





## SHAKE IT UP! (LEVELS 2 AND 3)

### Ages 8 to 10 (Level 2)

<b>Description:</b>	Learners will begin to understand the way the Earth is designed as tectonic plates, how mountains form, what earthquakes are and how we respond to them!
<b>Leading question:</b>	
<b>Age group:</b>	8 - 10-year old
<b>Subjects:</b>	<ul style="list-style-type: none"> <li>- Social Studies</li> <li>- Language</li> <li>- Art and Design</li> </ul>
<b>Total time required:</b>	4 hours total over 5 days
<b>Self-guided / Supervised activity:</b>	Low supervision by parents / guardians
<b>Resources required:</b>	Pens – Paper, Orange Plastic covers of containers, A large tub Cardboard, Scissors, Styrofoam, Glue Preferred: A World Map

Day	Time	Activity and Description
1		Do you think the ground beneath our feet is moving? Can you feel it move? Let's learn about it!
	10 minutes	Learners will reflect on how they think the Earth's surface and continents are formed. <ul style="list-style-type: none"> <li>• Learners will understand that our Earth is made up of slowly moving pieces called plates that are floating on a hot liquid. Our homes and even our oceans are on top of these plates, which are on top of this hot liquid.</li> <li>• These have moved over the millions of years to form the Earth with its continents, oceans, mountains and ridges as we know it today</li> </ul>
	10 minutes	Learners will take an orange that represents the Earth, they will tear pieces of the peel – each of the peel pieces represent one plate and the orange below represents the hot liquid underneath
	10 minutes	Learners will take a few small plastic covers (or any material that floats) and float this on a tub of water. The way these plastic covers move like the Earth's plates move but much more slowly

	10 minutes	Learners will reflect on the fact that the land they stand on is moving and how slowly it moves that they cannot feel it
2	30 minutes	<p>Learners will think about how the Earth is like a jigsaw puzzle</p> <p>Learners will draw and design their own map of the Earth as a jigsaw puzzle with 8 pieces on Styrofoam or Cardboard (representing the 8 large plates). They will draw this based on the below or their own imagination of the various continents</p> 
	10 minutes	Learners will paint over their world map with blue representing the oceans and label the ones that they know
	10 minutes	Learners will depict the continents and land in green or a chosen colour and label the ones that they know
3	15 minutes	<p>Learners will begin to understand different ways that these pieces move and form earthquakes and mountains</p> <p>Learners will understand how these plates slide over each other to cause friction that in most cases creates Earthquakes</p> <p>Learners will place their hands-on top of each other palms facing downwards. The palm of their upper hand should be touching the back of their other hand. They will now rub their hands in this position and notice how their left hand moves to the right and right hand moves to the left. This heat created when the hands rub represents the friction created when the pieces slide over each other. In most cases this creates an earthquake as the crust shakes</p>
	15 minutes	<p>Learners will be exploring how mountains are formed, which happens when two plates bump into each other</p> <ul style="list-style-type: none"> <li>Learners will hold up both their hands touching at the fingertips as shown in step 1. Each of their hands represents a different tectonic plate. Learners will then push their hands together from their wrists as shown in step 2 and observe how their fingers move upward to form a mountain as shown in step 3 (see images below for</li> </ul>

	<p>15 minutes</p>	<p>clarification). This is representative of two plates colliding with each other – this is how the Himalayas and other mountains were formed when plates crashed against each other</p> <p>Step 1:</p>  <p>Step 2</p>  <p>Step 3</p>  <p>Learners will try and draw the two types of movements and the geographical features that are created</p>
<p>4</p>	<p>40 minutes</p>	<p>Learners will try and create structures that are Earthquake resistant</p> <ul style="list-style-type: none"> <li>• Learners will use styrofoam (thermocool) as a base and construct a tower of any materials available at home such as paper or plastic cups</li> <li>• Learners will design two towers:</li> </ul>

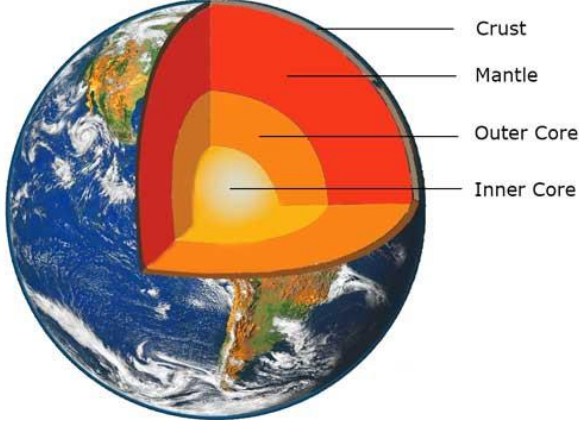
	10 minutes	<ul style="list-style-type: none"> <li>- The first tower will be deeply embedded into the base and have a broader base. Learners can use toothpicks, pins etc. to secure the tower into the base.</li> <li>- The second tower will not be as embedded into the base and has a narrower base</li> </ul> <p><i>Tip: Learners can be encouraged to experiment with different types of towers</i></p>
	10 minutes	Learners will try and shake the Styrofoam base to test which of the towers will not fall during an Earthquake
	10 minutes	Learners will reflect on what makes towers more resistant and write this down
5	20 minutes	Learners will begin to think about how they would react in their home if there is an Earthquake. What emergency response plan would they put into place <ul style="list-style-type: none"> <li>• Prompts: How would you ensure all the family members leave the home or stay safe? How can we ensure everyone leaves in an orderly fashion? Etc.</li> </ul>
	20 minutes	Learners will present their jigsaw puzzle and reflections with their family
Assessment Criteria:		<ul style="list-style-type: none"> <li>- Understanding of plates and movement</li> <li>- Representation of how geographical features</li> <li>- Designing maps and jigsaw puzzles</li> </ul>

Learning outcomes:	<ul style="list-style-type: none"> <li>- Tectonic plates and layers of the Earth</li> <li>- Movement of the tectonic plates</li> <li>- Formation of geographical features</li> <li>- Earthquake resistant structures</li> </ul>
Required previous learning:	Basic knowledge on the world map
Inspiration:	None
Additional enrichment activities:	None

### Ages 11 to 14 (Level 3)



<b>Description:</b>	Learners will begin to understand the way the Earth is designed as tectonic plates, how mountains form, what earthquakes are and how we respond to them!
<b>Leading question:</b>	
<b>Age group:</b>	11 - 14-year old

<b>Subjects:</b>	<ul style="list-style-type: none"> <li>- Social Studies</li> <li>- Language</li> <li>- Art and Design</li> </ul>
<b>Total time required:</b>	5 hours total over 5 days
<b>Self-guided / Supervised activity:</b>	Low supervision by parents / guardians
<b>Resources required:</b>	Pens – Paper, Orange Biscuits / Clay, Tub Desks / Tables Cardboard, Scissors, Styrofoam, Glue Extension Materials: Vinegar, Baking Soda, Empty Plastic Bottle and a World Map

Day	Time	Activity and Description
1	10 minutes	<p>Learners will reflect on how they think the Earth's surface and continents formed</p> <p>Learners will understand that our Earth's outer shell (also called the lithosphere) is made up of different layers of crust that are slowly moving as they are floating on the mantle (the hot liquid) under the crust</p> <p>might be useful to illustrate <a href="https://science4fun.info/composition-of-the-earth/">https://science4fun.info/composition-of-the-earth/</a></p>  <p>There are 7 – 8 major plates and many minor plates that together make up our Earth's crust. To help visualize these plates, think of pieces of a broken eggshell!</p> <p>These have moved over the millions of years to form the Earth with its continents, oceans, mountains and ridges as we know it today</p> <p>All the continents in the world were together as one super continent called Pangea</p>
	10 minutes	





	<p>10 minutes</p>	<p>Tip: One of the reasons that earthquakes often happen in the same places is because these places are on the fault lines that mark the boundaries between plates</p> <p>Learners will try and draw the two types of movements and the geographical features that are created</p> <p><b>Insert diagram</b></p>
<p>3</p>	<p>15 minutes</p>	<p>Learners will continue exploring what happens when plates collide to understand how mountains are formed and earthquakes happen</p> <p>Learners will also understand convergent plates of how they collide with each other</p> <p>Learners will hold up both their hands touching at the fingertips as shown in step 1. Each of their hands represents a different tectonic plate. Learners will then push their hands together from their wrists as shown in step 2 and observe how their fingers move upward to form a mountain as shown in step 3 (see images below for clarification). This is representative of two plates colliding with each other – this is how the Himalayas and other mountains were formed when plates crashed against each other</p> <p>Step 1:</p>  <p>Step 2:</p> 





	10 minutes	Learners will shake the base with different levels of intensity to represent different magnitude or strength of Earthquakes  Learners will reflect on what makes structures more resistant and write this down
5	20 minutes  40 minutes	Learners will begin to think about how they would react in their home if there is an Earthquake. What emergency response plan would they put into place  Prompts: How would you ensure all the family members leave the home or stay safe? How can we ensure everyone leaves in an orderly fashion? Etc.  Learners will put together all their understanding in the form of basic diagrams and text as a chapter of a schoolbook to explain this to their younger siblings
Assessment Criteria:		- Understanding of plates and movement - Representation of how geographical features - Designing maps and jigsaw puzzles

Learning outcomes:	- Tectonic plates and layers of the Earth - Movement of the tectonic plates - Formation of geographical features - Earthquake resistant structures
Required previous learning:	- Basic knowledge on the world map
Inspiration:	None
Additional enrichment activities:	None