Scope and sequence
Design and Technologies
Reception to year 6

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Design and Technologies: Scope and sequence year Reception to 6

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Context statement

Design and Technologies is about building on students' curiosity and creativity. It enables students to create products, services or environments that address authentic problems.

Design, systems and computational thinking are fundamental to Design and Technologies.

Design Thinking is a process of imagining and creating solutions in a cyclic process. This process involves responding to design challenges by:
- developing empathy for the end user
- investigating and defining problems
- generating and designing new ideas and solutions
- producing, creating and evaluating solutions
- responding to user feedback and redesigning

Systems thinking is the ability to see the big picture. Students need to understand the impact of their solutions. They need to see the solution through legal, ethical and sustainability lenses.

These documents:

- Provide an explicit interpretation of the Australian Curriculum content descriptors
- Identify the specific knowledge, skills and understanding learners need at each year level
- Guide educators to work through the design process with their students
- Support educators to understand the processes and tools to respond to design challenges.

Achievement standards

Reception to year 2	Years 3 to 4	Years 5 to 6
By the end of year 2, students: • describe the purpose of familiar products, services and environments and how they meet the needs of users and affect others and environments • identify the features and uses of technologies for each of the prescribed technologies contexts • create designed solutions for each of the prescribed technologies contexts (with guidance) • describe given needs or opportunities • create and evaluate their ideas and designed solutions based on personal preferences • communicate design ideas for their designed products, services or environments using modelling and simple drawings • following sequenced steps, demonstrate safe use of tools and equipment.	By the end of year 4, students: • explain how products, services and environments are designed to best meet the needs of communities and their environments • describe contributions of people in design and technologies occupations • describe how the features of technologies can be used to produce designed solutions for each of the prescribed technologies contexts • create designed solutions for each of the prescribed technologies contexts • explain needs or opportunities and evaluate ideas and designed solutions against identified criteria for success, including environmental sustainability considerations • develop and expand design ideas and communicate these using models and drawings including annotations and symbols • plan and sequence major steps in design and production • identify appropriate technologies and techniques and demonstrate safe work practices when producing designed solutions.	By the end of year 6, students: • describe competing considerations in the design of products, services and environments, taking into account sustainability • describe how design and technologies contribute to meeting present and future needs • explain how the features of technologies impact on designed solutions for each of the prescribed technologies contexts • create designed solutions for each of the prescribed technologies contexts suitable for identified needs or opportunities • suggest criteria for success, including sustainability considerations, and use these to evaluate their ideas and designed solutions • combine design ideas and communicate these to audiences using graphical representation techniques and technical terms • record project plans including production processes • select and use appropriate technologies and techniques correctly and safely to produce designed solutions.

Strand: knowledge and understanding

Understanding how products, services and environments change over time, are reiterated and redesigned to meet new needs and opportunities.

Thread	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Technologies in society: Students use systems thinking to understand the outcomes of production, for example: • Product: a thing we use or consume. • Service: systems to help us live well. • Environment: inside and outside places that produce things like food, shelter, clothing, raw materials or recreation 'Occupations' refers to the ways people pursue solutions. It refers to both paid and unpaid occupations.	Products, services and environments change over time and will continue to change.	People design products, services and environments to meet needs or solve problems. We can predict how they may change in the future by how they have changed over time.	People who design products services and environments consider sustainability and meeting personal and local community needs.	People in design and technologies occupations have been designing products, services and environments to meet community and sustainability needs for a long time. Designs continuously change over time to meet new needs and improve on existing solutions.	People in design and technologies occupations explore factors, including sustainability, that impact on the design of products, services and environments to meet community needs.	People in design and technologies occupations address competing considerations, including sustainability in the design of products, services, and environments. Designs change over time as these demands and considerations change.	People in design and technologies occupations address competing considerations, including sustainability in the design of products, services, and environments for current and future use.
Contexts	By the end of a 2 year band students will have had the opportunity to create designed solutions addressing the three technologies contexts below.						
Engineering principles and systems Students use systems thinking to understand how forces and energy can be used to create light, sound, heat, movement, control, or support in systems.	Objects move due to forces that push, pull, bounce, slide, fall, spin and float.	The ways objects move influences design decisions.	Technologies use forces to create movement in products.	The properties of materials influence how technologies are able to use forces to create movement.	Forces and the properties of materials affect the behaviour of a product or system.	Forces can be used to control sound, light, or movement in a designed solution or system.	Electrical energy can control movement, sound or light in a designed product or system.
Food and fibre production/ food specialisations Students use systems thinking to understand the processes of safely producing food or fibre as natural materials for the design and development of a range of products, services or environments.	Plants and animals are used to produce food, clothing, and shelter. People can make choices about how to prepare the food they eat.	Plants and animals used for production have basic needs, such as food, nutrients, water, space and protection. The ways food is grown and prepared can influence food choices.	People make choices about the plants and animals they use to produce food, clothing, or shelter based on healthy living and availability.	Types of food and fibre produced vary according to different environments, cultures, or time periods, including the equipment used to produce or prepare them.	Food and fibre production technologies have changed over time to meet the changing needs of people in traditional and modern societies. The ways food is produced and consumed is influenced by people, place, time and health considerations.	People in design and technologies occupations consider the efficiency of production systems, consumer satisfaction, and the availability of resources. Food and food preparation choices influence our health and wellbeing.	Food and fibre are produced in managed environments. These environments are influenced by the availability of resources, the efficiency of production systems, and the number and satisfaction of consumers. People can make choices about their food consumption based on ingredients and preparation techniques and these choices influence overall health and wellbeing.
Materials and technologies specialisations Students use systems thinking to understand a broad range of traditional, contemporary and emerging materials that can be used to design products, services and environments. Working with materials requires specific knowledge of the materials and the safe use of tools for production.	People use different materials for different purposes.	Some materials are better for some purposes than others.	The characteristics and properties of materials and components influence designed solutions.	The properties of materials, systems, components, tools and equipment can be tested for suitability.	The suitability of materials, systems, components, tools and equipment for a range of purposes influences design choices and solutions.	Design choices and solutions need to consider the sustainability and suitability of materials and the needs of the end user.	The characteristics and properties of a range of materials, systems, components, tools, and equipment can be evaluated according to the impact of their use.

Strand: process and production skills

Creating designed solutions by:.

Threads	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Investigating and defining Students use design thinking to: • develop empathy for end users' needs and find problems that need solutions • consider the limitations of current solutions • pose 'How might we…' questions • define problems and develop design briefs.	Explore the design of existing solutions and tools and how they meet needs or opportunities.	Explore the needs of users and how existing designed solutions meet these needs or require improvement.	Explore the needs or opportunities for designing, and the technologies needed to realise designed solutions.	Compare and contrast the needs or opportunities for designing solutions. Evaluate the suitability of a variety of materials, components, tools, and equipment and the techniques needed for designed solutions.	Critique the needs or opportunities for designing solutions. Explore and test a variety of materials, components, tools, equipment and techniques needed to produce designed solutions.	Consider the needs or opportunities presented by a target group of end users. Consider the possibilities for designed solutions based on the suitability and availability of materials, components, tools and equipment needed.	Critique the needs or opportunities for designing and investigating materials, components, tools, equipment and processes to achieve intended designed solutions.
Generating and designing Students use design thinking to: • develop an ideation process, where designers generate lots of solutions. Some may be far-fetched and impossible, but divergent thinking is a necessary part of this process • decide upon a solution and begin to visualise and graphically document the end product, service or environment.	Draw, build or record design ideas. Make choices about the suitability of design ideas.	Generate design ideas based on improving a product, service or environment. Pose questions about the suitability of design solutions.	Generate, develop and record design ideas through describing, drawing and modelling.	Generate, develop, and design solution ideas. Select and communicate design ideas explaining suitability and a criteria for success.	Generate, develop, and communicate design ideas and decisions using appropriate technical terms and graphical representation techniques.	Communicate design ideas to an audience using technical terms and graphical representation techniques. Seek feedback. Develop design briefs for solution ideas and establish a criteria for success while incorporating user feedback.	Generate, develop and communicate design ideas and processes for audiences using appropriate technical terms and graphical representation techniques.
Producing and implementing Students use design thinking to: • prototype, where designers create and trial models or simulations • use a prototyping to see if and how well the design works with various materials.	Explore a range of materials, tools, and equipment and their suitability to safely make designed solutions. Experiment with making designed solutions using safe procedures. Test materials selected for their suitability.	Explore a range of techniques used to safely make designed solutions. Experiment with safely making designed solutions, selecting appropriate techniques.	Use materials, components, tools, equipment, and techniques to safely make designed solutions.	Use safe work practices to make or build prototypes, models, or designed solutions according to a design brief. Choose and use suitable materials and techniques, considering sustainability.	Select and use materials, components, tools, equipment, and techniques. Use safe work practices to make designed solutions.	Use safe work practices and sustainability considerations to build prototypes, models, or designed solutions according to a design brief. Use a range of suitable materials and techniques.	Select appropriate materials, components, tools, equipment and techniques and apply safe procedures to make designed solutions.
Evaluating Students use design thinking to: • evaluate the design ideas, processes and solutions against specific criteria for success, as outlined in a design brief • understand design briefs can change according to evaluation results.	Evaluate designed solutions using a criteria for success based on personal preferences.	Evaluate designed solutions using a criteria for success that includes suitability of materials, techniques, and care for the environment.	Use personal preferences to evaluate the success of design ideas, processes and solutions, including their care for the environment.	Evaluate design solutions based on a criteria for success that considers user preference, sustainability, techniques, materials, and suitability for purpose.	Evaluate design ideas, processes and solutions based on criteria for success developed with guidance and including care for the environment.	Evaluate design solutions based on a criteria for success that considers user feedback and sustainability. Based on evaluations redesign or improve on design solutions.	Negotiate criteria for success that include sustainability, to evaluate design ideas, processes and solutions.

Collaborating and managing Students use design thinking to understand: • designers rarely work alone. It is important that diverse teams work together using each other's strengths to develop solutions • project management involves understanding how to best utilise resources, people and time under safe conditions.	Identify safe processes for making designed solutions with others.	Identify a sequence of steps for making designed solutions. Work with others to decide roles and responsibilities for safely making designed solutions.	Sequence steps for safely making designed solutions and working collaboratively.	Work individually and with others to identify an efficient process for making designed solutions considering sustainability, availability of resources and safety.	Plan a sequence of production steps when safely making designed solutions individually and collaboratively.	Design, plan and communicate a sequence of production that considers the availability of resources, time, people, cost and safety.	Develop project plans that include consideration of resources when safely making designed solutions individually and collaboratively.