WithOnePlanet

- Module 1: **Carbon**
- Level: **Years 1 to 2**
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- Unit outline for teachers

Module: Carbon

Unit outline for teachers

years 1 to 2

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INQuIRY

WithOnePlanet
Open education
An xpand Foundation initiative

Australian Curriculum covered in this unit:

INQuIRY

Learning area		General capabilities		Cross-curriculum priorities	
	English	✓	Literacy		Aboriginal and Torres Strait Islander histories and cultures
	Mathematics	✓	Numeracy	✓	Asia and Australia's engagement with Asia
✓	Science	✓	Information and communication technology (ITC) competence	✓	Sustainability
	History	✓	Critical and creative thinking		
	Geography	✓	Social and personal competence		
		✓	Ethical behaviour		
		✓	Intercultural understanding		

Carbon is child's play:

A unit for Years 1 to 2

Unit outline for teachers

Introduction

Carbon is all around us and makes up every living thing. Whether it's a tree, a bird or a person, it all consists of carbon. When living things grow and change, the natural processes that cause these changes affect the carbon they contain. But carbon doesn't just reside in living things – it can also affect the weather living things experience. Furthermore, the carbon life-forms themselves can influence how much effect carbon has on the weather! The ***Carbon is child's play*** unit is an ideal way to investigate the basic science of carbon in living things and the weather, and improve the scientific literacy of students in the classroom and in their own worlds. It provides opportunities for students to investigate their understandings of carbon in the context of their everyday experiences and, through hands-on activities and discussion, to make decisions and take actions to live more sustainably with carbon.

*'The **Carbon is child's play** unit is an ideal way to investigate the basic science of carbon in living things and the weather, and improve the scientific literacy of students in the classroom and in their own worlds.'*

Units at a glance – INQuIRY teaching and learning model

The WithOnePlanet The **INQuIRY** teaching and learning model provides problem-and challenge-based activities, designed to build sequential and experiential learning, practical skills and actions, critical thinking, knowledge and awareness about the impacts of climate change on plants, people and place in our region.

Inquiry model	Lesson sequence	At a glance
INQuIRY Introduce	**Lesson 1** Carbon alive!	To capture students' interest and find out what they think they know about carbon in living things and how carbon's movements affect the weather.
INQuIRY Question	**Lesson 2** Making inquiries about carbon Collectively, students develop some questions about carbon.	To elicit students' questions about carbon in living things and how carbon's movements affect the weather. To collectively develop some questions. about carbon that students can investigate.
INQuIRY Investigate	**Lesson 3** Let's play with carbon Through fieldwork activities, students investigate different living things that contain carbon and how the natural processes that change living things also change the carbon they contain.	To provide students with hands-on, investigation experiences of: > carbon as a component of living things > the natural processes that allow living things to change and how this affects the carbon they contain.
	Lesson 4 It's raining carbon! Through fieldwork activities, students investigate how carbon can influence changes in the weather.	To provide students with hands-on, investigation experiences of how changes in the amount of carbon in the atmosphere can affect changes in the weather.
	Lesson 5 Sharing our carbon Students discuss and act in ways that influence the amount of carbon in the air.	To provide students with hands-on, investigation experiences of how the amount of carbon in the air can be influenced by their decisions and actions.
	Lesson 6 Carbon answers the question Students review their progress with the class's question(s) and determine if they have been answered.	To provide students with an opportunity to reflect on their progress with the class's question(s) and determine whether or not they have been fully answered. To support students to answer the question(s) developed by the class.

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Inquiry model	Lesson sequence	At a glance
INQuIRY Review	**Lesson 7** **Tell me a story about carbon** Students review their understanding of the unit.	To provide opportunities for students to represent what they know about carbon and to reflect on their learning during the unit.
INQuIRY Your future	**Lesson 8** **My carbon future** Students decide on where to go next on their own Carbon learning journey.	To provide opportunities for students to take their learning about Carbon into a new cycle of inquiry in their own preferred direction.

WithOnePlanet Big questions about big ideas

The WithOnePlanet curriculum seeks to engage students in the big idea of Carbon and its effects on their immediate environment and that of their neighbours in the Asia-Pacific region. The WithOnePlanet *Carbon: Environment* curriculum is based on 5 big questions. These questions can be explored at all levels from Foundation to Year 10, with ever increasing complexity as students move through each unit.

The table below outlines these big questions and provides specific detail about how these ideas can be tackled in Years 1 to 2.

Big Ideas	What is carbon?	What is the carbon cycle?	What is climate change and what role does carbon play in it?	What is my carbon footprint and how can I reduce it?	What can be done to mitigate climate change on a regional scale?
	At its core, carbon is a chemical element. Its physical and chemical properties make it the most essential element for life on Earth, and possibly the most versatile.	Carbon is essential for life and can be found in all Earth's spheres. There are many processes that allow carbon to be cycled through these spheres.	Carbon dioxide is a greenhouse gas. When carbon leaves the biosphere and lithosphere and enters the atmosphere and hydrosphere, it enhances the greenhouse effect. This is when the impacts of climate change become visible.	Every living thing is made of carbon and uses carbon in its various forms every day to survive and thrive. But humans have the capacity to determine how much carbon they use and implement changes to reduce it.	The carbon emissions from everyday activities of Australians not only impact our own carbon footprints but can have significant effects on others in our local region. Furthermore, as Australians we can not only influence our own carbon footprints, but through positive actions, we can impact positively on the lives of our neighbours.

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Big Ideas	What is carbon?	What is the carbon cycle?	What is climate change and what role does carbon play in it?	What is my carbon footprint and how can I reduce it?	What can be done to mitigate climate change on a regional scale?
Years 1 to 2	When living things grow, change and reproduce, they are using carbon in some way to make this happen.	Carbon exists in different forms in different parts of the carbon cycle. Natural processes control the movement of carbon between parts of the carbon cycle.	When there is too much or too little carbon in the air, the effects on the weather can be dramatic.	People can do everyday things that add carbon to the air, prevent carbon from entering the air and take carbon out of the air.	

Alignment with the Australian Curriculum: Science

This *Carbon is child's play* unit embeds all three strands of the Australian Curriculum: Science. The table below lists sub-strands and their content for Years 1 to 2. This unit is designed to be taught in conjunction with other units at Years 1 and 2 to cover the full range of the Australian Curriculum: Science content.

The table below outlines the sub-strands and their content aligned to lessons.

Strand	Sub-strand	Year level	Code	Years 1 to 2 content descriptions	Lesson
Science understanding	Biological sciences	1	ACSSU017	Living things have a variety of external features.	1, 3
			ACSSU211	Living things live in different places where their needs are met.	3, 5
		2	ACSSU030	Living things grow, change and have offspring similar to themselves.	1, 2, 3
	Chemical sciences	1	ACSSU018	Everyday materials can be physically changed in a variety of ways.	1, 2, 3, 4
		2	ACSSU031	Different materials can be combined, including by mixing, for a particular purpose.	1, 2, 3, 5
	Earth and space sciences	1	ACSSU019	Observable changes occur in the sky and landscape.	4, 5
		2	ACSSU032	Earth's resources, including water, are used in a variety of ways.	1, 2, 3, 4, 5, 6
	Physical sciences	1	ACSSU020	Light and sound are produced by a range of sources and can be sensed.	
		2	ACSSU033	A push or a pull affects how an object moves or changes shape.	

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Strand	Sub-strand	Year level	Code	Years 1 to 2 content descriptions	Lesson
Science as a human endeavour	Nature and development of science	1 & 2	ACSHE021	Science involves asking questions about, and describing changes in, objects and events.	1, 2, 3, 4, 5, 6, 7, 8
	Use and influence of science	1 & 2	ACSHE022	People use science in their daily lives, including when caring for the environment and living things.	1, 2, 3, 4, 5, 6
Science inquiry skills	Questioning and predicting	1 & 2	ACSIS024	Respond to and pose questions and make predictions about familiar objects and events.	1, 2, 3, 4, 5, 6, 7, 8
	Planning and conducting		ACSIS025	Participate in different types of guided investigations to explore and answer questions, such as manipulating materials, testing ideas and accessing information sources.	1, 3, 4, 5, 6
			ACSIS026	Use informal measurements in the collection and recording of observations, with the assistance of digital technologies as appropriate.	3, 5
	Processing and analysing data and information		ACSIS027	Use a range of methods to sort information, including drawings and provided tables.	1, 2, 3, 4, 5, 6, 7, 8
			ACSIS212	Through discussion, compare observation with predictions.	1, 3, 4, 5
	Evaluating		ACSIS213	Compare observations with those of others.	1, 2, 3, 4, 5, 6, 7
	Communicating		ACSIS029	Represent and communicate observations and ideas in a variety of ways such as oral and written language, drawing and role play.	1, 2, 3, 4, 5, 6, 7, 8

Alignment with Australian Curriculum: Science - Overarching Ideas

Overarching idea	Incorporation in *Carbon is child's play*
Patterns, order and organisation	Students compare similarities and differences and identify patterns: > between living things > between a living thing at different ages > of different types of weather. Students organise their ideas and understanding in: > the analysis of first-hand data > developing questions about carbon > analysing the carbon stored in living structures > designing strategies to reduce their carbon footprints.
Form and function	Students explore how different forms and stages of life all contain carbon. They link the storage and release of carbon in living things to atmospheric and weather changes.

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Overarching idea	Incorporation in *Carbon is child's play*
Stability and change	Students discuss how: > burning of carbon-based substances can release carbon dioxide emissions, leading to the enhanced greenhouse effect > changes in human lifestyles can affect the stability of different forms of carbon and increase carbon emissions.
Scale and measurement	Students measure the amount of carbon stored in trees of different sizes. Students compare the carbon content of different living things at different ages.
Matter and energy	Students investigate the carbon content of living matter and how energy use from burning can release carbon into the atmosphere.
Systems	Students investigate large-scale Earth systems including the enhanced greenhouse effect and its impact on global carbon emissions.

Alignment with Australian Curriculum: Science - Curriculum focus

The Australian Curriculum: Science is described by year level, but provides advice across four year groupings on the nature of learners. Each year grouping has a relevant curriculum focus.

Curriculum focus Years 1 to 2	Incorporation in *Carbon is child's play*
Awareness of self and the local world	This *Carbon* unit is primarily structured around students' everyday observations and experiences. With guidance and support, students are encouraged to use their senses to observe the world immediately around them and how they interact with it, and are then provided with structured and modelled pathways through which to further investigate these interactions.

Alignment with Australian Curriculum: Science – Achievement standards

The achievement standards of the Australian Curriculum: Science indicates the quality of learning that students typically demonstrate by a particular point in their schooling, for example, at the end of a year level. These standards will be reviewed regularly by ACARA and are available on the ACARA website.

By the end of this unit, teachers will be able to make evidence-based judgments on whether the students are achieving below, at or above the Australian Curriculum: Science Years 1 to 2 achievement standards.

Alignment with Australian Curriculum: General capabilities

The skills, behaviours and attributes that students need to succeed in life and work in the 21st century have been identified in the Australian Curriculum as General capabilities. There are seven general capabilities and they are embedded throughout the Science curriculum.

For further information go to: ACARA 2012, *General Capabilities in the Australian Curriculum*, viewed 20 December 2013, <http://www.australiancurriculum.edu.au/GeneralCapabilities/Overview/General-capabilities-in-the-Australian-Curriculum>.

For examples of our unit-specific General capabilities information see the table below.

General capabilities	Australian curriculum description	*Carbon is child's play* example
Literacy	By learning the literacy of science, students understand that language varies according to context and they increase their ability to use language flexibly. Scientific vocabulary is often technical and includes specific terms for concepts and features of the world, as well as terms that encapsulate an entire process in a single word, such as 'photosynthesis'. Students learn to understand that much scientific information is presented in the form of diagrams, flow charts, tables and graphs.	The literacy focuses are: > words and sentences > basic tables > animations > pictures and drawings > basic graphic organisers > videos
Numeracy	Many elements of numeracy are evident in the Science Curriculum, particularly in science inquiry skills. These include practical measurement and the collection, representation and interpretation of data from investigations. Students are introduced to measurement, first using informal units then formal units. Later they consider issues of uncertainty and reliability in measurement. As students progress, they collect both qualitative and quantitative data, which is analysed and represented in graphical forms. Students learn data analysis skills, including identifying trends and patterns from numerical data and graphs. In later years, numeracy demands include the statistical analysis of data, including issues relating to accuracy, and linear mathematical relationships to calculate and predict values.	Students: > collect and analyse first-hand data > analyse, represent and communicate data in drawings and basic tables.

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Information and communication technology (ICT) competence	Students develop ICT capability when they research science concepts and applications, investigate scientific phenomena, and communicate their scientific understandings. In particular, they employ their ICT capability to access information; collect, analyse and represent data; model and interpret concepts and relationships; and communicate science ideas, processes and information. Digital technology can be used to represent scientific phenomena in ways that improve students' understanding of concepts, ideas and information. Digital aids such as animations and simulations provide opportunities to view phenomena and test predictions that cannot be investigated through practical experiments in the classroom and may enhance students' understanding and engagement with science.	Students: > use online videos and animations to view information.
Critical and creative thinking	In the science learning area, critical and creative thinking are embedded in the skills of posing questions, making predictions, speculating, solving problems through investigation, making evidence-based decisions, and analysing and evaluating evidence. Students develop understandings of concepts through active inquiry that involves planning and selecting appropriate information, and evaluating sources of information to formulate conclusions. Creative thinking enables the development of ideas that are new to the individual, and this is intrinsic to the development of scientific understanding. Scientific inquiry promotes critical and creative thinking by encouraging flexibility and open-mindedness as students speculate about their observations of the world. Students' conceptual understanding becomes more sophisticated as they actively acquire an increasingly scientific view of their world.	Students: > formulate, pose and respond to questions for inquiry > develop evidence-based opinions about environmental issues.

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Personal and social competence	Students develop personal and social capability as they engage in science inquiry, learn how scientific knowledge informs and is applied in their daily lives, and explore how scientific debate provides a means of contributing to their communities. This includes developing skills in communication, initiative taking, goal setting, interacting with others and decision making, and the capacity to work independently and collaboratively. The science learning area enhances personal and social capability by expanding students' capacity to question, solve problems, explore and display curiosity. Students use their scientific knowledge to make informed choices about issues that have an impact on their lives, such as health and nutrition and environmental change, and consider the application of science to meet a range of personal and social needs.	Students: > work collaboratively in teams > participate in discussions > follow directions to work safely > follow detailed instructions when completing practical and written tasks.
Ethical behaviour	Students develop the capacity to form and make ethical judgments in relation to experimental science, codes of practice, and the use of scientific information and science applications. They explore what integrity means in science, and explore and apply ethical guidelines in their investigations. They consider the implications of their investigations on others, the environment and living organisms. They use scientific information to evaluate claims and to inform ethical decisions about a range of social, environmental and personal issues, for example, land use or the treatment of animals.	Students: > ask questions respecting each other's points of view > consider their rights and responsibilities as global citizens of the Earth.

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Intercultural understanding	There are opportunities in the science learning area to develop intercultural understanding. Students learn to appreciate the contribution that diverse cultural perspectives have made to the development, breadth and diversity of science knowledge and applications. Students become aware that the raising of some debates within culturally diverse groups requires cultural sensitivity. They recognise that increasingly scientists work in culturally diverse teams and engage with culturally diverse communities to address issues of international importance.	N/A

Alignment with Australian Curriculum: Cross-curriculum priorities

There are three cross-curriculum priorities identified by the Australian Curriculum:

> Aboriginal and Torres Strait Islander histories and cultures.
> Asia and Australia's engagement with Asia.
> Sustainability.

For each cross-curriculum priority, a set of organising ideas reflects the essential knowledge, understandings and skills for the priority. The organising ideas are embedded in the content descriptions and elaborations of each learning area as appropriate.

Aboriginal and Torres Strait Islander histories and cultures

Carbon is child's play primarily focuses on the Western science way of making evidence-based claims about things required for survival.

Indigenous cultures might have different explanations about the needs for survival, and they might prioritise their relative importance in different ways depending on their culture.

WithOnePlanet recommends working with Indigenous community members to access contextualised, relevant indigenous perspectives.

Code	Organising ideas	Incorporation in *Carbon is child's play*
Country/Place		
011	Australia has two distinct Indigenous groups, Aboriginal Peoples and Torres Strait Islander Peoples.	N/A
012	Aboriginal and Torres Strait Islander communities maintain a special connection to and responsibility for Country/Place throughout Australia.	N/A
013	Aboriginal and Torres Strait Islander Peoples have unique belief systems and are spiritually connected to the land, sea, sky and waterways.	N/A

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Culture		
014	Aboriginal and Torres Strait Islander societies have many language groups.	N/A
015	Aboriginal and Torres Strait Islander Peoples' ways of life are uniquely expressed through ways of being, knowing, thinking and doing.	N/A
016	Aboriginal and Torres Strait Islander Peoples have lived in Australia for tens of thousands of years and experiences can be viewed through historical, social and political lenses.	N/A
People		
017	The broader Aboriginal and Torres Strait Islander societies encompass a diversity of nations across Australia.	N/A
018	Aboriginal and Torres Strait Islander Peoples have sophisticated family and kinship structures.	N/A
019	Australia acknowledges the significant contributions of Aboriginal and Torres Strait Islander people locally and globally.	N/A

Asia and Australia's engagement with Asia

Asia and Australia's engagement with Asia is a key component of the *Carbon* curriculum and is integrated into the curriculum throughout years 3 to10.

The table below outlines the organising ideas for Asia and Australia's engagement with Asia and their content aligned to lessons.

Code	Organising ideas	Incorporation in *Carbon is child's play*
Asia and its diversity		
011	The peoples and countries of Asia are diverse in ethnic background, traditions, cultures, belief systems and religions.	N/A
012	Interrelationships between humans and the diverse environments in Asia shape the region and have global implications.	N/A
Achievements and contributions of the peoples of Asia		
013	The peoples and countries of Asia have contributed and continue to contribute to world history and human endeavour.	N/A
Asia-Australia engagement		
015	Collaboration and engagement with the peoples of Asia support effective regional and global citizenship.	N/A
016	Australia is part of the Asia region and our histories from ancient times to the present are linked.	N/A
OI7	Australians play a significant role in social, cultural, political and economic developments in the Asia region.	N/A
018	Australians of Asian heritage have influenced Australia's history and continue to influence its dynamic culture and society.	N/A

Sustainability

Sustainability is a key component of the *Carbon* curriculum and is integrated into the curriculum throughout F-10. The table below outlines the organising ideas for Sustainability and their content aligned to lessons.

Code	Organising ideas	Incorporation in *Carbon is child's play*
Systems		
011	The biosphere is a dynamic system providing conditions that sustain life on Earth.	Carbon is an integral component of the biosphere and changes in the biosphere can directly impact on the movement of carbon and energy throughout the carbon cycle.
012	All life forms, including human life, are connected through ecosystems on which they depend for their well-being and survival.	Carbon moves through ecosystems and the nature of this movement can affect the well-being and survival of all life forms.
013	Sustainable patterns of living rely on the interdependence of healthy social, economic and ecological systems.	The global nature of greenhouse gas emissions and climate change both highlights and necessitates the interdependence of social, economic and ecological systems.
World views		
014	World views that recognise the dependence of living things on healthy ecosystems, and value diversity and social justice, are essential for achieving sustainability.	N/A
015	World views are formed by experiences at personal, local, national and global levels, and are linked to individual and community actions for sustainability.	Evidence and experience-based world views on climate change highlight the importance of social justice and sustainability at a personal level.
Futures		
016	The sustainability of ecological, social and economic systems is achieved through informed individual and community action that values local and global equity and fairness across generations into the future.	Individual action that values local equity can contribute to the sustainability of ecological systems.
017	Actions for a more sustainable future reflect values of care, respect and responsibility, and require us to explore and understand environments.	Reduction of carbon footprints and the impacts of climate change on local regions are linked to the values of care, respect and responsibility.
018	Designing action for sustainability requires an evaluation of past practices, the assessment of scientific and technological developments, and balanced judgments based on projected future economic, social and environmental impacts.	Students design actions to reduce their personal carbon footprints, as well as mitigate the impacts of climate change on their local environment.
019	Sustainable futures result from actions designed to preserve and/or restore the quality and uniqueness of environments.	Students design actions to reduce their personal carbon footprints, as well as mitigate the impacts of climate change on their local environment.

Key lesson outcomes

In the *Carbon is child's play* unit, students begin to develop their understanding of the presence of carbon in living things. They are introduced to the idea that carbon can be found in all living things, and as living things change, so does the carbon within them. Students begin to understand that the movement of carbon, particularly into the air, can affect the weather. Students examine the link between the amount of carbon in the atmosphere and the types of weather that can be experienced. Students are given opportunities to examine their own behaviours and are challenged to make decisions and take actions that reduce the amount of carbon in the atmosphere.

Teacher background information

Carbon is life.

Carbon is a substance that is found in all living things. As living things grow and change, they change the amount of carbon they contain and how it is used in their bodies. When living things reproduce, they are creating new life out of carbon. The natural processes, that allow living things to survive, grow and reproduce, necessarily affect the amount and use of carbon by these life forms.

Through their actions and activities, living things can also affect the amount of carbon, through carbon dioxide emission, that exists in the atmosphere. This can affect the weather that living things experience. There are clear links between the amount of carbon present in the atmosphere and the types of weather events that can occur, such as extreme weather events including cyclones, floods and drought. Individuals are able to make conscious decisions and take actions that can either increase or reduce the amount of carbon they release into the air. Decisions to reduce carbon generally take the form of reductions in energy use by taking actions such as walking rather than driving and using less electricity in the home, or using energy from alternative non-emitting sources, such as wind or solar power.

Students' conceptions

Taking account of students' existing ideas is important in planning effective teaching approaches that help students learn science. Students develop their own ideas during their experiences in everyday life and might hold more than one idea about an experience, an event or phenomenon.

Many students would not have heard of carbon, particularly in a scientific context, and therefore may find it difficult to link such an abstract concept to living things and life itself. It is important to demonstrate to students that carbon can look quite different depending on the types of living structures it forms. It is therefore part of every living thing the students observe and interact with.

Students may find the idea of using scientific terms rather than everyday words and phrases to describe scientific phenomena difficult to grasp. As such it is important to integrate as many of the new terms with everyday language as is possible and to provide multiple examples of how these terms can take the place of more common expressions. When students are introduced to the more abstract concepts, such as carbon, confusion can arise. It is useful to give multiple sensory examples of carbon-based substances, such as charcoal or diamond, or carbon-rich versus carbon-poor soils, so that students can begin to comprehend the nature of carbon in their immediate environments.

Often students' preconceptions about the weather are observational and simplistic, and relative to their own feelings and experiences, e.g. I feel hot, I feel cold, etc. Using these ideas as a starting point and remoulding them in a scientific framework, with correct scientific terms, can allow students to move from the unscientific, simplistic view of the weather, to a more sophisticated scientific view of the effects of increasing carbon in the air and the resulting particular weather events and patterns.

Most students will find the link between changes in the amount of carbon in the air and changes in the weather a relatively unfamiliar one. For others, this may not be their first introduction to these scientific ideas. However, it is quite common for students to have embedded misconceptions surrounding the weather and their relative impact on it.

When discussing the effects and impacts of carbon on the weather, students can mistakenly assume that terms they may have heard, such as 'global warming' and 'climate change' mean that the weather will be hotter. While true on a general scale, the effects that are both happening now and forecast for the future, are much more complex. It is essential that students are introduced to the idea that increasing carbon levels in the air increases the frequency of significant weather events, such as cyclones and flash flooding, in order that, over time, they can learn to distinguish global warming from increasing daily temperatures. One means to this end is to use the term climate change in preference to global warming.

Students may bring many different attitudes and beliefs to the issue of climate change, its existence, and the role that humans do play, and should play, in its causes and solutions. Each student may already have formed a basic opinion on how much they or their families are willing to engage in the issue. Climate change can be a very sensitive issue for some students as they grapple with possible differences between their new understandings and those of their families, friends and in society at large. However, by reframing the issue in terms of resource use, this possible conflict can be somewhat averted.

It is also important to allow students to feel empowered to create meaningful change to reduce their excess resource use. This can be achieved by creating in students a sense of ownership and control over their own beliefs and actions, and establishing the idea that all positive action, large or small, has value and potential to create positive change.

Safety

Learning to use materials and equipment safely is central to working scientifically. It is important, however, for teachers to review each lesson before teaching in order to identify and manage safety issues specific to a group of students.

The following guidelines will help minimise risks:

- Be aware of the school's policy on safety in the classroom and for excursions and lessons conducted in the outdoors.
- Check students' health records for allergies or other health issues.
- Be aware of potential dangers by trying out activities before students do them.
- Caution students about potential dangers before they begin an activity.
- Instruct students never to taste, smell or eat anything unless they are given permission.
- Discuss and display a list of safe practices for science activities.

Carbon futures program

Out of the classroom and into the bush

Carbon futures is an engaging, inquiry-based program developed by WithOneSeed in association with the Royal Botanic Gardens, Melbourne.

The program is available as a field trip to the Royal Botanic Gardens, Cranbourne and Melbourne, yet most elements of this program can also be completed within a school setting. Specific elements of the *field trip* are embedded within the lessons of this unit.

Carbon futures aims to 'plant' seeds to enable Australian students to better understand their environment, the carbon cycle and their rights and responsibilities as citizens of the Asia-Pacific region.

The *Carbon futures* program takes students out of the classroom and into the bush to gain a practical look at carbon in the environment. Students will learn about how carbon works in different natural systems through ocean acidification experiments and measuring carbon in trees. Students will also discover the many other services a forest has to offer people anywhere on the planet. The program also aims to connect schools in Australia with subsistence school communities in Timor Leste, as part of WithOnePlanet's open education and WithOneSeed's community forestry initiatives.

Teachers can arrange a *Carbon futures field trip* through the Royal Botanic Gardens Education Program.

Primary school bookings: http://www.rbg.vic.gov.au/learn/programs/primary-cranbourne
http://www.rbg.vic.gov.au/learn/programs/primary-melbourne

Secondary schools bookings: http://www.rbg.vic.gov.au/learn/programs/secondary-cranbourne
http://www.rbg.vic.gov.au/learn/programs/secondary-melbourne

Carbon futures program info video – http://vimeo.com/51257037

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Royal Botanic Gardens Melbourne