


# The Australian Curriculum

<b>Learning areas</b>	Technologies
<b>Subjects</b>	Design and Technologies, Digital Technologies
<b>Year levels</b>	Year 4

## Years 3 and 4 Content Descriptions

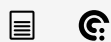
### Design and Technologies Knowledge and Understanding

Recognise the role of people in design and technologies occupations and explore factors, including sustainability that impact on the design of products, services and environments to meet community needs ([ACTDEK010 - Scootle](#) )



#### Elaborations

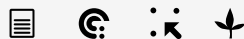
exploring, playing with and testing materials for their appropriateness, for example materials for a new sun-shade product



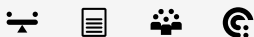
examining the suitability of a service or everyday system and proposing improvements, for example a water saving system for a bathroom at home



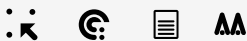
investigating materials, components, tools and equipment, including by using digital technologies, to discover their characteristics and properties, how they can be used more sustainably and their impact in the future



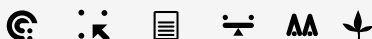
considering the impact of environments on users, for example a school vegetable garden, a protected outdoor play area




exploring and testing factors that impact on design decisions, for example considering the demographics of an area or the impact of natural disasters on design of constructed environments such as the structural design of buildings in Japan to withstand earthquakes



critiquing designed products, services and environments to establish the factors that influence the design and use of common technologies, for example the characteristics that contribute to energy-efficient cooking such as wok cooking; the suitability and sustainable use of particular timbers



Investigate how forces and the properties of materials affect the behaviour of a product or system ([ACTDEK011 - Scootle](#) )

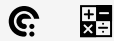


## Elaborations

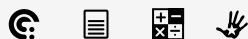
examining models to identify how forces and materials are used in the design of a toy



exploring through play how movement can be initiated by combining materials and using forces, for example releasing a wound rubber band to propel a model boat



conducting investigations to understand the characteristics and properties of materials and forces that may affect the behaviour and performance of a product or system, for example woomera design



deconstructing a product or system to identify how motion and forces affect behaviour, for example in a puppet such as a Japanese bunraku puppet or a model windmill with moving sails



identifying and exploring properties and construction relationships of an engineered product or system, for example a structure that floats; a bridge to carry a load



experimenting with available local materials, tools and equipment to solve problems requiring forces including identifying inputs (what goes in to the system), processes (what happens within the system) and outputs (what comes out of the system), for example designing and testing a container or parachute that will keep an egg intact when dropped from a height



Investigate food and [fibre](#) production and food [technologies](#) used in modern and traditional societies ([ACTDEK012 - Scootle](#)



## Elaborations

exploring tools, equipment and procedures to improve plant and animal production, for example when growing vegetables in the school garden and producing plant and animal environments such as a greenhouse, animal housing, safe bird shelters



identifying the areas in Australia and Asia where major food or fibre plants and animals are grown or bred, for example the wheat and sheep belts, areas where sugar cane or rice are grown, northern Australia's beef industry, plantation and native forest areas



describing ideal conditions for successful plant and animal production including how climate and soils affect production and availability of foods, for example Aboriginal seasons and food availability




recognising the benefits food technologies provide for health and food safety and ensuring that a wide variety of food is available and can be prepared for healthy eating



investigating the labels on food products to determine how the information provided contributes to healthy eating, for example ingredients and nutrition panels



Investigate the suitability of materials, systems, [components](#), tools and [equipment](#) for a range of purposes ([ACTDEK013 - Scootle](#) )

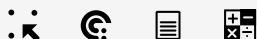


#### Elaborations

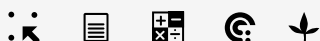
conducting experiments and tests to understand the properties of materials, for example strength, durability, warmth, elasticity



investigating the mass production of products to ensure standardisation, for example students setting up a production line to produce a product for a school fete



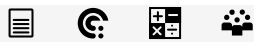
investigating the suitability of technologies – materials, systems, components, tools and equipment – when designing and making a product, service or environment, for example a toy for a young child, a composting system for household waste management, raised garden beds for improved access, weaving nets, bags or baskets



comparing how different components interrelate and complement each other in a finished designed solution, for example investigating and playing with joining processes for a variety of materials in the production of common products



investigating local constructed environments to compare how buildings were constructed in the past and in the present and noting innovations



analysing products, services and constructed environments from a range of technologies contexts with consideration of possible innovative solutions and impacts on the local community and the sustainability of its environment



## Design and Technologies Processes and Production Skills

Critique needs or opportunities for [designing](#) and explore and test a variety of materials, [components](#), tools and [equipment](#) and the techniques needed to produce designed solutions ([ACTDEP014 - Scootle](#) [↗](#))



### Elaborations

exploring the different uses of materials in a range of products, including those from Aboriginal and Torres Strait Islander communities and countries of Asia



critiquing and selecting appropriate joining techniques for materials to produce working models



exploring and testing a range of materials under different conditions for suitability including sustainability considerations and identifying appropriate tools, equipment and techniques



examining the structure and production of everyday products, services and environments to enhance their own design ideas



exploring the properties of materials to determine suitability, for example the absorbency of different fabrics or the strength of different resistant materials

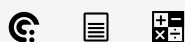


Generate, develop, and communicate design ideas and decisions using appropriate technical terms and graphical representation techniques ([ACTDEP015 - Scootle](#) [↗](#))

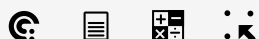


### Elaborations

exploring ways of joining, connecting and assembling components that ensure success



generating a range of design ideas for intended products, services, environments



identifying the properties of materials needed for the designed solution



visualising and exploring innovative design ideas by producing thumbnail drawings, models and labelled drawings to explain features and modifications



planning, sharing and documenting creative ideas and processes using digital tools such as a class blog or collaborative document

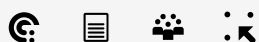


Select and use materials, [components](#), tools, [equipment](#) and techniques and use safe work practices to make designed solutions ([ACTDEP016 - Scootle](#) )

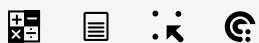


#### Elaborations

using appropriate technologies terms to confidently describe and share with others procedures and techniques for making, for example cutting and joining materials



exploring ways of joining, connecting and assembling components that ensure success, and the impact digital technologies have had on these processes



using tools and equipment accurately when measuring, marking and cutting; and explaining the importance of accuracy when designing and making, for example creating a template, measuring ingredients in a recipe, sowing seeds



selecting and using materials, components, tools, equipment and processes with consideration of the environmental impact at each stage of the production process



demonstrating safe, responsible and cooperative work practices when making designed solutions



Evaluate design ideas, processes and solutions based on [criteria for success](#) developed with guidance and including care for the [environment \(ACTDEP017 - Scootle\)](#)



#### Elaborations

negotiating criteria for success with class or group members



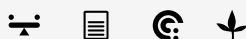
evaluating, revising and selecting design ideas, based on criteria for success and including consideration of ethics, social values and sustainability



evaluating the functional and aesthetic qualities of a designed solution



reflecting on the sustainability implications of selected designed solutions



comparing the amount of waste that would be produced from different design and development options and the potential for recycling waste



reflecting on designed solutions to critique and assess suitability, sustainability and enterprise opportunities and determine how well they meet success criteria



Plan a sequence of production steps when making designed solutions individually and collaboratively ([ACTDEP018 - Scootle](#))



#### Elaborations

determining planning processes as a class, for example recording a procedure or creating time plans



managing time and resource allocation throughout production, for example materials, tools, equipment and people



identifying the steps in a mass production process




sequencing steps to collaboratively produce a designed solution





## Years 3 and 4 Content Descriptions

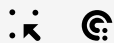
### Digital Technologies Knowledge and Understanding

Identify and explore a range of digital systems with peripheral devices for different purposes, and transmit different types of data ([ACTDIK007 - Scootle](#) )

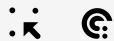


#### Elaborations

using different peripheral devices to display information to others, for example using a mobile device, interactive whiteboard or a data projector to present information



using specific peripheral devices to capture different types of data, for example using a digital microscope to capture images of living and non-living things




experimenting with different types of digital system components and peripheral devices to perform input, output and storage functions, for example a keyboard, stylus, touch screen, switch scan device or joystick to input instructions; a monitor, printer or tablet to display information; a USB flash drive and external hard drive as storage peripheral devices



recognising that images and music can be transferred from a mobile device to a computer, for example using a cable to connect a camera and computer to upload images for a photo story



Recognise different types of data and explore how the same data can be represented in different ways ([ACTDIK008 - Scootle](#) )



#### Elaborations

recognising that numbers, text, images, sounds, animations and videos are all forms of data when stored or viewed using a digital system



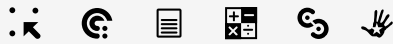
using a table to reorganise information that includes sentences, and/or words, and/or numbers and/or images




recognising representations of different types of data such as waves for sound



exploring codes and symbols that are representations of data, for example morse code and semaphore and how similar symbols in Aboriginal and Torres Strait Islander art can represent different concepts depending on the context, for example three circles, drawn as lines, can represent ants, fruit, flowers or eggs depending on the art region



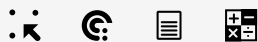
## Digital Technologies Processes and Production Skills

Collect, access and present different types of [data](#) using simple software to create information and solve problems ([ACTDIP009 - Scootle](#) )

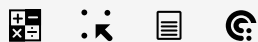


### Elaborations

selecting appropriate formats or layout styles to present data as information depending on the type of data and the audience, for example lists, tables, graphs, animations, info graphics and presentations



using different techniques to present data as information, for example creating a column chart in a spreadsheet by colouring cells to represent different items



improving the appearance and usability of data, for example using colour, headings and labelling of images to organise and accurately identify data



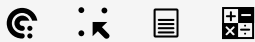
using software to sort and calculate data when solving problems, for example sorting numerical and categorical data in ascending or descending order and automating simple arithmetic calculations using nearby cells and summing cell ranges in spreadsheet or database software




exploring different online sources to access data, for example using online query interfaces to select and retrieve data from an online database such as a library catalogue or weather records



recognising that all types of data are stored in digital systems and may be represented in different ways such as files and folders with names and icons

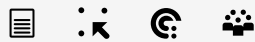


Define simple problems, and describe and follow a sequence of steps and decisions (algorithms) needed to solve them ([ACTDIP010 - Scootle](#) )

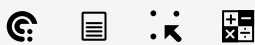


#### Elaborations

explaining what the problem is and some features of the problem, such as what need is associated with the problem, who has the problem and why



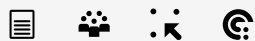
describing, using drawings, pictures and text, the sequence of steps and decisions in a solution, for example to show the order of events in a game and the decisions that a player must make



experimenting with different ways of describing a set of instructions, for example writing two versions of the same simple set of instructions for a programmable robotic device




explaining to others how to follow technical instructions, for example how to capture and download images from a mobile device



defining and describing the sequence of steps needed to incorporate multiple types of data in a solution, for example sequencing the steps in selecting and downloading images and audio to create a book trailer



Implement simple digital solutions as visual programs with algorithms involving branching (decisions) and user input ([ACTDIP011 - Scootle](#) )

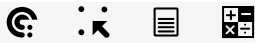


#### Elaborations

designing and implementing a simple interactive digital solution using a visual programming language, for example preparing the content and design of a simple guessing game that provides options in English and an Asian language



using different design tools to record ways in which digital solutions will be developed, for example creating storyboards or flowcharts to record relationships or instructions about content or processes



exploring common elements of standard user interfaces that are familiar and appeal to users, for example navigation links on the left and top of web pages to help users interact with the site




implementing programs that make decisions on the basis of user input or choices such as through selecting a button, pushing a key or moving a mouse to 'branch' to a different segment of the solution



creating options for users to make choices in solutions, for example a user input and branching mechanism such as buttons in a slideshow

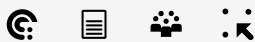


Explain how student solutions and existing information systems meet common personal, school or community needs ([ACTDIP012 - Scootle](#) )



#### Elaborations

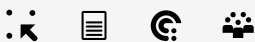
investigating how information systems are used in communities and explaining what needs are being met, for example students jointly creating a short survey and collecting data about how many community residents use the online library borrowing system to download e-books and why they do or do not



imagining and considering alternative uses and opportunities for information systems used in the classroom, for example visiting a virtual museum and being able to feel the texture of historical Asian objects or to view Aboriginal and Torres Strait Islander artworks



exploring information systems that suit particular home or personal needs, for example using speech recognition software that can help speakers whose language background is not English, or a system to monitor energy or water consumption in the home



testing the adequacy of student solutions, for example asking a classmate to review a digital solution and provide feedback



Plan, create and communicate ideas and information independently and with others, applying agreed

ethical and [social protocols \(ACTDIP013 - Scootle !\[\]\(2e897e890e69d81eae4503a8342c36b0\_img.jpg\)](#))



### Elaborations

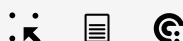
considering ways of managing the use of social media to maintain privacy needs, for example activating privacy settings to avoid divulging personal data such as photographs, addresses, and names and recognising that all digital interactions are difficult to erase (digital footprints)



using a range of online tools to share information and being aware that information may be received at different times, for example adding entries to a class blog, participating in a web conference or online chat with an author, or participating in a forum on a specific topic



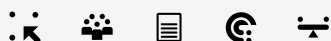
organising and creating different types of information for sharing and collaborating online, for example planning the sequence and appearance of an animation, and sharing it online with students from another school



managing a project that involves students working together to publish online, for example identifying how group members can help each other to avoid delays in finishing the project



discussing digital citizenship rules and behaviours for participating in an online environment, for example not using all capital letters when expressing a strong viewpoint about a contentious matter and ensuring that the audience is aware of your identity



making ethical decisions when faced with reporting inappropriate online behaviour or acknowledging digital products created by others, for example making a decision based on how individuals would like to be treated by others

