Our Lady of the Wayside Catholic Primary School
Learning and growing together rooted in Christ

Our Lady of the Wayside's Geography Curriculum

General information	
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Our aspirations and aims for Geography at Our Lady of the Wayside Catholic School
Our curriculum intent

As Catholic Primary educators, we are passionate about Geography.

We believe the interaction between humans and our fragile world to be the key challenge facing our world in the 21st Century. We know that the future of our world rests in the hands of our children. We have the responsibility to provide our children with the knowledge, skills and confident to become true global citizens. We teach our children to be inquisitive, to ask questions and to challenge decision makers and human behaviour within a local, national and global context. Ultimately, we want our children to care about the world around them, who know and understand their world and their role within it.

Our Geography curriculum focuses on two main themes:

· How human actions impact on our world

· How our world impacts on humans

Our Geography Curriculum is designed to allow children to learn about the physical processes of our planet, human societies and environmental changes within a local, national and global context. In order to really understand the connection between humans and the physical world, we believe that our children must explore and learn about the social, moral and cultural issues that affect human behaviour. To achieve this, we have threaded the 7 principles of Catholic Social Teaching are through our Geography Curriculum:

1**. Life and dignity of the Human Person**: How has the impact of climate change effected people across the world? How do we protect human life in vulnerable countries where there is poverty and natural disasters such as earth quakes? How does the physical world affect human life?

2. Call to family, Community and Participation: We are called to respect all of God's gifts of creation, to be good stewards of the earth and each other. How can we be good stewards of God's creation?

3. Rights and Responsibilities: All people have the right to participate in decisions that affect their lives. We all have a duty to work for the common good for example through Geography, we think about how does climate change affect the poor of this world?

4. Option for the poor and vulnerable: We are called to look at public policy decisions in terms of how they affect the poor. For example, in Geography we think about fair trade. We think about how we can support the poor who live in parts of the world where extreme weather has destroyed livelihoods and homes. We ask questions – how does what we do in the first world, affect those in the third world.

5. The Dignity of Work and the Rights of Workers: People have a right to decent and productive work, fair wages, private property and economic initiative.

6. Solidarity: We are one human family. Our responsibilities to each other cross national, racial, economic and ideological differences. In Geography how do we work together to combat climate change? Poverty?

7. Care for God's Creation: The goods of the earth are gifts from God. We have a responsibility to care these goods as stewards and trustees, not as consumers and users. In Geography we look at what we can do to stop climate change, we think about where our food comes from and how we heat our homes. We think about animals and plants that are endangered.

Finally, we believe that Geography is by its nature, an investigative subject where children will experience concepts at first hand through field work.

Geographical skills and fieldwork

In Year 1 and Year 2, pupils will be taught to:

- use world maps, atlases and globes to identify the United Kingdom and its countries, as well as the countries, continents and oceans studied.
- use simple compass directions (North, South, East and West) and locational and directional language [for example, near and far; left and right], to describe the location of features and routes on a map
- Use aerial photographs and plan perspectives to recognise landmarks and basic human and physical features; devise a simple map; and use and construct basic symbols in a key
- Use simple fieldwork and observational skills to study the geography of their school and its grounds and the key human and physical features of its surrounding environment.

In Year 3, Year 4, Year 5 and Year 6, pupils will be taught to:

- use maps, atlases, globes and digital/computer mapping to locate countries and describe features studied
- use the eight points of a compass, four and six-figure grid references, symbols and key (including the use of Ordnance Survey maps) to build their knowledge of the United Kingdom and the wider world
- use fieldwork to observe, measure, record and present the human and physical features in the local area using a range of methods, including sketch maps, plans and graphs, and digital technologies**.**

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Locational Knowledge

UK Locational Knowledge

Key Stage 1 National Curriculum – Locational Knowledge

♣ name and locate the world's seven continents and five oceans
♣ name, locate and identify characteristics of the four countries and capital cities of the United Kingdom and its surrounding seas

Key Stage 2 National Curriculum – Locational Knowledge

♣ locate the world's countries, using maps to focus on Europe (including the location of Russia) and North and South America, concentrating on their environmental regions, key physical and human characteristics, countries, and major cities
♣ name and locate counties and cities of the United Kingdom, geographical regions and their identifying human and physical characteristics, key topographical features (including hills, mountains, coasts and rivers), and land-use patterns; and understand how some of these aspects have changed over time
♣ identify the position and significance of latitude, longitude, Equator, Northern Hemisphere, Southern Hemisphere, the Tropics of Cancer and Capricorn, Arctic and Antarctic Circle, the Prime/Greenwich Meridian and time zones (including day and night)

Year 1 pupils will know:

- They live in a country called the United Kingdom which is sometimes referred to as the UK.
- The UK consists of four nations (sometimes called countries).
- The names of the four nations and be able locate them on a map of the UK.
- They live in the nation called England.
- Our Lady of the Wayside School is located in Shirley and Shirley is a district in the Borough of Solihull.
- Solihull is in the centre of England and Birmingham is a large city which borders Solihull.

Year 2 pupils will know:

- Sometimes the nations are referred to as Great Britain or GB, and Northern Ireland is not part of GB.
- The names of the capital cities of the UK nations.
- The names of the seas which surround the UK and locate them on a UK map.
- Identify the Union Jack and the flags of the England, Scotland and Wales.
- A local landmark of Solihull, for example, *St Alphege Church, Touchwood Shopping Centre, Landrover factory*

Year 3 pupils will know:

- Particular geographical areas within England are often referred to as the nine regions. Pupils will know the names of these English regions (Greater London, South East, East Anglia, South West, West Midlands, East Midlands, North West, North East, Yorkshire and The Humber) and be able to identify/name these on a map of England/GB/UK.
- Solihull is located in the West Midlands region.
- The River Blythe flows through Solihull.
- Name at least three districts which are located in the Borough of Solihull e.g. *Olton, Cheswick Green, Knowle, Fordbridge etc.*

Year 4 pupils will know:

- Geographical regions of England can be divided into smaller areas known as counties.
- Some towns and cities are not part of a county, Solihull is an example of this.
- Many counties (not all) end in…..shire.
- The names of a county which borders Solihull (Worcestershire or Warwickshire)
- The names of at least three English counties and which English region they are located in.
- The name of a least one UK river (excluding the River Blythe)
- The name of the highest mountain in England (Scafell Pike) and which geographical region it is located in (North West, pupils may say The Lake District or Cumbria)

Year 5 pupils will know:

- How to give directions from within GB – e.g. from Wales I would travel in an easterly direction to get to East Anglia.
- The name of a town or a city in the UK, but not in England. Pupils will know which nation their town or city is located in.
- The name of the UK's longest river (currently River Severn although some believe it to be the River Thames).
- The names of the highest mountain in England (Y4), Scotland and Wales.
- Ben Nevis is the highest mountain in the UK

Year 6 pupils will know:

- The name of a town or a city from each of the English geographical regions and will be able to locate them on a map of England e.g. Norwich in East Anglia.
- The name of at least one UK town or city which is located:
  -On the coast or close to the sea
  -Close to a mountain or highland area
  -On or close to a river
  -close to the border of England/Wales and England/Scotland
- The name of at least three UK rivers and the name at least one town/city on the river's path. E.g. *River Severn, Shrewsbury*
- The name of a famous landmark from at least three English cities *e.g. Clifton Suspension Bridge in Bristol.*
- The name of a UK National Park

Europe and World Locational Knowledge

Year 1 pupils will know:

Aspect A: World knowledge
- The names of the world's seven continents
- The names of the world's five oceans.

Aspect B: Europe knowledge
- The UK is part of the continent of Europe

Year 2 pupils will know:

Aspect A: World knowledge
- The location of the world's seven continents on a map of the world and on a globe.
- The location of the world's five oceans on a map of the world and on a globe.

Aspect B: Europe knowledge
- The names of at list three countries in Europe.

Year 3 pupils will know:

Aspect A: World knowledge
- The Equator is an imaginary line around the middle of the Earth. It is halfway between the North and South Poles, and divides the Earth into the Northern and Southern Hemispheres
- Highest mountain in the world is believed to be Mt Everest

Aspect B: Europe knowledge
- The location of at least three European countries and be able to identify them on a map of Europe.
- The names of a least three European capital cities and their corresponding country.

Aspect C: North and South America knowledge
- The name of a country in North America and South America

Year 4 pupils will know:

Aspect A: World knowledge
- The Northern Hemisphere is the part of the Earth that is north of the Equator.
- All of the continents of North America and Europe are in the Northern Hemisphere.
- Most of the continent of Asia is in the Northern Hemisphere.
- The Southern Hemisphere is the part of the Earth that is south of the equator.
- The location of the world's oceans in relation to the hemispheres.

.Aspect B: Europe knowledge
- The names of a least three famous European historical landmarks e.g. *Eiffel Tower, Colosseum, Leaning Tower of Pisa etc*., including the country in which they are located.
- At least five European flags.
- The location of at least five European countries and be able to identify them on a map of Europe.
- The names of a least five European capital cities and their corresponding country.

Aspect C: North and South America knowledge:
- The name of at least three countries in South America.
- The name of the capital cities of USA and Canada.

Year 5 pupils will know:

Aspect A: World knowledge

- The name of a desert and its location in the world.
- The name of the world's longest river (River Nile is the longest, the River Amazon the largest by water volume)
- The names of at least three countries in Africa and be able to locate them on a map of Africa.
- The name the name of a capital city in Africa and its corresponding country

Aspect B: Europe knowledge

- The name of a European mountain range e.g. Alps, Dolomites,Pyrenees etc.
- The name of a European river (not a UK river)

Aspect C: North and South America knowledge

- The name of at least three countries in South America and the name of its corresponding capital city.
- The name of a river which flows through North America.
- The name of a river which flows through South America.

Year 6 pupils will know:

Aspect A: World knowledge

- The name a country in the Northern Hemisphere south and north of the Tropic of Cancer
- The name a country in the Southern Hemisphere south and north of the Tropic of Capricorn
- The name of the world's three largest countries as measured by physical size (land area + lakes, reservoirs, and rivers) - Russia, Canada & China
- The name of the world's three largest countries as measured by population (as of 2021) – China, India & USA
- The name of a country which is ahead of the UK on the world's time zones.
- The name of a country which is behind the UK on the world's time zones.

Aspect B: Europe knowledge

- The name of a European country which:
  -is smaller in physical size to the UK
  -borders the Mediterranean Sea
  -has a climate significantly warmer than that of the UK
  -has a climate significantly colder than the UK in the winter
  -has mountains renowned for climbing or skiing
  -is landlocked, has no coastline

Aspect C: North and South America knowledge

- The names of at least three states which make up the USA.
- The name of a USA state or city/town which are on the, a. Atlantic coast and, b. Pacific coast.

Golden Thread A

How Humans Impact On Our World

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Golden Thread A

How our actions (the things we do) can change our planet and cause harm.

Golden Knowledge

Learning outcomes which are revisited and embedded annually

- Pupils respect their planet and God's creation and are aware that our planet is fragile and ecosystems are finely balanced.
- Pupils have a curiosity and fascination about the planet and its people, a curiosity that will remain with them for the rest of their lives.
- Pupils understand how the Earth's features, at different scales, are shaped, interconnected and change over time.
- Pupils understand how humans' actions and decisions can have repercussions at a local, regional or global scale.
- Pupils understand the need to maintain and improve the quality of the lives of humans while ensuring this does not damage the planet for future generations.
- Pupils have the knowledge, skills and understanding to enable them to make informed decisions as part of a global community.

Golden Skills

Skills which are developed

- Pupils are able to apply questioning skills and use effective analytical techniques to understand different perspectives.
- Pupils are able to reach conclusions and develop a reasoned argument to explain findings.
- Pupils are able to choose appropriate presentational techniques.
- Pupils are able to express well-balanced opinions based on geographical knowledge and vocabulary.

Curriculum Design

Lower Phase (Year 1 and Year 2)

In Lower Phase, our curriculum was designed and developed to enable pupils to consider the impact of humans' actions within their local area based on first-hand observations. This was to avoid exposing younger pupils to more abstract and complex concepts, concepts which require significant prior knowledge and understanding and a greater understanding and awareness of the world in which they live.

Year 1 – In Year 1the curriculum is focused on rubbish. Pupils consider what rubbish is, how it is disposed of and what they can do to reduce the impact of rubbish on our planet. Pupils apply their knowledge through an investigation of food packaging.

Year 2 - Year 2's curriculum is very much a development of Year 1. Prior learning is developed and enhanced as Year 2 pupils focus on litter. Pupils investigate the impact of litter within their local area. They then consider the wider impact of litter on an environment (ecosystem) beyond their local area. Pupils begin to understand that their actions reach beyond their own locality, localities are connected and our planet is fragile.

Middle Phase (Year 3 and Year 4)

In Middle Phase, our curriculum moves away from pupils' local area and learning through first-hand observations, to considering more global issues. We recognise that this is a big step for many pupils, particularly for those pupils who have no, or little experience, of travelling to places outside of the UK. The curriculum is designed to develop contextual knowledge, knowledge which is then applied to a particular action or locality in order to develop understanding.

Year 3 – In Year 3, pupils consider how humans' actions impact of other species – both plants and animals. They learn that humans have great power which can cause great harm but can also much good. Pupils apply their knowledge to the context of an event, illegal poaching. They consider why this happens, what can be done to prevent this and the impact it has. Pupils are developing a greater understanding of how humans' actions in one locality can have a significant impact on localities often far away.

Year 4 – Year 4's curriculum is a development of Year 3 and continues to build on previous learning. Rather than focusing on an event, as in Year 3, pupils studying a particular locality learning how that locality/environment has been, and is, harmed by humans. This will focus on deforestation with the Amazon rainforest.

Upper Phase (Year 5 and Year 6)

When pupils reach Upper Phase, they will have a good understanding of their world and the impact and harm that can be caused by humans. The Upper Phase curriculum has been designed to consider more abstract global concepts which have the potential to significantly, and irreversibly, change life on our planet.

Year 5 – In Year 5, pupils learn about global warming. They investigate the causes of global warming with a focus on burning fossil fuels. Pupils apply their knowledge to the context of melting ice sheets and rising sea levels. They explore the impact on polar regions and how a rise in sea level will increase coastal erosion in a small seaside village in Mid-Wales.

Year 6 – In Year 6 pupils consider the impact of global warming on the climate and future climate predictions if we do nothing. They investigate the impact of more extreme weather on various locations throughout the world and consider the response from politicians and individuals.

Teaching Sequence

This golden thread will be taught in three phases:

Phase 1 – **Knowing.** Phase 1 is factual in nature. Key knowledge will be embedded (transferred into long term memory) to ensure pupils can quickly recall this knowledge in Phase 2 and 3.

Phase 2 –**Applying**. In phase 2 pupils apply their key knowledge into a real life context to develop understanding, which we refer to as contextualised learning.

Phase 3 – **Responding**. In phase 3 pupils consider how we as humans can respond and how they can respond as individuals.

Golden Thread Outcomes

- Pupils are knowledgeable and are well-informed about our planet. They use their knowledge to make well informed decisions as part of a global community.
- Pupils can clearly articulate their views (age appropriate) and use evidence and examples to justify their opinions.
- Pupils are passionate about our planet, they care about what is happening to our planet and they want to make a difference.
- Pupils understand that we must all take responsibility for caring for our planet. They try to live by example and encourage others to do the same

Year 1 Focus – Impact of rubbish on our planet

What pupils will learn and know (Learning components)

Phase 1 – KNOWING

- Pupils know that rubbish is unwanted things that a person believes has little or no value/worth.
- Pupils will know that rubbish is sometimes referred to as waste.
- Pupils know that rubbish can be a solid, liquid or a gas.
- Pupils know that people normally talk about 3 different sorts of rubbish:
  -Domestic rubbish
  -Industrial and commercial rubbish
  -Hazardous rubbish
- Pupils know that some rubbish is biodegradable – rubbish that breaks down naturally in the environment and eventually disappears.
- Pupils know that some rubbish is non-biodegradable – rubbish that does not break down naturally in the environment.
- Pupils know, and understand, the different ways to get rid of our rubbish, including:
- Landfill
- Turning into compost
- Incineration
- Recycled and reused.
- Pupils know that sending rubbish to landfills or burning rubbish can be bad for our world.
- Pupils know that reusing and recycling our rubbish is better for our world.
- Pupils know that we should try to reduce the amount of rubbish we produce.
- Pupils will compare, on maps, how much rubbish is produced in different regions of the world understanding that rubbish levels are related to wealth.

Phase 2 - APPLYING

Case study 1 – pupils will investigate how much rubbish they produce as a family, classifying and recording their rubbish over a period of time. Pupils will consider ways in which they can reduce the amount of rubbish they produce e.g. using a lunchbox instead of plastic bags for their packed lunch.

Case study 2 – pupils will investigate how much rubbish is created from food packaging through a visit to a local supermarket.

Phase 3 – RESPONDING

Pupils will work with a local supermarket and shoppers to encourage them to reduce the amount of rubbish they produce e.g. by reducing unnecessary packaging.
Pupils will educate other pupils in school, and their families, on steps they can take to reduce the amount of rubbish they produce and educate them on how to reuse and recycle their rubbish.

Year 2 Focus – Impact of litter on our planet

What pupils will learn and know (Learning components)

Phase 1 – KNOWING

- Pupils know that litter can be described as 'rubbish that is in the wrong place' – any item left by a person that should not be there.
- Pupils know that natural material such as weeds, or leaves that have fallen from trees, are not classed as litter.
- Pupils know that fly tipping is a form of littering but involves the deliberate disposal/dumping of larger quantities of litter in a particular area.
- Pupils know that litter can take a very long time to degrade (rot away) or may not degrade at all (link to Year 1 unit on rubbish).
- Pupils know the main forms of littering in the UK relate to:
  -food waste packaging such as sweet and crisp wrappers, plastic drink bottles and cans, fast-food packaging.
  -fruit waste such as banana skins, apple cores.
  -plastic bags
  -smoking related litter – cigarette butts, matchsticks, cigarette packets
  -chewing gum
  -balloons
- Pupils know that it is against the law to litter and that people can be fined or go to prison for littering and fly tipping.
- Pupils know that the local council/local authority is responsible for clearing up litter dropped in public places and they pay for this through local taxes.
- Pupils know that fly tipping occurs when people do not want to pay the charges for disposing of their rubbish, or are too lazy to dispose of their rubbish correctly.
- Pupils know that litter spoils the appearance of an environment.
- Pupils know that litter harms wildlife in their local area, including:
  -Wildlife harmed by sharp cans or broken glass
  -wildlife suffocated inside plastic bags
  -wildlife harmed by swallowing litter
  -wildlife poisoned or choked by cigarette butts
- Pupils know that litter can cause fires e.g. discarding of disposable barbeques, matches and cigarettes and magnification of glass and shiny objects.
- Pupils know that food litter can attract rats, pigeons and other vermin, which in the wild can spread disease.
- Pupils know that litter can move between environments and littering in one environment may damage a different environment, including its wildlife.
- Pupils know that litter can naturally move between environments due to:
  -Water
  -Wind
  -Being carried by animals (moving through the food chain).

Phase 2 - APPLYING

Case Study 1 - Pupils undertake a litter survey, and litter collection, in their local area collecting litter during a 7 day period. Pupils analyse and classify the litter collected.

Case Study 2 Pupils learn about the impact of litter on a marine environment with a focus on the impact of plastics for wildlife.

Phase 3 – RESPONDING

Pupils visit other local schools to present to their findings about litter and what they can do to reduce the amount of littering.

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Year 3 Focus – How human actions impact of other species

What pupils will learn and know (Learning components)

Phase 1 – KNOWING

This unit of wok links closely to Science (Living things and their habitats and animals)

- Pupils will know the term organism and that all living things have certain characteristics that are essential for keeping them alive.
- Pupils will understand the term classification and classifying.
- Pupils will know that classification is very important because it helps scientists identify and group different organisms.
- Pupils will know that a scientist called Carolus Linnaeus (18th Century) developed a system for classifying animals and plants which has 7 levels and the first (top) level is called kingdom - **pupils are not be expected to learn details of each level*
- Pupils will know that there are 6 different kingdoms in the natural world and one of them is the Kingdom Animalia (Animal Kingdom) which is composed of animals.
- Pupils will know that the Animal Kingdom can be divided into two groups – invertebrates and vertebrates. Pupils will know that vertebrates can be further divided into smaller groups:
  -Amphibians
  -Reptiles
  -Birds
  -Fish
  -Mammals
- Pupils will know their main characteristics
- Pupils will know that all living organisms need other organisms to survive.
- Pupils will learn about food chains and how changes in one part of the food chain can affect other parts.
- Pupils will know the terms herbivore, carnivore and omnivore and will relate it to food chains.
- Pupils will know what the terms threatened, endangered and extinct means in relation to animal and plant conservation.
- Pupils will know that animals and plants can become endangered because of many different reasons and that through the food chain link if one animal, or plant, becomes extinct it can affect others.
- Pupils will know that human actions are a major cause of animals and plants becoming endangered, including:
  -Loss of habitat due to expanding urban growth (towns and cities)
  -Farming (use of pesticides)
  -Legal hunting and illegal hunting (poaching) of animals.

Phase 2 - APPLYING

Pupils will learn how humans' actions have made animals extinct in the past are endangering animals today.

Case Study 1 – The story of the Dodo, on the island of Mauritius, and how it became extinct.

Case Study 2 – Example of how human activity is endangering an animal today e.g. Siberian Tiger. This is being caused by illegal hunting and habitat loss.

Phase 3 – RESPONDING

- Pupils will know that many countries have laws and rules in place to protect endangered species – pupils consider why people may choose to ignore these and undertake illegal hunting.
- Pupils will investigate how the world has responded, including the formation and the work of the International Union for Conservation of Nature (IUCN and the creation of their Red List.

- Pupils will investigate charities and celebrities who promote animal conservation and promote measures to protect endangered animals e.g. *World Wildlife Fund (WWF) , The Duke of Cambridge United for Wildlife*
- Pupils will consider the role zoos can play in animal conservation.

Year 4 Focus – How humans actions can lead to a loss of habitats

What pupils will learn and know (Learning components)

Phase 1 – KNOWING Introduction to Biomes

- Pupils will learn about the major biomes of the world. This unit of work has close links to Science.
- Pupils will understand the terms biome and habitat and know the differences between them.
- Pupils will know the major characteristics (climate, plant and animal life, geographical location) of these eight different land based biomes: Grasslands (sometimes called plains or prairie), Savannah, Tundra, Temperate forests, Tropical rainforests, Deserts, Wetlands and Polar regions
- Pupils will know that climate plays a huge role in the determination of biomes.
- Pupils will know that organisms (animals and plants) are adapted physically and behaviourally to their biome and habitat.
- Pupils will know that all living organisms need other organisms to survive. How these organisms interact with the sun, soil, water, air and each other in a specific area is called an ecosystem. (revisit from to Year 3 unit)

Phase 2 - APPLYING

- Pupils will study the tropical rainforest biome with a particular focus on the Amazon rainforest habitat.
- Pupils will know the location of the Amazon rainforest and countries it spans.
- Pupils will know why the Amazon rainforest is an important global habitat.
- Pupils will study the Amazon ecosystem and will be able to give examples of how organisms have adapted to this habitat.
- Pupils will study the indigenous people of the Amazon.
- Pupils will know that the Amazon rainforest is being destroyed by humans and the main reasons for this.
- Pupils will know of the impact, and possible impact, of the destruction of the Amazon on the indigenous people, animals and plants.

Phase 3 – RESPONDING

- Pupils will consider how humans are responding to the destruction of the Amazon rainforest. They will consider this at a global level and a local level.
- Pupils will learn how rules and laws can be used to protect an environment with a focus on laws in the UK to protect special habitats e.g. National Parks, Sites of Special Scientific Interest (SSSI)
- Pupils will consider laws which have been applied to the Amazon rainforest and why people find it hard to agree – for example pressure of people to make a living through farming.
- Pupils will learn how the food we consume is global in nature and the desire of companies and consumers to pay as little as possible – pupils will consider the impact this has on farmers.
- As an example, pupils will study the production of palm oil and the impact of the Amazon rainforest.
- Pupils will learn about Fairtrade and its work in promoting sustainable farming.

Year 5 Focus – Impact of burning fossil fuels on our planet

What pupils will learn and know (Learning components)

Phase 1 – KNOWING Introduction to fossil fuels

- Pupils will know what a fossil fuel is and that coal, oil and gas are examples of fossil fuels.

- Pupils will have an understanding of how fossil fuels were mined in the UK (coal) and their role in the industrial revolution. Pupils will appreciate how challenging conditions were for those who worked in the mines.
- Pupils will know that fossil fuels are burned to generate energy to heat our homes, for transport and for manufacturing.
- Pupils will know that fossil fuels are a diminishing resource.
- Pupils will know the names of countries rich in fossil fuels and will be able to find these on a map of the world.

Phase 2 - APPLYING Impact of burning fossil fuels on our world (how our actions are causing harm)

- Pupils will know what a greenhouse gas is and that burning fossil fuels releases carbon.
- Pupils will know that the greenhouse effect is causing the climate to get warmer (global warming) and that burning fossils are contributing to this.
- Pupils will study the impact (and potential impact) through two case studies – impact on Polar regions and on coastal environments.
- Pupils will be able to describe, giving examples, the impact that global warming is having, and could have, on the world's polar regions.
- Pupils will be able to describe, giving examples, the impact that global warming is having, and could have, on a small coastal community in Mid- Wales (summer term, linked to Golden Thread B)

Phase 3 – RESPONDING What is happening now and how we can change our behaviour to reduce the harm we are causing to our planet.

- Pupils will know there are alternative to burning fossil fuels to generate energy.
- Pupils will know the term renewable and will know different types of renewable energy.
- Pupils will know every day practical strategies they can take to reduce the use of fossil fuels.

Year 6 Focus – Impact of rubbish on our planet

What pupils will learn and know (Learning components)

Phase 1 – <u>KNOWING</u>

- Pupils will know the difference between climate and weather.
- Pupils will know that climate changes are caused by many natural factors including changes in the sun, volcanoes, Earth's orbit and CO2 levels.
- Pupils will know that scientists believe that it is extremely likely that human activity has been the dominant cause of climate change (global warming) since the mid-20th Century.
- Pupils will know the human activity believed to be having the greatest impact: Burning fossil fuels, Deforestation (refer back to Year 4 unit on deforestation of the Amazon rainforest) and Intensive farming (including release of methane gas by animals)
- Pupils will know that scientist are predicting an continuing increase in global temperatures (Intergovernmental Panel of Climate Change, IPCC, predicts the average global temperature in 2100 could reach between2.5 to 7.8 Degrees Celsius above late 19th century levels).
- Pupils will know that climate change is already affecting the UK and other countries around the world, including: Rise in sea levels and shrinking Arctic ice sheets, Bleaching coral reefs, More intense weather events e.g. intense periods of rainfall, record weather temperatures in Europe in 2019, Changes to habitats and impact on ecosystems and Impact on food production of higher temperatures and less rainfall – soil becoming less fertile.

Phase 2 - <u>APPLYING</u> Impact of climate change on UK and other regions of the world.

Case Study - Impact on UK – pupils will study examples of the impact of extreme weather events in the UK in recent years – for example flooding due to intense rainfall (linked to Golden Thread B, rivers)

Case Study -Impact on other regions of the World - pupils will study examples of the impact of extreme weather events in other regions of the world, outside of the UK, for example high temperature in Europe in 2019, hurricanes, forest fires etc.

Phase 3 – <u>RESPONDING</u> What is happening now and how we can change our behaviour to reduce the harm we are causing to our planet.

- Pupils will know that many world leaders are concerned about the impact of burning fossil fuels, although a minority of world leaders disagree. Pupils will consider why some world leaders may disagree.
- Pupils will know that the majority of world leaders, in partnership with the United Nations, have committed to reducing emitting greenhouse gases e.g. The Paris Agreement.
- Pupils will know that the UK government has made promises/commitments e.g. ban sell of combustion engine cars by 2040.
- Pupils will know that changing human behaviour can be difficult.
- Pupils will know that people are protesting around the world and activism e.g. Extinction Rebellion, Greta Thunberg.

Our Lady of the Wayside Catholic Primary School
Learning and growing together rooted in Christ

Golden Thread B

How Our World Impacts On Humans

Golden Thread B

How Earth can cause us (people) harm

Golden Knowledge

Learning outcomes (scope statements) which are revisited and embedded annually

- Pupils respect their planet and God's creation and are aware that our planet is fragile and ecosystems are finely balanced.
- Pupils have a curiosity and fascination about the planet and its people, a curiosity that will remain with them for the rest of their lives.
- Pupils understand how the Earth's features, at different scales, are shaped, interconnected and change over time.
- Pupils understand how the physical features of Earth can affect the lives of humans, in a positive and in a detrimental way.
- Pupils understand how humans' actions and decisions can have repercussions at a local, regional or global scale.
- Pupils understand the need to maintain and improve the quality of the lives of humans while ensuring this does not damage the planet for future generations.
- Pupils have the knowledge, skills and understanding to enable them to make informed decisions as part of a global community.

Golden Skills

Skills which are developed

- Pupils are able to apply questioning skills and use effective analytical techniques to understand different perspectives.
- Pupils are able to reach conclusions and develop a reasoned argument to explain findings.
- Pupils are able to choose appropriate presentational techniques.
- Pupils are able to express well-balanced opinions based on geographical knowledge and vocabulary.

Curriculum Design

Year 2 Mountains – In Year 2, pupils will learn about mountains. They will learn that mountains are found throughout the world and people are attracted to visit mountains for leisure. Pupils will learn that mountains can be very dangerous places. Pupils will have the opportunity to visit the Lickey Hills, near Birmingham, to understand some of the attraction of visiting mountains.

Year 3 Volcanoes– In Year 3, pupils will learn about volcanoes. They will revisit and build upon their plate tectonic-knowledge taught in Year 3. They will learn how volcanoes are formed and will know regions of the world where there are active volcanoes today. Pupils will learn how volcanoes impact on people's lives, both in the past and in the present.

Year 4 Earthquakes– In Year 4, pupils will learn how the Earth is formed of large plates of rock referred to as tectonic plates. They will learn how these plates move very, very slowly, and places where they meet are called faults. Pupils will learn that when these plates rub together, the movement forces waves of energy to come to the earth's surface, referred to as an earthquake. Pupils will know the regions of the world where earthquakes are more likely to happen. Pupils will learn how earthquakes impact on people's lives, both in the past and in the present

Year 5 Coasts - In Year 5, pupils will learn coastal features. . In addition to studying rivers, pupils will also learn about coasts through a field trip to Cardigan Bay in Mid Wales. They will learn some of the physical features associated with a

coast, including erosion association with waves, beach formation, longshore drift, formation of a spit and coastal estuaries.

Year 6 Rivers – In Year 6, pupils will learn about the physical features of a river. They will learn that many UK towns were built in order to cross a river or because the river flowed through it. While rivers bring many benefits to people, pupils will discover that rivers are also extremely dangerous and destructive to communities.

Teaching Sequence

This golden thread will be taught in two phases:

Phase 1 – **Knowing.** Phase 1 is factual in nature. Key knowledge will be embedded (transferred into long term memory) to ensure pupils can quickly recall this knowledge in Phase 2.

Phase 2 –**Applying**. In Phase 2 pupils will learn about the impact of the world's physical features on people. This learning will be applied through a minimum of two case studies per year group.

Golden Thread Outcomes

- Pupils are knowledgeable and are well-informed about our planet. They use their knowledge to make well informed decisions as part of a global community.
- Pupils can clearly articulate their views (age appropriate) and use evidence and examples to justify their opinions.
- Pupils are passionate about our planet, they care about what is happening to our planet and they want to make a difference.
- Pupils understand that we must all take responsibility for caring for our planet. They try to live by example and encourage others to do the same.

Year 2 Focus – Mountains

Subject Knowledge - Teacher Summary

A mountain is something that's part of the land, but that rises above everything else. Mountains can join up with other mountains to make up a range. Mountains are formed when huge areas of land hit each other. The surface of Earth is made up of lots of different sections called tectonic plates, and mountains can be formed in different ways when these plates collide or when magma can get from the centre of the earth up to the surface.

There are five types of mountains:

Fold (or, Folded) This is the most common type of mountain. It's called 'fold' because when the tectonic plates collide, the edges crumple as they are pushed together and the rock of the Earth's surface is pushed up to create mountains. The Himalayas are fold mountains. Fault-block (or, Block) When cracks in the Earth's surface open up, large chucks of rock can be pushed up while others are pushed down. This creates mountains with a long slope on one side, and a sharp drop on the other. The Sierra Nevada mountains in California, USA are fault-block mountains. Dome - Dome mountains are smooth and round-looking. They are formed when magma from in between the Earth's crust and mantle gets pushed up, but doesn't ever flow out – so, all the magma makes the land bubble up like a balloon. Bear Butte in South Dakota, USA is an example of a dome mountain. Volcanic - Volcanic mountains are formed around volcanoes, which are vents in the Earth's top layer that let through magma from between the crust and the mantle layers. Mountains are made of ash and cooled lava. Mauna Loa in Hawaii, USA is the largest active volcano in the world. Plateau- Plateau mountains are different from the other mountain types because they haven't formed because of rock or magma being pushed up. Instead, they've formed because of materials being taken away through erosion, which has left deep valleys or gorges next to high cliffs. The Columbia Plateau in the Northwest USA is an example of this type of mountain.

Mountain habitats have a lot of variety. Because mountains are mostly rock, there isn't much soil for growing things and the trees plants that do grow there are able to thrive in the rocky conditions. You can also find different plants and animals the higher you climb up a mountain, because temperatures get cooler. This also means that there is more rain at the top of a mountain than at the bottom. This is because hot air rises, but as it rises it cools down – as it cools down, it loses moisture and has to drop it off somewhere along the way up. If it's cold enough, this moisture will fall as snow rather than rain. You can tell just how cold it is at the top of a mountain by looking at how much snow you can see at the summit. Some mountains are so high that it's too cold for anything to grow at the top, and there is less oxygen at very high altitudes. Often all the trees stop at about the same altitude and the mountain is bare above that apart from scrub and grass – this altitude is called the tree line.

With conditions like that, living on mountains can be very challenging for both animals and people. Animals that live on mountains are used to the cold temperatures and the different types of plants that grow there. These are some of the animals that live on mountains: Brown bear, Coyote, Snow leopard, Bighorn sheep, Wolverine, Mountain hare, Ibex, Great grey owl, Golden eagle.

The highest mountains in each continent are:

- Europe – Mount Elbrus (Russia)
- Asia – Mount Everest (Nepal)
- Australia – Mount Kosciuszko
- Antarctica – Vinson Massif
- South America – Aconcagua (Argentina)
- North America – Mount McKinley (United States of America)
- Africa – Kilimanjaro (Tanzania)

Some famous mountain ranges around the world are:

- The Himalayas, Asia
- The Rocky Mountains, North America
- The Andes, South America
- The Ural Mountains, Europe
- The Alps, Europe
- The Pyrenees, Europe

The highest mountains in the countries of the UK are:

- Ben Nevis in Scotland (which is also the highest in all of the UK)
- Mount Snowdon in Wales
- Scafell Pike in England
- Slieve Donard in Northern Ireland

What pupils will learn and know (Learning components)

Phase 1 – Knowledge about Mountains

- Pupils will know that a mountain is something that's part of the land, but that rises above everything else. It is a **natural feature** of the world, mountains are not created by people (manmade).
- Pupils will know that mountains can join up with other mountains and this is called a **range** of mountains.
- Pupils will learn that people disagree when a hill becomes a mountain but it is generally related to the **height and steepness.**
- Pupils will learn that most mountains are formed when things happen inside the Earth to push rocks up – the longer this happens, the higher the rocks are pushed, and the higher the mountains can be. (*pupils do not need to learn about the different types of mountains).*
- Pupils will learn that while some mountains are getting taller, you can't see them grow. It takes a very, very long time for mountains to **form.**
- Pupils will know the top of a mountain is called the **summit.**
- Pupils will learn that some mountains are even completely **underwater.**
- Pupils will know that the highest mountain in the world is **Mount Everest** in Nepal. (8,850 metres high)
- Pupils will know that the highest mountain in the UK **is Ben Nevis** in Scotland (1,344 metres high).
- Pupils will learn that mountains are very **rocky a**nd difficult to grow things on.
- Pupils will know that the higher the mountain goes up, the colder it gets – this means different kinds of plants and animals might live at the top of a mountain than at the bottom, depending on just how high it is.
- Pupils will know that the weather changes a lot on mountains. For example, it can be raining at the top but not at the bottom.
- Pupils will know that some mountains are so high that their top (summit) is always covered in snow, even in the summer.
- Pupils will know that many people love to climb mountains and ski on mountains.
- Pupils will know that mountains can be dangerous and people can lose their lives on mountains.

Key vocabulary

Mountain, natural feature, manmade, mountain range, height, steepness, form, summit, underwater, Mount Everest, Mount Ben Nevis, rocky.

Phase 2 - Pupils will learn how mountains can cause people harm, and bring many benefits to a community.

Case Study 1 – Lickey Hills, near Birmingham – Pupils will visit the Lickey Hills, near Birmingham. They will experience how it feels to climb a hill in order help them imagine what it would feel like to climb a mountain (a higher hill). They

will enjoy the view at the top of Lickey Hills and consider how you enjoy a better view when you are higher up. They will learn how the Lickey Hills attract people for leisure, including hill walking, flying kite (windy conditions), playing golf etc.

Case Study 2 - The Alps – Pupils will learn that the Alps are a range of mountains in Europe. They will learn that the Alps attract thousands of visitors each year. While beautiful, these very high mountains can be very dangerous and people can die walking on the mountains. Pupils will learn how difficult it can be living in the mountains, particularly in the winter.

BBC Bitesize has some excellent short videos - https://www.bbc.co.uk/bitesize/topics/z3fycdm/articles/zb3ywty

Year 3 Focus – Volcanoes

Subject Knowledge - Teacher Summary

There are lots of different types and sizes of volcanoes, from small cracks in the Earth's surface to huge mountains which have been built up by lots of layers of lava and ash.

Magma is liquid rock in between the crust and the mantle, formed when part of the lower crust or upper mantle melts. When magma travels up through a volcano's vent, bubbles of gas also appear. All the gas builds up pressure, which causes the magma to explode out of the volcano. When magma is thin, the gas bubbles can rise and pop easily – volcanoes located over thin magma don't have very large explosions. When magma is thick, the gas bubbles get trapped and the pressure builds up so much that the explosion shoots high up into the air. If magma cools down as it rushes up the vent, it will come out as rock or ash.

Volcanoes can be very dangerous; some of the worst natural disasters in human history have been caused by erupting volcanoes. Lava flowing out of volcanoes can burn and destroy anything in its path, and ash can be so thick in the air that it's hard to breathe. Earthquakes can happen when a volcano erupts, causing very large waves called tsunamis. If gases and ash get into the atmosphere, it can even change the weather by causing thunderstorms and cool temperatures.

When volcanoes haven't erupted for many years (perhaps thousands!), people begin to live near them in order to farm the land which is very fertile thanks to the volcanic ash. If the volcano does erupt, there can be huge loss of human life in nearby cities. In the biggest explosion in recorded history, the eruption of Tambora in Indonesia in 1815, an estimated 60,000 people lost their lives and the ash cloud affected farming, causing the worst famine of the century. https://www.youtube.com/watch?v=FLLLCnIpO7M

Volcanologists (scientists who study volcanoes) can sometimes tell if a volcano is going to erupt by keeping track of earthquakes underneath it. The types of gases coming out of the vent can also change close to an eruption. Animals living near a volcano may start to act differently, as if they can sense something is going to happen.

The Earth's surface is made up of lots of pieces called tectonic plates. These plates can slide against each other, which lets magma from underneath squeeze up through the cracks. When tectonic plates move, it also causes earthquakes. Most volcanoes are located along the edges of tectonic plates, especially around the Pacific Ocean – this is called the Pacific Ring of Fire.

The ancient Romans wrote about a huge volcanic eruption that happened in 79 AD in Pompeii. The ash and rocks that erupted out of Mount Vesuvius buried nearby towns and killed more than 2,000 people. Mount Vesuvius is dormant today.

Other famous volcanic eruptions in history are: Mount Tambora (Indonesia) in 1815 Krakatoa (Indonesia) in 1883 Mount Pelée (Martinique) in 1902 Mount St Helens (Washington, USA) in 1980 Mount Pinatubo (Philippines) in 1991 Eyjafjallajokull (Iceland) in 2010.

What pupils will learn and know (Learning components)

Phase 1 – Knowledge about Volcanoes

- Pupils will know that volcanoes are big holes that let out hot gasses, ash and magma from deep inside the Earth.
- Pupils will learn that the word 'volcano' comes from 'Vulcan', the Roman god of fire.
- Pupils will know that the Earth has three layers – the **crust** at the very top, then the **mantle,** then the **core** at the very middle of the planet.
- Pupils will know that a volcano is a very deep hole in the Earth's crust that can let out hot gasses, ash and lava.
- Pupils will know that volcanoes have long shafts (**vent**) that go all the way down through the Earth's crust, to magma - magma is found between the crust and the mantle. It's so hot there that rocks melt into liquid!
- Pupils will know when a volcano **erupt**s, magma comes up and out through the vents.
- Pupils will know magma is called **lava** when it's outside the volcano.
- Pupils will learn that many volcanoes are mountains, made up of layers of lava and ash.
- Pupils will know that some volcanoes are underwater.
- Pupils will know there are three ways to describe a volcano and explain what it's doing – **active, erupting, and dormant.**
- Pupils will learn that an extinct volcano is one that hasn't erupted in at least 10,000 years, and that scientists don't think will erupt again for a very long time.
- Pupils will learn that volcanoes can destroy communities, injure people and lead to deaths. They will learn that most of the gas that comes out of volcanoes is poisonous.
- Pupils will learn that ash from volcanoes is very good for growing things for it adds nutrients to the soil.
- Pupils will learn that most volcanoes can be found in countries that have coastlines on the Pacific Ocean – this is called the **Ring of Fire.** *(link to Year 3 Earthquake learning)*
- Pupils will learn that there are 1,500 active volcanoes in the world and about 50 volcanoes erupt every year.
- Pupils will know there aren't any volcanoes in the UK.
- Pupils will know the largest volcano in Europe is Mount Etna in Sicily (Italy).
- Pupils will learn that the largest active volcano in the world is Mauna Loa, on the Hawaiian islands.

Key vocabulary

Tectonic plates, Faults, crust, mantle, outer core, inner core, magma, vent, active, dormant, erupting, extinct, ring of fire

Phase 2 - Pupils will learn how volcanoes can cause people harm

Pupils will learn how volcanoes can cause people harm through two case studies:

1 – **Mount Vesuvius**, a volcano near the Bay of Naples in Italy, has erupted more than 50 times. Its most famous eruption took place in the year 79 A.D., when the volcano buried the ancient Roman city of Pompeii under a thick carpet of volcanic ash. The dust "poured across the land" like a flood, one witness wrote, and shrouded the city in "a darkness…like the black of closed and unlighted rooms." Two thousand people died, and the city was abandoned for almost as many years. When a group of explorers rediscovered the site in 1748, they were surprised to find that– underneath a thick layer of dust and debris–Pompeii was mostly intact. The buildings, artefacts and skeletons left behind in the buried city have taught us a great deal about everyday life in the ancient world.

2 - **Eyjafjallajökull volcano,** situated on the Eastern Volcanic zone in southern Iceland, began erupting lava on 20 March 2010. At first there was not much explosive activity. A second eruption then began beneath the ice cap near the summit of the volcano on 14 April 2010. This eruption caused the melting of large amounts of ice, leading to flooding in southern Iceland.

The interaction of magma and water created a plume of very fine volcanic ash and gas over 10 kilometres (33,000 feet) high, which spread out and was carried by winds south-eastwards towards the Faroe Islands, Norway, and northern Scotland. The eruption caused a huge amount of harm to thousands of people. Further information can be found at BBC Bitesize - https://www.bbc.co.uk/bitesize/guides/zpf9mnb/revision/8

Year 4 Focus – Earthquakes

Subject Knowledge - Teacher Summary

An earthquake is what happens when two blocks, or 'plates' of the Earth suddenly slip past one another. The surface where they slip is called the fault or fault plane. The location below the earth's surface where the earthquake starts is called the hypocentre, and the location directly above it on the surface of the earth is called the epicentre.

The earth has four major layers: the inner core, outer core, mantle and crust. The crust and the top of the mantle make up a thin layer on the surface of our planet. But this layer is not all in one piece – it is made up of many pieces like a jigsaw puzzle covering the surface of the Earth. These puzzle pieces keep slowly moving, sliding past one another and occasionally bumping into each other. We call these puzzle pieces tectonic plates, and the edges of the plates are called the plate boundaries. The plate boundaries are made up of many faults, and most of the earthquakes around the world occur on these faults. Since the edges of the plates are rough, they get stuck while the rest of the plate keeps moving. Finally, when the plate has moved far enough, the edges unstick on one of the faults and there is an earthquake.

While the edges of faults are stuck together, and the rest of the plate keeps moving, the energy that would normally cause the blocks to slide past one another is being stored up. When the moving block suddenly 'unsticks', all that stored up energy is released. The energy radiates outward from the fault in all directions in the form of seismic waves like ripples on a pond. The seismic waves shake the earth as they move through it, and when the waves reach the earth's surface, they shake the ground and anything on it.

Instruments called seismographs are used to determine how large the earthquake was. The instrument uses a weighted pen and a spring and the vibrations from the earthquake makes the pen draw lines onto some paper. A short wiggly line that doesn't wiggle very much means a small earthquake, and a long wiggly line that wiggles a lot means a large earthquake. The length of the wiggle depends on the size of the fault, and the size of the wiggle depends on the amount of slip.

The size of the earthquake is called its magnitude. There is one magnitude for each earthquake. Scientists also talk about the intensity of shaking from an earthquake, and this varies depending on where you are during the earthquake.

What pupils will learn and know (Learning components)

Phase 1 – Knowledge about Earthquakes

- Pupils will know that the Earth is made up of huge pieces of flat rock called **tectonic plates**.
- Pupils will know that these tectonic plates move very, very slowly, and places where they meet are called **faults**.
- Pupils will learn that when these plates rub together, the movement forces waves of energy to come to the earth's surface. Pupils will know that we feel this on the Earth's surface as an **earthquake**.
- Pupils will know that these waves of energy that travel through the earth are known as **seismic waves**.
- Pupils will learn that earthquakes can sometimes be nothing more than small **tremors** or shakes, but sometimes they can cause damage and d**evastation**.
- Pupils will learn that earthquakes can make buildings fall down and set off landslides, as well as having many other deadly effects.
- Pupils will learn that an earthquake that occurs at the bottom of the ocean/ sea can push water upwards and create massive waves called **tsunamis.**
- Pupils will know the **epicentre** of an earthquake is the area on the surface, above the point where the earthquake **originated.**

- Pupils will learn about the location of earthquakes and will identify these regions on world maps. Pupils will learn that almost 80% of all the world's earthquakes occur along the rim of the Pacific Ocean, called the "**Ring of Fire**
- Pupils will know that the amount of energy generated by an earthquake is known as the **magnitude** of an earthquake. (You are unlikely to feel a magnitude 3 earthquake but magnitude 6 earthquakes could potentially cause large damage)
- Pupils will know that the **Richter Scale** is a device that gauges the magnitude (the energy it generates) of the earthquake.(It was originated by American geophysicist Charles Francis Richter).
- Pupils will learn that in Ancient Greece, people believed that the god of the sea, **Poseidon**, caused earthquakes. When he was angry, Poseidon would strike the ground with his trident and set off an earthquake. His unpredictable, violent behaviour earned him the nickname 'Earth-Shaker'.
- Pupils will learn that scientists think that animals may sense weak tremors before a quake. Other scientists think that animals may sense electrical signals set off by the shifting of underground rocks.

Key vocabulary

Tectonic plates, Faults, Earthquake, Tremor, Devastation ,Tsunamis, Magnitude, Richter Scale, Ring of Fire, Seismic Waves.

Phase 2 - Pupils will learn how earthquakes can cause people harm

Pupils will learn how earthquakes can cause people harm through two case studies:

1 – Earthquake which hit Haiti on January 12, 2010. Death toll estimates range from 100,00 to 160,000 people.
2 - Earthquake that hit the Tohoku region of Japan on March 11, 2011, had a magnitude of 9.0 and killed over 15,000 people

- Pupils will learn that earthquakes can destroy communities, injure people and lead to deaths. Often earthquakes are only the beginning of the damage that can occur. The effects of an earthquake can be any or all of the following: buildings damaged and made unstable, burst water pipes that could result in water pollution, contamination and flooding; burst gas pipes potentially leading to explosions or fires; businesses, industries, homes and public buildings destroyed; transport links and emergency services disrupted. Other risks involve consequences to the landscape, environment and wildlife along with the risk of landslides and tsunamis.
- Pupils will learn about the tsunami on December 26 2004. A tsunami was triggered following a massive earthquake in the Indian Ocean. The death toll was enormous. Worldwide, it is estimated that about 230,000 people died as a result.
- Pupils will learn that not all earthquakes harm people. There are about 500,000 earthquakes a year around the world. About 100,000 of those can be felt, and only 100 or so cause damage each year. Each year, the southern California area alone experiences about 10,000 earthquakes, most of them not felt by people.
- Pupils will learn that people's behaviour can sometimes cause earthquakes. For example, oil extraction and fracking for gas can cause minor earthquakes. An example of this is an earthquake caused by fracking near Blackpool in 2011.
- Pupils will know that it is important for earthquake-prone countries such as Japan to build houses and buildings that react well to earthquakes. Good building engineering can help stop buildings collapsing under the stress of large earthquakes, for example by building structures which can 'wobble' when an earthquake hits.
- Pupils will consider why people living in wealthy regions of the world are less likely to die in an earthquake than those living in poorer regions of the world (cost of building earthquake resistant buildings).

Please note, a tsunami is a sequence of huge waves of water that usually occur in oceans or large lakes. Tsunamis are caused by disturbances within the surrounding areas; they are usually caused by underwater earthquakes, volcanic eruptions and landslides. ***A tsunami is not a tidal wave*** *– tidal waves are caused by the forces of the moon, sun, and planets upon the tides, as well as the wind as it moves over the water.*

Year 5 Focus – Coasts

Subject Knowledge - Teacher Summary

The UK is a maritime nation, with nowhere more than 80 miles from the sea. The UK's coastline is well over 6,000 kilometres long. It varies dramatically and has a number of different rocky habitats, ranging from calm, sheltered coves and rocky beaches to tall, rocky cliffs. Coasts provide a particularly appropriate context for exploring and investigating key geographical ideas and concepts, such as physical processes and human effects on the environment; physical changes can occur almost every day through the action of the tides.

Waves are usually created by the action of the wind on the surface of the sea – the exceptions are tsunamis, which are the result of undersea earth movements. When waves reach the shore they can be either destructive or constructive. Destructive waves are high and have a great deal of energy. Constructive waves have less energy, and the action of the swash can move material up a beach. Waves erode softer rock on the coast into bays, leaving headlands of harder rock protruding into the sea. Erosion is at its greatest where large waves break against a cliff. Slowly the waves undercut the foot of the cliff, and over time it is undermined and collapses. As this process is repeated, the cliff will retreat, leaving an expanse of gently sloping rock at its foot. This area will be covered at high tide and exposed when the tide is out – there is a great example of rock pools in Borth which children will experience on their Y5 field trip (if the tide is out!)

On headlands where resistant rocks have cracks and faults, erosion will widen any weakness to form, initially, a cave. If the headland is relatively narrow, eventually wave action will cut through to form a natural arch. As the waves continue to erode, sooner or later the roof of the arch will collapse, leaving an isolated stack. Because waves rarely approach a beach at right angles, they cause movement of material along the shore, this is known as longshore drift. Wooden barriers called groynes are built to slow down the movement.

Tides

The tide is the regular rising and falling of the sea's surface caused by changes in gravitational forces. At any point on the coast, there are normally two high tides and two low tides each day.

Human Features - It is possible to categorise places on the coast by the types of human features which are evident there. In places such as river mouths and deep-water bays, fishing and trading ports have grown. In places with attractive beaches, tourist resorts have developed. Coastlines distant from population centres and/or unsuitable for ports have remained largely unspoilt. Such coasts still suffer from tourism pressures, however, and some have attracted attention as potential locations for wind farms. Human features can contribute to erosion on the coast. Buildings on cliff tops can increase the instability of cliffs, resulting in landslips. Concrete sea walls are built at the base of cliffs, and gabions (huge metal baskets filed with stones and boulders) are placed to reinforce coasts threatened by erosion.

Misconceptions

Two obvious misconceptions may become apparent when children are investigating coasts:

> Children often do not understand the difference between waves and tides. It is important to emphasise that, although the waves appear to roll in and out constantly on a beach, the sea as a whole moves in and out from the shore twice a day by a much greater amount. Children often assume that coastal processes happen over a very short timescale, these are often long-term processes.

Coasts are continually changing as a result of the movement of the plates that make up Earth's crusts. In the long term, sea levels rise and fall because of this movement. Scientists have also predicted that changes in climate caused by global warming will cause sea levels to rise. An increase in marine pollution is also affecting coasts and their delicate ecosystems.

What pupils will learn and know (Learning components)

Phase 1 – Knowledge about Coasts

- Pupils will know that the **coast** is the point where the land meets the sea or ocean.
- Pupils will know there are many different types of coast. They may be sandy, rocky, muddy, or covered in shingle.
- Pupils will learn that coasts have changed over millions of years. Coasts are affected by events such as volcanic activity, ice ages, and changes in sea levels.
- Pupils will know that coasts are in a **constant state of change.**
- Pupils will know that water, wind, and ice cause something called **erosion** – the wearing away rocks or soil.
- Pupils will know that the continual force of waves against rocks wears them down (erodes) and breaks them up into smaller and smaller **fragments.**
- Pupils will know that there are different types of rock and different rocks have different **properties**.
- Pupils will know hard rocks will erode slower and softer rocks erode quicker.
- Pupils will learn that **coastal headlands** often form as a result of hard rock and soft rock tending to be eroded to form openings in the coastline, known as **bays.**
- Pupils will know that **sand** is tiny pieces/fragments of rock and minerals.
- Pupils will learn that erosion at the coast can result in the formation of features such as **sea caves** and **wave-cut platforms** with their associated **rock pools**.
- Pupils will know that the water (sea) often carries eroded material, This movement of eroded material is known as **transportation.**
- Pupils will learn that because waves rarely approach a beach at **right angles**; the eroded material is transported along the shore at an angle, this is known as **longshore drift,**
- Pupils will know that when the sea loses energy the transported material is dropped (**deposited**) this is called **deposition.**
- Pupils will learn that coastal landforms are either a result of erosion or deposition.
- Pupils will know that **beaches** are the most common **depositional coastal landform**.
- Pupils will learn that a **spit** is an example of a depositional coastal landform caused by longshore drift – pupils will visit Ynyslas spit during their Y5 fieldtrip.
- Pupils will know that the sea can destroy coastal communities and people create **sea defences** to protect such communities.

Key vocabulary

Coast, state of change, erosion, fragments, properties, coastal headlands, bays, rock pools, sea caves, wave-cut platform, rock pools, transportation, sand, longshore drift, beach, deposited, deposition, landform, spit, sea defences.

Phase 2 - Pupils will learn how the sea can cause people living by the coast harm

Pupils will learn how the sea can cause people living by the sea. Pupils will link this learning to climate change and how, as the Earth warms, sea levels are due to rise and erosion will increase as the sea energy's increase.

Case Study 1 – Borth, Wales. Pupils will investigate the impact of the sea on coastal communities through the study of Borth, a small coastal village in Ceredigion, Mid Wales. Pupils will undertake a fieldtrip to Borth.

Borth provides the opportunity for pupils to witness, at first hand, the erosion of local cliffs. Pupils will learn how the eroded material is transported up the coastline as longshore drift and how it is deposited to form sandy beaches and, in Ynyslas, a spit. Pupils will learn how many years of erosion has created a wave-cut platform. Dependent on the tide, pupils will have the opportunity to investigate the rock pools. Pupils will learn how the erosion of the cliff are effecting residents whose homes are on the cliff top. Pupils will consider what will happen to these homes as the cliff continues to erode. Pupils will learn about measures (sea defences) taken by the authorities to protect the village of Borth from the sea (large boulders placed on the beach) and the impact of sea level rise.

Case Study 2 - Fairbourne, Wales. Pupils will learn about the Welsh village of Fairbourne on the coast of Barmouth Bay. The authorities have said that if sea levels rise as predicted by scientists, they would not have the financial resources to protect Fairbourne from the sea. It would mean the village of Fairbourne would become engulfed by the sea, leaving a community of around 850 people homeless.

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Year 6 Focus – Rivers

Subject Knowledge - Teacher Summary

When a lot of rain falls in a short time, the ground can't always absorb it quickly enough. This means that lots more water than normal flows into the rivers. If there is more water than the river can carry away to the sea, it bursts over its banks and floods the land around it. This is called a 'flash flood' because it happens so quickly. There aren't always many safe places to cross a river on foot, and building bridges was hard for people before they had modern machines. Anyone going on a journey would have to cross a river at the same place as lots of other people. Towns would often grow up around these places so that travellers could find a place to sleep or trade goods with each other.The mouth of a river also used to be a very good place to build a town. Large boats that cross the sea to other countries can sail into the mouth of the river to unload their cargo and to load local produce to take elsewhere. Small boats can sail up and down the river taking goods to and from the towns that are further inland.

Lots of towns are named after river crossings or the rivers that flow through them. Oxford is named after a ford where people used to take their oxen across the river Thames. Stourbridge is a town in the West Midlands where there is an old bridge over the river Stour. Dartmouth in Devon is town at the mouth of the river Dart. The Welsh word for a river mouth is 'aber'. Many towns in Wales are named after the rivers that they are on, just as they are in England. Aberystwyth is town at the mouth (aber) of the river Ystwyth.The faster a river flows, the more erosion it causes in the soil and rocks around it. Over millions of years streams and rivers will remove more and more material from the area around them and cut bigger and bigger paths for themselves. This is one way how valleys are created (valleys are also created by the moved of ice). Even quite small streams can create big valleys over a long time. When the slope that rivers are flowing down stops being so steep, rivers slow down and instead of rushing down the straightest path through the valley, they often start to curve and bend. These curves are called meanders.

Erosion on the bends of the meanders means that they are slowly changing shape and that path the river takes will gradually change. Sometimes the erosion will cut a straight path for the river to take and leave what used to be a bend isolated from the river. This is called an 'ox-bow lake'. Pupils do not need to know this as this will be taught in KS3/KS4 curriculum. Sometimes to make it easier to for boats to travel up and down rivers, people change the way that the river flows. If part of a river is very bendy, they might dig a straighter channel for the river to flow down so that the boats don't have to make tight turns. Sometimes they make the river wider or make it deeper so that bigger boats can travel on it. When the river is too steep and flows to fast, they might put in locks to make it safer for the boats to travel. Rivers have also been used for a long time to help people work equipment. People would build mills to grind corn and grain near to rivers so that they could use a water wheel to work the mill. The bottom of the wheel would be put into the water, and when the water turned the wheel, the wheel would make the equipment in the mill turn and grind up the grain.

Today, instead of using a wheel to operate equipment, we build big dams across the rivers and use the force of the water to turn turbines and generate electricity to power our machines. We call this hydro-electricity because it is generated from water. Pupils will have the opportunity to visit a hydro-electricity power station on their Y5 fieldtrip to Mid Wales. In recent years, the frequency of flash flooding has increased as extreme weather events become more common. The impact of flash flooding on communities can be significant with the destruction of buildings and the loss of life.

What pupils will learn and know (Learning components)

Phase 1 – Knowledge about Rivers

- Pupils will know that rivers carry rainwater from hills downhill to other rivers, lakes or the ocean.
- Pupils will know the start of a river is called the **source** and the end is called the **mouth.**
- Pupils will know that an **estuary i**s where the river meets the sea.

- Pupils will learn that the river here is **tidal** (linked to work on coasts) and when the sea retreats the volume of the water in the estuary is reduced. (Pupils will have visit the Dyfi estuary on their Y5 fieldtrip to Mid Wales)
- Pupils will know that many rivers and streams will join together before they reach the mouth of the river. The smaller rivers and streams are called **tributaries.**
- Pupils will know that the sides of the river are called the **river banks** and the bottom of the river is called the **river bed**.
- Pupils will learn that rivers often don't flow straight and can curve and form bend. Pupils will know that these bends are referred to as **meanders.**
- Pupils will know that a **river current** is the water moving in a river. The river current is sometimes referred to as the **river flow.**
- Pupils will know that it is the force of **gravity**, which makes the water flow downwards, which creates river currents.
- Pupils will know that the amount of water (**volume**) in the river also affects the speed of the current – as the volume of water increases the strength of the current increases.
- Pupils will learn that a fast flowing (strong current) river has lots of **energy** and is able to carry rocks and soil from its banks. The more energy the river has the more material the river can carry.
- Pupils will know that the process that wears away the river bed and banks is called **erosion.** (teacher note, this is a key physical geographical term which pupils must retain).
- Pupils will learn that when the current slows the river loses energy. Eventually the river will not have enough energy to carry material (rocks and soil) and these are dropped.
- Pupils will know than this is called **deposition.** (teacher note, this is a key physical geographical term which pupils must retain).
- Pupils will learn that when there is too much water in a river, the water flows over the top of the its river banks. Pupils will know that this is known as a **river flood.**
- Pupils will learn that people can use the river current to generate electricity Pupils will know we call this hydro-electricity because it is generated from water and it is known as a 'green' form of electricity because it dones involve burning fossil fuels. Pupils will have had the opportunity to visit a hydro-electricity power station near Aberystwyth as part of their Y5 fieldtrip.

- *Pupils will identify rivers on maps and will study aerial photographs - please refer to locational knowledge statements. Pupils will learn that lots of UK towns are named after river crossings or the rivers that flow through them. For example: 1 - Oxford is named after a ford where people used to take their oxen across the river Thames. 2 - Stourbridge is a town in the West Midlands where there is an old bridge over the river Stour. 3 - Dartmouth in Devon is town at the mouth of the river Dart. 4 - The Welsh word for a river mouth is 'aber'. Many towns in Wales are named after the rivers that they are on, just as they are in England. Aberystwyth is town at the mouth (aber) of the river Ystwyth.*

Key vocabulary

river source, river mouth, estuary, tidal, tributary/tributaries, river banks, river bed, meander, river current, river flow, gravity, volume, energy, erosion, deposition, river flood, material, river flood

Phase 2 - Pupils will learn how rivers can cause people harm

Pupils will learn how rivers can cause people harm, particularly when rivers flood. Pupils will link this learning to climate change and will understand how rivers are more at risk of flooding as heavy rainfall events become more frequent. This learning will be taught through case studies.

Case Study 1: Floods of Lynmouth, Devon in 1952 - The worst post-war flooding disaster in Britain took place in the North Devon village of Lynmouth in 1952, in a tragedy which claimed 34 lives. The flooding occurred on 15 August 1952, after 23cm of rain fell in the space of 24 hours. The downpour caused a wall of water to surge down from Exmoor onto Lynmouth. Trees were uprooted and formed dams behind bridges, creating walls of water that carried huge boulders into the village. In all, 34 people in Lynmouth and surrounding villages were killed, and 39 buildings collapsed.

Case Study 2: Floods of Germany and Belgium in July 2021 - Record rainfall in parts of western Europe caused major rivers to burst their banks. The floods in Germany, Belgium and other areas killed at least 220 people as towns and villages were swamped. Scientist say global heating made rainfall events like this up to nine times more likely in Western Europe. The destruction caused by these floods were amongst the worse ever experienced in Europe.

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Assessment Golden Thread A

Assessment Criteria - How our actions (the things we do) can change our planet and cause harm.

Developing	Establishing	Embedding
The pupil can independently recall/remember some of the key knowledge taught in Phase 1 (knowing). They struggle to remember the majority of the key knowledge and rely on prompts.	The pupil can independently recall/remember the majority of the key knowledge taught in Phase 1 (knowing). Where there are minor gaps, the pupil responds quickly when promoted.	The pupil can independently recall/remember all of the key knowledge taught in Phase 1 (knowing). They can supplement this taught knowledge with additional knowledge learnt outside of the classroom.
The pupil display some enthusiasm for their learning, but may be reluctant to share and discuss their knowledge.	The pupil display an enthusiasm for their learning, they are keen to share and discuss their knowledge.	The pupil displays a real passion and commitment for this golden thread. They are excited to share and discuss their knowledge.
The pupil struggle to apply their Phase 1 knowledge and they may not have made the connection from Phase 1 to the case studies taught in Phase 2.	The pupil can apply their Phase 1 knowledge. They use their case study knowledge to give examples.	In addition to the case studies taught in class, the pupil can give additional examples from case studies outside of those studied in the classroom.
The pupil can describe what may happen to our world if humans do not change their behaviour, this lacks sufficient detail.	The pupil can describe what may happen to our world if humans do not change their behaviour.	
The pupil understands that solving the issues studied in Phase 1 and Phase 2 are complex. They struggle to give examples.	The pupil understands that solving the issues studied in Phase 1 and Phase 2 are complex. They are able to give examples of why it is difficult to change human behaviour.	
The pupil can give some examples of what they can do to make a difference.	The pupil can give examples of what they can do to make a difference.	
The pupil knows there are organisations (local, national or international) which are trying to change human behaviour. They struggle to give examples of their work.	The pupil knows there are organisations (local, national or international) which are trying to change human behaviour. They can give examples of some of the work of these organisations.	In addition to giving examples of the work of these organisations, the pupil is also able to describe where this work has been successful and where it has been less so.
The pupil is beginning to use knowledge to reach conclusions and is beginning to form their own opinions. They may struggle to explain/justify their opinion.	The pupil can use the knowledge gained to reach clear conclusions, they have developed their own opinions and can justify these opinions with evidence.	The pupil's ability to use evidence/knowledge to justify their opinion is beyond what is expected for their age, they are an example of a pupil who have a deep rooted understanding of the subject.
The pupil is beginning to use some geographical knowledge and vocabulary but often rely on not geographical knowledge and vocabulary.	The pupil can use appropriate geographical knowledge and vocabulary when discussing and describing their learning.	Pupils have an extensive base of geographical knowledge and vocabulary, this is beyond what is expected and is a result of wider learning outside the classroom.

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Suggested Question Prompts
Did you enjoy our recent golden thread? Why did you enjoy it? Tell me what can you remember from our golden thread, 'How our actions can change our planet our cause harm'? What do you now know that you didn't know before? Have you learnt any new words/concepts? What does……means? (choose examples of concepts from your year group e.g. greenhouses gases) Can you give me examples where ……. is damaging our world? Is there anything (action) we can do (take) to reduce or stop this happening? Can you give examples of where people have responded - done something/taken action? Has this been successful? Why? What could we do as individuals? If you met …….(world leader) what would you say? Why? Thinking about our golden thread and based on what you now know, if you were a world leader what would you do? Why?
Please note, these are only examples of the sorts of question you may wish to use when talking to individual pupils, they are not an exhaustive list. Please tailor questions/prompts to ensure they are appropriate to the needs of your pupils.