ST LAWRENCE C.E. PRIMARY SCHOOL LEARNING JOURNEY

SUBJECT: Geography UNIT: Tectonic Plates, Volcanoes, Mountains and Earthquakes TERM: Spring 1 YEAR GROUP: 6

THE BIG QUESTION	
How do tectonic plates affect the world's physical features?	
END OF UNIT OUTCOME	Encyclopaedia Page displaying information learnt about tectonic plates, mountains, volcanoes and earthquakes
OBJECTIVES	• Describe and understand key aspects of physical geography, including: mountains, volcanoes and earthquakes • Use maps, atlases, globes and digital/computer mapping to locate countries and describe features studied
CONCEPT: Legacy	What legacy have the tectonic plates left on the world so far? (e.g. mountains, volcanoes, earthquakes, oceans, continents)
LESSON 1 QUESTION	**How do tectonic plates shape our planet?**
KEY KNOWLEDGE	• scientists believe that a long time ago, the continents were joined together to form one huge land mass called Pangea. • about 200 million years ago Pangaea began to break apart, spreading out to form today's continents. • The Earth's outer layer is called the crust, and it is broken into large pieces called tectonic plates. • Tectonic plates are like giant puzzle pieces that fit together to cover the Earth. • These plates float on hot, soft rock called the mantle underneath them. • Tectonic plates are always moving, but very slowly—about the same speed that fingernails grow. • There are seven major tectonic plates and many smaller ones. • Some plates move towards each other, some move away, and some slide past each other. • When tectonic plates move, they can cause earthquakes. • When plates push together, they can form mountains. • When plates move apart, volcanoes can form as magma rises to the surface. • Most volcanoes and earthquakes happen along the edges of tectonic plates. • Tectonic plates help shape the Earth's surface, creating mountains, oceans, and continents. • Without tectonic plates, the Earth's surface would be flat and lifeless
RICH TASK	**Introduce The Big Question – what do they already know? Annotate for the learning journey.** **Explore KO** – copy in book after title page and paper copy home – tectonic plate section **Main Task** - Children to have maps of the world and how it has changed over time. Children to annotate changes in groups the changes they have noticed and present to the rest of the class.

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SUPPORT AND CHALLENGE	**Support** - Provide sentence starters for annotations, or use labelled maps with plate boundaries already marked **Challenge** - Explain why earthquakes and volcanoes happen at plate boundaries		
KEY VOCABULARY	Crust, mantle, tectonic plates, Pangaea, plate boundary, collision, magma, continent	**RESOURCES**	Digi-maps showing the boundary lines Images from the map showing how the tectonic plates have moved over time iPads
LESSON 2 QUESTION	**How are mountains formed?**		
KEY KNOWLEDGE	• mountains are areas of land that are much higher than the land surrounding them. • At plate boundaries, mountains are formed when the plates move apart or come together. • longest mountain range on earth is the mid-ocean ridge in the Atlantic ocean which was formed by tectonic plates moving apart. • Know the location of famous mountain ranges including: The Alps (central Europe), The Andes (the world's longest mountain range - South America) and The Himalayas (central Asia).		
RICH TASK	**Retrieval practice activity – tectonic plates – jigsaw four images (Pangea, move against each other, move apart, push together)** **Revise KO – Mountain Section** **Main Task** - Using resources locate the mountain ranges and identify these on our large class world map! – children to be split into three groups and gather information that will be added to the world map in the classroom. Model how fold mountains are formed with different materials. Which materials are most effective and why. - Felt - Tissue paper - Fabric - Coloured Paper - Card **Task 2** – Opinion Heads - after completing the practical activity, ask the children which head they agree with and why based on the task they completed previously.		
SUPPORT AND CHALLENGE	**Support** – Provide mountain range location cards, use pre-labelled atlases/maps and model explanations orally before written work **Challenge** - Compare and explain the difference between fold mountains and volcanic mountains		
KEY VOCABULARY	Mountain range, fold mountains, tectonic plates, collision, erosion, crust	**RESOURCES**	Use Digi-maps and the atlases to locate mountain ranges Materials for demonstration https://www.youtube.com/watch?v=ioqGcV1rS1g

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<table>
<tr><td>LESSON 3 QUESTION</td><td colspan="3">How and why do volcanoes form?</td></tr>
<tr><td>KEY KNOWLEDGE</td><td colspan="3">

Volcanoes are formed commonly at tectonic plate boundaries.
At plate boundaries, volcanoes are formed when the plates move apart or come together.
Some volcanoes are formed by hot spots in the Earth's crust, these do not erupt violently, lava flows slowly out of them e.g. Mauna Loa in Hawaii.
Pacific Ring of Fire has 452 volcanoes.
A volcano is an opening in the Earth's crust that allows magma, hot ash and gases to escape.
Eruptions occur when there is a build-up of pressure, when the pressure is released, magma explodes to the surface causing a volcanic eruption.
The magma chamber stores liquid magma below the volcano.
The mouth of the volcano is called a crater.
A vent is an opening at the Earth's surface through which volcanic materials escape.
Magma is molten rock that is so hot that is has turned into liquid. When magma reaches the surface of the earth it is called lava.
Over time as the volcano continues to erupt it will get bigger as the lava cools and forms a new crust.
Ash clouds are small pieces of rock and glass that can be carried in the air for many kilometres.
An active volcano has been erupting or has erupted in recent history and is likely to do so in the future, a dormant volcano is currently inactive but it may erupt again and an extinct volcano is never likely to erupt again.

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<tr><td>RICH TASK</td><td colspan="3">Retrieval practice activity – Mountains – True or False Mini Quiz
Revise KO – section on Volcanoes
Task 1 - On their own smaller map – children to identify where the tectonic plate boundaries are. Children to cut their map into different plates and then use resources to locate the Pacific Ring of Fire. Demonstrate how volcanoes are formed using watered down icing sugar and biscuits. Move biscuits in three different ways to show 'pulling apar, side by side and pushing into one another.
Task 2 - Create a cross section cone out of paper of a volcano and then ask the children how it erupts using a list of vocabulary. When the children have explained it using the vocabulary given they can erupt the volcano in the water bottle.</td></tr>
<tr><td>SUPPORT AND CHALLENGE</td><td colspan="3">Support – Vocabulary mat with diagrams showing the cross section of a volcano, group work, teacher modelling of activity
Challenge task options - Explain the difference between active, dormant and extinct volcanoes or compare hot spot volcanoes and plate boundary volcanoes</td></tr>
<tr><td>KEY VOCABULARY</td><td>Active, dormant, extinct, volcano, magma, lava, vent, crater, magma</td><td>RESOURCES</td><td>Use Digi-maps and the atlases to locate volcanoes and the Pacific Ring of Fire
https://www.youtube.com/watch?v=S9ty-ta1wyI</td></tr>
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	chamber, eruption, hot spot, Ring of Fir		https://www.nhm.ac.uk/discover/how-to-make-a-volcano.html

LESSON 4 QUESTION	**How do earthquakes affect our planet?**		
KEY KNOWLEDGE	• Earthquakes are caused by tectonic plates moving. • This happens when two plates collide or slide past each other. • As the plates move over long periods of time, friction causes energy to build up. • When the energy is suddenly released, it creates shock waves called an earthquake. • The place where an earthquake starts underground is called the focus. • The point on the Earth's surface directly above the focus is called the epicentre. • Earthquakes that happen under the ocean can create a huge wave called a tsunami. • The Richter scale is used to measure the strength (magnitude) of earthquakes. • Scientists who study earthquakes are called seismologists. • A seismometer is used to record earthquake movements. • Earthquakes can cause buildings to collapse, roads to crack, and landslides. • Over 80 per cent of large earthquakes happen around the edges of the Pacific Ocean. • This area is known as the Ring of Fire. • Some small earthquakes are so weak that people cannot feel them. • The largest earthquake ever recorded had a magnitude of 9.5. • It happened in Chile in 1960		
RICH TASK	**Retrieval practice activity – Volcanoes – Dual coding task (provide images of a crater, vent, hot spot, magma, ash cloud). Get children to explain each image.** **Revise KO – Earthquakes** **Main Task** - Using resources locate the world's earthquake locations. Label the location with the magnitude of the earthquake using the Richter scale on our large class world map. Watch videos of tsunamis and the affects that are caused. Children to make their own scale in groups - build a LEGO building which is effective by their own Earthquake. Groups to monitor the recorded scale they created.		
SUPPORT AND CHALLENGE	**Support** – Mixed ability groupings and adult support during LEGO structure testing **Challenge** - Evaluate which LEGO structure was strongest and why and explain how people can prepare for earthquakes		
KEY VOCABULARY	Earthquake, focus, epicentre, Richter scale, seismometer, tsunami, friction, magnitude	**RESOURCES**	Use Digi-maps and the atlases to locate locations where earthquakes occur.

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<table>
<tr><td>LESSON 5 QUESTION</td><td colspan="3">How do tectonic plates affect the world's physical features?</td></tr>
<tr><td>KEY KNOWLEDGE</td><td colspan="3">Summarise previous knowledge throughout the previous lessons – use of 'brain dump' task and cops and robbers to gather information learnt.</td></tr>
<tr><td>END OF UNIT OUTCOME</td><td colspan="3">Retrieval Task Earthquakes - 'Shake it Up!'- divide the class into table teams. Ask questions about earthquakes. Set a timer for 30 seconds for each team to answer. If they answer correctly, they get a point! If not, the other team has a chance to steal. The team with the most points at the end wins!
KO quiz – fill in the missing blanks
Outcome linked to The Big Question
What links to our concept have you found?
End of Unit Outcome - Encyclopaedia Page displaying information learnt about tectonic plates, mountains, volcanoes and earthquakes</td></tr>
<tr><td>SUPPORT AND CHALLENGE</td><td colspan="3">Support – Scaffolded encyclopaedia template and provide key vocabulary bank provided
Challenge - Make clear links to legacy (long-term impact on Earth and humans such as shaping the Earth's surface, creating natural hazards and natural resources, affecting where and how people live)</td></tr>
<tr><td>KEY VOCABULARY</td><td>Legacy, physical features, tectonic plates, mountains, volcanoes, earthquakes, plate boundaries</td><td>RESOURCES</td><td>Atlases
Pens
Pencils
iPads
Digi maps</td></tr>
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