Stage 3 Science

STAGE STATEMENT

By the end of Stage 3 students show informed attitudes to issues related to the current and future use and influence of science and technology. They are interested and willing to engage in local, national and global issues that are relevant to their lives and the maintenance of a sustainable future. They are able to discuss how science and technology directly affect people's lives and are used to solve problems.

Students initiate, use and apply the processes of Working Scientifically and Working Technologically with a greater level of independence. They are more self-reliant in undertaking a range of scientific investigations and design projects, and in collaboratively completing the tasks. Students select and safely use a variety of equipment, materials and resources identifying potential risks. They identify where improvements to their methods, techniques or research could enhance the quality of the information gathered. Students use a range of representations to present, document and communicate methods, findings and ideas, including tables, graphs, diagrams and multi-modal texts, using digital technologies where relevant.

When Working Scientifically, students follow instructions, pose questions for investigations, predict likely outcomes and demonstrate honesty and accuracy in collecting, recording and analysing data and information. In planning and conducting fair tests they are able to identify variables to be changed and measured, and check results by repeating observations and measurements. They construct tables and graphs to organise data and identify patterns. They use evidence to draw conclusions and develop explanations.

When Working Technologically, students plan and implement a design process to meet the needs and wants of users/audiences. They explore and define the design task, establishing design criteria and considering constraints when planning the process. Students select and apply appropriate methods to develop and generate ideas and apply established criteria to evaluate and modify them. They develop plans, specifications and production sequences to produce solutions for built environments, information and products. They evaluate their solutions using self and peer assessment, and identify the strengths and limitations of the process used.

As students continue to observe and investigate aspects of the Natural Environment, they explain how natural events cause rapid changes to the Earth's surface. They describe key features of the solar system and the contribution of people from a range of cultures over time to the advancement of science. Students explain everyday phenomena associated with the transfer of light and requirements for the transfer and transformation of electricity. They identify how energy from a variety of sources can be used to generate electricity and how science knowledge is used to inform personal and community decisions. Students describe how features of living things help them to survive in their environment and how the growth and survival of living things is affected by changes in the physical conditions of their environment.

Students identify the observable properties of solids, liquids and gases. They compare and classify different types of observable changes to materials, considering how their properties determine their use.

Within the Made Environment students explain how production systems are used to manufacture products. They explore changes that have occurred in the design of products over time and the social and environmental factors that influence the design of products. Students investigate how systems in built environments are designed to meet the needs of people, in response to social and environmental influences. They explain how systems can be used to transfer information and support communication, and how social influences impact on the design of a range of emerging information products.

OUTCOMES

Outcome		
Values and Attitudes	ST3-1VA	shows interest in and enthusiasm for science and technology, responding to their curiosity, questions and perceived needs, wants and opportunities
	ST3-2VA	demonstrates a willingness to engage responsibly with local, national and global issues relevant to their lives, and to shaping sustainable futures
	ST3-3VA	develops informed attitudes about the current and future use and influence of science and technology based on reason
Skills	ST3-4WS	investigates by posing questions, including testable questions, making predictions and gathering data to draw evidence-based conclusions and develop explanations
	ST3-5WT	plans and implements a design process, selecting a range of tools, equipment, materials and techniques to produce solutions that address the design criteria and identified constraints
Knowledge and Understanding	ST3-6PW	describes how scientific understanding about the sources, transfer and transformation of electricity is related to making decisions about its use
	ST3-7PW	uses scientific knowledge about the transfer of light to solve problems that directly affect people's lives
	ST3-8ES	describes how discoveries by people from different cultures and times have contributed to advancing scientific understanding of the solar system
	ST3-9ES	explains rapid change at the Earth's surface caused by natural events, using evidence provided by advances in technology and scientific understanding
	ST3-10LW	describes how structural features and other adaptations of living things help them to survive in their environment
	ST3-11LW	describes some physical conditions of the environment and how these affect the growth and survival of living things

	ST3-12MW	identifies the observable properties of solids, liquids and gases, and that changes made to materials are reversible or irreversible
	ST3-13MW	describes how the properties of materials determine their use for specific purposes
	ST3-14BE	describes systems in built environments and how social and environmental factors influence their design
	ST3-15I	describes how social influences impact on the design and use of information and communication systems
	ST3-16P	describes systems used to produce or manufacture products, and the social and environmental influences on product design