Lesson Plans

Year 7 Science

Chapter 6
Earth's Resources

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
Practical Report
End of Unit Test

Content Description (4 weeks)

Chapter 6 Earth's Resources

Some of Earth's resources are renewable, but others are non-renewable (ACSSU116)

- ★ Consider what is meant by the term 'renewable' in relation to the Earth's resources.
- ★ Consider timescales for regeneration of resources.
- ★ Compare renewable and non-renewable energy sources, including how they are used in a range of situations.

Content strands

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 6 Earth's Resources (4 weeks)

Lesson	Method	Resources
1	□ General (covering book, ruling pages, paste study guide etc.) □ Purpose of chapter □ Introduce/discuss Earth's Resources p132 □ Exercise p132 □ HW: Complete exercise	
2	□ Discuss renewable/non-renewable resources p133 □ Internet: 'Tragedy of the Commons' □ Activity: Global warming and Tragedy of the Commons? Debate? □ Exercise p133 □ HW: Complete exercise	Internet
3	□ Introduce/discuss Energy resources p134 □ Internet: Bagasse p134 □ Activity: Design a solar oven p135 □ HW: Complete solar oven	Internet
4	□ Activity: Temperature of solar oven □ Exercise p135 □ HW: Complete exercise	Solar oven activity p135
5	□ Introduce/discuss Coal p136 □ Internet: 'coal formation' □ Internet: Coal power plant p136 □ Activity: coal formation simulator □ Exercise p136 □ HW: Complete exercise	Gases produced by plants activity top p45
6	□ Introduce/discuss Oil p137 □ Internet: List of advantages and disadvantages of oil □ Activity: Brainstorm/research 20 everyday oil products □ Exercise p137 □ HW: Complete Exercise	Internet
7	□ Introduce/discuss Natural gas p138 □ Internet: Play 'electrocity' game □ Internet: List of advantages and disadvantages of coal seam gas □ Exercise p138 □ HW: Complete Exercise	Internet
8	□ Introduce/discuss Uranium p139 □ Exercise p139 □ HW: Complete Exercise	Internet

Chapter 6 Earth's Resources (4 weeks)

Lesson	Method	Resources
9	□ Introduce/discuss Biomass p140 □ Internet: Methane from Garbage p140 □ Internet: Methane generator p140 □ Activity: Survey Biomass at local dump □ Exercise p140 □ HW: Complete Exercise	Internet Survey bio-mass at local dump activity p140
10	□ Introduce/discuss Hydro energy p140 □ Internet: Basslink p141 □ Internet: Hydroelectricity and Ocean/wave energy p141 □ Exercise p141 □ HW: Complete Exercise	Internet
11	□ Introduce/discuss Wind energy p142 □ Wind turbine maths p142 □ Internet: Best wind resources p142 □ Exercise p142 □ HW: Complete Exercise	Internet Calculators
12	□ Introduce/discuss Solar energy p143 □ Solar panel maths p143 □ Internet: Solar energy webquest p143 □ Exercise p143 □ HW: Complete Exercise	Internet Calculators
13	□ Introduce/discuss Geothermal energy p144 □ Geothermal maths p144 □ Internet: 'hot rock' Geothermal energy and Cooper Basin p144 □ Exercise p144 □ HW: Complete Exercise	Internet Calculators
14	□ Introduce/discuss Joules and Watts p145 □ Joules and Watts maths p145 □ Internet: Daily energy needs and Energy in food p145 □ Exercise p145 □ HW: Complete Exercise	Internet Calculators
15	Chapter Review and Task □ Exercises p146 □ Begin work on 'A Task' p131 □ HW: Complete exercises & work on task as required	

Chapter 6 Earth's Resources (4 weeks)

Lesson	Method	Resources
16	Chapter Review and Task □ Exercises p148 □ Continue work on 'A Task' p131 □ HW: Complete exercises & work on task as required	
17	Chapter Review and Task □ Competition Questions p149 □ Continue work on 'A Task' p131 □ HW: Complete exercises & work on task as required	
18	Chapter Review and Task □ Harder test questions p150 □ Continue work on 'A Task' p131 □ HW: Complete exercises & work on task as required	
19	Chapter Review and Task □ Prepare for test □ Continue work on 'A Task' p131 □ HW: Complete exercises & work on task as required	
20	□ End of chapter/unit test	