2025 Premier's Coding Challenge

Curriculum Alignment to Australian Curriculum V8.4: Digital Technologies

Alignment to Band Descriptions, Achievement Standards (Subject specific and where appropriate Learning area), and Content Descriptions has been provided below. Greyed out text signifies no alignment. https://www.australiancurriculum.edu.au/f-10-curriculum/technologies/digital-technologies/

Years 3 and 4

Band Description

Learning in Digital Technologies focuses on further developing understanding and skills in computational thinking, such as categorising and outlining procedures; and developing an increasing awareness of how digital systems are used and could be used at home, in school and the local community. **By the end of Year 4, students will have had opportunities to create a range of digital solutions, such as interactive adventures that involve user choice, modelling simplified real world systems and simple guessing games.** In Year 3 and 4, students explore digital systems in terms of their components, and peripheral devices such as digital microscopes, cameras and interactive whiteboards. They collect, manipulate and interpret data, developing an understanding of the characteristics of data and their representation. **Using the concept of abstraction, students define simple problems using techniques such as summarising facts to deduce conclusions. They record simple solutions to problems through text and diagrams and develop their designing skills from initially following prepared algorithms to describing their own that support branching (choice of options) and user input. Their solutions are implemented using appropriate software including visual programming languages that use graphical elements rather than text instructions. They explain, in general terms, how their solutions meet specific needs** and consider how society may use digital systems to meet needs in environmentally sustainable ways. **With teacher guidance, students identify and list the major steps needed to complete a task or project. When sharing ideas and communicating in online environments they develop an understanding of why it is important to consider the feelings of their audiences and apply safe practices and social protocols agreed by the class that demonstrate respectful behaviour.**

Digital Technologies Achievement Standard

By the end of Year 4, students describe how a range of digital systems (hardware and software) and their peripheral devices can be used for different purposes. They explain how the same data sets can be represented in different ways.

Students **define simple problems, design and implement digital solutions using algorithms that involve decision-making and user input. They explain how the solutions meet their purposes.** They collect and manipulate different data when creating information and digital solutions. **They safely use and manage information systems for identified needs using agreed protocols and describe how information systems are used.**

Learning Area Achievement Standard

By the end of Year 4, students describe how social, technical and sustainability factors influence the design of solutions to meet present and future needs. They describe features of technologies that influence design decisions and how a range of digital systems can be used.

Students **outline and define needs, opportunities or problems.** They collect, manipulate and interpret data from a range of sources to support decisions. **Students generate and record design ideas for an audience using technical terms and graphical and non-graphical representation techniques including algorithms. They plan a sequence of steps (algorithms) to create solutions, including visual programs.** Students plan and safely produce designed solutions for each of the prescribed technologies contexts. **They use identified criteria for success, including sustainability considerations, to judge the suitability of their ideas, solutions and processes. Students use agreed protocols when collaborating, and creating and communicating ideas, information and solutions face-to-face and online.**

Content Descriptions

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

Implement simple digital solutions as visual programs with algorithms involving branching (decisions) and user input (ACTDIP011)

Explain how student solutions and existing information systems meet common personal, school or community needs (ACTDIP012)

Plan, create and communicate ideas and information independently and with others, applying agreed ethical and social protocols (ACTDIP013)

Band Description

Learning in Digital Technologies focuses on further developing understanding and skills in computational thinking, such as categorising and outlining procedures; and developing an increasing awareness of how digital systems are used and could be used at home, in school and the local community. **By the end of Year 4, students will have had opportunities to create a** range of **digital solution**s, **such as interactive adventures that involve user choice, modelling simplified real world systems and simple guessing games.** In Year 3 and 4, students explore digital systems in terms of their components, and peripheral devices such as digital microscopes, cameras and interactive whiteboards. They collect, manipulate and interpret data, developing an understanding of the characteristics of data and their representation. **Using the concept of abstraction, students define simple problems using techniques such as summarising facts to deduce conclusions. They record simple solutions to problems through text and diagrams and develop their designing skills from initially following prepared algorithms to describing their own that support branching (choice of options) and user input. Their solutions are implemented using appropriate software including visual programming languages that use graphical elements rather than text instructions. They explain, in general terms, how their solutions meet specific needs** and consider how society may use digital systems to meet needs in environmentally sustainable ways. **With teacher guidance, students identify and list the major steps needed to complete a task or project. When sharing ideas and communicating in online environments they develop an understanding of why it is important to consider the feelings of their audiences and apply safe practices and social protocols agreed by the class that demonstrate respectful behaviour.**

Digital Technologies Achievement Standard

By the end of Year 6, students explain the fundamentals of digital system components (hardware, software and networks) and how digital systems are connected to form networks. They 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 solutions by developing algorithms to address the problems. They incorporate decision-making, repetition and user interface design into their designs and implement their digital solutions, including a visual program. They 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.**

Learning Area Achievement Standard

By the end of Year 6, students explain how social, ethical, technical and sustainability considerations influence the design of solutions to meet a range of present and future needs. They explain how the features of technologies influence design decisions and how digital systems are connected to form networks.

Students describe a range of needs, opportunities or problems and define them in terms of functional requirements. They collect and validate data from a range of sources to assist in making judgements. Students **generate and record design ideas for specified audiences using appropriate technical terms, and graphical and non-graphical representation techniques including algorithms. They plan, design, test, modify and create digital solutions that meet intended purposes including user interfaces and a visual program.** Students plan and document processes and resources and safely produce designed solutions for each of the prescribed technologies contexts. **They negotiate criteria for success, including sustainability considerations, and use these to judge the suitability of their ideas, solutions and processes. Students use ethical, social and technical protocols when collaborating, and creating and communicating ideas, information and solutions face-to-face and online.**

Content Descriptions

Design a user interface for a digital system - ACTDIP018

Design, modify and follow simple algorithms involving sequences of steps, branching, and iteration (repetition) -ACTDIP019

Implement digital solutions as simple visual programs involving branching, iteration (repetition), and user input -ACTDIP020

Explain how student solutions and existing information systems are sustainable and meet current and future local community needs -ACTDIP021

Plan, create and communicate ideas and information, including collaboratively online, applying agreed ethical, social and technical protocols -ACTDIP022

Band Description

Learning in Digital Technologies focuses on further developing understanding and skills in computational thinking such as decomposing problems and prototyping; and engaging students with a wider range of information systems as they broaden their experiences and involvement in national, regional and global activities. **By the end of Year 8, students will have had opportunities to create a range of digital solutions, such as interactive web applications or programmable multimedia assets or simulations of relationships between objects in the real world.** In Year 7 and 8, students analyse the properties of networked systems and their suitability and use for the transmission of data types. They acquire, analyse, validate and evaluate various types of data, and appreciate the complexities of storing and transmitting that data in digital systems. Students use structured data to model objects and events that shape the communities they actively engage with. They further develop their understanding of the vital role that data plays in their lives, and how the data and related systems define and are limited by technical, environmental, economic and social constraints. They further develop abstractions by identifying common elements while decomposing apparently different problems and systems to define requirements, and recognise that abstractions hide irrelevant details for particular purposes. When defining problems, students identify the key elements of the problems and the factors and constraints at play. **They design increasingly complex algorithms that allow data to be manipulated automatically, and explore different ways of showing the relationship between data elements to help computation, such as using** pivot tables, **graphs and clearly defined mark-up or rules. They progress from designing the user interface to considering user experience factors such as user expertise, accessibility and usability requirements. They broaden their programming experiences to include general-purpose programming languages, and incorporate subprograms into their solutions. They predict and evaluate their developed and existing solutions, considering time, tasks, data and the safe and sustainable use of information systems, and anticipate any risks associated with the use or adoption of such systems. Students plan and manage individual and team projects with some autonomy. They consider ways of managing the exchange of ideas, tasks and files, and techniques for monitoring progress and feedback. When communicating and collaborating online, students develop an understanding of different social contexts, for example acknowledging cultural practices and meeting legal obligations.**

Digital Technologies Achievement Standard

By the end of Year 8, students distinguish between different types of networks and defined purposes. They explain how text, image and audio data can be represented, secured and presented in digital systems.

Students **plan and manage digital projects to create interactive information. They define and decompose problems in terms of functional requirements and constraints. Students design user experiences and algorithms incorporating branching and iterations, and test, modify and implement digital solutions. They evaluate information systems and their solutions in terms of meeting needs, innovation and sustainability**. They analyse and evaluate data from a range of sources to model and create solutions. **They use appropriate protocols when communicating and collaborating online.**

Learning Area Achievement Standard

By the end of Year 8, students explain how social, ethical, technical and sustainability considerations influence the design of innovative and enterprising solutions to meet a range of present and future needs. They explain how the features of technologies influence design and production decisions. Students make choices between different types of networks for defined purposes.

Students explain a range of needs, opportunities or problems and define them in terms of functional requirements and constraints. They collect, authenticate and interpret data from a range of sources to assist in making informed judgements. **Students generate and document in digital and non-digital form, design ideas for different audiences using appropriate technical terms, and graphical representation techniques including algorithms. They independently and safely plan, design, test, modify and create a range of digital solutions that meet intended purposes including user interfaces and the use of a programming language.** They plan, document and effectively manage processes and resources to produce designed solutions for each of the prescribed technologies contexts. **They develop criteria for success, including innovation and sustainability considerations, and use these to judge the suitability of their ideas, solutions and processes. Students use appropriate protocols when collaborating, and creating and communicating ideas, information and solutions face-to-face and online.**

Content Descriptions

Design the user experience of a digital system, generating, evaluating and communicating alternative designs - ACTDIP028

Design algorithms represented diagrammatically and in English, and trace algorithms to predict output for a given input and to identify errors - ACTDIP029

Implement and modify programs with user interfaces involving branching, iteration and functions in a general-purpose programming language - ACTDIP030

Evaluate how student solutions and existing information systems meet needs, are innovative, and take account of future risks and sustainability - ACTDIP031

Plan and manage projects that create and communicate ideas and information collaboratively online, taking safety and social contexts into account - ACTDIP032

Years 9 and 10

Band Description

Learning in Digital Technologies focuses on further developing understanding and skills in computational thinking such as precisely and accurately describing problems and the use of modular approaches to solutions. It also focuses on engaging students with specialised learning in preparation for vocational training or learning in the senior secondary years. **By the end of Year 10, students will have had opportunities to analyse problems and design, implement and evaluate a range of digital solutions, such as database-driven websites and artificial intelligence engines and simulations.** In Year 9 and 10, students consider how human interaction with networked systems introduces complexities surrounding access to, and the security and privacy of, data of various types. They interrogate security practices and techniques used to compress data, and learn about the importance of separating content, presentation and behavioural elements for data integrity and maintenance purposes. Students explore how bias can impact the results and value of data collection methods and **they use structured data to analyse, visualise, model and evaluate objects and events.** They learn how to develop multilevel abstractions, identify standard elements such as searching and sorting in algorithms, and explore the trade-offs between the simplicity of a model and the faithfulness of its representation. **When defining problems students consider the functional and non-functional requirements of a solution through interacting with clients and regularly reviewing processes. They consolidate their algorithmic design skills to incorporate testing and review, and further develop their understanding of the user experience to incorporate a wider variety of user needs. Students develop modular solutions to complex problems using an object-oriented programming language where appropriate, and evaluate their solutions and existing information systems based on a broad set of criteria** including connections to existing policies and their enterprise potential. They consider the privacy and security implications of how data are used and controlled, and suggest how policies and practices can be improved to ensure the sustainability and safety of information systems. **Students progressively become more skilled at identifying the steps involved in planning solutions and developing detailed plans that are mindful of risks and sustainability requirements. When creating solutions, both individually and collaboratively, students comply with legal obligations, particularly with respect to the ownership of information, and when creating interactive solutions for sharing in online environments.**

Digital Technologies Achievement Standard

By the end of Year 10, students explain the control and management of networked digital systems and the security implications of the interaction between hardware, software and users. They explain simple data compression, and why content data are separated from presentation. Students **plan and manage digital projects using an iterative approach. They define and decompose complex problems in terms of functional and non-functional requirements. Students design and evaluate user experiences and algorithms. They design and implement modular programs, including an object-oriented program, using algorithms and data structures involving modular functions** that reflect the relationships of real-world data and data entities. They take account of privacy and security requirements when selecting and validating data. **Students test and predict results and implement digital solutions. They evaluate** information systems and **their solutions in terms of risk, sustainability and potential for innovation and enterprise. They share and collaborate online, establishing protocols for the use, transmission and maintenance of data and projects.**

Content Descriptions

Design the user experience of a digital system by evaluating alternative designs against criteria including functionality, accessibility, usability, and aesthetics - ACTDIP039

Design algorithms represented diagrammatically and in structured English and validate algorithms and programs through tracing and test cases - ACTDIP040

Implement modular programs, applying selected algorithms and data structures including using an object-oriented programming language - ACTDIP041

Evaluate critically how student solutions and existing information systems and policies, take account of future risks and sustainability and provide opportunities for innovation and enterprise - ACTDIP042

Create interactive solutions for sharing ideas and information online, taking into account safety, social contexts and legal responsibilities - ACTDIP043

Plan and manage projects using an iterative and collaborative approach, identifying risks and considering safety and sustainability - ACTDIP044