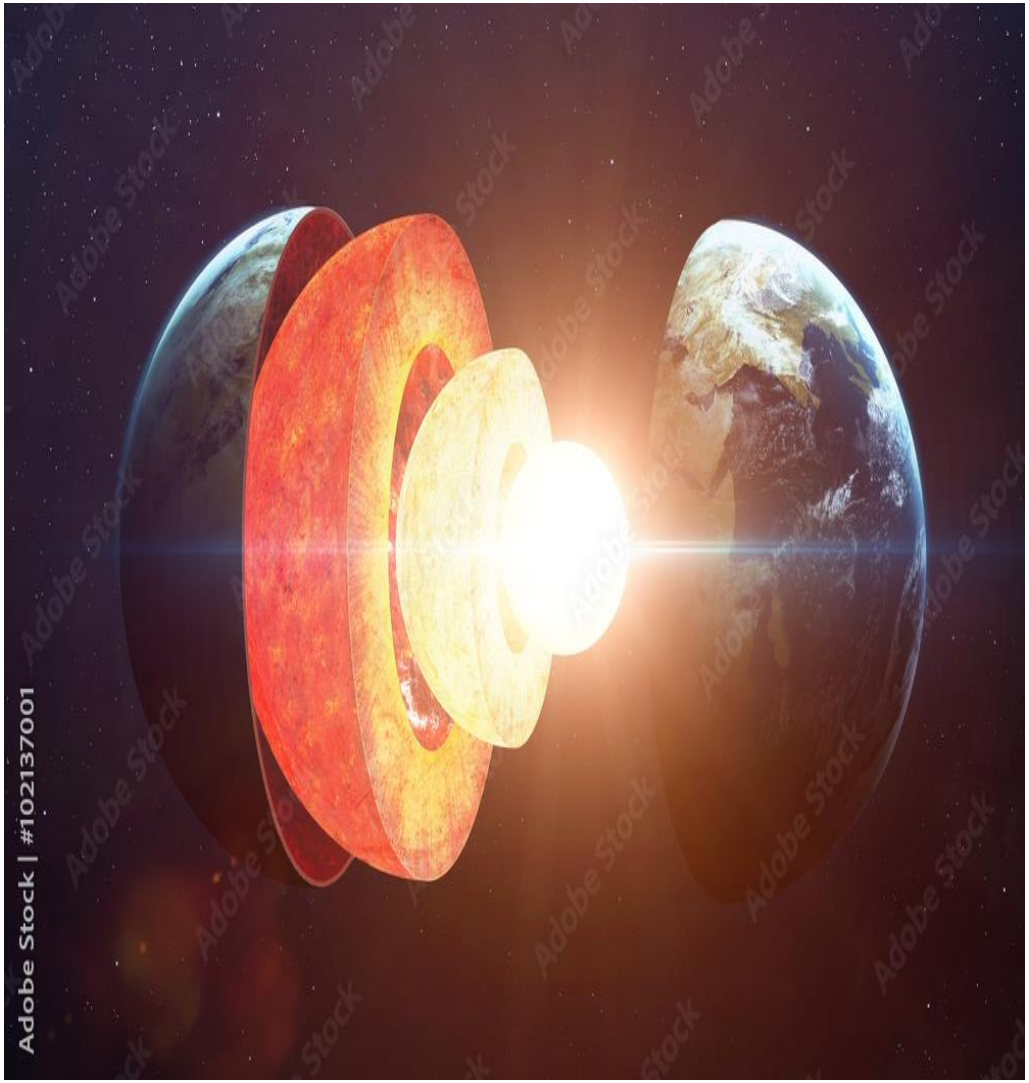
Journey to the Centre of the Earth

Recommended year group: Year 7

Subject focus: Drama, English, Science, Maths, Geography, History, RE

Driving Question

Is the Earth Alive?



Introduction

The intent of the theme is to use the mystique that has intrigued mankind throughout history about what goes on beneath the Earth's surface to spark students curiosity. The theme focuses on a fascinating mix between scientific explanations, religious beliefs and key literary pieces with the centre of the Earth as a common link. The theme borrows its name from Jules Verne's classic science fiction novel of the same name. The book introduces the students to the theme with a clear focus on inference as a literary skill when studying the text. Students will also explore the religious and scientific ideas of how the universe came into being. As the theme progresses students will discuss the impact of important scientific figures and discoveries on how, as humans, we understand our position in the universe.

Assessment outcomes

Lesson 2: Gravity, Weight and Mass. Animation demonstrating the relationship between mass, weight and gravity.
Lesson 3: Religious Creation Stories. PEEL paragraph - Compare and contrast the religious creation views.
Lesson 4: The Moving Earth. Creation and interpretation of graph.
Lesson 6: Big Read: Jules Verne. Annotated extract and written piece of analysis.
Lesson 8: The Dynamic Earth. Labelled diagrams and PEEL paragraph on the social, economic, and environmental impacts of earthquakes.
Lesson 12: Weather and Climate. Produce weather report and interpretation of climate graph.
Lesson 13: Big Write Pompeii. Descriptive perspective piece.

Key vocabulary

Adjectives, afterlife, alliteration, atmosphere, Big Bang, Christianity, climate, continental drift, creation, crust, earthquakes, forecast, force, Galileo, gravitational field strength, gravity, Hinduism, interpretation, Islam, light years, mantle, mass, metaphors, Newton, opinions, personification, persuade, plate boundaries, planets, Pompeii, religion, repetition, rhetorical questions, science, seismic waves, Sikhism, Solar system, source, space exploration, tectonic plates, theory, universe, volcanoes, weather, weight

Flipped learning opportunities

- **Lesson 1**: **Our Place in the Universe.** Use the link to explore the night sky. Research and make notes about constellations, planets, galaxies and stars.https://stellarium-web.org/
- **Lesson 8: The Structure of the Earth.** Earth's core label.
- **Lesson 14**: **Death – Is it the end?** Research and explain what ancient civilizations believed about the afterlife.

Linked reading

- **Read *Earth Alive! From Microbes to a Living Planet* By Mary E. White**
  This links to the driving question and focuses on the first bacterial 'germ of life' cells that formed in the hot, highly volcanic Earth nearly 4 billion years ago, to the present day, life has been an unbroken continuum.
- **Read *Journey to the Centre of the Earth* by Jules Verne**
  This book follows explorers travelling to inside a volcano and inside the centre of the earth. They contend with many dangers, including cave-ins, subpolar tornadoes, an underground ocean, and living prehistoric creatures. This will allow students to explore the driving question. This links to the learning students will do in the lesson 'Big Read: Jules Verne'.
- **Read *Plate Tectonics* by National Geographic**
  This article explore plate tectonics, continental drift and plate boundaries. It also explores volcanoes and earthquakes and will develop students' knowledge. This links to the learning students will do in the lessons 'The Dynamic Earth', 'The Structure of the Earth', 'How to Make an erupting Volcano' and 'Pompeii Evidence'.
  https://www.nationalgeographic.com/science/article/plate-tectonics

Cultural capital suggestions

- **Read: Earth Alive! From Microbes to a Living Planet By Mary E. White**

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- **Look: Documentary *A Life On Our Planet* by David Attenborough.**

This documentary looks at the impact of climate change, rock formation and the Earth's atmosphere. This links to learning students will do in the lessons 'Weather and Climate', 'The Earth's Atmosphere', and 'The Changing Earth'.

- **Listen: Documentary *A Place in Space and Time* by Brian Cox**

This documentary explores mankind's place in the universe. It looks at how we came to understand that we are not at the centre of the universe. This links with the learning students will do in the lesson 'Our Place in the Universe' 'How Ideas Have Changed Made' 'Big Bang vs Creation Stories' and 'Creation Stories'.

Family learning opportunities

- WOE

Extended learning opportunities

Careers

- Further Careers Link to enhance the lesson within theme - https://www.plymouth.ac.uk/schools/school-of-geography-earth-and-environmental-sciences/earth-sciences/earth-sciences-careers

Places to Visit

- Visit to the Think Tank Science Museum in Birmingham or the National Space Centre in Leicester.
- Virtual Tour Inside a Volcano
- Outside visitors could come in and talk to students about the religious creation stories related to their religion.
- Virtual Tour of The Giant's Causeway - Geology focus
- Expedition to the heart of an active volcano - Volcano focus
- Virtual Tour of Mount Everest - Tectonic plates focus

Lessons

Lesson title	Subject	Essential knowledge/concepts	Competencies	National curriculum coverage
Lesson 1: Our Place in the Universe.	Science	Outline what a light year. Sketch a graph that compares distances in space to temperature. Explore different theories regarding the origin of the universe and use scientific language to summarise and model the Big Bang Theory.	**SC.CS.01 -** Using Scientific Ideas	**Science:** Understand that scientific methods and theories develop as earlier explanations are modified to take account of new evidence and ideas, together with the importance of publishing results and peer review.
Lesson 2: Gravity, Weight and Mass	Science and Maths	Identify the relationship between mass, weight and gravity. Calculate and compare weight on different planets. Apply knowledge to PowerPoint animations.	**SC.MS.01:** Using Equations and Solving Problems	**Science Physics** 'non-contact forces: gravity forces' and 'forces measured in newtons' and 'gravity force, weight = mass x gravitational field strength' **Maths** 'use standard units of mass, length, time, money and other measures, including with decimal quantities '
Lesson 3: Religious Creation Stories	Religious Studies	Discuss the creation of Planet Earth. Describe and explain religious creation stories. Compare religious creation stories.	**SE.RE.01** - Make sense of religious beliefs	**Religious Studies** 'comparison of religious beliefs'

Lesson 4: The Moving Earth	Science and Maths	Describe the theory of day and night. Explain what changes occur when the Earth spins once around its axis and orbits the Sun. Create a graph showing daylight hours.	**SC:CS:01** Using Scientific Ideas **SC.PE.02** Interpreting, Analysing and Evaluating Data	**Science Physics:** 'the seasons and the Earth's tilt, day length at different times of year, in different hemispheres' and 'interpreting observations and other data, including identifying patterns and trends, making inferences and drawing conclusions' **Maths:** 'plot and interpret graphs'
Lesson 5: How Ideas Have Changed	Science	Describe Galileo. Explain key events in Galileo's life. Investigate how important Galileo was in terms of astrological discovery.	**SC.CS.02** Reviewing Theories	**Science** 'understand that scientific methods and theories develop as earlier explanations are modified to take account of new evidence and ideas, together with the importance of publishing results and peer review'
Lesson 6: Big Read: Jules Verne	English	Identify language techniques in a given text. Explain the purpose behind these features. Analyse the purpose and overall effectiveness behind these features.	***RL.LD.05b:** Identify and interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyse how they affect meaning or tone.	**English**: 'knowing how language, including figurative language, vocabulary choice, grammar, text structure and organisational features, presents meaning' and 'making inferences and referring to evidence in the text'
Lesson 7: The Structure of the Earth	Science	Describe the structure of the Earth. Evaluate models that represent the structure of the Earth.	**SC.CS.01:** Using Scientific Ideas	**Science Chemistry:** 'the structure of the Earth' Pupils should be taught about: Earth and atmosphere the composition of the Earth the structure of the Earth

Lesson 8: The Dynamic Earth	Geography	Identify what continental drift is and the theory of plate tectonics. Describe plate boundaries. Assess the positive/negative and long term/short term effects of earthquakes and volcanoes.	**SE.GE.03**: Demonstrate understanding of physical geography concepts and their interrelationships with places, environments and processes	**Geography:** 'physical geography relating to: geological timescales and plate tectonics'
Lesson 9: The Changing Earth	Science and Geography	Describe how sedimentary, metamorphic and igneous rocks are formed. Explain the properties of different types of rocks. Apply knowledge to a rock cycle and story.	**SC.CS.01:** Using Scientific Ideas **SE.GE.03:** Demonstrate understanding of physical geography concepts and their interrelationships with places, environments and processes	**Science Chemistry:** 'the rock cycle and the formation of igneous, sedimentary and metamorphic rocks' **Geography:** 'physical geography relating to rocks and weathering'
Lesson 10: The Earth's Atmosphere	Science	Describe what the Earth's atmosphere used to be like. Explain how the Earth's atmosphere formed and the layers within it. Apply your knowledge to an infographic and questions about the Earth's atmosphere.	**SE.GE.03:** Demonstrate understanding of physical geography concepts and their relationship with places, environments and processes.	**Science Chemistry:** 'Earth and atmosphere'

Lesson 11: Weather and Climate	Geography	To define the concepts of weather and climate. Explain the purpose and importance of a weather report. Apply key words to a weather report and climate graph.	**SE.GE.03:** Demonstrate understanding of physical geography concepts and their relationship with places, environments and processes.	**Geography:** 'weather and climate, including the change in climate'
Lesson 12: How to make an erupting Volcano	Science and Geography	Identify features of volcanoes. Design an erupting volcano based on your knowledge of volcanoes. Work in teams to construct and apply a diagram to a 3D model.	**PL.TP.01:** Collaborate with others to reach a common goal **SE.GE.03** Demonstrate understanding of physical geography concepts and its interrelationships with places, environments and processes	**Chemistry:** 'the structure of the Earth' and 'geographical timescales and plate tectonics' **Geography:** ensure that all pupils: understand the processes that give rise to key physical and human geographical features of the world, how these are interdependent and how they bring about spatial variation and change over time.
Lesson 13: Big Write: Pompeii	English	Create your own literary devices. Produce a piece of descriptive writing based on the events of Pompeii. Organise a text creatively to engage the reader.	**CL.WP.01:** Write imaginative, interesting and developed texts to covey complex ideas clearly and accurately (Ideas).	**English:** 'Students to write accurately, fluently, effectively and at length for pleasure and information through: writing for a wide range of purposes and audiences, including essays. Students need to draw on knowledge of literary and rhetorical devices from their reading and listening to enhance the impact of their writing'.
Lesson 14: Pompeii Evidence	History	Identify sources and interpretations.	**SE.HS.03:** Using historical sources **SE.HS.04:** Using historical interpretations	**History:** 'understand how different types of historical sources are used' and 'understand how different types of historical interpretations are used'

		Describe the events of the destruction of Pompeii. Apply knowledge to sources and interpretations.		
Lesson 15: Careers	Careers	Identify different careers in the Earth/Space Sciences fields. Research the necessary qualification, skills, and experience to successfully pursue a career in these fields. Explain the importance of these careers.	**PD.CA.02:** Experiencing the world of work	**Gatsby benchmark 4:** Linking curriculum learning to careers. All teachers should link curriculum learning with careers. STEM subject teachers should highlight the relevance of STEM subjects for a wide range of future career paths. **Science:** 'Establishing the basis for a wide range of careers'
Lesson 16: Death – Is it the end?	Religious Studies	Examine theories about life on Earth being the only life we live. Explore the concept of the afterlife as believed by different religions. Compare and contrast theories of what happens once our 'journey' of life ends in the form of a discursive text.	**SE.RE.01** Make sense of religious beliefs	**Religious Studies:** 'comparison of religious beliefs'