In a world that is increasingly digitised and automated, it is critical to the wellbeing and sustainability of the economy, the environment and society, that the benefits of information systems are exploited ethically. This may impact the present or future society. The use of potentially dangerous materials, tools and equipment can impact on project timelines. It covers all necessary aspects of health, safety and injury prevention and, in any technologies and across all subjects, including in Design and Technologies. The ICT capability is more explicit and foregrounded. Students develop explicit knowledge, understanding and skills relating to operating and managing ICT and applying social and ethical protocols that acknowledge factors such as age, gender, ability and agreed protocols. When developing solutions in Digital Technologies, students explore, analyse and develop ideas based on data, research and data interactions. When students design a solution to a problem they consider how users will be presented with data, the degree of interaction with that data and the various types of computational processes. For example, designing a maze; writing precise and accurate sequences of instructions to move a robot through the maze or testing the program and modifying the solution.

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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.

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The Australian Curriculum: Digital Technologies (F–10) comprises two related strands:

- Digital Technologies knowledge and understanding – the information system components of data, and digital systems (hardware, software and networks)
- Digital Technologies processes and production skills – using digital systems to create ideas and information, and to define, design and implement digital solutions, and evaluate these solutions and existing information systems against specified criteria.

Digital Technologies knowledge and understanding
This strand focuses on developing skills to create digital solutions to problems and opportunities. The Digital Technologies processes and production skills strand focuses on:

- collecting, managing and analysing data, which involves the nature and properties of data, how they are collected and interpreted using a range of digital systems and peripheral devices and interpreting data when creating information
- defining problems and designing digital solutions (Foundation – Year 2), which develops into defining problems and designing, implementing and evaluating solutions that have been developed by students, and evaluating how well existing information systems meet different needs (Year 3–10)
- communicating ideas and information (Foundation – Year 4), which develops into managing, creating and communicating ideas and information (Year 5–10) through to independently and collaboratively managing projects to create interactive solutions (Year 7–10). This involves creating and communicating information, especially online by creating websites, and interacting safely using appropriate technical and social protocols. These require skills in using digital systems, and critical and creative thinking including systems, design and computational thinking.

Computational thinking
The curriculum is designed so that students will develop and use increasingly sophisticated computational thinking skills, and processes, techniques and digital systems to create solutions to address specific problems, opportunities or needs. Computational thinking is a process of recognizing aspects of computation in the world and being able to think logically, algorithmically, recursively and abstractly. Students will also apply procedural and computational techniques and processing skills when creating, communicating and sharing ideas and information, and managing projects.

Key concepts
A number of key concepts underpin the Digital Technologies curriculum. These establish a way of thinking about problems, opportunities and information systems and provide a framework for knowledge and practice. The key concepts are:

- abstraction, which underpins all content, particularly the content descriptions relating to the concepts of data representation, and specification, algorithms and implementation
- data collection (properties, sources and collection of data), data representation (symbolisation and separation) and data interpretation (patterns and contexts)
- specification (descriptions and techniques) and implementation (translating and programming)
- digital systems (hardware, software, and networks and the internet)
- interactions (people and digital systems, data and processes) and impacts (sustainability and empowerment)

The concepts of abstraction, data collection, representation and interpretation, specification, algorithms and implementation correspond to the key elements of computational thinking. Collectively, these concepts span the key ideas about the organisation, representation and automation of digital information and solutions. They can be explored in non-digital or digital contexts and are likely to underpin future digital systems. They provide a language and perspective that students and teachers can use when discussing digital technologies.

Abstraction
Abstraction involves hiding details of an idea, problem or solution that are not relevant, to focus on a manageable number of aspects. Abstraction is a natural part of communication: people rarely communicate every detail, because many details are not relevant in a given context. The idea of abstraction can be acquired from an early age. For example, when students are asked to make toast for breakfast, they do not mention all steps explicitly, assuming that the listener is an intelligent implementer of the abstract instructions. Central to managing the complexity of information systems is the ability to temporarily ignore the internal details of the subcomponents of larger specifications, algorithms, systems or interactions. In digital systems, everything must be broken down into simple instructions.

Data collection, representation and interpretation
The concepts that are about data focus on the properties of data, how they are collected and represented, and how they are interpreted in context to produce information. These concepts in Digital Technologies build on a corresponding statistics and probability strand in the Mathematics curriculum. The Digital Technologies curriculum provides a deeper understanding of the nature of data and their representation, and computational thinking for interpreting data. The data concepts provide rich opportunities for authentic data exploration in other learning areas while developing data processing and visualisation skills. Data collection describes the numerical, categorical and textual facts measured, collected or calculated as the basis for creating information and its binary representation in digital systems. Data collection is addressed in the processes and production skills strand.

Data representation describes how data are represented and structured symbolically for storage and communication, by people and in digital systems, and is addressed in the knowledge and understanding strand. Data interpretation describes the processes of extracting meaning from data and is addressed in the processes and production strand.

Specification, algorithms and implementation
The concepts specification, algorithms and implementation focus on the precise definition and communication of problems and their solutions. This begins with the description of tasks and concludes in the accurate definition of computational problems and their algorithmic solutions. This concept draws from logic, algebra and the language of mathematics, and can be related to the scientific method of recording experiments in science. Specification describes the process of defining and communicating a problem precisely and clearly. For example, explaining the need to direct a robot to move in a particular way. An algorithm is a precise description of the steps and decisions needed to solve a problem. Algorithms will need to be tested before the final solution can be implemented. Anyone who has followed or given instructions, or navigated using directions, has used an algorithm. These generic skills can be developed without programming. For example, students can follow the steps within a recipe or describe directions to locate items. Implementation describes the automation of an algorithm, possibly using appropriate software or writing a computer program. These concepts are addressed in the processes and production skills strand.

Digital systems
The digital systems concept focuses on the components of digital systems: hardware and software (computer architecture and the operating system), and networks and the internet (wireless, mobile and wired networks and protocols). This concept is addressed in both strands. The broader definition of an information system that includes data, people, processes and digital systems falls under the interactions and impacts concept below.

Interactions and impacts
The interactions and impacts concepts focus on all aspects of human interaction with and through information systems, and the enormous potential for positive and negative environmental, economic and social impacts enabled by these systems. Interactions and impacts are addressed in the processes and production skills strand. Interactions relate all interactions with information systems: user-system and user-user interactions including communication and collaboration facilitated by digital systems. This concept also addresses methods for protecting stored and communicated data and information, impacts describing analysing and predicting the extent to which personal, economic, environmental and social needs are met through existing and emerging digital technologies; and appreciating the transformative potential of digital technologies in people’s lives. It also involves consideration of the relationship between information systems and society and in particular the ethical and legal obligations of individuals and organisations regarding ownership and privacy of data and information.

Types of digital solutions
Across each band, 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 computations 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.

Subject structure
The Australian Curriculum: Digital Technologies (F–10) comprises two related strands:

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Relationship between the strands
Together, the two strands provide students with knowledge, understanding and skills through which they can safely and ethically exploit the capacity of information systems (people, data, processes, digital systems and their interactions) to systematically transform data into solutions that respond to the needs of individuals, society, the economy and the environment. Teaching and learning programs will typically integrate these, as content in processes and production skills frequently draws on understanding of concepts in the knowledge and understanding strand.

The strands are based on key concepts that provide a framework for knowledge and practice in Digital Technologies.

Years 5 and 6 Content Descriptions
Digital Technologies Knowledge and Understanding
Examine the main components of common digital systems and how they may connect together to form networks to transmit data.

Examine how whole numbers are used to represent all data in digital systems.

Digital Technologies Processes and Production Skills
Acquire, store and validate different types of data, and use a range of software to interpret and visualise data to create information.

Define problems in terms of data and functional requirements drawing on previously solved problems.

Design a user interface for a digital system.

Design, modify and follow simple algorithms involving sequences of steps, branching, and iteration.

Implement digital solutions as simple visual programs involving branching, iteration.