

The Slate Landscape of Northwest Wales

A UNESCO World Heritage Site

Teaching Resource

Supporting the Curriculum for Wales
Progression steps 2 and 3



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1

How to use this resource

This resource has been created to support teachers to help pupils explore the Slate Landscape of Northwest Wales.

The resource is an excellent way to develop and promote the Curriculum for Wales and provide cross curricular activities and integral skill development as well as activities to explore Cynefin. The activities have been designed to support pupils to reach progression step 3 but can be adapted by teachers for older/younger children.

Supporting the Curriculum for Wales

The Curriculum for Wales Humanities Area of Learning emphasises the importance of learners investigating and exploring the human experience in their own localities and elsewhere in Wales, as well as in the wider world, this can help learners discover their heritage and develop a sense of place and cynefin.

This resource highlights the importance of the slate industry within Northwest Wales locally, within Wales nationally and its impact internationally.

The activities also encourage cross-curricular learning by helping to support progression steps as well as developing skills and knowledge. These will be highlighted alongside the activities.



1

Using the activities

- The activities have been developed to link to the Curriculum for Wales.
- Each activity has instructions, key Areas of Learning and skills.
- Each activity has an equipment list and supporting Appendix documents if required.
- The activities encourage cross-curricular learning by helping to support progression steps as well as developing skills and knowledge. These will be highlighted alongside the activities.

Health and Safety

These resources are designed for in-class use. Several of the quarries and mines mentioned in these units are still in use. If teachers wish to use site visits to enrich the learning, we strongly advise that these are only to those used as 'tourist attractions' such as the National Slate Museum in Llanberis.

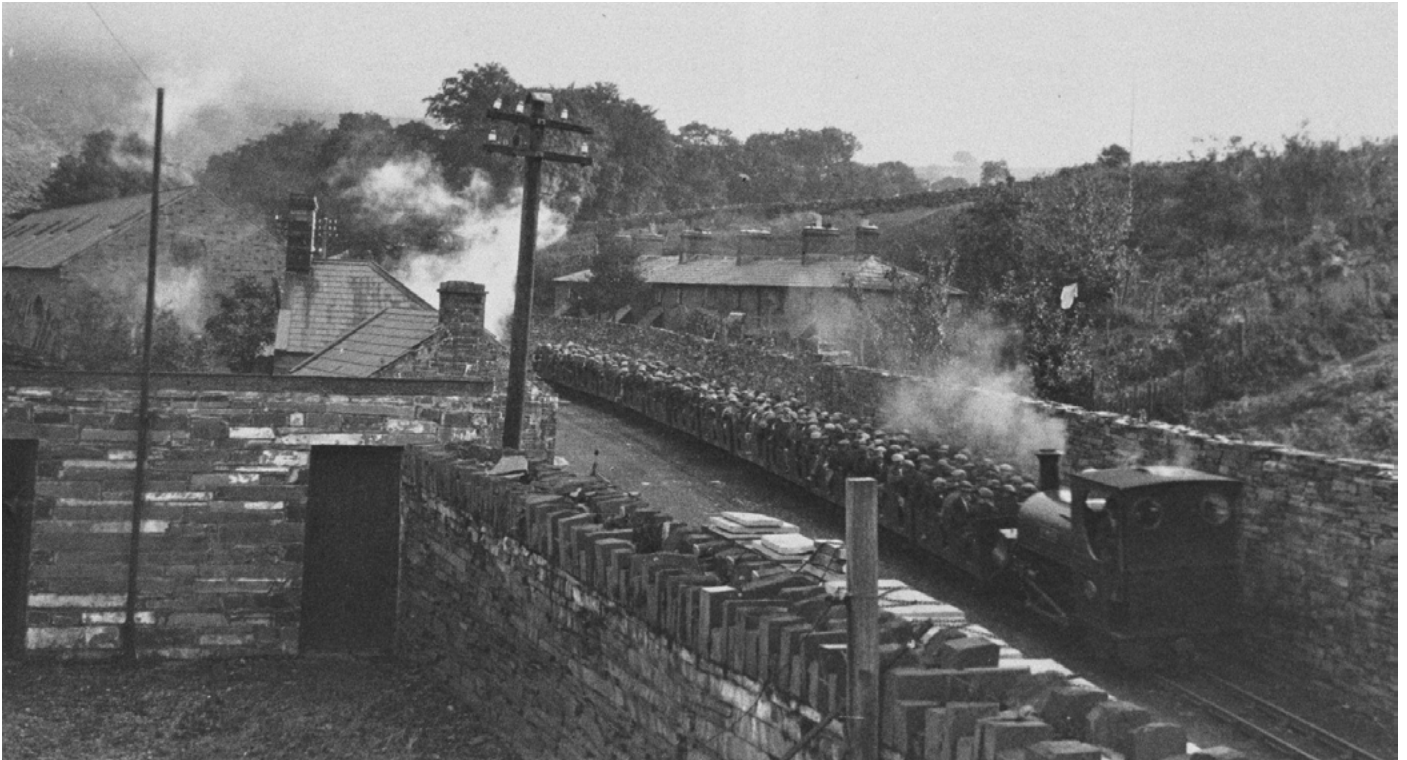
Penrhyn Quarry Loading Slates
Public Domain



2

The Slate Landscape of Northwest Wales

Slate quarrying and mining greatly affected the physical landscape of Northwest Wales, with the effects still being visible today. The infrastructure built to transport slate, from narrow gauge railway systems to roads and ports has shaped both the landscape and the communities which live in it.



Penrhyn Quarry Railway, National Library of Wales CCASA 4.0

The technologies developed in the quarries played a pivotal role in the industrial revolution in Britain and elsewhere. Technology developed in Welsh slate quarries were used all over the world, not just in Northwest Wales, for example mountain railways. Water was important in a slate quarry. Waterwheels could be used to power machinery. The advances were not only in the industrial field; the quarry hospitals also contributed to advances in fields such as anaesthesia and orthopaedics which benefited the wider population.

Quarries and slate waste, as well as towns and villages and the infrastructure associated with them, replaced a landscape that was mainly agricultural. The Welsh slate industry provided jobs for thousands of people. These new communities also shaped the cultural landscape, building churches and chapels and strengthening the Welsh language.

Welsh slate was not just used in Wales and other parts of Britain, it was used all over the world. Welsh slate is said to have 'roofed the world.' Welsh slate was used on the roof of Copenhagen City Hall, Denmark. The dome of the Royal Exhibition Building in Melbourne, Australia is also roofed with Welsh slate.

Many quarries have closed but some quarries are still open now (such as Penrhyn Quarry, Bethesda). People still work in them today.

A World Heritage Site



In 2021, part of the slate landscape of Northwest Wales was made into a UNESCO World Heritage Site. A UNESCO World Heritage Site is a special place that is very important because of its history or outstanding beauty. A World Heritage Site is not allowed to be harmed or spoiled because it is unique and needs to be protected. One of the things UNESCO does is to decide which places should become World Heritage Sites.

The slate quarries of Northwest Wales and the landscapes around them are very important. This is because they are an outstanding example of stone quarrying during 1780-1940.

It is important that the slate landscape of Northwest Wales has been awarded World Heritage Site status. There is a lot to be celebrated. It is also important to remember that it could be very difficult and dangerous for those working in a quarry and the lives of Welsh families both relied on and were affected by the slate industry.

Six slate landscapes are now UNESCO World Heritage Sites

- Penrhyn Slate Quarry and Bethesda and the Ogwen Valley to Port Penrhyn
- Dinorwig Slate Quarry Landscape
- Nantlle Valley Slate Quarry Landscape
- Gorseddau and Prince of Wales Quarries, Railway and Mill
- Blaenau Ffestiniog its Slate Mines and Quarries, “city of slates” and Railway to Porthmadog
- Bryneglwys Slate Quarry, Abergynolwyn village and the Talylyn Railway

2

How is slate formed?

Slate formed millions of years ago from layers of clay and shale. Movement of the earth underground caused the layers to be pressed together under great pressure and heat so that they formed even thinner layers and eventually a new rock we call slate. The natural process of rock being changed through heat and pressure is called Metamorphism. This means that we call slate a metamorphic rock.


Slate comes in different shades of grey and the colour is determined by the amount of iron and plant material that were in the clay and shale when it formed. The pressure caused the rock to have very thin layers and so it can be split into thin sheets that are very useful for roofing and flooring.



James St. John, CC BY 2.0


2

Timeline of Slate History



77	Slate was used to build parts of the Roman fort of Segontium in Caernarfon, including the temple of Mithras which had a slate roof.
1280s	Slate was used as a building material for Edward I's castle at Conwy.
1413	First recorded quarrying near the later Penrhyn Quarry.
1570	First reference to slate quarrying at Penrhyn recorded in a Welsh poem.
1713	The first exports of slate from Penrhyn quarry were recorded being sent to Ireland.
1770s	Richard Pennant, Baron Penrhyn began to develop the slate industry for local use.
1787	Great New Quarry" at Dinorwig opened.
1790	The first quay was built at Port Penrhyn for transporting slate more easily.
1801	Penrhyn Quarry Railway was completed to transport slate to Penrhyn Port, with horses hauling the wagons of slate. It was replaced by steam powered locomotives in 1876.
1802	The world's first stone cutting saws installed at Felin Fawr workshops for the Penrhyn Quarry.
1820	The towns of Bethesda and Blaenau Ffestiniog began to develop due to the nearby slate industry.
1828	Nantlle Railway developed to take slate to Caernarfon.
1831	Slate duty was abolished, helping to expand the industry in the 19th century.
1836	The Ffestiniog Railway opened to transport slate from Blaenau Ffestiniog to Porthmadog.
1840s	Porthmadog developed as a port for transporting slate from Blaenau Ffestiniog to places like Hamburg, Germany.
1844	Bryneglwys Quarry was developed from earlier initial workings, developing rapidly from 1864 onwards.
1850	Development of the Gorseddau and Prince of Wales quarries began.
1857	Ynyspandy Slate Mill was built for Gorseddau quarry with machinery for cutting slate powered by a waterwheel.

2 Timeline of Slate History



1866	The Talyllyn Railway was opened running from Bryneglwys and Abergynolwyn to Tywyn using the first railway of its type designed for locomotive haulage.
1878	The Corris Railway opened to transport slate from nearby quarries.
1879-1890s	The growth of the industry slowed down and went into recession.
1896-97	"The Penrhyn Lockout"- a strike of quarry workers who had a dispute with the management of the Penrhyn Quarry which lasted 11 months.
1900-1903	A second strike at Penrhyn known as "the Great Strike" caused great hardship amongst workers and their families and lasted three years.
1904	Pant yr Afon hydro station opened to generate power for Llechwedd Quarry.
1914	WWI impacted the slate industry as Germany was an important buyer of Welsh slate and some quarries closed as they were deemed to be non-essential industries.
1939	The industry suffered a significant drop in trade due to WWII.
1945-1949	Slate was banned as a roofing material to repair bombed out buildings as tiles were being imported from Portugal, France and Italy instead.
1951	The Talyllyn Railway was the first railway to be saved and run by volunteers as a visitor attraction.
1950s & 60s	Demand for slate was reduced and production declined with many quarries closing in this period.
1955	Diffwys Quarry at Blaenau Ffestiniog and Cilgwyn Quarry in the Nantlle Valley, one of the oldest quarries closed.
1962	The Railway at Penrhyn quarry closed, as lorries had become more popular and convenient.
1969	Dinorwic Quarry closed and 300 quarrymen lost their jobs.
1979	The Government recognised Silicosis as an industrial disease allowing former quarrymen compensation.
2021	The slate landscape of North Wales was recognized as a World Heritage Site by UNESCO.

Map of the Slate Landscape of Northwest Wales

1. Penrhyn Slate Quarry and Bethesda and the Ogwen Valley to Port Penrhyn
2. Dinorwig Slate Quarry Landscape
3. Nantlle Valley Slate Quarry Landscape
4. Gorseddau and Prince of Wales Slate Quarries, Railways and Mill
5. Blaenau Ffestiniog its Slate Mines and Quarries, "city of slates" and Railway to Porthmadog
6. Bryneglwys Slate Quarry, Abergynolwyn village and the Talyllyn Railway



3

Activities

Importance of Slate





Activity 1: Enquire and Research

Objective:

This activity encourages pupils to develop their enquiry and research skills. It encourages them to investigate what slate is, research the slate quarries of Northwest Wales and discover why the slate landscape is so important. It also helps pupils to think about how they might find out more about the past and to be curious about the history of Wales, both locally and nationally. It encourages them to present their findings and reflect on their approaches and identify areas of improvement.

Pupils could:

- Find out the names of the historic slate quarries in Northwest Wales, using the timeline to help them and discover where they are located.
- Investigate what a slate quarry is and where there are still slate quarries today.
- Investigate what slate is and how it is formed.
- Research why the Slate Landscape of Northwest Wales is important and what makes up the Slate Landscape using the pictures in Appendix 1 and the links section to help them.

Pupils could think about:

- *How they would find out about the slate industry.*
- *Where they would find their research.*
- *Who they could ask to find out more.*
- *How the landscape of Wales changed, including both the natural environment and people.*
- *Where the slate was used.*
- Present their findings including photos, drawings and text through PowerPoint, displays or collages.
- Evaluate their research skills and discuss what worked well and what they could have improved on.
- Think about what they would like to know more about and make a plan as to how to do this.

Skills

- Literacy
- Communication
- Oracy
- Investigation
- Curiosity
- Enquiry
- Evaluation
- Digital Competence
- Creativity and Innovation
- Critical Thinking and Problem Solving
- Personal Effectiveness
- Planning and Organising

Equipment

- The Internet
- Timeline
- Appendix 1

Areas of Learning

- Humanities
- Language, Literacy and Communication
- Expressive Arts

Links

- [Cadw: The Slate Landscape of Northwest Wales](#)
- [Pictures: The Slate Landscape of Northwest Wales - Gallery - UNESCO World Heritage Centre](#)
- [Art: Art and slate: the slate landscape of north-west Wales | Art UK](#)

Appendix 1 The Slate Landscape of North Wales



Penrhyn Slate Quarry and Bethesda, and the Ogwen valley to Port Penrhyn
© Crown copyright. RCAHMW



Dinorwig Slate Quarry Mountain Landscape
© Crown copyright. RCAHMW

Appendix 1 The Slate Landscape of North Wales



Nantlle Valley Slate Quarry Landscape - 'Blondin' ropeway, Pen yr Orsedd Slate Quarry
Dave Hopewell © Gwynedd Archaeological Trust



Ffestiniog: its Slate Mines and Quarries, 'city of slates' and Railway to Porthmadog
© Crown copyright. RCAHMW

Appendix 1 The Slate Landscape of North Wales



Dinorwig Slate Quarry Mountain Landscape - Australia' Level
© Crown copyright. RCAHWW



Underground workings at Bryneglwys Slate Quarry
© Jon Knowles

Appendix 1 The Slate Landscape of North Wales



Dinorwig Slate Quarry Mountain Landscape - Australia' Level mill saw-tables
© Crown copyright. RCAHMW



Dinorwig Slate Quarry Mountain Landscape - V2 inclined plane
© Crown copyright. RCAHMW

Activity 2: Discover and Investigate

Objective:

This activity encourages pupils to discover why the Slate Landscape of Northwest Wales is a UNESCO World Heritage Site. It also encourages pupils to investigate what a UNESCO World Heritage Site is, where in Wales these are and compare to others around the world. It aims to develop their enquiry and research skills and present their findings. It encourages them to investigate local examples and take part in a debate about what sites are important to them and their local area.

Pupils could:

- Investigate what a UNESCO World Heritage Site is.
- Find out about the four Welsh UNESCO World Heritage Sites and others around the world and use Appendix 2 to record key facts.
- Investigate why a place becomes a UNESCO World Heritage Site.
- Investigate why the Slate Landscape of Northwest Wales became a UNESCO World Heritage Site in 2021.
- Plan what they would like to find out and contact someone at UNESCO asking for more information.
- Present their findings including photos, drawings and text through PowerPoint, displays or collages.
- Choose an important local history place or landscape in their area and as a group create a display/talk/video as to why it should become a UNESCO World Heritage Site.

Pupils could:

- *Visit the site to take pictures and find out more information.*
- *Write to the site to find out more information.*
- *Use the internet to find out more information.*
- *Use Appendix 3 to record their ideas.*
- *Present their findings to the class.*
- Debate which of the chosen sites/places should become a World Heritage Site and vote on the winner. Award the winner with certificate in Appendix 4.
- Evaluate their research skills and discuss what worked well and what they could have improved on.

Skills

- Literacy
- Communication
- Oracy
- Investigation
- Curiosity
- Enquiry
- Evaluation
- Digital Competence
- Creativity and Innovation
- Critical Thinking and Problem Solving
- Personal Effectiveness
- Planning and Organising

Equipment

- The Internet
- Appendix 2
- Appendix 3
- Appendix 4

Areas of Learning

- Humanities
- Language, Literacy and Communication
- Expressive Arts

Links

- [UNESCO World Heritage Centre - World Heritage List](#)
- United Kingdom (including Wales) list: [UNESCO World Heritage Centre - World Heritage List](#)

Castles and Town Walls of King Edward in Gwynedd



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Blaenavon Industrial Landscape



© ejbaurdo
Creative Commons Attribution
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Pontcysyllte Aqueduct and Canal



© Crown copyright. RCAHMW

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The Slate Landscape of Northwest Wales



© Crown copyright. RCAHMW

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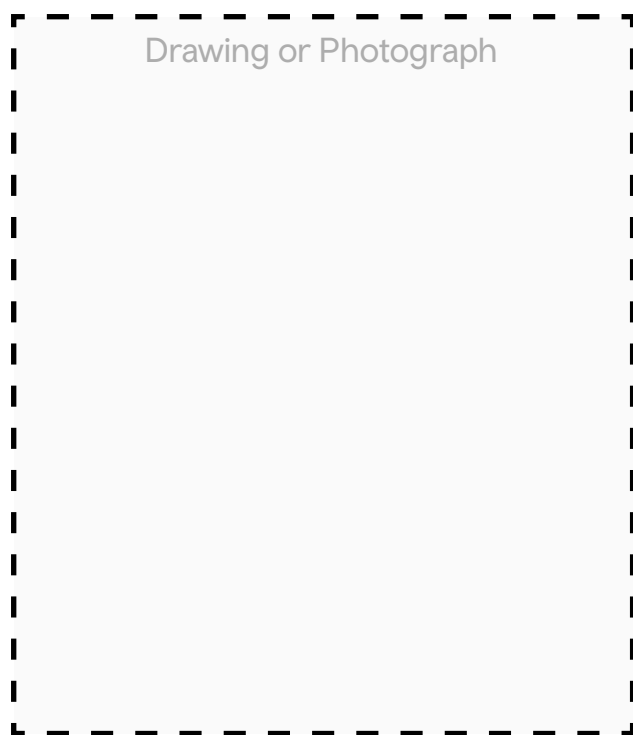
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Appendix 3 Fact Recording Sheet

Name of place:

Drawing or Photograph



Facts:

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Reasons why it is special to your area:

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Why should it be a new UNESCO World Heritage Site?

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.....

School Award For consideration to be a



UNESCO

World Heritage Site



Name:

Reason:

4

Activities

Changes in the Landscape



Activity 3: Explore and Map

Objective:

This activity encourages pupils to investigate the Slate Landscape of Northwest Wales and discover how it has changed over time. It encourages them to develop map research skills. It also encourages them to look at their own local area to find out how it has changed over time using Archwilio and the National Library of Scotland websites.

Pupils could:

- Use the pictures in Appendix 5 to compare how the landscape has changed over time.
- Use the maps in Appendix 6 to compare Bethesda in 1888 to today. Answer the questions and record their findings in the table.
- Imagine they lived in the area before the quarries were built and after and discuss:
 - *How building the quarries impacted on the landscape and how the way it looked changed*
 - *How someone living in the area would feel*
 - *How someone who wanted to work in the area would feel*
- Split into groups and investigate the other slate landscape towns using the links below and record their findings:
 - [View map: Blaenau Ffestiniog 1888](#)
 - [View map: Dinorwic 1899](#)
 - [View map: Llanberis 1888](#)
 - [View map: Corris 1888](#)
 - [View map: Nantlle 1888](#)
- Use the Archwilio or the National Library of Scotland map links to investigate how their town has changed over time. They could compare an old map with a map from today.
- Present their findings to the class and discuss the similarities and differences in how the landscape changed pre industrialisation, after the quarries were built and today.

Skills

- Literacy
- Communication
- Oracy
- Investigation
- Curiosity
- Enquiry
- Evaluation
- Digital Competence
- Cynefin
- Creativity and Innovation
- Critical Thinking and Problem Solving
- Personal Effectiveness

Equipment

- The Internet
- Appendix 5
- Appendix 6

Areas of Learning

- Humanities
- Language, Literacy and Communication
- Expressive Arts

Links

- [Archwilio maps:](#)
- [National Library of Scotland maps:](#)

Appendix 5 Changes in the Landscape



Ogwen Valley and Glyders William Turner 1817 Public Domain



Snowdon from Nantlle Lakes JJ Dodd 1854 National Library of Wales Creative Commons CC0 1.0

Appendix 5 Changes in the Landscape



Snowdon from Nantlle Lakes John Harwood 1847 National Library of Wales Creative Commons CC0 1.0



Vale of Festiniog Hughes and Childs 1845 National Library of Wales CC01.0

Appendix 5 Changes in the Landscape



Penrhyn Slate Quarry and Bethesda, and the Ogwen valley to Port Penrhyn
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Dinorwig Slate Quarry Mountain Landscape
© Crown copyright. RCAHMW

Appendix 5 Changes in the Landscape



Dinorwig Slate Quarry Mountain Landscape - Australia' Level
© Crown copyright. RCAHMW



Ffestiniog: its Slate Mines and Quarries, 'city of slates' and Railway to Porthmadog
© Crown copyright. RCAHMW

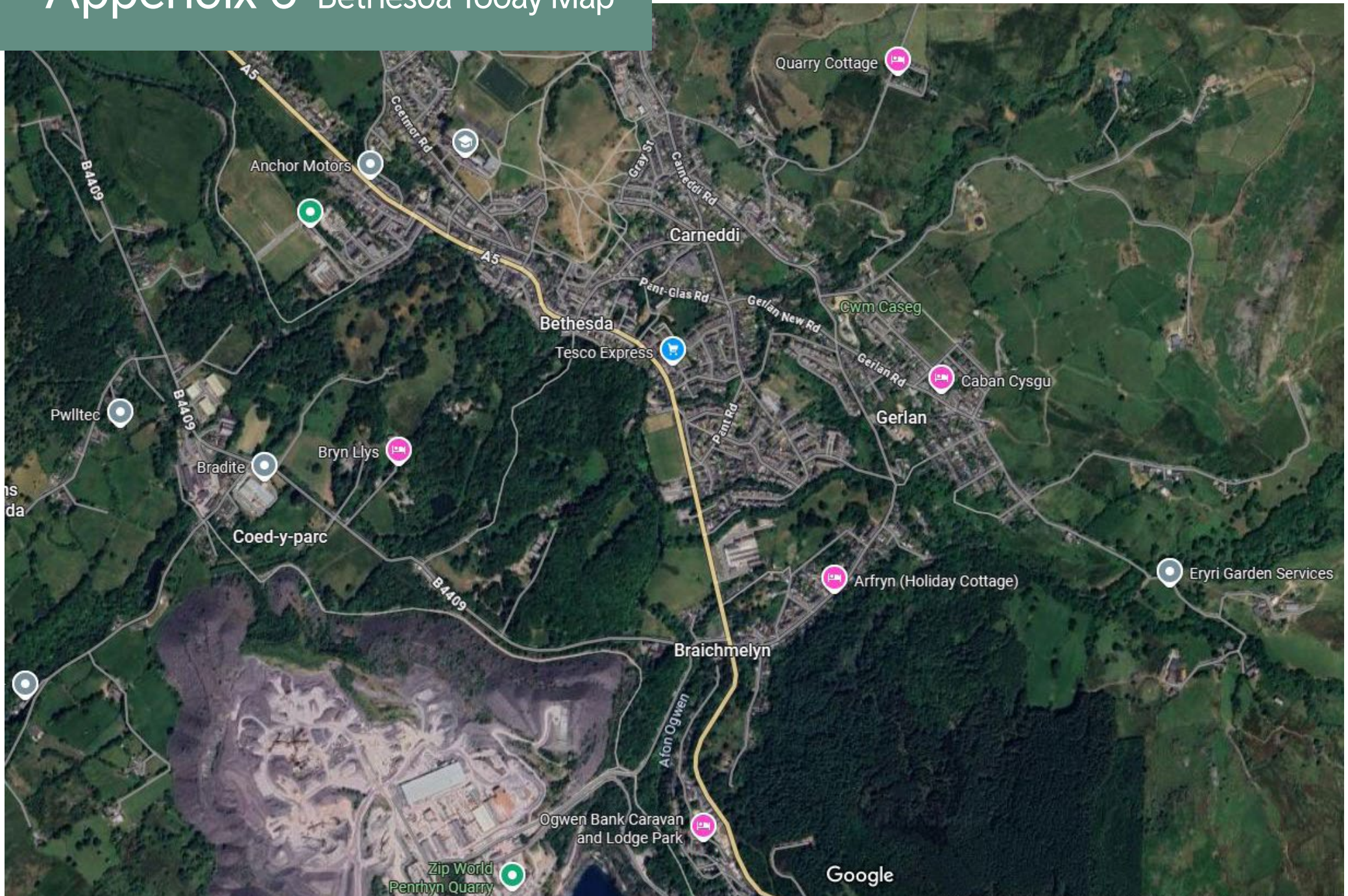
Appendix 6 Map Comparison Table

What can you see?	1888 map	Modern map
Which map has more houses?		
Can you find the river?		
Is the railway on the map?		
What other types of transport would they use?		
Which industries can you find?		
What jobs would people have done?		
What could people do in their leisure time?		

Appendix 6 Bethesda 1888 Map



Appendix 6 Bethesda Today Map



Activity 4: Create and Analyse

Objective:

This activity encourages pupils to use their knowledge of the slate landscape to create their own 3D or digital model. It encourages them to analyse and discuss creative work inspired by the landscape. It also encourages them to reflect on their own work as well as others in the class.

Pupils could:

- Explore the Art UK website using the links section and choose a piece of artwork inspired by the slate landscape and discuss as a group:
 - *What the painting tells them about the slate landscape*
 - *What techniques are used: Colour, pattern, texture, line, tone, and shapes*
 - *If they think the painting helps them to discover more about the slate landscape and why*
- Use their research from Activity 3 and the photographs from Appendix 5 to create their own 3D or digital model of the slate landscape. They could plan what they would like to create inspired by the slate landscape (e.g., a painting, collage, 3D models or digital landscape). To help shape their ideas **they could think about:**
 - *The key elements of a slate landscape e.g. mountains, valleys*
 - *Where people would live and work*
 - *What resources they might need and make a plan for their work*
- **They could use:**
 - *Recycled materials to create a 3D model*
 - *Paint, draw or create a collage to create a 2D model*
 - *The internet and create a digital landscape*
- Reflect on their own work and the work of others and give constructive feedback.

Skills

- Literacy
- Communication
- Oracy
- Investigation
- Curiosity
- Enquiry
- Evaluation
- Digital Competence
- Creativity and Innovation
- Critical Thinking and Problem Solving
- Personal Effectiveness
- Planning and Organising

Equipment

- The Internet
- Art Materials
- Appendix 5

Areas of Learning

- Humanities
- Language, Literacy and Communication
- Expressive Arts

Links

- ARTUK: [Art and slate, the slate landscape of north west Wales](#)

5

Activities

The Journey of Slate





Activity 5: The Process

Objective:

This activity encourages pupils to learn about the journey of the slate from the quarry and the different processes involved in removing it from the ground and shaping it. It also encourages them to think about the roles people have within the mines and quarries.

Pupils could:

- Research the process and use the 'The Journey of Slate 1' information sheet in Appendix 7 to investigate:
 - *Where slate comes from*
 - *How slate was removed from the ground*
 - *What the blasting process was (watch the video in the links section)*
 - *What happened to the slate once it was removed from the ground*
 - *The tools slate workers used*
- Feedback to the class about what they have learnt and what they would like to know more about.
- Create a freeze frame for each of the different parts of the process using the pictures in Appendix 8:
 - *Quarrying/Mining*
 - *Blasting process and lighting the fuse*
 - *Blast shelter*
 - *Shaping the slate*
- Bring the freeze frame to life by writing a couple of sentences and performing them out loud thinking about:
 - *What the job involved*
 - *What the person would think and feel*

Freeze Frame

A freeze frame (tableau) is a silent, motionless depiction of a scene. Learners work together in groups to represent part of a photograph or imagined image. They use their bodies to make a picture capturing a moment in time. This can then be developed to include the thoughts of the people they are representing and as inspiration for the beginning of a short drama piece.

Skills

- Literacy
- Communication
- Oracy
- Investigation
- Curiosity
- Enquiry
- Evaluation
- Digital Competence
- Creativity and Innovation
- Critical Thinking and Problem Solving
- Personal Effectiveness

Equipment

- The Internet
- Appendix 7
- Appendix 8

Areas of Learning

- Humanities
- Language, Literacy and Communication
- Expressive Arts

Links

- **BFI: Blasting process**
(2 minutes 33 seconds to 3 minutes and 58 seconds):

Appendix 7 The Journey of Slate 1

The first stage of the journey involved either quarrying or mining the slate. The alignment of slate veins informs how it is taken out of the ground; steep veins tend to lead to open quarrying, lower angles mean the slate needs to be mined underground.

Quarrying slate

Slate would either come from an open quarry or a deep mine. An open quarry might be a big pit or a series of levels in a hillside. These levels are called galleries, or 'ponciau' in Welsh.

The trees and buildings give an idea of how huge the ponciau are. Workers quarried the slate from the ponciau.



© Hawlfraint Ymddiriedolaeth Archeolegol Gwynedd Archaeological Trust Copyright

Mining slate

Slate was also mined underground. Tunnels and shafts were made to reach it. A shaft is a steep or vertical tunnel or passage.

Explosives

- Explosives were used to break up the slate.
- Firstly, holes were drilled into the slate and gunpowder was poured into the holes.
- Then a whistle or bugle was blown, and workers went to shelter in the 'cwt mochel ffeiar' (blast shelter).
- Three minutes later the signal was sounded again, someone would light the fuse and then run for the shelter themselves.
- Then came the bang of the explosion, rock would fall, and the air would be smoky and dusty.

Blast Shelters

- These are photographs of blast shelters at Dinorwig Quarry. Blast shelters had really thick roofs. This was to protect the workers inside from falling rock blasted into the air by the explosions.



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Appendix 7 The Journey of Slate 1

- After blasting the slate was split into smaller blocks.
- Blocks of slate were then taken to other parts of the quarry, such as mills, to be made into things which could be sold.
- Blocks of slate might also be taken to a 'gwal' (more than one: 'gwaliau'). A gwal was a cabin with an open side where workers would split then trim the slate to make slate roofing tiles.
- Here is a photograph of a worker splitting slate in a gwal. The photograph nicknames him 'Lord Penmachno, father of all the quarrymen'. The photograph was taken in about 1875.



Quarry Workers Tools

Small mallet used to strike the wide-bladed slate splitting chisel.



© Amgueddfa Cymru - Museum Wales

Wide-bladed slate splitting chisel used to split roofing slates out of a block of slate.



© Amgueddfa Cymru - Museum Wales

Appendix 8 Freeze Frame Images



Drilling in
preparation for
blasting

Public Domain
New York Public Library 2009



Shaping the
slate at
Penrhyn
Quarry

National Library of Wales
CCASA4.0

Appendix 8 Freeze Frame Images



Quarrying
at Penrhyn
Quarry

National Library of Wales
CCASA4



Signal for
blasting

Public Domain



Activity 6: Transport

Objective:

This activity encourages pupils to think about how the slate was transported in and from the quarry to the rest of the country and the world. It also encourages pupils to think about how machinery was powered and to create their own versions. Slate was also used to make many things and this activity allows them to discover its uses.

Pupils could:

- Research how the slate is taken from the quarries. Using 'The Journey of Slate 2' information sheet in Appendix 9 and the videos in the links section below as a starting point. Pupils could investigate:
 - *Steam Trains*
 - *Horses*
 - *Inclines*
 - *Blondin Aerial Ropeways*
 - *Ports*
- Present their findings including photos, drawings and text through PowerPoint, displays or collages.
- Investigate how the machinery was powered. This could include waterwheels, pulleys, and levers. Plan how they could make their own waterwheel or pulley and lever system.
- Make their own waterwheel using Appendix 10.
- Make their own pulley and lever using the Canal and River Trust film in the links below.
- Evaluate their creations. What did they think went well and what could they have done better?
- Discover where in the world slate was transported to and what it was used for. Create a PowerPoint presentation, collage or short talk using a map of the world to present what they have found out.

Skills

- Literacy
- Communication
- Oracy
- Investigation
- Curiosity
- Enquiry
- Evaluation
- Digital Competence
- Creativity and Innovation
- Critical Thinking and Problem Solving
- Personal Effectiveness
- Planning and Organising

Equipment

- The Internet
- Materials to make waterwheels
- Pulleys and Levers
- Appendix 9
- Appendix 10

Areas of Learning

- Humanities
- Language, Literacy and Communication
- Expressive Arts
- Science and Technology

Links

- BFI: [Horse-drawn railway from the station at Tal-y-sarn to Pen-yr-Orsedd quarry \(watch first 50 seconds\)](#)
- BFI: [Aerial ropeways \(5 minutes 21 seconds to 6 minutes and 11 seconds\)](#)
- Youtube: [Canal and River Trust: Pulleys and Levers](#)

Appendix 9 The Journey of Slate 2

After the slate had been worked, it had to be transported from the quarry.

Trains

Steam locomotives were used to move slate both in the quarry and from quarry to port. Narrow railways had to be made for the locomotives.



© J.W. Davies/Amgueddfa Cymru - Museum Wales

Lots of steam locomotives which were used in the quarries of Northwest Wales survive today and some are in museums. Some are still used on heritage railways, like this one, called 'Dolbadarn', at Llanberis Lake Railway.



Timothy Titus, CC BY-SA 4.0

Appendix 9 The Journey of Slate 2

Horses

Horses were sometimes used to move slate. They would pull carts along rails.



Copyright © Günter Grundmann, Detmold

Inclines

One thing which really stands out in a quarry is an incline. These are huge ramps, used to move slate. Inclines had tracks on them. This incline is at Dinorwig Quarry.



Hefin Owen CC BY-SA 2.0

Appendix 9 The Journey of Slate 2



Dinorwig Quarry, winding drum tumbles@whateversleft.co.uk

There were different kinds of incline. On counterbalanced inclines a wagon full of slate going down one track pulled up an empty wagon on the other track. Water-balance inclines used a tank of water on a wagon as the weight. Powered inclines used waterwheels, steam, or even animals. Later, electricity could be used.

At the top of an incline the rope was wound around a drum in a winding house.

Blondin Aerial Ropeways

Sometimes special equipment was used to lift slate out of areas that were hard to get to. One way of doing this was to use a Blondin aerial ropeway.

The Blondin ropeway was named after Charles Blondin. He walked across the Niagara Gorge, which is near Niagara Falls on the border of Canada and America, on a tightrope in 1859.



A photograph of a Blondin at Pen yr Orsedd quarry
Spanisheyesphotography CC BY-SA 4.0



A blondin at Stoney Stanton quarry, showing the cableway crossing a deep pit. Public Domain

Appendix 9 The Journey of Slate 2

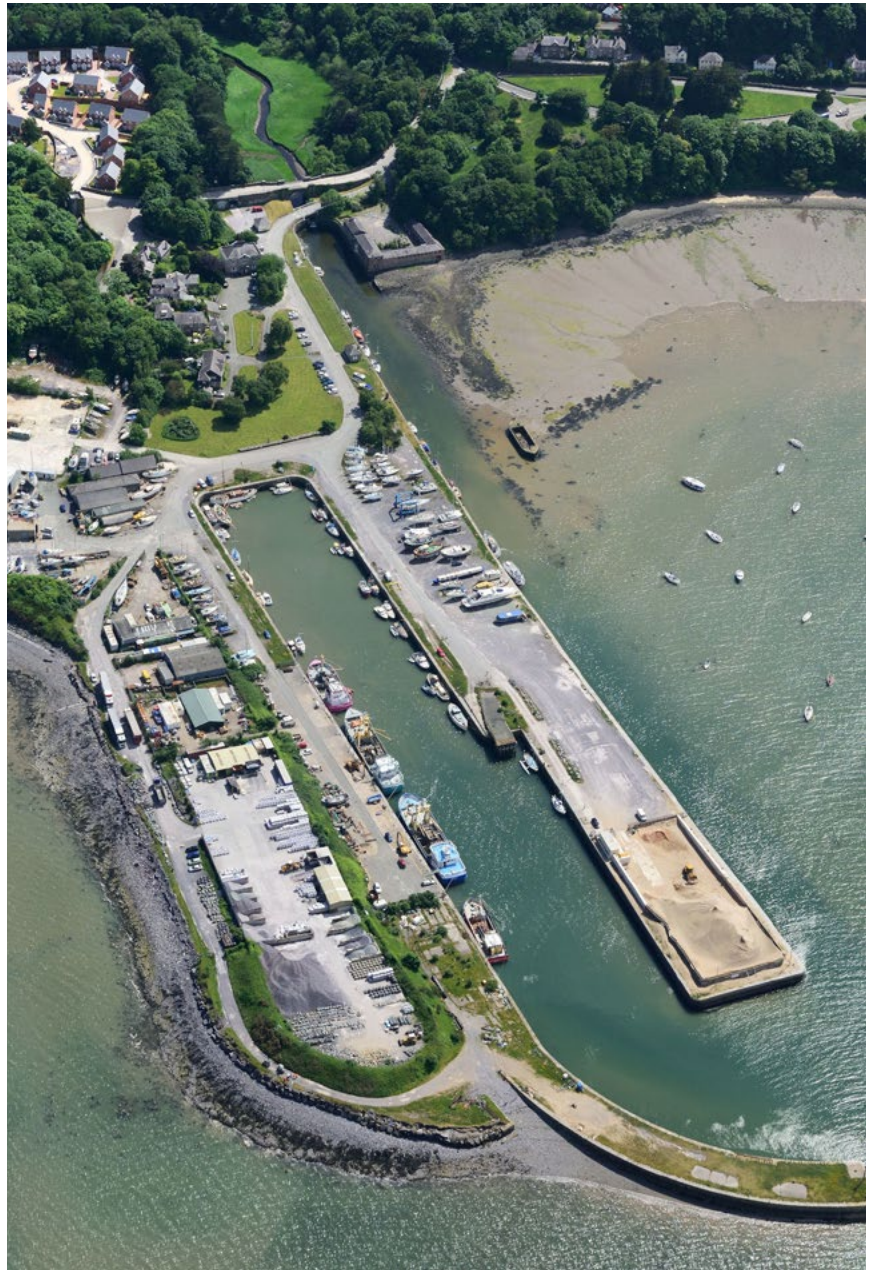
Ports

The slate was taken from the quarries to ports. As well as locomotives and railways, boats were also used to carry slate to ports. Ships took the slate from the ports to different parts of Britain and the rest of the world. Later, slate was transported by road. This is Porth Penrhyn, Bangor. Slate was taken here on a railroad from Penrhyn Quarry, Bethesda. This port was first built so that ships could transport slate. The port is still used now.

Development in transport

Before the expansion of the road and rail network, slate was taken to ports or harbours for transport to other parts of Britain and all over the world. In some areas, 'narrow gauge' railways were built between the quarry and the port (e.g at Port Penrhyn in Bangor or Port Dinorwig in Y Felinheli between Bangor and Caernarfon).

Where the rivers were suitable, slate would be transported by boat to the nearest harbour for onward distribution. However, in the same way that locomotive use within the quarry was replaced by other methods, so the expansion of the road and main-line rail network made these old systems outdated. Several of the narrow-gauge railways have either become cycle / multi-use tracks or heritage railways. The multi-use track between Port Penrhyn, Bangor and Bethesda, Gwynedd, is an example of this.



Port Penrhyn © Crown copyright: RCAHWW

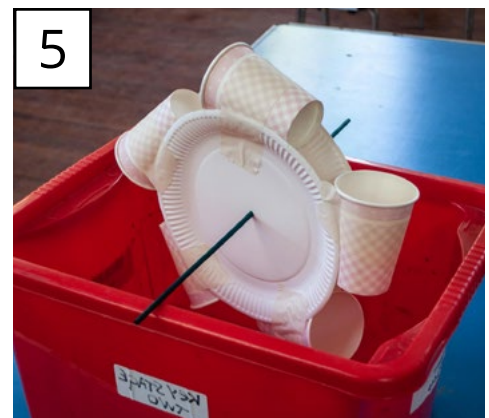
Appendix 10 Making Waterwheels

Equipment Needed

- Paper plates x2
- Paper cups x5
- Double-sided tape
- Wooden stick (approximately 10cm long)
- Water
- Bucket/tub

Instructions:

1. Take two paper plates and place them back to back.
2. Make a hole in the middle of the two paper plates, large enough to insert your wooden stick.
3. Insert the wooden stick into the two paper plates.
4. Take your first paper cup and place it between the two paper plates, with the opening of the cup facing outwards. Using sellotape, stick the cup to the two paper plates. Repeat this with the other four paper cups, making sure that all of the cups are facing the same way.
5. Place the waterwheel over a bucket or tub and pour water over the top of the wheel and observe it moving.



6

Activities

People of the Slate Industry





Activity 7: Working Conditions

Objective:

This activity encourages pupils to research the roles of the people of the slate industry. They will investigate and learn about their working conditions and imagine how it would feel to be a quarry worker by listening to real stories, creating their own characters and interviewing each other. They will also imagine they are in the Caban and write and perform their own songs.

Pupils could:

- Research the different jobs in the slate quarries/mines using 'People of the Slate Industry' information sheet in Appendix 11 as a starting point.
- Research the working conditions using the fact sheet in Appendix 12.
- Listen to the 'slate stories' in the links section ('The dust', 'Difficult working conditions' and 'Working in the quarry') and discuss:
 - *What the working conditions were like*
 - *How the workers would feel*
 - *What would be good and bad about working in the slate industry*
- Create a role play card for one of the roles they have researched using Appendix 13.
- Take on the role of one of jobs and interview each other using the questions in Appendix 13.
- Imagine they are workers in the Caban. Discuss as a group what they would do to relax during break times. **They could think about:**
 - *The activities the men might do*
 - *What the men might talk about*
 - *What quizzes and games they might make up*
 - *Why it was important to have a space like the Caban*
- Listen to the soundscape by clicking the icon.
- Write and record their own song individually or as a group about experiences in the quarry using their research. Most of the workers spoke Welsh, pupils could write and sing their songs in Welsh.



Skills

- Literacy
- Communication
- Oracy
- Investigation
- Curiosity
- Enquiry
- Evaluation
- Performance
- Digital Competence
- Cynefin
- Critical Thinking and Problem Solving
- Personal Effectiveness
- Planning and Organising

Equipment

- The Internet
- Appendix 11
- Appendix 12
- Appendix 13

Areas of Learning

- Humanities
- Language, Literacy and Communication
- Expressive Arts
- Health and Well-being

Links

- Slate Stories: [Information and Oral Histories](#)
- BFI: [Quarry workers in a Caban](#) (17 minutes and 55 seconds to 21 minutes and 42)

Appendix 11 People of the Slate Industry

Quarrymen

They worked in crews of three, four, six or eight men, known as a 'bargain gang'. They were called a 'bargain' gang as part of their payment was determined by the number of slates the gang produced. The payment was agreed on a Monday by the setting steward for a certain area of rock. If the rock in the bargain allocated to a gang was poor, they would be paid a higher poundage, while good rock meant a lower poundage. They were treated as the elite group due to their skill and they usually lived in the quarry village.

Rockmen

They would blast the rock to produce blocks. They would drill holes in the rock and then put the gunpowder in holes and then set the fuse. This blasted large areas of rock from the rock face in one go. Large blocks could then be worked on by splitters.

Splitter

They would split the larger blocks into smaller pieces with a hammer and chisel. This was very skilled as they had to make sure the pieces of slate they split off were very thin and all the same. If the chisel was in the wrong place or the hammer strike was too hard then the piece would break into small pieces and be useless.

Bad-rockmen and rubbish men

They usually worked in crews of three and were paid based on how much rubbish they removed by the ton. Bad rockmen removed the unworkable rock from the rock face. The "rubbish men" cleared the waste rock from the galleries and built the tips of waste which surrounded the quarry. They had to be strong and be able to recognise the rubbish from the good rock so they did not remove the wrong rocks.

Rybelwrs

These were boys of 12 years old who were in the first stage of learning the job. They would wander along the galleries offering help. Sometimes they would be given an extra slab of rock to split and they would be paid by the gang. From this stage the rybelwr would hope to become a journeyman and then a quarryman proper. This way they learned on the job and practiced the skills they needed, building up their expertise.

Appendix 11 People of the Slate Industry

Quarry doctor

The doctor worked in a hospital like the one at Dinorwic Quarry. A quarry was a dangerous place to work and there could small or large accidents that caused injury. The men used sharp hand tools and dealt with heavy rocks and gunpowder. Doctors would be there to treat the men as soon as they were injured. Many of the people they saw had been in serious accidents. They would amputate the limbs of patients who had been injured. Men could develop a serious lung disease called silicosis which causes breathing problems and fever.

Quarry Manager

They were in charge of the quarry and so had to be organised. The manager was employed by the owner of the quarry. He managed the workers and paid them their wages and organised the supplies that were needed such as tools, gunpowder, fuel and other equipment. He had to also make sure that the quarry was producing enough slate that was required to make money for the owner. He often had to make difficult decisions to make sure the men worked hard to produce the slate.

Quarry Blacksmith

The quarry workers used chisels and hand tools that needed to be kept sharp. The stone could soon blunt the tools so the blacksmith could sharpen the tools. They were highly skilled and could also help make tools and repair machinery or anything else that was broken during the quarrying. As the quarry was far from a shop or town, the blacksmith would be essential for keeping the workers supplied with good tools. The blacksmith used a forge to heat the metal and hammer it into the shape he needed. He used a grind stone to sharpen the blades of the chisels.

Quarry Railway Driver

The driver operated the steam locomotives that took the slate from the quarry to port Penrhyn. The locomotives had names, Charles, Blanche and Linda. The driver had to make sure the boiler was stoked with coal to keep it running. Certain points along the track would have stops for the locomotive to fill up with water that the engine needed to create the steam power. As well as slate, the trains also took workers to and from the quarry, with 24 quarrymen to a carriage. Lord Penrhyn had his own saloon coach.

Other roles:

Weighers, hauliers, brakesmen, stationary enginemmen, engineers, saw-sharpeners, carpenters, platelayers, storekeepers, timekeepers and general labourers.

Appendix 12 Working Conditions

Working conditions

It was difficult and dangerous working in a quarry. The working days were long and would start from around 6.30am until 5.30pm in the summer. The quarry workers worked in all weather conditions and the clothes they wore were not very warm and did not dry easily. Work was dangerous, with hardly any health and safety. Some quarry workers worked in dark mines, with chances of being crushed. Others were on the terraces, trying to blast and remove huge boulders of slate with dynamite or by hand.

The Caban

The Caban was an important part of quarry life. It was usually a cabin, with a fireplace, tables and chairs. This was where quarry-workers went for meal breaks. The Caban wasn't just somewhere to have lunch. It was important for other reasons:

- Sometimes quarry workers would learn to read and write in the Caban.
- They could have discussions about politics or religion.
- There was singing, poetry, competitions and quizzes
- Eisteddfodau were even held in the Caban.
- There were talks with speakers about different subjects. Taking part in these things would have encouraged the workers education.
- Some quarrymen created things for their own use, like ornamental slate fans; or pieces of slate decorated with patterns and circles, using a compass.



Inside the quarrymen's 'caban', Oakeley Quarry, Blaenau Ffestiniog
© Meirionnydd Archives, Gwynedd Archives Service 2025

Appendix 12 Working Conditions

Food

Most quarrymen took their lunch with them to work. It would usually be bread and butter, with tea to drink. If they were able to grow vegetables they could eat those.

Clothing

Most clothing was made from wool, linen or cotton. A description from 1848 tells us what the typical quarryman wore:

'a high waistcoat or short jerkin of white corduroy, trousers of fustian or light-coloured corduroy, and an apron of white linen turned in the middle, its corner hanging down the lower part of the back, low boots and a hard felt hat'

Diseases and Injuries

Workers could get injured or killed by falling rock. They could also fall off 'ponciau' or bridges or machinery might fall over. Dynamite was often used, if workers were not careful, they could get injured or killed. Many quarry workers ended up with an illness called Silicosis, which is caused from breathing in slate dust. Silicosis is very serious and caused slate dust to build up in their lungs and it often caused a slow and painful death.

Quarry Hospitals

Working in a quarry was so dangerous and so some owners built hospitals for their workers. Dr Robert Roberts was one of the first doctors at the Quarry Hospital in Dinorwig. The quarry hospitals were ahead of their time in some surgical fields. Dinorwig received its first X-ray machine in 1885, within 3 years of the discovery of the technology. The quarry hospital in Penrhyn was one of the first to use chloroform when performing surgery. Chloroform was one of the first anaesthetics to be used in surgery. Before that, surgeons might get a patient drunk, use drugs like opium or just work really quickly.

The men would pay into a sick club. This then gave them free medical care, payment if off work for a week, a small payment on retirement and help towards a burial. Not all quarries had doctors and ambulances were scarce with only a stretcher available.

Here is a picture of an artificial wooden leg from Dinorwig Quarry Hospital, made in the early 1960s. These were used for amputees who had been injured in quarry accidents.



An artificial wooden Leg
Copyright Amgueddfa Cymru
National Museum of Wales 2025

Appendix 12 Working Conditions

Barracks

The places where quarry-workers would stay needed to be built in remote locations near the quarries as the quarrying industry grew. These were called Barracks.

Workers would travel from where they lived to stay in barracks during the week, close to where they worked. Then workers would go back home at weekends, some would also work on the family farm. Living conditions in barracks were difficult, with lots of workers in one unit and no plumbing.

Anglesey Barracks, Main Street, Dinorwic Quarry by Brian Deegan,
CC BY-SA 2.0 via Wikimedia Commons



Llywelyn2000, CC BY-SA 4.0 via Wikimedia Commons



Jonathan Wilkins, CC BY-SA 2.0 via Wikimedia Commons

Appendix 13 Role-play Cards

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Questions you could ask

- | | |
|----------------------------|--|
| 1. What is your job title? | 4. What conditions do you work with? |
| 2. What do you do? | |
| 3. What tools do you need? | 5. What is your favourite part of the job? |



Activity 8: Daily Life

Objective:

This activity encourages pupils to learn how to use a census to discover more about the daily lives of the quarry workers and their families. It also develops their research and evaluation skills. It also allows them to compare their lives to those of children in the past and reflect on this.

Pupils could:

- Use the census documents and table in Appendix 14 to record information about families in Bethesda.
- Research family life in Victorian Wales using the links below to help them. Pupils could pick a topic that interests them and highlight the similarities and differences today:
 - *Victorian School*
 - *Wash day*
 - *Religion and choirs*
 - *Workhouses*
 - *Women and jobs (Appendix 15)*
 - *Food and nutrition*
 - *What people spent their money on*
- Create a PowerPoint presentation, collage or short talk about what they have found out.
- Listen to the audio '[Fun as children](#)' in the links section and compare and contrast their life today with the stories they can hear.
- Take on the role of one of the children and create freeze frames. Perform their freeze frames and discuss as a class what they have found out.

Skills

- Literacy
- Communication
- Oracy
- Investigation
- Curiosity
- Enquiry
- Evaluation
- Cynefin
- Digital Competence
- Creativity and Innovation
- Critical Thinking and Problem Solving
- Personal Effectiveness

Equipment

- The Internet
- Appendix 14
- Appendix 15

Areas of Learning

- Humanities
- Language, Literacy and Communication
- Expressive Arts
- Health and Well-being
- Mathematics and Numeracy

Links

- Museum Wales: [Victorian School](#)
- Museum Wales: [Washday Virtual Workshop](#)
- Merchedchwarel: [Welsh Women's Stories](#)
- Snowdonia Slate Trail: ['Fun as Children'](#)

Appendix 14 Blank Census Table

Investigate the 1881 census to find out more about the families living in Blaenau Ffestiniog. Pick two families to compare.

Question	Family 1	Family 2
Who is head of the house? What is their job?		
How many people live in the house?		
What jobs do the rest of the family have?		
How many servants do the family have?		
What would the house be like? (living conditions)		
What would the children's lives be like?		

Appendix 14 Census Table

Slate Quarry Family 1881 Blaenau Ffestiniog

Place	Inhabited	Names	Relation to head of the family	Married?	Age and sex		Profession
					Male	Female	
5 Rhos Goch St	Yes	John Evans	Head	Married	53		Quarryman
		Elizabeth	Wife	Married		47	
		Rowland	Son		10		Scholar
		Catharine	Daughter			7	
6	Yes	Rees Hughes	Head	Married	44		Slate Inspector
		Sarah	Wife	Married		44	
		Edward	Son	Unmarried	20		Quarryman
		Mary	Daughter	Unmarried		16	Dressmaker
		Elizabeth	Daughter	Unmarried		15	Scholar
		Grace	Daughter			7	
		Gwen	Daughter			4	
Bryn no. 1	Yes	Ewan Jones	Head	Widow	45		Slate quarry labourer
		Ellen	Daughter	Unmarried		19	
		Edward	Son	Unmarried	18		Quarryman
		Euan	Son	Unmarried	15		Quarryman
		Mary	Daughter	Unmarried		14	Scholar
		Jane	Daughter	Unmarried		12	Scholar
No 2	Yes	Hannah Williams	Head	Widow		66	Knitting woman
		Thomas Jones	Boarder	Unmarried	23		Quarry labourer
No 3	Yes	David Jones	Head		39		Quarry labourer
		James	Wife	Married		39	
		John	Son	Unmarried	17		Quarry labourer
		Edward	Son	Unmarried	13		Quarry labourer
		Richard	Son	Unmarried	11		Scholar
		Alice	Daughter	Unmarried		6	Scholar
		Elizabeth	Daughter	Unmarried		5	

Appendix 14 Original Census Table

Slate Quarry Family 1881 Blaenau Ffestiniog

The undermentioned Houses are situate within the Boundaries of the

[Page 9]

Civil Parish (or Township) of	City or Municipal Borough of	Municipal Ward of	Parliamentary Borough of	Town or Village or Hamlet of	Urban Sanitary District of	Rural Sanitary District of	Ecclesiastical Parish or District of			
Pennmachon						Llanrwst	37			
No. of Schedule	ROAD, STREET, &c., and No. or NAME of HOUSE	HOUSES Inhabited (A) or Uninhabited (B)	NAME and Surname of each Person	RELATION to Head of Family	CON- DITION as to Marriage	AGE last Birthday of		Rank, Profession, or OCCUPATION	WHERE BORN	If (1) Deaf and Dumb (2) Blind (3) Imbecile or Idiot (4) Lunatic
						Males	Females			
720	5 Rhosgoch St	1	Robert Price	Son	Mar	6		Scholar	Llanrwst Pennmachon	
			John Evans	Head	Mar	53		Quarryman	Do Do	
			Elizabeth Do	Wife	Mar		47		Do Do	
			Rowland Do	Son	Mar	10		Scholar	Do Do	
			Catharine Do	Daughter	Mar		7		Do Do	
721	6 Do	1	Rees Hughes	Head	Mar	44		Slate Inspector Quarry	Do Do	
			Jane Do	Wife	Mar		44		Do Do	
			Edward Do	Son	Unm	20		Quarryman	Do Do	
			Evans Do	Son	Mar	12		Scholar	Do Do	
			David Do	Son	Mar	10		Do	Do Do	
			Mary J. Hughes	Daughter	Unm		16	Dressmaker	Do Do	
			Elizabeth Do	Daughter	Unm		14	Scholar	Do Do	
			Grace Do	Daughter	Mar		7		Do Do	
			Lucretia Do	Daughter	Mar		4		Do Do	
12	Brayn No 1	1	Evans Jones	Head	Wid	45		Quarry Labourer	Dorchester Dorset	
			Ellen Do	Daughter	Unm		19	Quarryman	Anglesea Holyhead	
			Edward Do	Son	Unm	18		Quarryman	Llanrwst Pennmachon	
			Evans Do	Son	Unm	15		Do	Do Do	
			Mary Do	Daughter	Unm		14	Scholar	Do Do	
			Jane Do	Daughter	Mar		12	Do	Do Do	
722	Do 2	1	Hammond Williams	Head	Wid	46		Knitting Woman	Do Do	
723	Do 3	1	Thomas Jones	Head	Unm	35		Quarry Labourer	Do Trefriar	
724	Do 3	1	David Jones	Head	Mar	34		Do	Do Pennmachon	
			Jane Do	Wife	Mar		39		Dorchester Blaenau Ffestiniog	
			John Do	Son	Unm	17		Quarry Labourer	Llanrwst Pennmachon	
Total of Houses...		5	Total of Males and Females...			13	12			

Appendix 15 Women in Welsh Slate Communities

Just like the quarrymen, their wives had hobbies. Sometimes they sang in choirs, like the Penrhyn Ladies Choir. Some women worked as seamstresses, as maids, in shops or as landladies.



The Penrhyn Ladies Choir
© National Museum Wales

There is evidence that some women worked in the quarries in the 1740s, however, there is no evidence that any women worked in the quarries after the Industrial Revolution started.

According to Merfyn Jones' "the North Wales Quarrymen 1874 - 1922":

"Little is known about the quarryman's wife and daughter ... Slate quarrying was a male industry and as far as is known no woman worked in a slate quarry in any capacity, certainly not after the early period of capitalisation and development of the industry. Moreover, since slate quarrying was the only major source of employment in the quarrying areas, women who stayed at home found difficulty in gaining any employment at all... of 2,289 women over ten years of age in Bethesda in 1901, 83 per cent were not in employment; of the 381 who were in work, 141 were domestic servants and 117 tailoresses."

Appendix 15 Women in Welsh Slate Communities

Jane 'Jennie' Williams

Jane was born around 1875, the youngest child of John and Ellen Williams. Jane had been an enthusiastic member of the Llanberis Branch of the Red Cross; in 1915, during the First World War, she joined the Voluntary Aid Detachment (VAD) serving in hospitals in England before being sent to Le Havre in October 1916.

She saw service throughout the war, but in 1919, during the Spanish Flu Epidemic, she caught Pneumonia and died.

<https://www.merchedchwarel.org/jennie-williams-llanberis>



Alice Griffiths

Alice lived in Talysarn during the later Victorian period until she died in 1907. Although Alice's husband was a quarryman, she was a butcher, and travelled around in a pony and trap (a type of small carriage) buying cattle which she butchered and sold.

<https://www.merchedchwarel.org/amazonian-alice-griffith>

Appendix 15 Women in Welsh Slate Communities

Ellen Francis

Until the middle of the Twentieth Century, ships were the only way to move anything around the world, and that included slate. But to sail a ship, you needed to know how to navigate.

Mrs Ellen Francis taught more than 1,000 mariners (the name given to people who steer ships) from her school in Caernarfon, over a 60 year period. She was even recognised in the newspapers of the time, with one in 1853 calling her:

'This clever woman, highly accomplished in the theory of navigation...'

<https://www.merchedchwarel.org/ellenedwards>



Kate Griffiths

In 1909, Kate Griffiths from Blaenau Ffestiniog decided to set up a school for the children living in Rhiwbach village. To get there, she had to walk up 3 quarry inclines.

At the end of the school day, she would walk up to Graig Ddu Quarry (over 600 metres) and ride down three inclines, of over 200 metres, on a 'Car Gwylt'. This was a bit like a skateboard you sit on with a hand brake.

The photograph shows an incline at Dinorwig.

<https://www.merchedchwarel.org/new-page-5>

Link to 'Car Gwylt' film:

<https://www.youtube.com/watch?v=nRrC6WnqqIE>



7

Activities

The Great Strike of Penrhyn





Activity 9: Census and Strikes

Objective:

This activity encourages pupils to think about what a strike is and why people would go on strike. It allows them to explore the Great Strike of Penrhyn and investigate what happened. It also allows them to use census data to help explore the lives of the workers and the owners of the quarry and present the information they have found.

Pupils could:

- Research what a strike is and what 'strike' means.
- Discuss:
 - *What they already know about working in a quarry*
 - *What they would like to know about the Great Strike of Penrhyn*
 - *How they might find out the information*
- Use the 'The Great Strike of Penrhyn' information sheet in Appendix 16 as a starting point for their research and answer the following questions:
 - *What was the Great Strike?*
 - *Why did the quarry workers strike?*
 - *What happened?*
 - *What impact did the strike have on the workers and their families?*
 - *Why did it end?*
- Use the two census documents to compare the lives of Lord Penrhyn and a Bethesda family and answer the questions in the table in Appendix 17.
- Present their findings including photos, drawings and text through PowerPoint, displays or collages.
- Evaluate their research techniques and think about what they did well and what they could have improved on.

Skills

- Literacy
- Communication
- Oracy -
- Investigation
- Curiosity
- Enquiry
- Evaluation
- Digital Competence
- Creativity and Innovation
- Critical Thinking and Problem Solving
- Personal Effectiveness
- Planning and Organising

Equipment

- The Internet
- Appendix 16
- Appendix 17

Areas of Learning

- Humanities
- Language, Literacy and Communication
- Mathematics and Numeracy

Links

- TUC: [The Great Penrhyn Strike](#)
- People's Collection Wales: [The Penrhyn Lockout](#)

Appendix 16 'The Great Strike of Penrhyn' Fact Sheet

- **When?** 1900 – 1903
- **Where?** At Penrhyn Quarry, Bethesda, Ogwen Valley
- **Who?** The men working in Penrhyn Quarry
- **Why?** Because of very poor and unsafe working conditions with very low pay

What is a Strike?

A strike is when people stop working and refuse to turn up for work. This is because workers are unhappy about parts of their job. They gather as a united front to protest about their work conditions.

Reasons could be because of:

- *Unsafe working conditions.*
- *Not getting paid enough.*
- *Being treated unfairly by their employers.*

Why did the Penrhyn quarrymen go on strike?

Unrest had been building in the Penrhyn Quarry over many years, this is because of:

- Very low pay.
- Terrible working conditions.
- Poor treatment by their employer.

The main reason was because the quarry owner Lord Penrhyn, and its manager, Emilius Young, tried to break the influence of the North Wales Quarrymen's Union at the site. On the 22nd November 1900, 2,800 men at Penrhyn slate quarry in Bethesda began a three-year-long strike.

Appendix 16 'The Great Strike of Penrhyn' Fact Sheet

The North Wales Quarrymen's Union

What is a Trade Union? A trade union is an organization run by a group of workers. Together, they try to improve the workplace, defend workers and fight to be treated fairly by their employers.

In a situation where the quarry owner ruled without discussions, there was no place for the workers to express their unhappiness over working conditions.

In 1874, to help raise issues around working conditions and pay as a group of workers, the North Wales Quarrymen Union was formed between quarrymen and supporters.



Leaders of the Penrhyn Strike
© Cyngor Gwynedd Archives

Appendix 16 'The Great Strike of Penrhyn' Fact Sheet

The Quarry's Owner, Lord Penrhyn

One of the main reasons the quarry workers went on strike, was because of the quarry owner's poor treatment towards them.

At this time, the quarry's manager was a man named George Sholto Gordon Douglas – Pennant, 2nd Baron of Penrhyn who lived between 1836 - 1907.

Lord Penrhyn did not like trade unions. He did everything he could to stop them. Throughout the strike Lord Penrhyn refused to engage with the strike leaders or recognise any trade union officials. In 1900 he refused to allow any intervention from outsiders assisting his men to improve working conditions, and the Great Strike began and it lasted for three years.



George Douglas-Pennant, 2nd Baron Penrhyn
Public domain, via Wikimedia Commons

Appendix 16 'The Great Strike of Penrhyn' Fact Sheet

The Great Strike

- On October 26th, 1900, the quarry workers had enough, and violence broke out against some contractors at Penrhyn Quarry.
- Lord Penrhyn had 26 quarrymen sacked and arrested, but only 6 were convicted and fined.
- The quarrymen agreed to strike and were marching on the streets of Bethesda and Bangor and the women joined them.
- There were lots of police in Bethesda during the strike and the army was sent for.
- A month later 2,000 men refused to work, only 77 men returned to work in the quarry.
- The Chief Constable of Caernarfonshire and his mounted troops were ready to respond to any violence from the strikers.



Image: Mounted Police
© TUC150

Appendix 16 'The Great Strike of Penrhyn' Fact Sheet

"Bradwr" – Traitor!

The quarry dispute caused friction between strikers and strike-breakers (those who went back to work). Some families who were once friends, now became enemies. This scarred the community of the Ogwen Valley for generations.



Printed card published during the Penrhyn Quarry Strike, 1900-03
© Caernarfon Record Office, Gwynedd Archives Service 2025

This printed card reads 'Nid oes Bradwr yn y ty hwn' ('There is no traitor in this house'). These cards were issued to the striking quarrymen during the Penrhyn Quarry Strike of 1900-03 and were placed in the windows of their homes. The quarry dispute created a deep division in the community between the strikers and the strike-breakers. The majority of the cards remained in the windows of Bethesda for over two years - when a card was removed from the window it was a sign that another quarryman had returned to work.

Based on a description in the Welsh Slate Museum Handbook (National Museum of Wales, 2002), page 43.

Appendix 16 'The Great Strike of Penrhyn' Fact Sheet

Hot off Press: The Strike

National and international newspapers reported on the strike – the news made it to Australia and the United States of America. The strike was discussed at length in the Parliament at Westminster. National newspapers, such as 'Punch' (which was very popular at the time), mocked Lord Penrhyn and published silly cartoons of him.



Edward Tennyson Reed (d 1933),
Public domain, via Wikimedia Commons

Appendix 16 'The Great Strike of Penrhyn' Fact Sheet

Life during the Great Strike

During the Great Strike, many people of Bethesda suffered. Families didn't have enough money for food, many were starving. This meant people became poorly, and fever spread through schools and the surrounding communities.

Nearly 2,000 quarry-workers and their families left Bethesda to work elsewhere with some emigrating and others moving down to South Wales to work in the coal mines. Some of the worse affected families ended up in Workhouses.

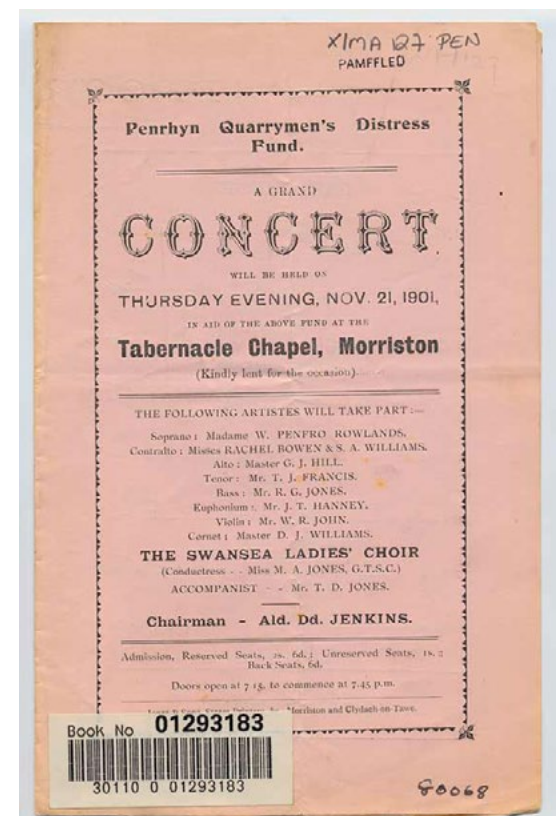
Some of the strikers felt forced to return to work back at the quarry and by 1902, 700 men had returned to the work at Penrhyn Quarry.

Support for the Strike

Many people came forwards to help those suffering from the strike. Male and Female Choirs from Bethesda raised money for families affected by the strike. Choirs from other places, such as Swansea also helped. Local farms employed strikers to build farm buildings and help with the livestock.



Quarry Choir, The Bangor Aye



Concert Programme in aid of the Penrhyn Quarrymen's Distress Fund
© The Welsh Library, University of Wales Bangor
Information Services 2025

The Penrhyn Ladies Choir
© National Museum Wales

Appendix 16 'The Great Strike of Penrhyn' Fact Sheet

End of the Strike

The Great Strike ended on November 8th, 1903. The North Wales Quarrymen's Union didn't have any more money to support those on strike. Because their families were near starving to death and in extreme poverty, the strikers had to return to work. The atmosphere in the community was at an all time low, as it became increasingly obvious that Lord Penrhyn would not be defeated. This was a huge blow to the community of Dyffryn Ogwen, and it took a long time to recover from this event in history.

Remembering the Great Strike

In the centre of Bethesda, there is a slate memorial to commemorate the Great Strike of Penrhyn. This is to remember and honour those affected by the strike. The Great Strike of Penrhyn is the longest recorded strike in British history. This memorial was unveiled in 2000, one hundred years after the strike began.



The slate memorial commemorating the Great Strike of Penrhyn
Eirian Evans / Penrhyn Strike, Memorial / CC BY-SA 2.0

Appendix 17 Blank Census Table

Compare the lives of Richard Roberts, a slate quarry worker and Lord Penryn, quarry owner using the 1901 census.

Question	Richard Roberts	Lord Penrhyn
Who is head of the house? What is their job?		
How many people live in the house?		
What jobs do the rest of the family have?		
How many servants do the family have?		
What would the house be like? (living conditions)		
What would the children's lives be like?		

Appendix 17 Census Lord Penryn 1901 - Quarry Owner

Place	Inhabited	Names	Relation to head of the family	Married?	Age		Profession
					Male	Female	
Wicken Park, Northampton	Yes	Lord Penrhyn	Head	Married	64		Quarry owner
		Lady Penrhyn	Wife	Married		50	
		Hon ESD Pennant	Son		36		
		Hon Ina Douglas Pennant	Daughter	Unmarried		33	
		Hon Winifred Douglas Pennant	Daughter	Unmarried		18	
		Hon Margaret Douglas Pennant	Daughter			14	
		Hon Nesta Douglas Pennant	Daughter			13	
		Hon Elin Douglas Pennant	Daughter			11	
		Amelie Schmidt	Boarder	Unmarried		45	Governess (teacher)
		Alexander Glarpe	Servant	Married	44		Butler
		Harriet Baker	Servant	Unmarried		52	Maid
		Arthur Moore	Servant	Married	34		Valet
		Henry Haynes	Servant	Unmarried	29		Butler
		Charles Phipps	Servant	Unmarried	25		Footman
		Adolphus Brace	Servant	Unmarried	25		Footman
		Frederick Skinner	Servant	Unmarried	18		Footman
		Charles Hurst	Servant	Unmarried	20		Oddman
		Mary Dunthorne	Servant	Unmarried		51	Cook
		Jessie Hallam	Servant	Unmarried		27	Lady's Maid
		Mary A Dale	Servant	Unmarried		45	Housemaid
		Gertrude A Reader	Servant	Unmarried		25	Lady's Maid
		Alice K Webber	Servant	Unmarried		26	Kitchen Maid
		Ina Sutherland	Servant	Unmarried		28	Stillroom Maid
		Martha Alderson	Servant	Unmarried		25	Children's Maid
		Florence Staves	Servant	Unmarried		23	Housemaid
		Rose Grove	Servant	Unmarried		23	Kitchen Maid
		Beatrice Hine	Servant	Unmarried		26	Housemaid
		Sarah A Giles	Servant	Unmarried		22	Kitchen Maid
		Elsie Woodard	Servant	Unmarried		21	Vegetable Maid
		Elizabeth H Tooley	Servant	Unmarried		18	House Maid
		Annie Evan	Servant	Unmarried		20	Scullery Maid
		John Brooks	Servant	Married	37		Butler

Appendix 17 Census Roberts Family 1901 Bethesda - Slate Quarry Worker

Place	Inhabited	Names	Relation to head of the family	Married?	Age and sex		Profession	Where born	Language
Bethesda	Yes	Richard Roberts	Head	Married	43		Slate quarry man	Llanllechid, Caernarvonshire, Wales	Welsh
		Sophia	Wife	Married		39		Llanllechid, Caernarvonshire, Wales	Welsh
		Griffith John	Son		16		Slate quarry man	Llanllechid, Caernarvonshire, Wales	Welsh
		Maggie	Daughter			14		Llanllechid, Caernarvonshire, Wales	Welsh
		Mary	Daughter			14		Llanllechid, Caernarvonshire, Wales	Welsh
		Blodwen	Daughter			10		Llanllechid, Caernarvonshire, Wales	Welsh
		Gwilym	Son		8			Llanllechid, Caernarvonshire, Wales	Welsh
		Richie	Son		5			Llanllechid, Caernarvonshire, Wales	Welsh
		Tommy	Son		2			Llanllechid, Caernarvonshire, Wales	Welsh



Activity 10: Debate and Discuss

Objective:

This activity encourages pupils to take part in a debate. They will think about what a debate is and what makes a good debate. They will research the point of view of the different people involved in the Great strike of Penrhyn and take on one point of view and argue for them. They will also have the opportunity to research modern strikes and why people go on strike.

Pupils could:

- Learn what a debate is, what makes a good debate and how they would go about holding one using the links as a starting point.
- Take part in the debate: 'Should the quarry workers have gone on strike?' Split into groups and take on the role of:
 - *Lord Penrhyn*
 - *Quarry worker on strike*
 - *Quarry worker not on strike*
 - *Quarry worker on strike family*
- Use their research from past activities and the 'Penrhyn Quarry debate' information sheet in Appendix 18 to help formulate their ideas and plan out their response.
- Take part in the debate and vote as a class who they think was right and why.
- Discuss what they thought went well and what they could have improved on.
- Research modern strikes and why people go on strike today.
- Take part in the debate 'should people go on strike today?' Take on different roles including workers and employers.

Skills

- Literacy
- Communication
- Oracy
- Investigation
- Curiosity
- Enquiry
- Evaluation
- Digital Competence
- Creativity and Innovation
- Critical Thinking and Problem Solving
- Personal Effectiveness
- Planning and Organising

Equipment

- The Internet
- Appendix 18

Areas of Learning

- Humanities
- Language, Literacy and Communication
- Religion, Values and Ethics

Links

- BBC Bitesize: [How to Have a Debate](#)
- Learning Mole: [KS2 Debate Preparation Resource Packs](#)



Appendix 18 Penrhyn Quarry Strike Debate

Quarry worker on strike

Many local people worked at Penrhyn slate quarry. Pay was very low and they had to work in terrible conditions. The workers joined a union to express their feelings but Lord Penrhyn would not listen. They felt that they had no way to express their unhappiness and were not listened to so they chose to go on strike. 2,000 men went on strike. For many this meant no money for their families. Some men were out of work for months but felt they had to hold out as long as they could to get better pay and conditions. Many families were starving and became ill and others moved away from the area to find different work.

Wife of Quarry worker on strike

A lot of quarry worker's families relied on the money from working in the quarry as it was their only source of income. If workers went on strike their pay was stopped and the family would have very little money. This meant the women could not afford food or clothing for their children or themselves. A lot of people became sick. Some families ended up in the workhouse or moving away from the area. Those who stayed were worried there might be violence against them if they were thought to be a family who broke the strike. To make sure they weren't targeted, the houses of striking workers put posters in their windows saying "There is no traitor in this house".

Quarry worker not on strike

Many local people worked at Penrhyn slate quarry. Pay was very low and they had to work in terrible conditions. They joined a union to express their feelings but Lord Penrhyn would not listen. The workers felt that they had no way to express their unhappiness and were not listened to so they chose to go on strike. A month later 2000 men continued to strike and would do for 3 years. 77 men went back to work. These men and their families were seen as enemies to those who were striking and things could turn violent. Cards were placed in their windows which said 'traitor'.

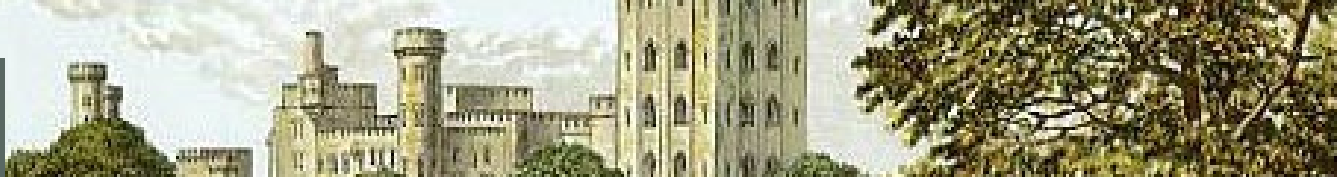
Lord Penrhyn

Lord Penrhyn the owner of the quarry and Emilius Young, its manager, did not believe in trade unions and felt that it was their decision what they paid the workers and the conditions they worked in. They refused to change anything or listen to worker demands. Eventually Young offered the workers new terms and conditions but they were refused by all but 77 of the workers and so the quarry was temporarily closed to workers. The trade unions eventually ran out of money after three years and the workers returned to work as they had no other choice. Many workers had moved away from the area but new workers took their place as they needed the jobs.

8

Activities
Slavery





Activity 11: The Transatlantic Slave Trade

Objective:

This activity encourages pupils to investigate the transatlantic trade in enslaved people and the Pennant family link to this. It allows them to discuss how the Pennant family made their money and funded the slate quarries, the history behind the abolition of the slave trade and different people's viewpoints. It also allows pupils to think about the ethics surrounding the trade in enslaved people.

Pupils could:

- Pupils could use Appendix 19 as a starting point for their own research and pick an area they want to explore more. This could include:
 - *The transatlantic trade in enslaved African People*
 - *The Pennant family and their plantations*
 - *Abolition and what this is*
 - *Compensation and the Pennant family*
- In groups create a PowerPoint presentation, collage or short talk about what they have found out and share with the class.
- Discuss as a class the topic of enslaved African people and the different viewpoints involved in the abolition of the slave trade.
- Discuss what they would like to find out more about and plan how they could do this.

Skills

- Literacy
- Communication
- Oracy
- Investigation
- Curiosity
- Enquiry
- Evaluation
- Digital Competence
- Creativity and Innovation
- Critical Thinking and Problem Solving
- Personal Effectiveness
- Planning and Organising

Equipment

- The Internet
- Appendix 19

Areas of Learning

- Humanities
- Language, Literacy and Communication
- Mathematics and Numeracy
- Religion, Values and Ethics

Links

- Museum Wales: [Everywhere in Chains - Wales and Slavery](#)
- Hwb resources: [Slavery and Wales: Past and Present](#)
- National Trust: [Penrhyn Castle and the Slave Trade](#)
- Spanglefish: [Sugar and slavery Penrhyn Castle](#)
- Liverpool Museums: [International Slavery Museum Teachers Pack](#)
- Youtube: [Wales and Slavery - The Untold Story part 1 \(BBC 2 Wales; 14 mins\)](#)
- Youtube: [Wales and Slavery - The Untold Story part 2 \(BBC 2 Wales; 14 mins\)](#)
- University College London: [Legacies of British Slavery](#)

Appendix 19 The Transatlantic Slave Trade

Note:

This is an emotive subject and while this information sheet focuses on a single family and their links to the trade, it is important to stress that they were by no means unique, and that most plantation owners, whether in the Caribbean or in the wider Americas used enslaved persons to work their land.

The Pennant Family & Penrhyn Slate Quarry

- The Pennant family were the owners of Penrhyn Slate Quarry for many years. They lived at Penrhyn Castle, (Llandygai, near Bangor, in Gwynedd).
- The Pennant family owned sugar plantations in Jamaica, this helped them become experts at managing big properties and businesses. They made lots of money from their sugar plantations in Jamaica.
- The Pennant family spent a lot of this money on Penrhyn Quarry as they wanted their quarry to be really successful.
- Richard Pennant (1739-1808), the First Baron of Penrhyn, inherited Penrhyn Quarry in 1871 when his father died. Richard Pennant paid for lots of things to be built in the Dyffryn Ogwen area, such as schools, houses for quarry-workers and their families, farms, churches, railways, roads and Porth Penrhyn.
- Penrhyn Quarry became one of the biggest suppliers of roofing slate in the world. The quarry provided work for lots of people and at the end of the 19th Century 3000 men worked there.

The Triangular Trade in Enslaved People

- The route between Africa, Jamaica and Britain was called the Triangular Trade in Enslaved People. Men, women and children were forced from their homes in Africa and shipped to work on plantations in Jamaica and other parts of the Americas. The sugar and other goods that they produced were then shipped back to Britain. Goods made in Britain were then shipped to Africa and then the trip started again.
- The captured people travelled across the Atlantic ocean in ships. They were packed into the hold (the bottom of the ship). They would be stuck in the hold for the entire journey which could take 3 months.

Appendix 19 The Slave Trade

Abolishing Slavery

- Many people thought slavery was wrong and wanted it to end. They worked hard to persuade the British government to abolish slavery. This happened in 1833 when the government passed an act called 'The Slavery Abolition Act'. Abolish means to stop something happening.
- It took Parliament a very long time to agree to stop slavery in places governed by Britain.
- Some people, like Lord Penrhyn, thought that slavery should continue. When they finally agreed to free their enslaved workforce, the plantation owners were given compensation by the British Government. Compensation is a payment that is made when a person loses something or is injured. The government was paying the plantation owners for losing their enslaved workers.
- The British Government had to borrow money to be able to pay the owners. They only paid off the loan in 2015, 180 years after slavery was abolished.

How much did Lord Penrhyn receive?

- Lord Penrhyn received £3,204 3s 4d for the 167 enslaved workers freed on the Coates Plantation in 1835. The image below shows how much was paid for the enslaved at each of the plantations. 764 people brought compensation worth £14,683 8s 1d.
- You can find out how much was paid to owners of enslaved people by looking at the database at: <https://www.ucl.ac.uk/lbs/>
- To find out how much the money would be worth today, you can use the National Archives converter at: <https://www.nationalarchives.gov.uk/currency-converter/>

George Hay Dawkins Pennant

Awardee	Jamaica Clarendon 3 (Pennant's) £4509 7S 3D [225 Enslaved]
Awardee	Jamaica Clarendon 351 (Denbigh) £3904 17S 8D [215 Enslaved]
Awardee	Jamaica Clarendon 362 (Cote's) £3204 3S 1D [167 Enslaved]
Awardee	Jamaica Clarendon 4 (Kupuis) £3065 9S 2D [157 Enslaved]