climate Change
https://climate.nasa.gov/effects/

Elan Valley
https://elanvalley.org.uk/

Microsoft Sway
https://sway.office.com/my

Natural Resources Wales - New LIFE for Welsh Raised Bogs
https://naturalresources.wales/about-us/what-we-do/our-projects/nature-projects/new-life-for-welsh-raised-bogs/?lang=en

Wales Online - How muddy bogs could end up being Wales' secret weapon against wildfires and climate change
https://www.walesonline.co.uk/news/how-muddy-bogs-could-end-24763435

Forest Research - Climate change factsheet: Peatlands, Forestry and Climate Change
https://cdn.forestresearch.gov.uk/2021/01/20_0041_leaflet_cc_factsheet_peatlands_wip06_acc.pdf

Elan Valley - Healthy Bogs
https://elanvalley.org.uk/about/elan-links/enhancing-nature-and-wildlife/healthy-bogs/

Met Office - Effects of climate change
https://www.metoffice.gov.uk/weather/climate-change/effects-of-climate-change

Climate Central - Coastal Risk Screening Tool
https://coastal.climatecentral.org/

Activity 9

Google Maps
https://www.google.co.uk/maps/@53.5560192,-3.0539776,14z?entry=ttu

Elan Valley Past and Present - Elan Valley Dams
https://elanvalleypastandpresent.co.uk/Dams/dams.php

Elan Valley – The Dams
https://elanvalley.org.uk/explore/the-dams/

Industrial Tour – Elan Valley Dams & Reservoirs
https://industrialtour.co.uk/elan-valley/

Alluring World - Elan Valley Reservoirs
https://www.alluringworld.com/elan-valley-reservoirs/

Sciencing - How to Build a Dam for a School Project
https://sciencing.com/build-dam-school-project-6234206.html

Let's talk science - Design & Build a Dam
https://letstalkscience.ca/educational-resources/lessons/design-build-a-dam

The Guardian - First wild beaver in Wales in years caught felling trees in garden
https://www.theguardian.com/environment/2023/apr/12/first-wild-beaver-in-wales-in-400-years-caught-felling-trees-in-garden

The Wildlife Trusts - Beavers
https://www.wildlifetrusts.org/saving-species/beavers

National History Museum - Record numbers of beavers are being introduced to the UK
https://www.nhm.ac.uk/discover/news/2021/april/record-numbers-of-beavers-are-being-introduced-to-the-uk.html

Woodland Trust - Beaver
https://www.woodlandtrust.org.uk/trees-woods-and-wildlife/animals/mammals/beaver/

Activity 10

Google Maps
https://www.google.co.uk/maps/@53.5560192,-3.0539776,14z?entry=ttu

Art UK - The Little Chapel in Elan Valley
https://artuk.org/discover/artworks/the-little-chapel-in-elan-valley-181451

Art Pal - View of Elan Valley Mid Wales
https://www.artpal.com/powysart?i=94102-6

Supercosmic Art - Elan Valley
https://supercosmicart.blogspot.com/2012/03/elan-valley.html

Poetry Atlas - Coombe Ellen by William Lisle Bowles
http://www.poetryatlas.com/poetry/poem/1211/coombe-ellen.html

Powys Digital History Project - Shelley in the Elan Valley
http://history.powys.org.uk/history/rhayader/shelley1.html

Simon O'Rourke - Home is Where the Art is
https://treecarving.co.uk/home-is-where-the-art-is-2/

Simon O'Rourke - Elan Valley Sculpture Trail
https://treecarving.co.uk/elan-valley-sculpture-trail/

BBC Bitesize - Exploring different types of poetry
https://www.bbc.co.uk/bitesize/topics/z4mmn39/articles/zqc3n9q