Australian Government

Australian Academy of Science

PrimaryConnections
Linking science with literacy

29 February 2012

Primary**Connections and the Australian Curriculum: Science**

The Australian Curriculum: Science was originally released by the Australian Curriculum, Assessment and Reporting Authority (ACARA) on 8 December 2010.[*]

Primary**Connections** is aligned with the rationale and aims of the Australian Curriculum: Science. It will support the Australian Curriculum's national implementation by continuing to provide an innovative, inquiry-based program linking the teaching of science with literacy. Primary**Connections** provides a sophisticated professional learning program supported by exemplary curriculum resources.

The Australian Curriculum: Science is organised around three interrelated strands:

- Science Understanding (SU);
- Science as a Human Endeavour (SHE) and
- Science Inquiry Skills (SIS).

Together, these provide students with understanding, knowledge and skills through which they can develop a scientific view of the world. (*Australian Curriculum: Science*, ACARA, 23 January 2012).

There are many questions being asked of Primary**Connections**: in particular, the alignment with the Australian Curriculum: Science, and the release dates for new aligned units.

FAQ

FAQ 1. How do the current published Primary**Connections' units align with the new Australian Curriculum: Science?**

Primary**Connections** units are well aligned with the General Capabilities and the three Current Priorities of the Australian Curriculum.There is significant alignment with the SHE and SIS strands of the Curriculum in all Primary**Connections** units. For specific information on how the current Primary**Connections** curriculum units align with each of the three strands, see pages 3-9.

[*] Version 3.0 was released in January 2012

FAQ 2. There are two other units that were trialled in 2010 – what happened to them?

What a waste (Year 2) – The Science Understanding that this unit was written to align with has changed from the initial draft of the Australian Curriculum: Science to the final version released in December 2010. This unit is now no longer applicable to the Year 2 Understanding. We may modify it as an alternative unit for the Year 4 Chemical science Understanding strand but as Year 4 teachers now have two units available for that strand we don't envisage rewriting and publishing that unit in the near future.

Life in the balance (Year 6) – The Science Understanding that this was written for has been moved to Year 7. Once we have completed publishing our suite of units for Years F-6 we then hope to complete the editing of this unit and release it for Year 7 teachers. We will notify when a publishing date is available, but it is likely that it will not be until the end of 2012.

FAQ 3. I am a Year 7 primary school teacher in Qld, WA or SA. Why are there no longer any units for me?

Primary**Connections** units cover the first seven years of primary school which is Years F-6 in the Australian Curriculum. At this stage, apart from *Life in the balance,* Primary**Connections** is not in the position to develop and publish units to meet the Year 7 Science strands. However, once the Year F-6 suite of units is complete, we will reassess our position on providing Year 7 units.

FAQ 4. Have there been any more new units trialled?

Yes. The final version of the Australian Curriculum: Science has three new Understandings for which there are currently no published Primary Connections units. Our plan for the trial and publishing of these units is as follows:

Year level	Sub-strand	Science Understanding	Trial	Available
Year 3	Physical science	**Heating up** can be produced in many ways and can move from one object to another.	Term 4 2011	Term 3 2012
Year 5	Biological science	**Desert survivors** Living things have structural features and **adaptations** that help them to survive in their environment	Term 3 2011	Term 3 2012
Year 5	Chemical science	**Solids, liquids and gases** have different observable properties and behave in different ways	Term 1 2012	Term 4 2012

FAQ 5. Can I volunteer as a trial teacher for one of these units mentioned above?

No. Applications to be a trial teacher for these units have now closed. The 30 teachers required for each unit and a lengthy list of reserves have been selected.

Current alignment by year level

Primary**Connections** alignment with the three strands of the Australian Curriculum: Science

FOUNDATION		*Staying alive*	*What's it made from?*	*Weather in my world*	*On the move*
SCIENCE UNDERSTANDING					
Biological sciences	Living things have basic needs, including food and water	✓			
Chemical sciences	Objects are made of materials that have observable properties		✓		
Earth and space sciences	Daily and seasonal changes in our environment, including the weather, affect everyday life			*	
Physical sciences	The way objects move depends on a variety of factors, including their size and shape				*
SCIENCE AS A HUMAN ENDEAVOUR					
Nature and development of science	Science involves exploring and observing the world using the senses	✓	✓	✓	✓
SCIENCE INQUIRY SKILLS					
Questioning and predicting	Respond to questions about familiar objects and events	✓	✓	✓	✓
Planning and conducting	Explore and make observations by using the senses	✓	✓	✓	✓
Processing and analysing data and information	Engage in discussions about observations and use methods such as drawing to represent ideas	✓	✓	✓	✓
Communicating	Share observations and ideas	✓	✓	✓	✓

* Unit requires minor modifications to include concept (shown in red) to align to Science Understanding

YEAR 1		Schoolyard safari	Spot the difference	Up, down and all around	Sounds sensational
SCIENCE UNDERSTANDING				Available Jan 2012	
Biological sciences	Living things have a variety of external features Living things live in different places where their needs are met	*			
Chemical sciences	Everyday materials can be physically changed in a variety of ways		✓		
Earth and space sciences	Observable changes occur in the sky and landscape			✓	
Physical sciences	Light and sound are produced by a range of sources and can be sensed				**
SCIENCE AS A HUMAN ENDEAVOUR					
Nature and development of science	Science involves asking questions about, and describing changes in, objects and events	✓	✓	✓	✓
Use and influence of science	People use science in their daily lives, including when caring for their environment and living things	✓	✓	✓	✓
SCIENCE INQUIRY SKILLS					
Questioning and predicting	Respond to and pose questions, and make predictions about familiar objects and events	✓	✓	✓	✓
Planning and conducting	Participate in different types of guided investigations to explore and answer questions, such as manipulating materials, testing ideas, and accessing information sources	✓	✓	✓	✓
	Use informal measurements in the collection and recording of observations, with the assistance of digital technologies as appropriate	✓	✓	✓	✓
Processing and analysing data and information	Use a range of methods to sort information, including drawings and provided tables	✓	✓	✓	✓
	Through discussion, compare observations with predictions	✓	✓	✓	✓
Evaluating	Compare observations with those of others	✓	✓	✓	✓
Communicating	Represent and communicate observations and ideas in a variety of ways such as oral and written language, drawing and role play	✓	✓	✓	✓

* Unit aligns with the Science Understanding. However, as it is now at a lower year level, some of the content will need to be changed to suit younger students i.e. reduce the number of animals studied.

** Unit requires major modifications to include 'light' as a concept to align with Science Understanding. However, the unit is well aligned to teach the concept of sound.

YEAR 2		Watch it grow!	All mixed up	Water works	Push pull
SCIENCE UNDERSTANDING		**Available now**	**Available Jan 2012**		
Biological sciences	Living things grow, change and have offspring similar to themselves	✓			
Chemical sciences	Different materials can be combined, including by mixing, for a particular purpose		✓		
Earth and space sciences	Earth's resources, including water, are used in a variety of ways			✓	
Physical sciences	A push or a pull affects how an object moves or changes shape				*
SCIENCE AS A HUMAN ENDEAVOUR					
Nature and development of science	Science involves asking questions about, and describing changes in, objects and events	✓	✓	✓	✓
Use and influence of science	People use science in their daily lives, including when caring for their environment and living things	✓	✓	✓	✓
SCIENCE INQUIRY SKILLS					
Questioning and predicting	Respond to and pose questions, and make predictions about familiar objects and events	✓	✓	✓	✓
Planning and conducting	Participate in different types of guided investigations to explore and answer questions, such as manipulating materials, testing ideas, and accessing information sources	✓	✓	✓	✓
	Use informal measurements in the collection and recording of observations, with the assistance of digital technologies as appropriate	✓	✓	✓	✓
Processing and analysing data and information	Use a range of methods to sort information, including drawings and provided tables	✓	✓	✓	✓
	Through discussion, compare observations with predictions	✓	✓	✓	✓
Evaluating	Compare observations with those of others	✓	✓	✓	✓
Communicating	Represent and communicate observations and ideas in a variety of ways such as oral and written language, drawing and role play	✓	✓	✓	✓

* Unit requires minor modifications to include concept of 'shape' to align with Science Understanding

YEAR 3		*Feathers, fur or leaves?*	*Melting moments*	*Spinning in space*	*Heating up*
SCIENCE UNDERSTANDING		**Available now**	**Available now**		**Available 2012**
Biological sciences	Living things can be grouped on the basis of observable features and can be distinguished from non-living things	✓			
Chemical sciences	A change of state between solid and liquid can be caused by adding or removing heat.		✓		
Earth and space sciences	Earth's rotation on its axis causes regular changes, including night and day.			**	
Physical sciences	Heat can be produced in many ways and can move from one object to another.				✓
SCIENCE AS A HUMAN ENDEAVOUR					
Nature and development of science	Science involves making predictions and describing patterns and relationships	✓	✓	✓	✓
Use and influence of science	Science knowledge helps people to understand the effect of their actions	✓	✓		
SCIENCE INQUIRY SKILLS					
Questioning and predicting	With guidance, identify questions in familiar contexts that can be investigated scientifically and predict what might happen based on prior knowledge	✓	✓	✓	✓
Planning and conducting	Suggest ways to plan and conduct investigations to find answers to questions	✓	✓		
	Safely use appropriate materials, tools or equipment to make and record observations, using formal measurements and digital technologies as appropriate	✓	✓	✓	✓
Processing and analysing data and information	Use a range of methods including tables and simple column graphs to represent data and to identify patterns and trends	✓	✓	✓	✓
	Compare results with predictions, suggesting possible reasons for findings	✓	✓	✓	✓
Evaluating	Reflect on the investigation, including whether a test was fair or not	✓	✓	✓	✓
Communicating	Represent and communicate ideas and findings in a variety of ways such as diagrams, physical representations and simple reports	✓	✓	✓	✓

** Unit aligns with the Science Understanding. However, as it is now at a lower year level, some of the content and literacy focuses will need to be modified to suit younger students.

YEAR 4		Plants in action	Material world	Package it better	Beneath our feet	Smooth moves
SCIENCE UNDERSTANDING					**Available now**	
Biological sciences	Living things have life cycles Living things, including plants and animals, depend on each other and the environment to survive	**				
Chemical sciences	Natural and processed materials have a range of physical properties; these properties can influence their use		*	*		
Earth and space sciences	Earth's surface changes over time as a result of natural processes and human activity.				✓	
Physical sciences	Forces can be exerted by one object on another through direct contact or from a distance.					✓
SCIENCE AS A HUMAN ENDEAVOUR						
Nature and development of science	Science involves making predictions and describing patterns and relationships	✓	✓	✓	✓	✓
Use and influence of science	Science knowledge helps people to understand the effect of their actions	✓	✓	✓	✓	✓
SCIENCE INQUIRY SKILLS						
Questioning and predicting	With guidance, identify questions in familiar contexts that can be investigated scientifically and predict what might happen based on prior knowledge	✓	✓	✓	✓	✓
Planning and conducting	Suggest ways to plan and conduct investigations to find answers to questions			✓	✓	
	Safely use appropriate materials, tools or equipment to make and record observations, using formal measurements and digital technologies as appropriate	✓	✓	✓	✓	✓
Processing and analysing data and information	Use a range of methods including tables and simple column graphs to represent data and to identify patterns and trends	✓	✓	✓	✓	✓
	Compare results with predictions, suggesting possible reasons for findings	✓	✓	✓	✓	✓
Evaluating	Reflect on the investigation, including whether a test was fair or not	✓	✓	✓	✓	✓
Communicating	Represent and communicate ideas and findings in a variety of ways such as diagrams, physical representations and simple reports	✓	✓	✓	✓	✓

* Unit requires minor modifications to include the concept shown in red to align with Science understanding

** Unit aligns with the first Science Understanding. Major modifications will be needed to incorporate the second Science Understanding

YEAR 5		*Desert survivors*	*Solids Liquids and gases*	*Earth's place in space*	*Light fantastic*
SCIENCE UNDERSTANDING		**NEW 2012**	**NEW 2012**	**Available NOW**	
Biological sciences	Living things have structural features and adaptations that help them to survive in their environment	✓			
Chemical sciences	Solids, liquids and gases have different observable properties and behave in different ways		✓		
Earth and space sciences	The Earth is part of a system of planets orbiting around a star (the sun)			✓	
Physical sciences	Light from a source forms shadows and can be absorbed, reflected and refracted				*
SCIENCE AS A HUMAN ENDEAVOUR					
Nature and development of science	Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena			✓	✓
	Important contributions to the advancement of science have been made by people from a range of cultures			✓	
Use and influence of science	Scientific understandings, discoveries and inventions are used to solve problems that directly affect peoples' lives			✓	✓
	Scientific knowledge is used to inform personal and community decisions				✓
SCIENCE INQUIRY SKILLS					
Questioning and predicting	With guidance, pose questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be			✓	✓
Planning and conducting	With guidance, select appropriate investigation methods to answer questions or solve problems			✓	
	Decide which variable should be changed and measured in fair tests and accurately observe, measure and record data, using digital technologies as appropriate				✓
	Use equipment and materials safely, identifying potential risks			✓	✓
Processing and analysing data and information	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			✓	✓
	Compare data with predictions and use as evidence in developing explanations			✓	✓
Evaluating	Suggest improvements to the methods used to investigate a question or solve a problem			✓	✓
Communicating	Communicate ideas, explanations and processes in a variety of ways, including multi-modal texts			✓	✓

*Unit requires minor modifications to include the concept of 'refraction' to align with Science Understanding

YEAR 6		*Marvellous micro-organisms*	*Change detectives*	*Earthquake explorers*	*It's electrifying*	*Essential energy*
SCIENCE UNDERSTANDING						**Available NOW**
Biological sciences	The growth and survival of living things are affected by the physical conditions of their environment.	✓				
Chemical sciences	Changes to materials can be reversible, such as melting, freezing, evaporating; or irreversible, such as burning and rusting		✓			
Earth and space sciences	Sudden geological changes or extreme weather conditions can affect Earth's surface.			✓		
Physical sciences	Electrical circuits provide a means of transferring and transforming electricity				✓	
	Energy from a variety of sources can be used to generate electricity					✓
SCIENCE AS A HUMAN ENDEAVOUR						
Nature and development of science	Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena	✓	✓	✓	✓	✓
	Important contributions to the advancement of science have been made by people from a range of cultures	✓		✓	✓	
Use and influence of science	Scientific understandings, discoveries and inventions are used to solve problems that directly affect peoples' lives	✓	✓	✓	✓	✓
	Scientific knowledge is used to inform personal and community decisions	✓		✓		✓
SCIENCE INQUIRY SKILLS						
Questioning and predicting	With guidance, pose questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be	✓	✓		✓	✓
Planning and conducting	With guidance, select appropriate investigation methods to answer questions or solve problems	✓	✓		✓	✓
	Decide which variable should be changed and measured in fair tests and accurately observe, measure and record data, using digital technologies as appropriate	✓	✓		✓	✓
	Use equipment and materials safely, identifying potential risks	✓	✓	✓	✓	✓
Processing and analysing data and information	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	✓	✓	✓	✓	✓
	Compare data with predictions and use as evidence in developing explanations	✓	✓		✓	✓
Evaluating	Suggest improvements to the methods used to investigate a question or solve a problem	✓	✓		✓	✓
Communicating	Communicate ideas, explanations and processes in a variety of ways, including multi-modal texts	✓	✓	✓	✓	✓