LESSON 3: EARTHQUAKE – DEFINITIONS

Age Range: 7-11 years Time: 1 hour

Outline

Pupils will consider what kind of questions about the Haiti earthquake geographical story they have asked: easy to answer, requiring further research or open questions with multiple answers. Pupils will then read some definitions and use these as a starting point for answering some of their questions. A choice of a domino activity or quiz will develop pupils' deductive skills and consolidate their knowledge about Haiti's earthquake story.

Learning objectives

- To read texts structured in different ways.
- To learn new vocabulary about earthquakes.
- To make inferences and refer to evidence in a text.
- To work collaboratively through group discussion.
- To learn more about the geographical story of Haiti and earthquakes.

Learning outcomes

- Pupils will identify the kinds of questions they have asked about the Haitian earthquake.
- Pupils will retrieve information to answer some of these questions.
- Pupils will use their knowledge and deductive skills to match dominoes or answer questions in a quiz.
- Pupils will be able to use an increased vocabulary when talking about earthquakes and Haiti.

Key questions

- What is an earthquake?
- What were the particular effects of the earthquake on Haiti?

Resources

- Slideshow 1– Stories from Haiti: up to 2010.
- Large sheets of paper with pupil questions from lesson 2.
- *Earthquake definitions.*
- *Earthquake dominoes*.
- *Earthquake quiz.*
- Dictionaries.

Optional resources

- *Alphabetical order.*
- *Information for teachers: poverty and geography*

Curriculum links

England

- Pupils retrieve information from non-fiction texts.
- Pupils learn new vocabulary, relating it explicitly to known vocabulary and understanding it with the help of context and dictionaries.
- Pupils participate actively in collaborative discussions, initiating and responding to comments.

Wales

Reading Skills:

- Retrieve and collate information and ideas from a range of sources.

Oracy Skills:

- Develop their ability to use a range of sentence structures and vocabulary with precision, including terminology that allows them to discuss their work.
- Identify key points and follow up ideas through question and comment, developing response to others in order to learn through talk.

Scotland

- I can make notes, organise them under suitable headings and use them to understand information, develop my thinking, explore problems and create new texts, using my own words as appropriate.

LIT 2-15a

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Activity Outline

Starter *(10 mins)*
Categorising questions

- Divide the class into the same groups of four or five they had for the starter activity in lesson 2. Show slide 17 of Slideshow 1 again and ask pupils to look through the questions they wrote on their large sheets of paper, including any new ones they added during the plenary. Using highlighter pens in three different colours, ask pupils to categorise their questions into three groups: those they think can be easily answered - those which need further information from books or other sources - those which may have one more answer and could lead to wider debate about the issues.
- Discuss with pupils how it is not necessary to answer all the questions immediately and help pupils to understand that many questions do not have clear-cut answers. Explain that in this lesson pupils will be discovering more facts about earthquakes which they can use to play dominoes or a quiz.

Activity 3.1 *(20 mins)*
Definition card game

- Explain the meaning of 'Definition' if pupils do not already know. Give pairs of pupils a set of Earthquake definitions cards and explain that the words on these cards are ones used by scientists when describing earthquakes. They may have heard of some of these words, but probably not all. Tell pupils this activity will help them extend their vocabulary.
- Tell pupils to shuffle the cards and divide the set between them. Ask pupils to take turns to read out their definitions. Encourage pupils to use dictionaries to look up word definitions they do not already know. You might like to help pupils with pronunciations.
- Tell pupils to reshuffle their cards and divide them again. This time, ask pupils to take turns to ask their partner for the definition of the word on their card. If their partner gets it right they win the card and should place it in a separate pile. If not, the reader supplies the definition and then places it at the bottom of their own pile to ask again later. The winner is the first pupil to win all their partner's cards. Pupils can repeat the game with different partners.
- As a whole class, discuss what pupils found out through reading the cards. Ask them to return to their starter groups and add any answers to their sheets.
- Now carry out either Activity 3.2 or Activity 3.3 to consolidate pupils' factual knowledge and develop their deductive skills.

Activity 3.2 *(20 mins)*
Earthquake dominoes

- This activity is best carried out in small groups of up to four pupils. Cut out the Earthquake dominoes and give a set to each group. Depending on what you have discussed in class, you (or your pupils) might also like to add some dominoes of your own.
- Share out the dominoes between pupils and tell them to take turns to try and match the dominoes by finding ways in which the definitions and information relate to each other. For

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example, the fact card stating that survivors slept outside because tremors caused fear links to the definition card “tremors”. Encourage pupils to discuss and agree on the links – some are easier to see than others! The winner of the game is the pupil who gets rid of the most dominoes within a given time limit.

Activity 3.3 *(20 mins)*
Earthquake quiz

- This activity is designed to consolidate the pupils' learning so far. You may wish to divide the class into two or more teams, or place pupils into small groups. Most of the answers are factual and quick - however a few will require pupils to use more deductive skills, for example thinking about why most deaths from natural disasters occur in poorer countries. Use discussion to draw out that when natural events such as earthquakes occur some people are more at risk than others because of where they live (see background notes for teachers).

Plenary *(10 mins)*

- Ask pupils to add any answers they now know to their question sheets from the starter. Point out that there is not sufficient time to answer all the questions now, but that it is useful to think about what kind of question has been asked. Ask other pupils to confirm which category they think the question falls into (easy to answer, needing more research or a question with multiple answers). Pupils might like to add some of this information to the word wall.
- Finally ask selected pupils to share what they think is their most interesting outstanding question. It is likely that at least some pupils will select open questions with multiple answers as their most interesting ones. Point out that these are often interesting questions because they invite different opinions about the answer which can lead to interesting discussions.

Further ideas

- Pupils could research the origins of some of the words they have learnt in today’s lesson (see Background notes for teachers for examples).
- If you have time you could do both the dominoes activity (3.2) and the quiz (3.3).
- Pupils could place the Earthquake definitions cards in alphabetical order.

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Background notes for teachers

You might like to refer to *Information for teachers: Haiti's poverty and geography*.

Activities 3.2 and 3.3 refer to the 'Global South'. You might need to explain to pupils that this is a general term to describe countries also known as developing countries or less economically developed countries (LEDCs).

Activity 3.3

Some people are more vulnerable than others in natural events such as earthquakes, hurricanes and tsunamis, for example women, children and elderly people. Poorer people are also more at risk because they are more likely to be living in geographical areas prone to these events, to be living on unsafe land or in poorly-built housing, or to be living in areas already affected by environmental damage or conflict.

Further idea

Examples of origins of words:

- Seismic: mid-nineteenth century word from Greek seismos 'earthquake' (from seien 'to shake')
- Fissure: late Middle English word from Old French, or from Latin fissura, from findere 'to split'.
- Tremor: early 17th century word from Latin tremor, from tremere 'to tremble'.
- Crust: Middle English word from Old French crouste, from Latin crusta 'rind, shell, crust'.

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Earthquake definition cards

Crust The surface layer of the earth which floats on liquid rock or magma underneath. It is less than 6 miles deep in some places and up to 30 miles deep in others.	**Epicentre** The place on the surface of the earth directly above the focus of an earthquake. This is where the earthquake's power is greatest.
Fissure A long, narrow crack in the ground which opens up during an earthquake and sometimes lets out smoke, fumes or fire.	**Tremors** Small earthquakes which can often happen just before a larger one, and provide a warning. Tremors also follow big earthquakes.
Seismology The science of using readings from a seismograph to determine intensity, or power, of earthquakes.	**Richter scale** A scale which classifies the magnitude or force of an earthquake by measuring the energy it produces.
Fault The point where tectonic plates in the earth's crust meet. Earthquakes occur when there is movement of the plates along the fault.	**Tectonic plate** One of the ten or more vast fragments of solid rock that make up the earth's crust. They float on liquid rock or magma.
Tsunami A great sea wave produced by an earthquake, volcanic eruption, or large landslide that takes place beneath the ocean.	**Modified Mercalli scale** A scale which measures earthquakes by the amount of damage that they do to buildings and people.
Anti-seismic Buildings that are made to withstand the effects of earthquakes so that they do not fall down when shaken.	**Aftershock** A smaller earthquake that follows the original one.
Magma Liquid rock underneath the surface or crust of the earth. This makes up 80% of the earth.	**Plate boundary** Place where two tectonic plates join and where there is a high risk of earthquakes.

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Alphabetical order

Can you put the following earthquake words into alphabetical order?

Seismology	
Epicentre	
Tsunami	
Magma	
Plate boundary	
Tectonic plate	
Fault	
Anti-seismic	
Fissure	
Modified Mercalli Scale	
Richter Scale	
Crust	
Tremors	
Aftershock	

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Earthquake dominoes

Cut down middle column first. Note there are four blank dominoes for pupils to add their own ideas.

Crust	The earthquake left 25 million tonnes of rubble. This is enough to send a loaded pick-up truck to the dump more than 8 million times. Haitians had to move most of the rubble by hand.	Epicentre	Port-au-Prince was home to nearly 3 million people when the earthquake hit. Many poor communities have little choice over where they build their homes.
Fault	Half of Haiti's schools and three main universities collapsed, along with hospitals and countless homes.	Modified Mercalli Scale	Many homes in Port-au-Prince were built from weak materials and very close together.
Fissure	Haiti is the poorest country in the Western hemisphere. Buildings were not made to withstand earthquakes.	Anti-seismic	Earthquake survivors slept outside because tremors led to fears of another earthquake.
Tremors	Thousands of homes in Port-au-Prince were built on slopes and collapsed onto those below when the earthquake struck.	Aftershock	The epicentre of the 2010 earthquake was just 10 miles south of Haiti's capital city, Port-au-Prince.

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Seismology	Even before the earthquake struck, many Haitians lived in poverty.	Tectonic plate	Even though disasters happen everywhere, 96% of deaths due to natural disasters occur in the Global South, and the risk of death is 12 times higher.
Richter scale	Earthquakes can start deep in the earth's crust. The earthquake in Haiti was just 8.1 miles below the earth's surface.	Plate boundary	More than a 1.5 million people were left homeless after the earthquake struck in Haiti.
_____		_____	
_____		_____	

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Earthquake quiz

1. What scale is used to measure the energy in an earthquake?
2. What is the place on the earth's crust directly above an earthquake called?
3. In Haiti, why was it difficult for people living in the countryside to help the survivors from the city?
4. How deep is the earth's crust?
5. What is the crack in the ground which can open up during an earthquake?
6. Name two things that made it difficult to stay healthy after the earthquake in Haiti.
7. Give one reason why the earthquake in Haiti caused so much damage.
8. Where do earthquakes occur?
9. What are small earthquakes which happen just before a big one called?
10. Where was the epicentre of the Haiti earthquake?

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11. What scale is used to measure the damage that an earthquake causes?
12. What lies beneath the earth's crust?
13. What is the name of a huge sea wave caused by an earthquake beneath the ocean?
14. Why had so many people moved to the capital city of Haiti, Port-au-Prince?
15. What is the name of the science which measures earthquakes?
16. What is a smaller earthquake that follows the original one called?
17. Why are you more likely to die in a natural disaster if you live in the Global South?
18. What is the name of buildings which are made to withstand earthquakes?
19. What did the earthquake in Haiti measure on the Richter scale?
20. How many people were left homeless after the earthquake in Haiti?

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