Science and technology K-6 sample scope and sequence

## Semester-based

### Stage 2

#### Semester 1, odd year – living world and digital technologies

Stage 2 of the living world strand focuses on the classification, life cycles and survival of living things. Students consider the agricultural processes used to grow plants and raise animals. They design and produce a product or system to support the growth of a plant and/or animal. Students describe how digital systems represent and transmit data and develop algorithms to solve problems within a living world context.

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| Outcomes | Focus |
| ST2-1WS-S – questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations  ST2-2DP-T – selects and uses materials, tools and equipment to develop solutions for a need or opportunity  ST2-3DP-T – defines problems, describes and follows algorithms to develop solutions  ST2-4LW-S – compares features and characteristics of living and non-living things  ST2-5LW-T – describes how agricultural processes are used to grow plants and raise animals for food, clothing and shelter  ST2-11DI-T – describes how digital systems represent and transmit data | Classification of living things  Inquiry question: How can we group living things?  Life cycles of living things  Inquiry question: What are the similarities and differences between the life cycles of living things?  Survival of living things  Inquiry question: How are environments and living things interdependent?  Producing food and fibre from living things  Focus question: How do we create food and fibre products from animals and plants?  Representation and analysis of data  Focus question: Why do we represent data in different ways?  Visual programming  Focus question: How are algorithms used to develop digital systems? |

#### Semester 2, odd year – material world and digital technologies

Stage 2 of the material world strand focuses on how solids and liquids change state and the properties of natural and processed materials. Students investigate how different properties of materials affect their suitability for products. They have the opportunity to develop a design solution to an identified need or opportunity, using a variety of materials. Stage 2 of this strand develops students’ knowledge and understanding of the properties and performance of materials and the material sciences. Students describe how digital systems represent and transmit data and develop algorithms to solve problems within a material world context.

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| Outcomes | Focus |
| ST2-1WS-S – questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations  ST2-2DP-T – selects and uses materials, tools and equipment to develop solutions for a need or opportunity  ST2-3DP-T – defines problems, describes and follows algorithms to develop solutions  ST2-6MW-S – describes how adding or removing heat causes a change of state  ST2-7MW-T – investigates the suitability of natural and processed materials for a range of purposes  ST2-11DI-T – describes how digital systems represent and transmit data | Changes of state  Inquiry question: How do materials change when heated and cooled?  Materials are used for a specific purpose  Focus question: How do you decide upon which material to use for a particular purpose?  Digital systems and the transmission of data  Focus question: How do digital systems share information and instructions?  Representation and analysis of data  Focus question: Why do we represent data in different ways? |

#### Semester 1, even year – Earth and space and digital technologies

Stage 2 of the Earth and space strand focuses on the Earth’s surface and how it changes over time. Students investigate natural processes and human activity in order to develop a view in relation to sustainable practices. They explore the effect of the interactions between the Earth and the Sun. Students describe how digital systems represent and transmit data and develop algorithms to solve problems within an Earth and space context.

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| Outcomes | Focus |
| ST2-1WS-S – questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations  ST2-2DP-T – selects and uses materials, tools and equipment to develop solutions for a need or opportunity  ST2-3DP-T – defines problems, describes and follows algorithms to develop solutions  ST2-10ES-S – investigates regular changes caused by interactions between the Earth and the Sun, and changes to the Earth’s surface  ST2-11DI-T – describes how digital systems represent and transmit data | How the Earth’s surface changes over time  Inquiry question: How do natural processes and human actions change the Earth’s surface over time?  Earth’s relationship with the Sun  Inquiry question: What occurs as a result of the interactions between the Earth and the Sun?  Representation and analysis of data  Focus question: Why do we represent data in different ways?  Visual programming  Focus question: How are algorithms used to develop digital systems? |

#### Semester 2, even year – physical world and digital technologies

Stage 2 of the physical world strand focuses on light, heat and electrical energy and how contact forces affect the behaviour of objects. Stage 2 of this strand develops their understanding of energy as a resource that can be generated and transferred. They investigate the interdependent relationship between energy and forces that affects the behaviour of objects. Students observe how energy and forces are used in the manufacture of products and in systems. They describe how digital systems represent and transmit data and develop algorithms to solve problems within a physical world context.

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| Outcomes | Focus |
| ST2-1WS-S – questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations  ST2-2DP-T – selects and uses materials, tools and equipment to develop solutions for a need or opportunity  ST2-3DP-T – defines problems, describes and follows algorithms to develop solutions  ST2-8PW-ST – describes the characteristics and effects of common forms of energy, such as light and heat  ST2-9PW-ST – describes how contact and non-contact forces affect an object’s motion  ST2-11DI-T – describes how digital systems represent and transmit data | Energy makes things happen (heat, light and electricity)  Inquiry question: How do heat, light and electrical energy make things happen?  Contact and non-contact forces  Inquiry question: How can objects affect other objects with or without touching them?  Forces and energy in products and systems  Focus question: How can we use forces and energy in a product or system?  Digital systems and the transmission of data  Focus question: How do digital systems share information and instructions?  Visual programming  Focus question: How are algorithms used to develop digital systems? |

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