



Lesson Plans

Year 9 Science

Chapter 7

Plate Tectonics

Some general points about the following lesson plans:

- ★ The lesson plans outline only one way of sequencing the learning material in this chapter of the textbook.
- ★ The content and sequence will obviously vary from class to class (The following guide is ambitious in many instances).
- ★ All activities and investigations in each chapter have been deliberately designed to support the National Curriculum content whilst keeping in mind the development and reinforcement of skills required in the study of science in Year 11/12.
- ★ The length of lessons vary from school to school and even within schools. The following guide is based on 35/40 min lessons because it was reasoned that adjustment to 60/75/90 mins lessons would be easier than reducing lesson plans.
- ★ Students may be challenged further by completing each chapter Task, Competition Questions, Challenges, and by finding and entering any of the many competitions, challenges, projects etc that may be found on the Internet. Such students may benefit by doing an Internet search early in the year and planning entries before they close.

Assessment

A Task p165
End of Unit Test

Content Description (5 weeks)

Chapter 7 Plate Tectonics

The theory of plate tectonics explains global patterns of geological activity and continental movement (ACSSU180)

- ★ Recognise the major plates on a world map.
- ★ Model sea-floor spreading.
- ★ Relate the occurrence of earthquakes and volcanic activity to constructive and destructive plate boundaries.
- ★ Consider the role of heat energy and convection currents in the movement of tectonic plates.
- ★ Relate the extreme age and stability of a large part of the Australian continent to its plate tectonic history.

Content structure

The Australian Curriculum: Science has three interrelated strands: *Science Understanding*, *Science as a Human Endeavour* and *Science Inquiry Skills*.

Together, the three strands of the science curriculum provide students with understanding, knowledge and skills through which they can develop a scientific view of the world. Students are challenged to explore science, its concepts, nature and uses through clearly described inquiry processes.

Science Understanding

Science understanding is evident when a person selects and integrates appropriate science knowledge to explain and predict phenomena, and applies that knowledge to new situations. Science knowledge refers to facts, concepts, principles, laws, theories and models that have been established by scientists over time.

The **Earth and space sciences** sub-strand is concerned with Earth's dynamic structure and its place in the cosmos. The key concepts developed within this sub-strand are that: Earth is part of a solar system that is part of a larger universe; and Earth is subject to change within and on its surface, over a range of timescales as a result of natural processes and human use of resources. Through this sub-strand, students view Earth as part of a solar system, which is part of a galaxy, which is one of many in the universe and explore the immense scales associated with space. They explore how changes on Earth, such as day and night and the seasons relate to Earth's rotation and its orbit around the sun. Students investigate the processes that result in change to Earth's surface, recognising that Earth has evolved over 4.5 billion years and that the effect of some of these processes is only evident when viewed over extremely long timescales. They explore the ways in which humans use resources from the Earth and appreciate the influence of human activity on the surface of the Earth and the atmosphere.

Science Inquiry Skills

Science inquiry involves identifying and posing questions; planning, conducting and reflecting on investigations; processing, analysing and interpreting evidence; and communicating findings. This strand is concerned with evaluating claims, investigating ideas, solving problems, drawing valid conclusions and developing evidence-based arguments.

Science as a Human Endeavour

Through science, humans seek to improve their understanding and explanations of the natural world. Science involves the construction of explanations based on evidence and science knowledge can be changed as new evidence becomes available. Science influences society by posing, and responding to, social and ethical questions, and scientific research is itself influenced by the needs and priorities of society. This strand highlights the development of science as a unique way of knowing and doing, and the role of science in contemporary decision making and problem solving. It acknowledges that in making decisions about science practices and applications, ethical and social implications must be taken into account. This strand also recognises that science advances through the contributions of many different people from different cultures and that there are many rewarding science-based career paths.

Science across Foundation to Year 12

Years 7–10, typically students from 12 to 15 years of age, Curriculum focus: explaining phenomena involving science and its applications

During these years, students continue to develop their understanding of important science concepts across the major science disciplines. It is important to include contemporary contexts in which a richer understanding of science can be enhanced. Current science research and its human application motivates and engages students.

Within the outlined curriculum, students should undertake some open investigations that will help them refine their science inquiry skills. The quantitative aspects of students' inquiry skills are further developed to incorporate consideration of uncertainty in measurement. In teaching the outlined curriculum, it is important to provide time to build the more abstract science ideas that underpin understanding.

Chapter 7 Plate Tectonics (5 weeks)

Lesson	Method	Resources
1	<ul style="list-style-type: none"> <input type="checkbox"/> General (covering book, ruling pages, paste study guide etc.) <input type="checkbox"/> Purpose of chapter <input type="checkbox"/> Introduce/discuss: The major plates p167 <input type="checkbox"/> Learn five major plates by heart <input type="checkbox"/> Exercise p167 <input type="checkbox"/> HW: Complete exercise p167 	
2	<ul style="list-style-type: none"> <input type="checkbox"/> Short test: What is plate tectonics? Identify five major plates on a map. <input type="checkbox"/> Development of plate tectonic theory p168 <input type="checkbox"/> Internet ‘Gondwana activity’ p168 <input type="checkbox"/> Challenges p168 <input type="checkbox"/> HW: Plate tectonic theory 	Internet
3	<ul style="list-style-type: none"> <input type="checkbox"/> Short test: What is plate tectonic theory? <input type="checkbox"/> Identify five major plates on a map. <input type="checkbox"/> Continental drift p169 <input type="checkbox"/> Watch online videos ‘Continental drift theory’ <input type="checkbox"/> Internet activity p169 <input type="checkbox"/> Exercise p169 <input type="checkbox"/> HW: Complete exercise p169, Challenge p169 	Internet
4	<ul style="list-style-type: none"> <input type="checkbox"/> Short test: Plate tectonic theory, major plates <input type="checkbox"/> Plate tectonics p170 <input type="checkbox"/> Sea-floor mapping p170 <input type="checkbox"/> Magnetic striping p171 <input type="checkbox"/> Exercise p171 <input type="checkbox"/> HW: Complete exercise p171 	
5	<ul style="list-style-type: none"> <input type="checkbox"/> Short test: Plate tectonic theory, major plates <input type="checkbox"/> Sea floor spreading p172 <input type="checkbox"/> Watch online videos about making a ‘Model of sea-floor spreading’ <input type="checkbox"/> Prepare for making a model of sea-floor spreading <input type="checkbox"/> HW: Sea-floor spreading, challenge p173 	Internet
6	<ul style="list-style-type: none"> <input type="checkbox"/> Short test: Plate tectonic theory, major plates, sea-floor spreading <input type="checkbox"/> Activity p173 Model of sea-floor spreading <input type="checkbox"/> Exercise p173 <input type="checkbox"/> HW: Complete exercise p173 	Materials for activity p173
7	<ul style="list-style-type: none"> <input type="checkbox"/> Short test: Plate tectonic theory, major plates, sea-floor spreading <input type="checkbox"/> Tectonic plate movement p174 <input type="checkbox"/> Online videos: Supercontinents, pangaea theory, tectonic plate movement <input type="checkbox"/> HW: Tectonic plate movement 	Internet
8	<ul style="list-style-type: none"> <input type="checkbox"/> Short test: Plate tectonic theory, major plates, sea-floor spreading <input type="checkbox"/> How plates move p175 <input type="checkbox"/> Activity p175 Convection currents <input type="checkbox"/> Exercise p175 <input type="checkbox"/> HW: Complete exercise p175 	Materials for activity p175
9	<ul style="list-style-type: none"> <input type="checkbox"/> Short test: Plate tectonic theory, major plates, sea-floor spreading <input type="checkbox"/> Earthquakes p176 <input type="checkbox"/> Online videos: ‘Earthquakes’ and ‘Plotting latitude and longitude’ <input type="checkbox"/> Activity p177 ‘Plot earthquake data’ <input type="checkbox"/> HW: Complete activity p177 if necessary 	Materials for activity p177 Internet
10	<ul style="list-style-type: none"> <input type="checkbox"/> Short test: Plate tectonic theory, major plates, earthquakes <input type="checkbox"/> Earthquakes p176 <input type="checkbox"/> Discuss activity p177 <input type="checkbox"/> Exercise p177 <input type="checkbox"/> HW: Complete exercise p177 	

Chapter 7 Plate Tectonics (5 weeks)

Lesson	Method	Resources
11	<input type="checkbox"/> Short test: Plate tectonic theory, major plates, earthquakes <input type="checkbox"/> Convergent plates p178, divergent plates p178, transform plates p179 <input type="checkbox"/> Online video 'East Africa Great Rift Valley' <input type="checkbox"/> Exercise p179 <input type="checkbox"/> Prepare for activity p179 'Make your own seismograph' <input type="checkbox"/> HW: Complete exercise p179, Prepare 'Make your own seismograph'	Internet
12	<input type="checkbox"/> Short test: Plate tectonic theory, major plates, earthquakes <input type="checkbox"/> Activity p179 'Make your own seismograph' <input type="checkbox"/> HW: Puzzles p193	Materials for activity p179
13	<input type="checkbox"/> Short test: Plate tectonic theory, major plates, earthquakes <input type="checkbox"/> Volcanoes p180 <input type="checkbox"/> Online videos: 'Erupting volcanoes' and 'Plotting latitude and longitude' <input type="checkbox"/> Activity p181 'Plot volcano data' <input type="checkbox"/> HW: Complete activity p181 if necessary	Materials for activity p181
14	<input type="checkbox"/> Short test: Plate tectonic theory, major plates, earthquakes, volcanoes <input type="checkbox"/> Volcanoes p180 <input type="checkbox"/> Discuss activity p181 <input type="checkbox"/> Exercise p181 <input type="checkbox"/> HW: Complete exercise p181	
15	<input type="checkbox"/> Short test: Plate tectonic theory, major plates, earthquakes, volcanoes <input type="checkbox"/> Volcanoes p182 <input type="checkbox"/> Online videos: 'Krakatoa' <input type="checkbox"/> Activity p183 'Supervolcanoes' <input type="checkbox"/> HW: Complete activity p183	Internet
16	<input type="checkbox"/> Short test: Plate tectonic theory, major plates, earthquakes, volcanoes <input type="checkbox"/> Volcanoes p182 <input type="checkbox"/> Online videos: 'Volcano model' <input type="checkbox"/> Exercise p183 <input type="checkbox"/> Activity p183 Volcano model <input type="checkbox"/> HW: Complete exercise p183	Materials for activity p183
17	<input type="checkbox"/> Short test: Plate tectonic theory, major plates, earthquakes, volcanoes <input type="checkbox"/> The Australian plate p184 <input type="checkbox"/> Exercise p185 <input type="checkbox"/> Compile Word bank p185 <input type="checkbox"/> HW: Complete exercise p185 and Word bank p185	
18	<input type="checkbox"/> Short test: Plate tectonic theory, major plates, earthquakes, volcanoes <input type="checkbox"/> Predicting earthquakes p186 Exercise p186 <input type="checkbox"/> Predicting volcanic eruptions p187 Exercise p187 <input type="checkbox"/> HW: Complete exercises p186, p187	
19	<input type="checkbox"/> Science Inquiry p189 <input type="checkbox"/> HW: Science Inquiry p189, Show sweet trick p193 at home	
20	<input type="checkbox"/> Science Inquiry p189 <input type="checkbox"/> Discuss sweet trick p193 <input type="checkbox"/> HW: Science Inquiry p189	

Chapter 7 Plate Tectonics (5 weeks)

Lesson	Method	Resources
21	Chapter Review and Task <input type="checkbox"/> Exercises p190, p191 <input type="checkbox"/> Begin work on 'A Task' p165 <input type="checkbox"/> HW: Complete exercises & work on task as required	
22	Chapter Review and Task <input type="checkbox"/> Exercises p192 <input type="checkbox"/> Continue work on 'A Task' p165 <input type="checkbox"/> HW: Complete exercises & work on task as required.	
23	Chapter Review and Task <input type="checkbox"/> Exercises p194 and Competition Questions p195 <input type="checkbox"/> Continue work on 'A Task' p165 <input type="checkbox"/> HW: Complete exercises & work on task as required	
24	Chapter Review and Task <input type="checkbox"/> Harder test questions p196 <input type="checkbox"/> Preparation for test <input type="checkbox"/> Continue work on 'A Task' p165 <input type="checkbox"/> HW: Prepare for test & work on task as required	
25	<input type="checkbox"/> End of chapter/unit test	