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|  | Years 5 and 6 band plan — Technologies  Overview for planning with the Australian Curriculum: Digital Technologies |

This band plan has been developed in consultation with the Curriculum into the Classroom (C2C) project team.

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| School name: | | | | | |
| Australian Curriculum: Digital Technologies Band: Years 5 and 6 | | | | | |
| Identify curriculum[[1]](#footnote-1) | Technologies learning area | The Technologies curriculum provides students with opportunities to consider how solutions that are created now will be used in the future. Students will identify the possible benefits and risks of creating solutions and learn to recognise that views about the priority of the benefits and risks will vary and that preferred futures are contested. They will use critical and creative thinking to weigh up possible short-term and long-term impacts. They develop solutions to meet needs considering impacts on liveability, economic prosperity and environmental sustainability.  The Australian Curriculum: Technologies describes two distinct but related subjects:   * Design and Technologies, in which students use design thinking and technologies to generate and produce designed solutions for authentic needs and opportunities * Digital Technologies, in which students use computational thinking and information systems to define, design and implement digital solutions.   The Australian Curriculum: Digital Technologies empowers students to shape change by influencing how contemporary and emerging information systems and practices are applied to meet current and future needs. A deep knowledge and understanding of information systems enables students to be creative and discerning decision-makers when they select, use and manage data, information, processes and digital systems to meet needs and shape preferred futures.  Digital Technologies provides students with practical opportunities to use design thinking and to be innovative developers of digital solutions and knowledge. The subject helps students to become innovative creators of digital solutions, effective users of digital systems and critical consumers of information conveyed by digital systems.  Digital Technologies provides students with authentic learning challenges that foster curiosity, confidence, persistence, innovation, creativity, respect and cooperation. These are all necessary when using and developing information systems to make sense of complex ideas and relationships in all areas of learning. Digital Technologies helps students to be regional and global citizens capable of actively and ethically communicating and collaborating. | | | |
| **Course organisation** | In the Australian Curriculum: Digital Technologies, the two strands — Knowledge and Understanding, and Processes and Production Skills — are interrelated and inform and support each other. In Digital Technologies students are actively engaged in the process of defining problems and opportunities, designing, implementing and evaluating digital solutions, and creating and sharing information that meets a range of current and future needs. These solutions and information are created through the application of computational and design thinking, and technical skills.  Students will create digital solutions that will use data, require interactions with users and within systems, and will have impacts on people, the economy and environments. Solutions may be developed using combinations of readily available hardware and software applications, and/or specific instructions provided through programming. Some examples of solutions are instructions for a robot, an adventure game, products featuring interactive multimedia including digital stories, animations and websites.  When developing teaching and learning programs teachers should consider:   * the relationship between each of the curriculum components (band descriptions, content descriptions, elaborations and achievement standards) and how they contribute to the development of coherent programs * integrating the two strands, as content in Processes and Production Skills strand frequently draws on understanding of concepts in the knowledge and understanding strand, and focus on a digital technologies application in a unit of work * combining aspects of the strands within a subject in different ways to provide students with learning experiences that meet their needs and interests * providing opportunity for ongoing practice and consolidation of previously introduced knowledge and skills as many aspects of Technologies curriculum are recursive * developing a variety of learning experiences that are relevant, rigorous and meaningful and allow for different rates of development, in particular for younger students and for those who need extra support * opportunities for integration of learning between the Technologies subjects and with other learning areas.   Teaching and learning programs should providing opportunities for students to:   * use their knowledge and understanding of data and digital systems to apply processes and production skills as they create digital solutions * engage in learning activities that do not require the full use of the process, particularly in the early years * be safe when they use information systems and create and communicate information online.   The Band plan for Digital Technologies is organised to:   * provide flexibility when making decisions about how the subject will be implemented, based on the local context and needs of students in schools * align with the Australia Curriculum: Digital Technologies, which is organised in bands for the achievement standards and content descriptions * provide a course structure and content that includes a sequence of teaching and learning and identification of opportunities for assessment and feedback, organised in units according to year levels, and developed using the Australian Curriculum: Digital Technologies content descriptions and achievement standards. | | | |
|  |  | The Band plan course organisation allows schools to implement the Australian Curriculum: Digital Technologies in:   * conjunction with other learning areas/subjects * a term * a semester * only one year of a band of years.   **Safety**  All practical work must be organised with student safety in mind. Identifying and managing risk in Technologies learning addresses the safe use of technologies, as well as risks that can impact on project timelines. It covers all necessary aspects of health, safety and injury prevention and, in any technologies context, the use of potentially dangerous materials, tools and equipment. It includes ergonomics, safety including cyber safety, data security, and ethical and legal considerations when communicating and collaborating online. The current safety requirements are clearly explained on the Queensland Government Education Health and Safety webpage: [http://education.qld.gov.au/health/safety](http://education.qld.gov.au/health/safety/). School must ensure that their practices meet current guidelines.  **Animal ethics**  Any teaching activities that involve caring, using, or interacting with animals must comply with the Australian code of practice for the care and use of animals for scientific purposes in addition to relevant state or territory guidelines. The *Animal Care and Protection Act 2001* and the accompanying Animal Care and Protection Regulation 2002 govern the treatment and use of all animals in Queensland (see [www.legislation.qld.gov.au](http://www.legislation.qld.gov.au/Acts_SLs/Acts_SL.htm)). The Department of Agriculture, Fisheries and Forestry Queensland (DAFF), through Biosecurity Queensland, is responsible for enforcement of the legislation. | | | |
| **Phase curriculum focus** | Curriculum focus: Years 3 to 6  Through the primary years, students draw on their growing experience of family, school and the wider community to develop their understanding of the world and their relationships with others. During these years of schooling, students’ thought processes become more complex and consistent, and they gradually become more independent. Students also develop their capacity to work in teams. They develop a sense of social, ethical and environmental responsibility and are interested in and concerned about the future (systems thinking). Students may share changes in their own thinking and making, giving reasons for their actions, and explaining and demonstrating their organisation and sequence of ideas. They begin to recognise and appreciate the different ways in which others think and respond to problems and situations, including those with a regional perspective. They respond resourcefully to a range of design and computing problems and situations using creative and innovative ideas to realise solutions. They communicate and record their ideas in diagrams and drawings using a range of technologies. They explain the main functions of their solutions and the systems, materials, tools and equipment which could be used.  In these years, learning in Technologies occurs through integrated curriculum and Technologies subject-specific approaches. Students’ activities in the early years develop into an interest in learning technologies thinking, processes and production. Students increasingly recognise the connections between Technologies and other learning areas. | | | |
| **Band description** | Learning in Digital Technologies focuses on further developing understanding and skills in computational thinking such as identifying similarities in different problems and describing smaller components of complex systems. It also focuses on the sustainability of information systems for current and future uses.  By the end of Year 6, students will have had opportunities to create a range of digital solutions, such as games or quizzes and interactive stories and animations.  In Year 5 and 6, students develop an understanding of the role individual components of digital systems play in the processing and representation of data. They acquire, validate, interpret, track and manage various types of data and are introduced to the concept of data states in digital systems and how data are transferred between systems.  They learn to further develop abstractions by identifying common elements across similar problems and systems and develop an understanding of the relationship between models and the real-world systems they represent.  When creating solutions, students define problems clearly by identifying appropriate data and requirements. When designing, they consider how users will interact with the solutions, and check and validate their designs to increase the likelihood of creating working solutions. Students increase the sophistication of their algorithms by identifying repetition and incorporate repeat instructions or structures when implementing their solutions through visual programming, such as reading user input until an answer is guessed correctly in a quiz. They evaluate their solutions and examine the sustainability of their own and existing information systems.  Students progress from managing the creation of their own ideas and information for sharing to working collaboratively. In doing so, they learn to negotiate and develop plans to complete tasks. When engaging with others, they take personal and physical safety into account, applying social and ethical protocols that acknowledge factors such as social differences and privacy of personal information. They also develop their skills in applying technical protocols such as devising file naming conventions that are meaningful and determining safe storage locations to protect data and information. | | | |
| **Achievement standard** | By the end of Year 6, students [explain](http://www.australiancurriculum.edu.au/glossary/popup?a=F10AS&t=Explain) the fundamentals of digital system components (hardware, software and networks) and how digital systems are connected to form networks. They [explain](http://www.australiancurriculum.edu.au/glossary/popup?a=F10AS&t=Explain) how digital systems use whole numbers as a basis for representing a variety of data types.  Students define problems in terms of data and functional requirements and [design](http://www.australiancurriculum.edu.au/glossary/popup?a=F10AS&t=Design) solutions by developing algorithms to address the problems. They incorporate decision-making, repetition and user interface [design](http://www.australiancurriculum.edu.au/glossary/popup?a=F10AS&t=Design) into their designs and implement their digital solutions, including a visual program. They [explain](http://www.australiancurriculum.edu.au/glossary/popup?a=F10AS&t=Explain) how information systems and their solutions meet needs and consider sustainability. Students manage the creation and communication of ideas and information in collaborative digital projects using validated data and agreed protocols. | | | |
| Teaching and learning | **Unit overviews**  The Australian Curriculum assumes that all students will study the two Technologies subjects from Foundation to the end of Year 8.  Schools decide which units of study per subject to complete, and how and when. This band plan provides two potential units. | **Unit 1 — A-maze-ing digital designs** | **Unit 2 — Data changing our world** | | |
| Students engage in a number of activities, including:   * investigating the functions and interactions of digital components and data transmission in simple networks, as they solve problems relating to digital systems * examining a maze game to explore algorithm design and develop skills in using a visual programming language * working collaboratively to create a new maze game. * applying a range of skills and processes when creating digital solutions by:   + defining problems clearly by identifying appropriate data and functional requirements   + designing a user interface, considering alternatives and design principles   + following, modifying and designing algorithms using diagrams and simple statements, relating particular programming language statements (steps and decisions) to actions in the game   + implementing their game using visual programming and including steps, branching and repetition   + evaluating how well their solutions meet defined requirements   + managing, creating and communicating ideas online during collaborative projects including negotiating, providing feedback and developing plans to complete tasks and applying social, ethical and technical protocols.   Cross-curriculum connections  This unit could complement the concepts taught in the *Year 5 plan: Science exemplar* unit *Survival in the environment*. By working collaboratively, students create a game based on the behavioural and structural features and adaptations that allow living things to survive in their environment or design and explain a new animal species based on a new environment (e.g. another planet with different environmental pressures).  See [www.qcaa.qld.edu.au/p-10/aciq/p-10-science/year-5-science](https://www.qcaa.qld.edu.au/p-10/aciq/p-10-science/year-5-science) > Planning > *Year 5 plan: Science exemplar* > Term 1: Survival in the environment. | Students explore local information systems and create a range of digital solutions that transform data into information. Learning opportunities include:   * exploring how community organisations collect data and present information to meet community needs * transforming raw data into a visual form to create information that is easily understood * creating a data-driven solution that processes user input to inform about health issues * applying a range of skills and processes when creating digital solutions by:   + exploring information systems, including systems that deliver community information, promote health and wellbeing, and simple online expert systems, and explain how they meet needs   + collecting, managing and analysing data using a range of software (such as spreadsheets)   + interpreting and visualising data to create information   + defining problems by considering what the need is, what data is required, who the audience is and how they will interact with the solution, and what features need to be included   + following steps and decisions (algorithms) that will process user input and solve a defined problem   + implementing a digital solution that automates the processing of user input and presentation of information   + explaining how their solutions meet identified needs   + managing, creating and communicating ideas and information, applying agreed social and ethical protocols   + applying technical protocols such as devising meaningful file naming conventions and determining safe storage locations to protect data and information.   Cross-curriculum connections  This unit could complement the concepts taught in the *Years 5–6 band plan: Health and Physical Education exemplar* unit *What am I drinking?* Students create a data-driven solution that processes user information about soft drinks, energy drinks and fruit juice, and the effects these have on the body.  See [www.qcaa.qld.edu.au/p-10/aciq/p-10-hpe/year-5-hpe](https://www.qcaa.qld.edu.au/p-10/aciq/p-10-hpe/year-5-hpe) > *Years 5–6 band plan: Health and Physical Education exemplar* > Unit 3: What am I drinking? | | |
| **Content descriptions** | Knowledge and Understanding | | Unit 1 | Unit 2 |
| Investigate the main [components](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=Components) of common [digital systems](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=Digital+systems), their basic functions and interactions, and how such [digital systems](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=Digital+systems) may connect together to form networks to transmit [data](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=Data) [(ACTDIK014)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACTDIK014) | | ✓ | ✓ |
| Investigate how [digital systems](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=Digital+systems) use whole numbers as a basis for representing all types of [data](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=Data) [(ACTDIK015)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACTDIK015) | | ✓ | ✓ |
| Processes and Production Skills | | Unit 1 | Unit 2 |
| Acquire, store and validate different types of [data](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=Data) and use a range of commonly available software to interpret and visualise [data](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=Data) in context to create information [(ACTDIP016)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACTDIP016) | |  | ✓ |
| Define problems in terms of [data](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=Data) and functional requirements, and identify [features](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=Features) similar to previously solved problems [(ACTDIP017)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACTDIP017) | | ✓ | ✓ |
| Design a [user interface](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=User+interface) for a digital system, generating and considering alternative designs [(ACTDIP018)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACTDIP018) | | ✓ | ✓ |
| Design, modify and follow simple algorithms represented diagrammatically and in English involving sequences of steps, [branching](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=Branching), and [iteration](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=Iteration) (repetition) [(ACTDIP019)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACTDIP019) | | ✓ | ✓ |
| Implement digital solutions as simple visual programs involving [branching](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=Branching), [iteration](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=Iteration) (repetition), and user input [(ACTDIP020)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACTDIP020) | | ✓ | ✓ |
| Explain how developed solutions and existing [information systems](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=Information+systems) are [sustainable](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=Sustainable) and meet local community needs, considering opportunities and consequences for future applications [(ACTDIP021)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACTDIP021) | | ✓ | ✓ |
| Manage the creation and communication of ideas and information including online collaborative projects, applying agreed ethical, social and technical [protocols](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=Protocols) [(ACTDIP022)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACTDIP022) | | ✓ | ✓ |
| **General capabilities** | Literacy    Numeracy    ICT capability    Critical and creative thinking    Personal and social capability    Ethical understanding | | | |
| Develop assessment | **Assessment**  The *Years 3 to 6 Technologies: Australian Curriculum in Queensland — assessment and reporting advice and guidelines* brings together advice about assessment, making judgments and reporting in a single document.  See [www.qcaa.qld.edu.au/p-10/aciq/p-10-technologies/year-3-technologies](https://www.qcaa.qld.edu.au/p-10/aciq/p-10-technologies/year-3-technologies) > *Years 3 to 6 Technologies: ACiQ.* | Students use their knowledge and understanding of data and digital systems to apply processes and production skills as they create digital solutions. In both teaching and learning and assessment students undertake projects. A project is a set of activities to address specified content, involving understanding the nature of a problem, situation or need; creating, designing and producing a solution to the project task; and documenting the process. Students progress from managing the independent creation of ideas and information to managing collaborative projects in online environments.  The assessment for each unit provides evidence of student learning and provides opportunities for teachers to make judgments about whether students have met the Australian Curriculum: Digital Technologies Years 5 and 6 Achievement standard. Students should contribute to an individual assessment folio that provides evidence of their learning and represents their achievements. The folio should include a range and balance of assessments for teachers to make valid judgments about whether the student has met the Achievement standard. | | | |
| **Unit 1 — A-maze-ing digital designs** | **Unit 2 — Data changing our world** | | |
| The assessment will gather evidence of students ability to:   * explain the interactions between digital system components in the context of sending data to a networked printer by:   + identifying and labelling digital components (hardware, software and network)   + describing the function of main components   + explaining how components connect to form a network   + explaining how sample data is represented as whole numbers. * work collaboratively to create a maze game by:   + defining the data and functional requirements of the game   + designing the user interface and algorithms for the maze game   + incorporating decision making and repetition algorithms into their designs and implemented game   + implementing the game in a visual programming language   + evaluating the game by explaining how it meets defined needs. | The assessment will gather evidence of students ability to:   * investigate a community information system and use an online collaboration space to respond to focus questions about the information system. Students create an infographic to present information by:   + collecting and validating data, and organise it using a spreadsheet   + presenting the data in an innovative way (e.g. using a data visualisation tool). * work individually to create an expert system by:   + defining the data requirements of the system   + designing a user interface that accepts data from the user   + creating a system that uses stored data, user input and algorithms to generate an expert response   + evaluating the system by explaining how it meets a need and considering sustainability   + creating and communicate ideas and information using agreed protocols. | | |
| Make judgments  and use feedback | **Consistency of teacher judgments** | Identify opportunities to moderate samples of student work at a school or cluster level to reach consensus and consistency. | | | |

1. Source: Australian Curriculum, Assessment and Reporting Authority (ACARA), *Australian Curriculum: Technologies*: [www.australiancurriculum.edu.au/technologies/rationale](http://www.australiancurriculum.edu.au/technologies/rationale) and   
   *Australian Curriculum: Digital Technologies*: [www.australiancurriculum.edu.au/technologies/digital-technologies/curriculum/f-10?layout=1](http://www.australiancurriculum.edu.au/technologies/digital-technologies/curriculum/f-10?layout=1). [↑](#footnote-ref-1)