Using a range of technologies including digital technologies, students develop dexterity and coordination through experimental activities. Design and Technologies motivates young people and engages them in a range of learning experiences that are fun, for family and home, constructive leisure activities, community contribution and the world of work.

As students progress through the Technologies curriculum, they will begin to identify possible and probable futures, and their preferences for the future. They develop solutions to meet needs considering impacts on livelihood, economic prosperity and environmental sustainability. Students will learn to recognise that views about system components that form a whole. Systems thinking is a method that is applied to create solutions that can be implemented using digital technologies. It involves integrating strategies, such as organising data logically, breaking down problems into parts, interpreting patterns and models and designing and implementing algorithms.

Computational thinking is used when specifying and implementing algorithmic solutions to problems in Digital Technologies. For a computer to be able to process data through a series of logical and ordered steps, students must be able to take an abstract idea and break it down into defined, simple tasks that produce an outcome. This may include analysing trends in data, responding to user input and certain preconditions or predicting the outcome of a simulation.

The clear difference between the Digital Technologies curriculum and the ICT general capability is that the ICT capability is more explicit and foregrounded. Students develop explicit understanding, knowledge and skills relating to operating and managing ICT and applying social and ethical protocols while investigating, creating and communicating. The study of Digital Technologies will ensure that ICT capability is developed systematically.

Computational thinking involves understanding design needs and opportunities, visualising and generating creative and innovative ideas and communicating these to others. It involves integrating design thinking processes and digital processes.

Design thinking is used when specifying and implementing algorithmic solutions to problems in Digital Technologies. For a computer to be able to process data through a series of logical and ordered steps, students must be able to take an abstract idea and break it down into defined, simple tasks that produce an outcome. This may include analysing trends in data, responding to user input and certain preconditions or predicting the outcome of a simulation.

When state and territory curriculum authorities integrate the Australian Curriculum into local courses, they will include more specific advice on the care and use of, or interaction with, animals.

For further information about relevant guidelines, contact your state or territory curriculum authority.
The Australian Curriculum: Design and Technologies (F–10) comprises two related strands:

- Design and Technologies knowledge and understanding – the use, development and impact of technologies and design ideas across a range of technologies contexts
- Design and Technologies processes and production – the skills needed to create designed solutions.

In Design and Technologies, creating designed solutions is also expressed as ‘designing and producing’ or ‘design and produce’ as a means of abbreviating the skills needed to create designed solutions, by investigating and defining, designing, producing and implementing, evaluating, and collaborating and managing.

Relationship between the strands Together, the two strands provide students with knowledge, understanding and skills through which they can safely and ethically design, plan, manage, produce and evaluate products, services and environments. Teaching and learning programs should balance and integrate both strands. Students learn about technologies and society through different technologies contexts (knowledge and understanding) as they create designed solutions (processes and production skills).

Design and Technologies knowledge and understanding

This strand focuses on developing the underpinning knowledge and understanding of technologies (materials, systems, components, tools and equipment) across technologies contexts and developing understanding of the relationship between technologies and society.

Technologies and society

The technologies and society content descriptions focus on how people use and develop technologies taking into account social, economic, environmental, ethical, legal, aesthetic and functional factors and the impact of technologies on individuals; families; local, regional and global communities; the economy; and the environment now and in the future.

Technologies contexts

The technologies contexts content descriptions provide a framework within which students can gain knowledge and understanding about technologies and design across a range of technologies contexts. These content descriptions focus on the characteristics and properties of technologies and how they can be used to create innovative designed solutions.

The technologies contexts provide a progression of learning from Foundation to Year 8 and optionally to Year 9–10 or lead to more specialised Technologies subjects in Year 9 and 10. They also reflect national priorities including working needs, food security and sustainable food and fibre production and health and wellbeing priorities.

Investigating and defining

The prescribed technologies contexts for Foundation – Year 8 are described below. The band descriptions show how many times each technologies context is addressed in a band.

Engineering principles and systems

Engineering principles and systems is focused on how forces can be used to create light, sound, heat, movement, control or support in systems. Knowledge of these principles and systems enables the design and production of sustainable, engineered solutions.

Students need to understand how sustainable engineered products, services and environments can be designed and produced as resources diminish. Students will progressively develop knowledge and understanding of how forces and the properties of materials affect the behaviour and performance of designed engineering solutions.

Food and fibre production

Food and fibre are the human-produced or harvested resources used to directly sustain human life and are produced in managed environments such as farms and plantations or harvested from wild stocks. Challenges for world food and fibre production include an increasing world population, an uncertain climate and competition for resources such as land and water. Students need to engage in these challenges by understanding the processes of food and fibre production and by investigating innovative and sustainable ways of supplying food and fibre. Students will progressively develop knowledge and understanding about the managed systems that produce food and fibre through creating designed solutions.

Food and fibre production includes an increasing world population, an uncertain climate and competition for resources such as land and water. Students need to engage in these challenges by understanding the processes of food and fibre production and by investigating innovative and sustainable ways of supplying food and fibre. Students will progressively develop knowledge and understanding about the managed systems that produce food and fibre through creating designed solutions.

Food specialisations

Food specialisations include the application of nutrition principles (as described in Health and Physical Education) and knowledge about the characteristics and properties of food to food selection and preparation and contemporary technology-related food issues. There are increasing community concerns about food issues, including the nutritional quality of food and the environmental impact of food manufacturing processes. Students need to understand the importance of a variety of foods, sound nutrition principles and food preparation skills when making food decisions to help better prepare them for their future lives. Students will progressively develop knowledge and understanding about the nature of food and food safety, and how to make informed and appropriate food preparation choices when experimenting with and preparing food in a sustainable manner.

Materials and technologies specialisations

Materials and technologies specialisations is focused on a broad range of traditional, contemporary and emerging materials and specialist areas that typically involve extensive use of technologies. We live in and depend on the human-made environment for communication, housing, employment, medicine, recreation and transport; however, we also face increasing concerns related to sustainability. Students need to develop the confidence to make ethical and sustainable decisions about solutions and the processes used to make them. They can do this by learning about and working with materials and production processes.

Students will progressively develop knowledge and understanding of the characteristics and properties of a range of materials either discretely in the development of products or through producing designed solutions for a technologies specialisation; for example, architecture, electronics, graphics technologies or human.

Design and Technologies processes and production skills

The Design and Technologies processes and production skills strand is based on the major aspects of design thinking, design processes and production processes. The content descriptions in this strand reflect a design process and would typically be addressed through a design brief.

The Design and Technologies processes and production skills strand focuses on creating designed solutions by:

- investigating and defining
- designing and producing
- producing and implementing
- evaluating
- collaborating and managing.

The processes and production skills that students will use throughout a design project are described below.

Investigating and defining

Investigating and defining involves students critiquing, exploring and investigating needs, opportunities and information. As creators and consumers they will critically reflect on the intention, purpose and operation of technologies and designed solutions. Critical thinking encourages students to examine values, analyse, question and review processes and systems. Students reflect on how decisions they make may have implications for the individual, society and the local and global environment, now and in the future. Students explore and investigate technologies, systems, products, services and environments as they consider the needs of society. They progressively develop effective investigation strategies and consider the contribution of technologies to their lives and make judgements about them. Students may respond to design briefs or design briefs in response to needs and opportunities.

Generating and designing

Generating and designing involves students in developing and communicating ideas for a range of audiences. Students create change, make choices, weigh up options, consider alternatives and develop various design ideas and possibilities. They use critical and creative thinking strategies to generate, evaluate and document ideas to meet needs or opportunities that have been identified by an individual, group or wider community. Generating creative and innovative ideas involves thinking differently. It entails proposing new approaches to existing problems and identifying new design opportunities considering preferred futures. Generating and developing ideas involves identifying various competing factors that may influence and dictate the focus of the idea. Students will evaluate, justify and synthesise what they have learned and discover. They will use graphical representation techniques when they draw, sketch, model and create innovative ideas that focus on high-quality designed solutions.

Producing and implementing

Students learn and apply a variety of skills and techniques to make products, services or environments designed to meet specific purposes and user needs. They apply knowledge about components, materials and their characteristics and properties to ensure their suitability for use. They learn about the importance of adopting safe work practices. They develop accurate production skills to achieve quality designed solutions. Students develop the capacity to select and use appropriate materials, systems, components, tools and equipment; and use work practices that respect the need for sustainability. The use of modelling and prototyping to accurately develop simple and complex physical models supports the production of successful designed solutions.

Evaluating

Students evaluate and make judgements throughout a design process and about the quality and effectiveness of their designed solutions and those of others. They identify criteria for success. In the early years, the teacher may guide the development of these criteria. Progressively, students develop criteria which become increasingly more complex and refined. Students consider the implications of actions and decision-making. They determine effective ways to test and judge their designed solutions. They reflect on processes and transfer their learning to other design opportunities.

Collaborating and managing

Students learn to work collaboratively and to manage time and other resources to effectively create designed solutions. Progressively, students develop the ability to communicate and share ideas throughout the process, negotiate roles and responsibilities and make compromises to work effectively as a team. Students work individually and in groups to plan, organise and monitor timelines, activities and the use of resources. Students progress from planning steps in a project through to more complex project management activities that consider various factors such as time, cost, risk and quality control.

Foundation to Year 2 Content Descriptions

Design and Technologies knowledge and Understanding

- Identify how people design and produce familiar products, services and environments and consider sustainability to meet personal and local needs.
- Explore how technologies are used to create movement in products.
- Explore how plants and animals are grown for food, clothing and shelter and how food is selected and prepared for healthy eating.
- Explore the characteristics and properties of materials and components that are used to produce designed solutions.

Design and Technologies processes and production skills

- Explore needs or opportunities for designing, and the technologies needed to realise designed solutions.
- Generate, develop and record design ideas through describing, drawing and modelling.
- Use materials, components, tools, equipment and techniques to safely make designed solutions.
- Use personal preferences to evaluate the success of design ideas, processes and solutions including their care for environment.
- Sequence steps for making designed solutions and working collaboratively.