

Subject	Geography	Year Group	8	Sequence No.	2	Topic	Natural hazards
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Retrieval	Core Knowledge	Student Thinking
What do teachers need retrieve from students before they start teaching new content ?	What specific ambitious knowledge do teachers need teach students in this sequence of learning?	What real life examples can be applied to this sequence of learning to development of our students thinking, encouraging them to see the inequalities around them and 'do something about them!'
<p>L 2</p> <p>Recap. What is the difference between a hazard and a natural event?</p> <p>Links to climate in the Africa topic.</p> <p>L3 Starter task showing an image of a tornado. Task is to write down what this is and explain why it is a natural hazard.</p> <p>Recap. Can we impact our weather and climate?</p> <p>L4 - Use your maps from last lesson, explain why tornadoes occur in Tornado Alley.</p> <p>Remembering how to describe where a location is, which is then used for Australia. Links to previous topics and L3.</p> <p>L5 starter - Using the information from last lesson, explain how wildfires occur.</p> <p>L6 - What can you remember from last lesson about plate boundaries? Test your partner. Do not let your partner cheat!</p>	<p>L1 - What is a natural hazard?</p> <ul style="list-style-type: none"> Natural hazards are extreme natural events that can cause loss of life, extreme damage to property and disrupt human activities. Natural event: Any event that is caused by natural processes. The difference between a hazard and an event is that a natural event only becomes a hazard when it has the potential to impact people. A natural disaster is a major adverse event resulting from natural processes of the Earth So a hazard has the potential, whereas a disaster is when it actually impacts human life adversely. The definitions of various types of hazards (worksheet task) – Drought. A prolonged period of abnormally low rainfall, leading to a shortage of water Volcano- a mountain or hill, having a crater or vent through which lava, rock fragments, hot vapour, and gas are or have been erupted from the earth's crust. Avalanche - A mass of snow, ice, and rocks falling rapidly down a mountainside Flood The covering or submerging of normally dry land with a large amount of water Tsunami A long, high sea wave caused by an earthquake or other disturbance Tornado - A mobile, destructive vortex of violently rotating winds having the appearance of a funnel-shaped cloud and advancing beneath a large storm system. Tropical storm (hurricane) A very intense low-pressure wind system bringing heavy rainfall and strong winds Earthquake – a sudden violent shaking of the ground, typically causing great destruction, as a result of movements within the earth's crust or volcanic action. Being vulnerable makes you more at risk to hazards. Vulnerability is a measure of the extent to which a community, structure, service 	<p>With the knowledge gained in this topic students will develop an understanding of causes and effects linked to natural hazards that impact our world as well as exploring ways to deal with them and solve problems associated with them. They will do this through the following activities:</p> <ul style="list-style-type: none"> Students understand the difference between a natural event and a natural hazard through real life examples. This helps them to see like a Geographer in everyday life and make this distinction themselves. Students look at what they think the country Mali's climate would be like using images and their own knowledge. Students can see how climate can influence their lives as a result of this. Students are able to see the real-life example of the USA in detail. They look at the locations of various states and understand the physical geography of the country, in particular the role that the Rocky Mountains and the Gulf of Mexico play. Students can see the damage that their actions could have on their local area if the conditions are right to cause wildfires. Students see how and why the earth looks the way it does. They can then understand why and how tectonic plates move.

<p>Using the knowledge gained from the volcano booklet, What type of volcano do you think this White Island is?</p> <p>L7 Recap question from L6</p> <ol style="list-style-type: none"> 1. Can you name 2 types of volcanoes? 2. What can you remember about an example of a volcano that we studied? <p>L8 Use knowledge gained from the topic especially lesson 7 to understand what causes a tsunami.</p> <p>Categorising impacts into social, economic and environmental impacts-links to previous y7 topics (how we use maps, Sherwood forest).</p> <p>L10 What management strategies do you think are the best from last lesson (L8 &9) and why?</p> <p>Know what terms focus and epicentre mean.</p> <p>Using the knowledge of destructive plate boundaries to understand a collision plate boundary.</p> <p>L11 & 12 - Write down as much information as you can from last lesson about Nepal in the back of your books. Be a top geographer and describe what makes a natural event become a natural hazard.</p>	<p>or geographical area is likely to be damaged or disrupted, based on its nature or location, by the impact of a particular natural hazard.</p> <p>L2 - What are extreme weather hazards and how are they influenced?</p> <p>What is weather and climate?</p> <ul style="list-style-type: none"> • Weather - the state of the atmosphere at a particular place and time (short term). What do we mean by atmosphere? • Climate - the weather conditions in an area in general or over a long period of time such as 30 years (long term). • Mali for example would have a hot and dry climate. <p>What are extreme weather hazards?</p> <ul style="list-style-type: none"> • Extreme weather includes unexpected, unusual, unpredictable, severe, or unseasonal weather. <p>Causes of climate change – human activity, burning fossil fuels causing the greenhouse effect.</p> <p>Impacts – melting sea ice (sea level rise), more extreme weather.</p> <p>Greenhouse gases trap heat in the Earth's atmosphere, like a blanket It is essential for life that the atmosphere keeps in the Sun's warmth, however too much warmth will have a negative impact on the environment. The greenhouse gases can cause climate change.</p> <p>Climate change can therefore cause more extreme weather which can impact human lives.</p> <p>L3 Why does the USA have so many tornadoes?</p> <p>The location of tornado alley:</p> <ul style="list-style-type: none"> • Generally, a Tornado Alley map starts in central Texas and goes north through Oklahoma, central Kansas and Nebraska and eastern South Dakota, sometimes dog-legging east through Iowa, Missouri, Illinois and Indiana to western Ohio. <p>Questions from the video</p> <ul style="list-style-type: none"> • How many tornadoes are recorded in Europe per year? <p>300</p> <ul style="list-style-type: none"> • What geographical features make Tornado Alley perfect for tornadoes? <p>Rocky Mountains to the west, the Gulf of Mexico to the south (large warm water source).</p> <ul style="list-style-type: none"> • What ingredients do we need for a tornado? <p>Thunderstorm, warm moist air (Gulf of Mexico), cool dry air (from the Rocky Mountains), third direction of wind (jet stream). Getting the storm to rotate – this happens as a result of varying wind directions which the area has an abundance of. The storm that this creates is called a supercell.</p> <ul style="list-style-type: none"> • Where else do we get tornadoes? 	<ul style="list-style-type: none"> • In order to get a feel for what the place is like, as a class the teacher will use google maps to take a quick look around. • Helps to understand how earthquakes occur and ways to protect yourself from them. This may be something that the students use in later life. • Students develop debating skills through a scenario which is useful for their oracy skills. Today we hear from the Japanese government and the general public and pose the question 'was Japan prepared for the earthquake and Tsunami?' • Examine another place which is very poor and see how it was impacted by an earthquake. • Students get the chance to develop their designing and communication skills through designing their own earthquake resistant building with varying budgets for a rich and poor place.
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	<p>South America</p> <p>L4 –How wildfires form:</p> <ul style="list-style-type: none"> • The bushfires are often started by natural causes such as lightning strikes • Humans can cause wildfires • Wildfires spread quickly through dried out vegetation • Hot embers travel far enough to start fires miles away • Started by campfires • Started by discarding lit cigarettes • Started by playing with matches or fireworks <p>Identify how a house can be at risk from wildfires. Examples include: overhanging trees, blocked guttering with vegetation, long grass, location of vehicles or flammable substances.</p> <p>L5 Explain how tectonic plates move.</p> <p>What has the earth and this egg got in common?</p> <ul style="list-style-type: none"> • The inside of the earth is layered something like an egg. Both have a thin, brittle shell. The crust of the earth is broken into pieces, like the cracked shell of a hardboiled egg. The mantle of the earth is like the egg white, and the core of the earth lies in the center, like the egg yolk. • A tectonic plate is a massive, irregularly shaped slab of solid rock, which is constantly moving. <p>Explain how plates move:</p> <ul style="list-style-type: none"> • Convection currents in the mantle cause plates to move. Rock is in a semi-liquid state and behaves like any other fluid, rising up from the bottom of the mantle towards the crust. As the rock loses heat near the earth’s crust, it becomes relatively cooler and more dense, sinking back down to the core. <p>There are a number of things that can happen when plates meet or move apart:</p> <ul style="list-style-type: none"> • Land can either be destroyed or constructed (created) at boundaries. • When plates meet it is called a destructive plate boundary • When plates move apart it is called a constructive plate boundary • When they slide past each other, this is called a conservative plate boundary! 	
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L6- How do volcanoes occur?

Reading the information booklet and answering the reading comprehension questions.

Impacts of the eruption:

- It was reported that there were 47 people on the island when the eruption occurred. Eighteen people were killed and a further 26 were seriously injured, many critically.
- Destroyed a helicopter.
- People had to be evacuated.
- Many of the surviving tourists on the island experienced burned lungs from inhaling sulphur dioxide and volcanic ash, and “very significant” deep-tissue burns, some to more than half of their body. Twenty-seven of the 31 people injured in the eruption of the Whakaari/White Island volcano had burns to more than 30% of their body.

L7 - What are earthquakes?

- Earthquakes are the sudden violent shaking of the ground.

Why do earthquakes happen?

- Because of the movements of plates which get stuck due to friction.
- The release of pressure sends out huge amounts of energy which makes the ground move.

Key words match up -

Fault line - A crack in the Earth's crust

Focus - The point where an earthquake starts

Epicentre - Centre of an earthquake on the surface

Richter Scale - A means of measuring the power of an earthquake

Seismic waves - Ripples outwards from epicentre

Explain the process of an earthquake:

An earthquake is caused by a sudden slip on a **fault line**. The tectonic plates are always slowly moving, but they get stuck at their edges due to friction.

When the stress on the edge overcomes the friction, there is an earthquake that releases energy as **seismic waves** that travel through the earth's crust and cause the shaking that we feel.

Ways to keep safe in an earthquake:

Six Steps to Stay Safe

Take these steps to prepare for, survive and recover from an earthquake



Make a plan

Gathering your family will be top on your list. Choose a meeting place and an out-of-area contact person to relay messages.



Drop, cover and hold on

When a quake starts, drop down where you are, and cover your head. If you're near heavy furniture, take cover underneath and hold on tight.



Secure your home

Make sure your house is as shakeproof as possible by retrofitting weak spots, strapping down heavy furniture and securing loose objects.



Check for hazards

When the shaking stops, check for injuries and for damage to home electrical wires, gas lines, walls, floors and water pipes.



Get a kit

Store supplies to get your family through at least the first three days after a quake.



Stay connected

Surviving a quake is a community effort. Get to know your neighbors now, and work together with local organizations to prepare.

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How can earthquakes be measured?

A Seismometer is used to measure quakes. This can be shown using the Richter scale from 1-10 which is logarithmic. However, there is another way of measuring earthquakes – using the moment magnitude scale, which more accurately measures the strength of larger quakes.

L8 - Was Japan prepared for the earthquake and tsunami?

A tsunami is a long, high sea wave caused by an earthquake or other disturbance.

Categorise the following into social, economic and environmental impacts:

Primary Impacts	Secondary impacts
<ul style="list-style-type: none"> • 1500 deaths as a result of building collapse • Many buildings severely damaged, with 127000 collapsing • Roads and railways damaged along the East coast of Honshu • Sewage systems damaged • Reclaimed land in Tokyo suffered liquefactions (the ground turns to liquid due to shaking) and this damaged 1000 buildings • 17000 deaths due to drowning in the tsunami. The high death toll was due to the power of the surge of water which overtopped tsunami defences and flooded areas that were thought to be safe • The Fukushima dam burst • The Fukushima Power Plant generator was damaged 	<ul style="list-style-type: none"> • Electricity was cut off to 1 million homes • 1 million people were left without running water • Ruptured gas pipes led to fires that raged for several days • Stock markets around the world fell over concerns about Japan's rising debts in the face of billions of dollars worth of damage • 500km² of coastal plains were inundated, damaging the farming economy • Because the generator was damaged, there were concerns about nuclear contamination and the possibility of a meltdown as the cooling systems failed to operate • The World Bank estimates the damage was in excess of US\$300 billion

L10 - What happened in Nepal?

On 25 April 2015 a 7.8 earthquake struck Nepal in Asia. The earthquake occurred between the Indian and Eurasian plates. The focus was only eight kilometres deep and the epicentre was just 60 kilometres north-west from the capital Kathmandu.

Landlocked, lacking substantial resources for economic development, and hampered by an inadequate transportation network, Nepal is one of the least developed nations in the world. The economy is heavily dependent on imports of basic materials and on foreign markets for its forest and agricultural products.

Type of plate boundary:

Collision plate boundary – similar to destructive (which is oceanic and continental) but this is two continental plates that meet. This means that the plates keep pushing up higher.

L11 &12 - Earthquake resistant buildings

- **Earthquake resistant buildings** are structures designed to protect **buildings** from **earthquakes**. While no structure can be entirely immune to damage from **earthquakes**, the goal of **earthquake resistant buildings** is to construct structures that fare better during seismic activity than normal buildings.
- **Retrofitting** - to add a component or an upgrade to a building that didn't exist at the time it was made.

Key features of an earthquake resistant building. Completed sheet saved in folder:

