

# National Curriculum

The various aspects of this project have been delivered in each of 6 states and the curriculum references carefully considered for each. Although each project supports a broad range of outcomes across many learning areas, it is possible to identify some science learning outcomes that are supported by all projects.

The following are references to state curriculum frameworks which relate to the science of these projects. Specific curriculum references are made in information detailed for each project the relevant sections of the folder.

## Queensland

### Queensland Curriculum, Assessment and Reporting (QCAR) Framework

#### Knowing and Understanding

**Characteristics and functions of phenomena, objects and systems in the natural world are interrelated.**

- The properties of materials can be explained in terms of their structure.

**Patterns of change can be described by qualitative and/or quantitative relationships and used to make predictions.**

- The inherited characteristics of an organism can be used to predict features.

**Scientific investigations can be characterised by systematic procedures.**

- Questions and hypotheses are critical elements of an effective investigation.
- Investigations may be evaluated and improvements considered.
- Suitable scientific equipment, tools and technologies are chosen to enhance efficiency and accuracy.
- A range of decision making and problem solving strategies are used when undertaking and investigation.

#### Inquiring, responding and reflecting

- Identify problems and issues suitable for developing controlled scientific investigations.
- Formulate questions and hypotheses.
- Work co-operatively to set, achieve and evaluate team goals.
- Explore the implications of different scientific choices.

<https://www.qcaa.qld.edu.au/about>

## New South Wales

#### What will students learn about?

Through their study of science students develop a knowledge and understanding about the living and non-living world. Students examine the historical and ongoing contribution of scientists and the implications of this research on scientific knowledge, society, technology and the environment.

#### What will students learn to do?

Students work individually and in teams in planning and conducting investigations. They evaluate issues and problems, identify questions for inquiry and draw evidenced-based conclusions from their investigations. Through this problem-solving process they develop their critical thinking skills and creativity. They are provided with

experiences in making informed decisions about the environment, the natural and technological world and in communicating their understanding and viewpoints.

### **Knowledge and Understanding**

Students will develop knowledge and understanding of:

- the nature and practice of science
- applications and uses of science
- implications of science for society and the environment
- current issues, research and development

### **Skills**

Students will develop skills in working scientifically through:

- planning investigations
- conducting investigations
- communicating information and understanding
- developing scientific thinking and problem-solving techniques
- working individually and in teams.

### **Values and Attitudes**

Students will develop positive values and attitudes towards themselves, others, learning as a lifelong process, science and the environment.

[http://www.boardofstudies.nsw.edu.au/syllabus\\_sc/#science](http://www.boardofstudies.nsw.edu.au/syllabus_sc/#science)

## **Victoria**

### **Essential Learnings**

#### **Science Knowledge and Understanding**

The **science knowledge and understanding** dimension focuses on building student understanding of the overarching conceptual ideas of science. These include understanding:

- The nature of the similarities between, and the diversity of, living things and their sustainable relationships with each other and the environment.
- Concepts related to matter – its properties and uses, and the production of different substances through chemical change.

#### **Science at Work**

The **science at work** dimension focuses on students experiencing and researching how people work with and through science. Students learn to be curious and to use scientific processes to find answers to their questions. They design and pursue investigations ethically and safely; generate, validate and critique evidence; analyse and interpret ideas and links them with existing understanding; work and reason with scientific models and communicate their findings and ideas to others. They identify and practise the underlying values, skills and attributes of science.

Through their investigations, they gain insight into science as a human activity and the relationship between science, technology and society both now and in the future. They explore how science is used in multiple contexts throughout their lives and its pervasiveness throughout the workplace.

<http://www.vcaa.vic.edu.au/Pages/foundation10/f10index.aspx>

## Tasmania

### Essential Learnings

Science skill	Key element outcome
Use technology and resources	Design, make and critically evaluate products and processes in response to human needs and challenges [Designing and evaluating technological solutions]
Develop and evaluate experiments and models	Understands how to investigate scientifically, appreciating the tentative nature of knowledge and valuing creative, imaginative and speculative thinking [Investigating the natural and constructed world]
Evaluate evidence scientifically	Understands the process of inquiry and uses appropriate techniques for posing questions, defining problems, processing and evaluating data, drawing conclusions and flexibly applying findings to further learning and to creating new solutions [Inquiry]

#### ***Essential - Thinking: Inquiry***

##### Key Element Outcome

Understands that reflective thinking is a deliberate process affected by emotions and motivations and that it is used to develop and refine ideas and beliefs and to explore different and new perceptions

##### **Performance Guidelines**

- The importance of being open to new possibilities and perceptions pertaining to the ideas of self and others.

#### ***Essential - World Futures: Investigating the Natural and Constructed World***

##### Key Element Outcome

Understands how to scientifically investigate the natural and constructed world, appreciating the tentative nature of knowledge and the value of creative, imaginative and speculative thinking.

##### **Performance Guidelines**

- Complete practical tasks, record analyse, critically question and evaluate results, drawing justifiable conclusions.

#### ***Essential - World Futures: Understanding Systems***

##### Key Element Outcome

Understands that the social, natural and constructed world is made up of a complex web of relationships or systems.

##### **Performance Guidelines**

- Recognise interconnections within and between systems.

#### ***Essential - World Futures: Creating Sustainable Futures***

##### Key Element Outcome

Understand the environmental principals and ethical issues involved in creating and working towards sustainable futures.

##### **Performance Guidelines**

- Identify possible and preferred futures as goals for sustainability.

<https://www.education.tas.gov.au/documentcentre/Documents/Tas-Curriculum-K-10-Vocational-and-Applied-Learning-Syllabus-and-Support.pdf>

## South Australia

### South Australian Curriculum Standards and Accountability Framework

The capacity to use, develop and apply scientific knowledge by;

- Investigating, explaining and predicting events, and devising solutions in their everyday endeavours in their physical, social and biological worlds.
- Using science to link with and across, other learning areas, with lifelong learning, work and community contexts.

The understanding that science is a social construction by;

- Acknowledging that aspects of thinking are carried out by all people as part of their everyday lives in ways that contribute to their personal and social wellbeing and identities in a range of contexts, including cultural, environmental and economic.
- Appreciating the evolutionary nature of science and scientific knowledge as a human endeavour with its own histories and ways of contributing to society.

Positive attitudes, values and dispositions related to science which involve;

- Being open to new ideas, being intellectually honest and rigorous, showing commitment to scientific reasoning and striving for objectivity, and pursuing and respecting evidence to confirm or challenge current interpretations.

<http://www.sacsa.sa.edu.au>

## Western Australia

### Curriculum Framework

#### Working Scientifically

Working Scientifically comprises five outcomes: Investigating, Communicating Scientifically, Science in Daily Life, Acting Responsibly and Science in Society. In planning curricula, learning experiences should link the Working Scientifically outcomes with the development of scientific conceptual understandings and the process outcomes in other learning areas.

#### Investigating

1. Students investigate to answer questions about the natural and technological world using reflection and analysis to prepare a plan; to collect, process and interpret data; to communicate conclusions; and to evaluate their plan, procedures and findings.

#### Understanding Concepts

Four outcomes are identified: Earth and Beyond, Energy and Change, Life and Living and Natural and Processed Materials. Through achieving these outcomes, students' conceptual understandings of the physical and biological world will be enhanced. These outcomes should be developed in conjunction with the Working Scientifically outcomes. The emphasis placed on particular concepts may vary according to students' needs and location, including the physical, biological and technological nature of the environments in which they live.

#### Life And Living

8. Students understand their own biology and that of other living things, and recognise the interdependence of life.

#### Natural and Processed Materials

9. Students understand that the structure of materials determines their properties and that the processing of raw materials results in new materials with different properties and uses.

<https://www.education.wa.edu.au/web/our-schools/how-our-schools-work/western-australian-curriculum>