Science and technology K-6 sample scope and sequence

## Overarching questions – whole school

### Term 1, odd year – food and fibre

**Overarching question:** How do we use plants and animals for food and fibre?

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|  | Skills | Knowledge and understanding | Inquiry/focus questions |
| ES1 | Working scientifically STe-1WS-S: observes, questions and collects data to communicate ideas  Design and production STe-2DP-T: develops solutions to an identified need | Living world STe-3LW-ST: explores the characteristics, needs and uses of living things | What do we notice about living things?  How can living things be used to meet our needs? |
| S1 | Working scientifically ST1-1WS-S: observes, question and collects data to communicate and compare ideas  Design and production ST1-2DP-T: uses materials, tools and equipment to develop solutions for a need or opportunity | Living world ST1-5LW-T: identifies how plants and animals are used for food and fibre products | How do humans use plants and animals? |
| S2 | Working scientifically ST2-1WS-S: questions, plans and conducts scientific investigation, collects and summarises data and communicates using scientific representations  Design and production ST2-2DP-T: selects and uses materials, tools and equipment to develop solutions for a need or opportunity | Living world ST2-5LW-T: describes how agricultural processes are used to grow plants and raise animals for food, clothing and shelter | How do we create food and fibre products from animals and plants? |
| S3 | Working scientifically ST3-1WS-S: plans and conducts scientific investigations to answer testable questions, and collects and summarises data to communicate conclusions  Design and production ST3-2DP-T: plans and uses materials, tools and equipment to develop solutions for a need or opportunity | Living world ST3-5LW-T: explains how food and fibre are produced sustainably in managed environments for health and nutrition | Why is it important for food and/or fibre to be produced sustainably? |

### Term 2, odd year – sky and space

**Overarching questions:** What happens in the sky and space? How do we respond? How do we use digital technologies to record and represent things that happen in the sky and space?

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|  | Skills | Knowledge and understanding | Inquiry/focus questions |
| ES1 | Working scientifically STe-1WS-S: observes, questions and collects data to communicate ideas  Design and production STe-2DP-T: develops solutions to an identified need | Earth and space STe-6ES-S: identifies how daily and seasonal changes in the environment affect humans and other living things  Digital technologies STe-7DI-T: identifies digital systems and explores how instructions are used to control digital devices | How do daily and seasonal changes affect the environment?  How are digital technologies used in everyday life? |
| S1 | Working scientifically ST1-1WS-S: observes, questions and collects data to communicate and compare ideas  Design and production ST1-3DP-T: describes, follows and represents algorithms to solve problems | Earth and space ST1-10ES-S: recognises observable changes occurring in the sky and on the land and identifies Earth’s resources  Digital technologies ST1-11DI-T: identifies the components of digital systems and explores how data is represented | How can we investigate the observable changes that occur in the sky and on the land?  What is data and how can we store and represent it? |
| S2 | Working scientifically ST2-1WS-S: questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations  Design and production ST2-3DP-T: defines problems, describes and follows algorithms to develop solutions | Earth and space ST2-10ES-S: investigates regular changes caused by interactions between the Earth and the Sun, and changes to the Earth’s surface  **Digital technologies ST2-11DI-T:** describes how digital systems represent and transmit data | What occurs as a result of the interactions between the Earth and the Sun?  Why do we represent data in different ways? |
| S3 | Working scientifically ST3-1WS-S: plans and conducts scientific investigations to answer testable questions, and collects and summarises data to communicate conclusions  Design and production ST3-3DP-T: defines problems, and designs, modifies and follows algorithms to develop solutions | Earth and space ST3-10ES-S: explains regular events in the solar system and geological events on the Earth’s surface  Digital technologies ST3-11DI-T: explains how digital systems represent data, connect together to form networks and transmit data | How does the Earth compare to other planets in the solar system?  How do components of digital systems interact with each other to transmit data? |

### Term 3, odd year – changing materials

**Overarching question:** How can materials be change or combined?

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|  | Skills | Knowledge and understanding | Inquiry/focus questions |
| ES1 | Working scientifically STe-1WS-S: observes, questions and collects data to communicate ideas  Design and production STe-2DP-T: develops solutions to an identified need | Material world STe-4MW-ST: identifies that objects are made of materials that have observable properties | What are some of the observable properties of materials? |
| S1 | Working scientifically ST1-1WS-S: observes, questions and collects data to communicate and compare ideas  Design and production ST1-3DP-T: describes, follows and represents algorithms to solve problems | Material world ST1-6MW-S: identifies that materials can be changed or combined | What changes occur when materials are combined?  How can we record instructions for others to follow and understand? |
| S2 | Working scientifically ST2-1WS-S: questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations  **Design and production ST2-2DP-T:** selects and uses materials, tools and equipment to develop solutions for a need or opportunity | Material world ST2-6MW-S: describes how adding or removing heat causes a change of state | How do materials change when heated and cooled? |
| S3 | Working scientifically ST3-1WS-S: plans and conducts scientific investigations to answer testable questions, and collects and summarises data to communicate conclusions  **Design and production ST3-3DP-T:** plans and uses materials, tools and equipment to develop solutions for a need or opportunity | Material world ST3-6MW-S: explains the effect of heat on the properties and behaviour of materials | How can the state of materials be changed and manipulated?  What is the result of combining materials? |

### Term 4, odd year – energy

**Overarching question:** What are some different types of energy and how do we use them?

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|  | Skills | Knowledge and understanding | Inquiry/focus questions |
| ES1 | Working scientifically STe-1WS-S: observes, questions and collects data to communicate ideas  Design and production STe-2DP-T: develops solutions to an identified need | Physical world STe-5PW-ST: observes the way objects move and relates changes in motion to push and pull forces  Digital technologies STe-7DI-T: identifies digital systems and explores how instructions are used to control digital devices | What causes objects to move in different ways? |
| S1 | Working scientifically ST1-1WS-S: observes, questions and collects data to communicate and compare ideas  Design and production ST1-3DP-T: describes, follows and represents algorithms to solve problems | Physical world ST1-8PW-S: describes common forms of energy and explores some characteristics of sound energy  Digital technologies ST1-11DI-T: identifies the components of digital systems and explores how data is represented | What are the different forms of energy around us and how can we detect them? |
| S2 | Working scientifically ST2-1WS-S: questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations  Design and production ST2-3DP-T: defines problems, describes and follows algorithms to develop solutions | Physical world ST2-8PW-ST: describes the characteristics and effects of common forms of energy, such as light and heat  Digital technologies ST2-11DI-T: describes how digital systems represent and transmit data | How do light, heat and electrical energy make things happen?  How can we use forces and energy in a product or system? |
| S3 | Working scientifically ST3-1WS-S: plans and conducts scientific investigations to answer testable questions, and collects and summarises data to communicate conclusions  Design and production ST3-3DP-T: defines problems, and designs, modifies and follows algorithms to develop solutions | Physical world ST3-8PW-ST: explains how energy is transformed from one form to another  Digital technologies ST3-11DI-T: explains how digital systems represent data, connect together to form networks and transmit data | What types of energy transformations can be observed?  How can electricity be used in a product or system? |

### Term 1, even year – forces

**Overarching questions:** How can we make objects move?

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| ES1 | Working scientifically STe-1WS-S: observes, questions and collects data to communicate ideas  Design and production STe-2DP-T: develops solutions to an identified need | Physical world STe-5PW-ST: observes the way objects move and relates changes in motion to push and pull forces | What causes objects to move in different ways? |
| S1 | Working scientifically ST1-1WS-S: observes, questions and collects data to communicate and compare ideas  Design and production ST1-2DP-T: uses materials, tools and equipment to develop solutions for a need or opportunity | Physical world ST1-9PW-ST: investigates how forces and energy are used in products | How are forces used for a purpose? |
| S2 | Working scientifically ST2-1WS-S: questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations  Design and production ST2-2DP-T: selects and uses materials, tools and equipment to develop solutions for a need or opportunity | Physical world ST2-9PW-ST: describes how contact and non-contact forces affect an object’s motion | How can objects affect other objects with or without touching them?  How can we use forces and energy in a product or system? |
| S3 | Working scientifically ST3-1WS-S: plans and conducts scientific investigations to answer testable questions, and collects and summarises data to communicate conclusions  Design and production ST3-2DP-T: plans and uses materials, tools and equipment to develop solutions for a need or opportunity | Physical world ST3-9PW-ST: investigates the effects of increasing or decreasing the strength of a specific contact or non-contact force | How can we make a force stronger or weaker? |

### Term 2, even year – properties of materials and their uses

**Overarching question:** What materials should we use to create certain objects, and why?

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| ES1 | Working scientifically STe-1WS-S: observes, questions and collects data to communicate ideas  **Design and production STe-2DP-T:** develops solutions to an identified need | Material world STe-4MW-ST: identifies that objects are made of materials that have observable properties | How do the properties of materials affect their use? |
| S1 | Working scientifically ST1-1WS-S: observes, questions and collects data to communicate and compare ideas  Design and production ST1-2DP-T: uses materials, tools and equipment to develop solutions for a need or opportunity | Material world ST1-7MW-T: describes how the properties of materials determine their use | How do the properties of materials determine their use? |
| S2 | Working scientifically ST2-1WS-S: questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations  Design and production ST2-2DP-T: selects and uses materials, tools and equipment to develop solutions for a need or opportunity | Material world ST2-7MW-T: investigates the suitability of natural and processed materials for a range of purposes | How do you decide upon which material to use for a particular purpose? |
| S3 | Working scientifically ST3-1WS-S: plans and conducts scientific investigation to answer testable questions, and collects and summarises data to communicate conclusions  Design and production ST3-2DP-T: plans and uses materials, tools and equipment to develop solutions for a need or opportunity | Material world ST3-7MW-T: explains how the properties of materials determines their use for a range of purposes | Why are the characteristics of materials important when designing and producing? |

### Term 3, even year – Earth and its resources

**Overarching questions:** How can we live in harmony with our Earth?

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| ES1 | Working scientifically STe-1WS-S: observes, questions and collects data to communicate ideas  Design and production STe-2DP-T: develops solutions to an identified need | Earth and space STe-6ES-S: identifies how daily and seasonal changes in the environment affect humans and other living things  Digital technologies STe-7DI-T: identifies digital systems and explores how instructions are used to control digital devices | How do daily and seasonal changes affect the environment? |
| S1 | Working scientifically ST1-1WS-S: observes, questions and collects data to communicate and compare ideas  Design and production ST1-3DP-T: describes, follows and represent algorithms to solve problems | Earth and space ST1-10ES-S: recognises observable changes occurring in the sky and on the land and identifies Earth’s resources  Digital technologies ST1-11DI-T: identifies the components of digital systems and explores how data is represented | What are Earth’s resources and how do we use and care for them? |
| S2 | Working scientifically ST2-1WS-S: questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations  Design and production ST2-3DP-T: defines problems, describes and follows algorithms to develop solutions | Earth and space ST2-10ES-S: investigates regular changes caused by interactions between the Earth and the Sun, and changes to the Earth’s surface  Digital technologies ST2-11DI-T: describes how digital systems represent and transmit data | How do natural processes and human actions change the Earth’s surface over time? |
| S3 | Working scientifically ST3-1WS-S: plans and conducts scientific investigations to answer testable questions, and collects and summarises data to communicate conclusions  Design and production ST3-3DP-T: defines problems, and designs, modifies and follows algorithms to develop solutions | Earth and space ST3-10ES-S: explains regular events in the solar system and geological events on the Earth’s surface  Digital technologies ST3-11DI-T: explains how digital systems represent data, connect together to form networks and transmit data | How do sudden geological changes and extreme weather events affect the Earth’s surface? |

### Term 4, even year – living things and their environments

**Overarching questions:** What are features of living things? How do they change?

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|  | Skills | Knowledge and understanding | Inquiry/focus questions |
| ES1 | Working scientifically STe-1WS-S: observes, questions and collects data to communicate ideas | Living world STe-3LW-ST: explores the characteristics, needs and uses of living things | What do we notice about living things? |
| S1 | Working scientifically ST1-1WS-S: observes, questions and collects data to communicate and compare ideas | Living world ST1-4LW-S: describes observable features of living things and their environments | What are the external features of living things? |
| S2 | Working scientifically ST2-1WS-S: questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations | Living world ST2-4LW-S: compares features and characteristics of living and non-living things | How do living things change as they grow? |
| S3 | Working scientifically ST3-1WS-S: plans and conducts scientific investigations to answer testable questions, and collects and summarises data to communicate conclusions | Living world ST3-4LW-S: examines how the environment affects the growth, survival and adaptation of living things | How can we improve a local environment to encourage living things to thrive? |

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