



DEEP OCEANS Education Kit – Australian Curriculum links

PREAMBLE:

- Seventeen classroom activities to extend your students' learning are provided in a downloadable Education Resource Kit.

All activities list

- An introduction explaining real-world applications or examples
- Objectives
- Materials and instructions with embedded inquiry questions and safety advice

Developed by Australian Museum and Questacon, the kit complements the Deep Oceans Exhibition and references Australian Curriculum.

- For information on deep sea expeditions in Qld waters (external sites):
 - [Deep Down Under](http://www.deepdownunder.de) project (in partnership with Queensland Museum). [www.deepdownunder.de]
 - [Deep Ocean Australia](http://web.qbi.uq.edu.au/ecovis/deep%20down%20under.htm) led by University of Queensland. [http://web.qbi.uq.edu.au/ecovis/deep%20down%20under.htm]
- Additional information including interviews, film footage, maps and data can be accessed through links to National and International organisations participating oceanic exploration. Links are listed at the end of the kit and on the [Australian Museum](#) and [Questacon](#) sites.
- Queensland Museum Resources showcasing other marine ecosystems and biology or principles of physics:
 - [QM Loans](#)
 - [Barrier Reef Discovery Guide](#)
 - Online Learning Resources: [Light](#) and [Biodiscovery and the Great Barrier Reef](#)

QUICKLINKS:

- [YEAR 3](#)
- [YEAR 4](#)
- [YEAR 5](#)
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- [YEAR 7](#)
- [YEAR 8](#)
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- [YEAR 10](#)

YEAR 3		CONTENT DESCRIPTION	ACTIVITY
Science Understanding			
Physical Sciences	<i>Heat can be produced in many ways and can move from one object to another.</i>		Activity 3 – Hydrothermal Vents – Under Pressure (pg 13) Activity 4 – Hydrothermal Vents – Convection Currents (pg 16)
Science as a Human Endeavour			
Use and Influence of Science	<i>Science knowledge helps people to understand the effect of their actions.</i>		Activity 15 – Ocean Acidification (pg 44)
Science Inquiry Skills			
Processing and Analysing Data and Information	<i>Use a range of methods including tables and simple column graphs to represent data and to identify patterns and trends.</i>		Activity 2 – Comparing Depths (pg 10)
Mathematics - Measurement and Geometry			
Using units of measurement	<i>Measure, order and compare objects using familiar metric units of length, mass and capacity.</i>		Activity 2 – Comparing Depths (pg 10)

YEAR 4		CONTENT DESCRIPTION	ACTIVITY
Science Understanding			
Biological Sciences	<i>Living things, including plants and animals, depend on each other and the environment to survive.</i>	Activity 14 – Giant Tube Worm Tubes (pg 41)	
Physical Sciences	<i>Forces can be exerted by one object on another through direct contact or from a distance.</i>	Activity 1 – Buoyancy – Floating and Sinking (pg 7) Activity 10 – Lungs under Pressure (pg 32) Activity 11 – Cartesian Diver (pg 34) Activity 12 – Marshmallows under Pressure (pg 36)	
Science as a Human Endeavour			
Use and Influence of Science	<i>Science knowledge helps people to understand the effect of their actions.</i>	Activity 15 – Ocean Acidification (pg 44)	
Science Inquiry Skills			
Processing and Analysing Data and Information	<i>Use a range of methods including tables and simple column graphs to represent data and to identify patterns and trends.</i>	Activity 2 – Comparing Depths (pg 10)	
Mathematics - Measurement and Geometry			
Using units of measurement	<i>Use scaled instruments to measure and compare lengths, masses, capacities and temperatures</i>	Activity 14 – Giant Tube Worm Tubes (pg 41)	

YEAR 5	CONTENT DESCRIPTION	ACTIVITY
Science Understanding		
Biological Sciences	<i>Living things have structural features and adaptation that help them to survive in their environment.</i>	<p>Activity 5 – Camouflage using Colours (pg 18)</p> <p>Activity 6 – Camouflage using Bioluminescence (pg 21)</p> <p>Activity 7 – Camouflage using Light (pg 24)</p> <p>Activity 8 – Angler Fish Mask (pg 26)</p> <p>Activity 9 – Squid Dissection (pg 29)</p> <p>Activity 10 – Lungs under Pressure (pg 32)</p> <p>Activity 11 – Cartesian Diver (pg 34)</p> <p>Activity 12 – Marshmallows under Pressure (pg 36)</p> <p>Activity 13 – Shark Shape Swim (pg 38)</p> <p>Activity 14 – Giant Tube Worm Tubes (pg 41)</p> <p>Activity 16 – Navigation using Sense of Smell (pg 46)</p> <p>Activity 17 – Deep Sea Monster (pg 48)</p>
Chemical Sciences	<i>Solids, liquids and gases have different observable properties and behave in different ways.</i>	<p>Activity 1 – Buoyancy – Floating and Sinking (pg 7)</p> <p>Activity 3 – Hydrothermal Vents – Under Pressure (pg 13)</p> <p>Activity 4 – Hydrothermal Vents – Convection Currents (pg 16) <i>cont..</i></p> <p>Activity 11 – Cartesian Diver (pg 34)</p>
Physical Sciences	<i>Light from a source forms shadows and can be absorbed,</i>	Activity 5 – Camouflage using Colours

	<i>reflected and refracted.</i>	(pg 18) Activity 6 – Camouflage using Bioluminescence (pg 21) Activity 7 – Camouflage using Light (pg 24) Activity 8 – Angler Fish Mask (pg 26)
Science Inquiry Skills		
Processing and Analysing Data and Information	<i>Construct and use a range of representations, including tables and graphs, to represent and describe observations, patterns or relationships in data using digital technologies as appropriate.</i>	Activity 2 – Comparing Depths (pg 10)
Planning and Conducting	<i>With guidance, select appropriate investigation methods to answer questions or solve problems.</i>	Activity 5 – Camouflage using Colours (pg 18) Activity 10 – Lungs under Pressure (pg 32) Activity 13 – Shark Shape Swim (pg 38)
Questioning and Predicting	<i>With guidance, pose questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be.</i>	Activity 13 – Shark Shape Swim (pg 38)
Mathematics - Statistics and Probability		
Data representation and interpretation	<i>Construct suitable data displays, with and without the use of digital technologies, from given or collected data. Include tables, column graphs and picture graphs where one picture can represent many data values.</i>	Activity 2 – Comparing Depths (pg 10)

YEAR 6		CONTENT DESCRIPTION	ACTIVITY
Science Understanding			
Biological Sciences	<i>The growth and survival of living things are affected by the physical conditions of their environment</i>		Activity 14 – Giant Tube Worm Tubes (pg 41) Activity 15 – Ocean Acidification (pg 44)
Science as a Human Endeavour			
Use and Influence of Science	<i>Influence the development of practices in areas of human activity such as industry, agriculture and marine and terrestrial resource management</i>		Activity 15 – Ocean Acidification (pg 44)
Science Inquiry Skills			
Planning and Conducting	<i>With guidance, select appropriate investigation methods to answer questions or solve problems.</i>		Activity 5 – Camouflage using Colours (pg 18) Activity 10 – Lungs under Pressure (pg 32) Activity 13 – Shark Shape Swim (pg 38)
Questioning and Predicting	<i>With guidance, pose questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be.</i>		Activity 13 – Shark Shape Swim (pg 38)

YEAR 7		CONTENT DESCRIPTION	ACTIVITY
Science Understanding			
Biological Sciences	<i>There are differences within and between groups of organisms; classification helps organise this diversity.</i>		Activity 9 – Squid Dissection (pg 29)
Science as a Human Endeavour			
Use and Influence of Science	<i>Influence the development of practices in areas of human activity such as industry, agriculture and marine and terrestrial resource management.</i>		Activity 15 – Ocean Acidification (pg 44)
Science Inquiry Skills			
Planning and Conducting	<i>Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed.</i>		Activity 9 – Squid Dissection (pg 29)
Mathematics - Number and Algebra			
Real Numbers	<i>Multiply and divide fractions and decimals using efficient written strategies and digital technologies</i>		Activity 14 – Giant Tube Worm Tubes (pg 41)

YEAR 8	CONTENT DESCRIPTION	ACTIVITY
Science Understanding		
Biological Sciences	<i>Multi-cellular organisms contain systems of organs that carry out specialised functions that enable them to survive and reproduce.</i>	Activity 9 – Squid Dissection (pg 29)
Chemical Sciences	<i>The properties of the different states of matter can be explained in terms of the motion and arrangement of particles.</i>	Activity 3 – Hydrothermal Vents – Under Pressure (pg 13) Activity 4 – Hydrothermal Vents – Convection Currents (pg 16)
Physical Sciences	<i>Energy appears in different forms including movement (kinetic energy), heat and potential energy, and causes change within systems.</i>	Activity 3 – Hydrothermal Vents – Under Pressure (pg 13) Activity 4 – Hydrothermal Vents – Convection Currents (pg 16)
Science Inquiry Skills		
Planning and Conducting	<i>Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed.</i>	Activity 9 – Squid Dissection (pg 29)

YEAR 9		CONTENT DESCRIPTION	ACTIVITY
Science Understanding			
Chemical Sciences	<p><i>Chemical reactions involve rearranging atoms to form new substances; during a chemical reaction mass is neither created nor destroyed.</i></p> <p><i>Chemical reactions, including combustion and the reactions of acids, are important in both living and non-living systems and involve energy transfer.</i></p>	<p>Activity 15 – Ocean Acidification (pg 44)</p>	
Physical Sciences	<p><i>Energy transfer through different mediums can be explained using wave and particle models.</i></p>	<p>Activity 3 – Hydrothermal Vents – Under Pressure (pg 13)</p> <p>Activity 4 – Hydrothermal Vents – Convection Currents (pg 16)</p>	

YEAR 10		CONTENT DESCRIPTION	ACTIVITY
Science Understanding			
Earth and Space Sciences	<p><i>Global systems, including the carbon cycle, rely on interactions involving the biosphere, lithosphere, hydrosphere and atmosphere.</i></p>	<p>Activity 15 – Ocean Acidification (pg 44)</p>	