

Cecil Andrews College

Year 9 Earth and Space Sciences Program

2021

Resources: EDI PowerPoints, Oxford Science 9 (OS9), Pearson Science 9 (PS9)

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| **ACSSU180: The theory of plate tectonics explains global patterns of geological activity and continental movement** | | |
| **CONTENT/ELABORATIONS** | **KNOWLEDGE/SKILLS/VALUES** | **ACTIVITIES/RESOURCES** |
| **Structure of the Earth**   * Recognising the major plates on a world map   **Theory of Plate Tectonics**   * Recognising the major plates on a world map * Considering the role of heat energy and convection currents in the movement of tectonic plates | **Term 2, Week 1**   * Review the four main layers of the Earth * Describe the composition of the four main layers of the Earth * Identify the difference between oceanic and continental crust, in terms of its thickness, density and location * Identifies that the crust is broken into large pieces called plates * Identifies the two individual theories that comprise the theory of plate tectonics: continental drift and sea-floor spreading * Describes Wegener’s continental drift theory, as the continents once being joined together, breaking apart and drifting across the oceans * Describe how Wegener’s theory was modified to include the entire plate * Describes sea-floor spreading, as proposed by Hess, as the sea-floor being pushed apart by rising magma, creating a ridge in the ocean floor * Describes how convection currents cause the magma to move * Analyses evidence for continental drift and sea-floor spreading | EDI PowerPoint: 1 Structure of the Earth  EDI PowerPoint: 2 Theory of Plate Tectonics  Activity: Reconstructing Pangea |
| **Tectonic Plates**   * Recognising the major plates on a world map * Relating the extreme age and stability of a large part of the Australian continent to its plate tectonic history | **Term 2, Week 2**   * Identifies and labels major plates on a map of the world * Describes the direction of movement of each plate using arrows * Based on plate movement, identifies boundaries between plates as converging, diverging or transform * Describes plate boundaries as destructive, constructive or conservative | EDI PowerPoint: 3 Tectonic plates  EDI PowerPoint: 4 Types of Plate Boundaries |
| **Assessment Task: Plate Tectonics Assignment (end of week 2)** | | |
| **Types of Plate Boundaries**   * Recognising the major plates on a world map * Modelling sea-floor spreading * Relating the occurrence of earthquakes and volcanic activity to constructive and destructive plate boundaries | **Term 2, Week 3**   * Describe transform boundaries as two plates sliding past each other * Earthquakes often occur at transform boundaries * When the plates move, they can become ‘jammed’ causing pressure to build up and earthquakes occur when the plates slip, releasing energy * Identify areas where earthquakes occur due to transform boundaries * Describe diverging boundaries as two plates moving apart or spreading * Diverging boundaries can occur in the middle of land or ocean * Describe how rift valleys are formed in continental crust * Describe how rift valleys can turn into oceans * Describe how a mid-ocean ridge is formed * Describe converging boundaries as two plates moving towards each other * Identify the three types of converging boundaries: continent-continent, ocean-continent and ocean-ocean * When two continental plates collide, the edges crumple and fold into mountain ranges * Subduction is when one plate is push underneath another * When oceanic crust collides with continental crust, oceanic crust is pushed downwards because it is denser * Ocean-continent converging boundaries cause mountains, volcanoes and ocean trenches that follow the outline of the plate * When two oceanic plates converge, the older and more dense crust subducts, creating a deep trench * Ocean-ocean converging boundaries create undersea volcanoes | EDI PowerPoint: 5 Transform and Diverging Boundaries  EDI PowerPoint: 6 Converging Boundaries  Experiment? |
| **Explaining Phenomena on Earth**   * Relating the occurrence of earthquakes and volcanic activity to constructive and destructive plate boundaries * Relating the extreme age and stability of a large part of the Australian continent to its plate tectonic history | **Term 2, Week 4**   * Define the epicentre and focus of an earthquake * Describe the scale used to measure earthquakes * Relate the size and frequency of earthquakes to tectonic plate boundaries * Explain why relatively small, infrequent earthquakes occur in Australia from the release of stress within the plate * Tsunamis are caused by undersea earthquakes * Describe how the height of the wave increases as the water gets shallower * Volcanoes form where there are weak points in the crust (hot spots) or close to plate boundaries * Identify basic structural features of a volcano * Explain how chains of volcanic islands form as a plate moves over a hot spot, using the Hawaiian islands as an example | EDI PowerPoint: 7 Earthquakes and Tsunamis  EDI PowerPoint: 8 Volcanoes |
| **Rock Cycle**   * Recognising the major plates on a world map * Considering the role of heat energy and convection currents in the movement of tectonic plates | **Term 2, Week 5**   * Explain how geologists are able to track the movement of tectonic plates using GPS * Use maps of the tectonic plates to predict changes to the shape and position of the continents | EDI PowerPoint: 9 Shape of Future Earth |
| **ESS Assessment Task: Plate Tectonics Test (lesson 2 week 5)** | | |