Science and technology K-6 sample scope and sequence

## Term-based questions and content

### Stage 1

#### Term 1, odd year – material world (changes in materials)

In Term 1 students focus on how materials can be changed, manipulated and combined. This strand develops their understanding of the properties of materials and their uses.

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| Outcomes | Inquiry/focus questions | Content |
| Working scientifically: ST1-1WS-SDesign and production: ST1-3DP-TMaterial world: ST1-6MW-S | What changes occur when materials are combined?How can we record instructions for others to follow and understand? | Students will: * investigate how materials can be changed by bending, twisting, stretching
* investigate how different materials can be combined
* follow and represent sequences of steps and decisions (algorithms) to solve problems
* test and evaluate the effectiveness of steps and decisions (algorithms) in solving a problem.
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#### Term 2, odd year – living world (environments, uses of food and fibre)

In Term 2 students focus on the environment of living things. They investigate how plants and animals are used to satisfy our needs for food and fibre. This strand develops their understanding of how living things and their environment play a central role in the support for and survival of humans. There are opportunities for integration with geography and PDHPE.

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| Outcomes | Inquiry/focus questions | Content |
| Working scientifically: ST1-1WS-S Design and production: ST1-2DP-TST1-3DP-TLiving world: ST1-4LW-S, ST1-5LW-T Digital technologies: ST1-11DI-T | How can we improve a local environment to encourage living things to thrive? How do humans use plants and animals?What is data and how can we store and represent it?How can we record instructions for others to follow and understand? | Living worldStudents will: * identify that living things live in different places that suit their needs
* design and produce an environment that meets the needs of living things
* recognise that people use science and technology in their daily lives, including when caring for their environment and living things
* identify some plants and animals that are grown and used for food production
* explore the plants and animals used in customary practices of Aboriginal and Torres Strait Islander Peoples
* explore the tools, equipment and techniques used to prepare food safely and hygienically for healthy eating
* investigate ways people use scientific and technological knowledge and skills to sustainably grow plants and animals to produce fibre for clothing and/or shelter.

Digital technologiesStudents will:* identify how data is represented as pictures, symbols and diagrams
* collect, explore and sort data, and use digital systems to present the data creatively
* explore and identify patterns in data
* follow and represent sequences of steps and decisions (algorithms) to solve problems.
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#### Term 3, odd year – physical world (types of energy)

In Term 3 students focus on the identification of light, sound and heat energy and how they are sensed and produced. This strand allows students to further develop their understanding of energy.

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| Outcomes | Inquiry/focus questions | Content |
| Working scientifically: ST1-1WS-S Design and production: ST1-2DP-T, ST1-3DP-TPhysical world: ST1-8PW-SDigital technologies: ST1-11DI-T | What are the different forms of energy around us and how can we detect them?What components might make up a digital system? How can we record instructions for others to follow and understand? | Physical worldStudents will:* produce and describe different sounds, for example, by blowing, scraping, striking, shaking or by observing musical instruments from different cultures
* explore how the volume and pitch of a sound can be changed
* identify sound, light, heat, electricity and movement as forms of energy
* explore sound, light and heat from various sources, using the senses.

Digital technologiesStudents will:* identify digital systems, their components and uses
* identify ways digital systems represent and display data
* test and evaluate the effectiveness of steps and decisions (algorithms) in solving a problem.
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#### Term 4, odd year – Earth and space (Earth’s resources)

In Term 4 students focus on the Earth’s resources. They explore how they are used and investigate their conservation. This strand develops their understanding of sustainability. There are opportunities for integration with geography.

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| Outcomes | Inquiry/focus questions | Content |
| Working scientifically: ST1-1WS-S Design and production: ST1-2DP-TEarth and space: ST1-10ES-S | What are Earth’s resources and how do we use and care for them? | Students will:* identify and explore the use of a variety of Earth’s resources including water and soil
* identify how Aboriginal Peoples care for Earth’s resources on-Country
* plan and implement strategies considering conservation of resources to address sustainability and to meet personal and/or community needs.
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#### Term 1, even year – material world (properties and purposes of materials)

In Term 1 students focus on how the properties of materials influence their use. They have the opportunity to develop a design solution demonstrating the suitability of materials for a purpose. This strand develops their understanding of the properties of materials and their uses.

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| Outcomes | Inquiry/focus questions | Content |
| Working scientifically: ST1-1WS-S Design and production: ST1-2DP-TMaterial world: ST1-7MW-T | How do the properties of materials determine their use? | Students will:* identify a range of natural materials available locally or through trade used by Aboriginal and/or Torres Strait Islander Peoples for a specific cultural purpose
* design and evaluate a product, demonstrating understanding of the suitability of materials for a purpose.
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#### Term 2, even year – living world (classification, growth and change in living things)

In Term 2 students focus on the features of living things and how living things change and reproduce. They have opportunities to investigate how plants and animals grow. This strand develops their understanding of how living things and their environment play a central role in the support for and survival of humans. There are opportunities for integration with mathematics.

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| Outcomes | Inquiry/focus questions | Content |
| Working scientifically: ST1-1WS-S Design and production: ST1-2DP-TLiving world: ST1-4LW-S Digital technologies: ST1-11DI-T | What are the external features of living things? How do living things change as they grow?What is data and how can we store and represent it? | Living worldStudents will:* describe the external features of a variety of living things
* identify and group plants and animals using their external features
* explore how living things grow, change and have offspring similar to themselves
* record the changes in growth of a common plant or animal, using uniform informal units and appropriate technologies.

Digital technologiesStudents will:* identify a variety of uses for digital systems
* communicate, collaborate and share information safely, using digital systems
* collect, explore and sort data, and use digital systems to present the data creatively.
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#### Term 3, even year – physical world (forces and energy use in products)

In Term 3 students focus on forces and how they create movement. This strand allows students to further develop their understanding of forces and energy and how these can be used for specific purposes in products.

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| Outcomes | Inquiry/focus questions | Content |
| Working scientifically: ST1-1WS-S Design and production: ST1-2DP-TPhysical world: ST1-9PW-ST | How are forces used for a purpose? | Students will:* explore how technologies use forces to create movement in products
* design and develop a product that uses one or more forms of energy to create change.
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#### Term 4, even year – Earth and space (weather and seasons)

In Term 4 students focus on the observable changes that occur in the sky and landscape. This strand introduces students to regular atmospheric and astronomical events and their effect on the Earth. There are opportunities for integration with geography.

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| Outcomes | Inquiry/focus questions | Content |
| Working scientifically: ST1-1WS-S Design and production: ST1-2DP-T, ST1-3DP-TEarth and space: ST1-10ES-SDigital technologies: ST1-11DI-T | 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?How can we record instructions for others to follow and understand? | Earth and spaceStudents will:* record the observable changes that occur in the sky and on the land
* identify how seasonal changes in our daily lives affect living things
* collect data related to short-term weather events and long-term seasonal patterns, to inform others using appropriate communication techniques
* observe, ask questions and describe changes in objects and events.

Digital technologiesStudents will:* identify how data is represented as pictures, symbols and diagrams
* explore and identify patterns in data
* identify a variety of uses for digital systems
* test and evaluate the effectiveness of steps and decisions (algorithms) in solving a problem.
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[Science and Technology K-6 Syllabus (2017)](https://educationstandards.nsw.edu.au/wps/portal/nesa/k-10/learning-areas/science/science-and-technology-k-6-new-syllabus) © NSW Education Standards Authority (NESA) for and on behalf of the Crown in right of the State of New South Wales.