Western Australian Curriculum

Technologies | Digital Technologies

Scope and sequence| Pre-primary–Year 10
Revised curriculum | For familiarisation in 2025

**Acknowledgement of Country**

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Overview

The current Western Australian Curriculum: Technologies was adopted and adapted from the Australian Curriculum version 8.4.

The revised Western Australian Curriculum: Technologies is adopted and adapted from the Australian Curriculum version 9.

The Technologies learning area comprises two subjects: Design and Technologies and Digital Technologies. The Technologies curriculum is written on the basis that students will study both Technologies subjects from Pre-primary to the end of Year 8. In Years 9 and 10 the study of Technologies is optional.

Guide to reading this document

The Scope and sequence for Digital Technologies shows the **mandated** curriculum for teaching, written as **content descriptions** across year levels so that a sequence of content can be viewed across the years of schooling from Pre‑primary to Year 10. The **examples** illustrate the content and are **not mandated**.Teachers should use examples relevant to the context of the school and the needs of their students.

The **Digital Technologies** strands for **Pre-primary to Year 6** include: Digital systems; Data representation; Privacy and security; Digital implementation; and Design thinking skills.

The **Digital Technologies** strands for **Years 7–10** include: Digital systems; Data representation; Acquiring, managing and analysing data; Privacy and security; Digital implementation; and Design thinking skills.

The **Design thinking skills** strand for **Pre-primary to Year 10** includes the sub-strands: Project management; Investigating and defining; Designing; Producing and implementing; and Evaluating. This strand is shared with the Design and Technologies subject.

The tables below outline the subject organisation for the Pre-primary to Year 10 Digital Technologies curriculum.

**Pre-primary to Year 6**

|  |  |  |  |
| --- | --- | --- | --- |
| **Digital systems** | **Data representation** | **Privacy and security** | **Digital implementation** |

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| **Design thinking skills** |
| Project management | Investigating and defining | Designing | Producing and implementing | Evaluating |

**Years 7–10**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Digital systems** | **Data representation** | **Acquiring, managing and analysing data** | **Privacy and security** | **Digital implementation** |

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| --- |
| **Design thinking skills** |
| Project management | Investigating and defining | Designing | Producing and implementing | Evaluating |

Pre-primary–Year 6

Strand: Digital systems

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Pre-primary | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| Digital systems have common features, including hardware devices and software, and are used at home, in school and in the communityFor example:* digital systems can include mobile devices, tablets and desktop personal computers (PCs)
* different digital systems are used to capture or transfer data (taking a photograph, voice or video)
* common features of digital systems include screens, camera, speakers and buttons that are usually integrated
* digital technologies are frequently networked or connected, enabling people to share, communicate, or store data
 | Digital systems have hardware and software that are used togetherFor example:* digital systems include mobile phones, tablets and desktop personal computers (PCs)
* digital systems are a collection of hardware and software
* hardware is physical and software is non-physical
* software includes applications, games, operating systems, etc.
* digital systems can be used for downloading and storing information, or for a purpose, such as retelling a story
 | Digital systems, including hardware devices and software, are used for an identified purposeFor example:* digital systems, such as mobile phones, tablets and desktop personal computers (PCs) are used/selected for a purpose
* digital systems are a collection of hardware and software
* hardware is physical and software is non-physical
* software includes applications, games, operating systems, etc.
* different software applications have different uses
 | Digital systems and peripheral devices are connected and used together for various purposesFor example:* input peripheral devices include keyboard, mouse, camera and microphone
* output peripheral devices include monitor, printer, 3D printer, speaker and remotes
* peripherals that have the ability to be both input and output devices include touch screen, headsets and controllers
 | Digital systems, including peripheral devices, are used to transfer and store different types of dataFor example:* peripheral devices, such as a keyboard, touch screen, mouse, camera and microphone, monitor, printer, 3D printer, speaker, storage, gaming controllers and headset devices can be categorised as input, output and storage functions
* peripheral devices can be wired or wirelessly connected
 | Digital systems have main internal components that perform particular functions to achieve a purposeFor example:* common internal hardware components, such as a central processing unit (CPU), random access memory (RAM), motherboard, solid state drive (SDD) and hard disk drive (HDD), are interconnected and work together to form a digital system
* data is transmitted between digital systems in different ways such as wires, cables, radio waves
 | Digital systems are connected in wired and wireless networks to transmit data for a variety of purposesFor example:* familiar networks can be found in the school, home or local community and can be connected through the internet
* wired and wireless networks have differences, such as speed, device mobility and ease of installation
* separate systems can be connected in different ways to exchange data
* data is transmitted through a network, broken up into packets (small pieces) and passed from the source, through multiple devices, to the destination
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Strand: Data representation

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Pre-primary | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| Data can be represented as objects and images For example:* icons are images that represent programs or applications (apps)
* street signs are images that represent data
* objects and events can be sorted based on easily identified characteristics and can be represented using digital systems, such as birthdates and categories
* a sun picture could represent ‘hot’ weather, an arrow image could represent movement in a particular direction
 | Data can be represented as images, symbols, numbers and wordsFor example:* the equivalence of different representations of numbers, such as words, digits, numbers and dice dots
* representing categorical data in a variety of ways, such as drawings, lists and tally marks
* the relationship between simple representations, such as arrows or appropriate emoji, and the concept or emotion they represent
* cultural symbols can represent people, objects and movement
 | Data can have patterns and may be represented as diagrams, symbols, numbers and wordsFor example:* data can be represented using a variety of visualisation techniques, such as picture graphs
* data patterns can be exemplified by the repetition of pictures and symbols
* number patterns can be represented as pairs or in multiples of two
 | Data is of different types and can be represented in various waysFor example:* data is of different types including sound, images, numeric and text
* symbols and icons are used to represent data
* symbolic representations such as flowcharts
* infographics that combine images, symbols, and diagrams tell a compelling data story and provide information
 | Data of the same type can be represented in different ways depending on the purposeFor example:* data can be of the same type including sound, images, numeric and text
* different types of data can be used depending on the purpose or needs, such as numbers, letters, symbols, pictures or sounds
* identifying circumstances when the same data can be represented in different ways and why some representations are better than others in certain contexts, such as four vs 4 vs IV vs |||| vs quatre, and that numbers are preferred for calculation than words
 | Data of all types, including text, numeric, sound and images, are represented using codesFor example:* data can be represented using whole numbers in a digital system, such as converting letters in a message to numbers using position in the alphabet
* the encoding and transmitting of data over a distance, such as Morse Code, semaphore, fire signals, drumming and radio
* digital systems represent data, such as Unicode or ASCII
 | Data can be represented by on and off states (zeros and ones in binary)For example:* on and off states in a circuit can represent the digits one and zero, and is how digital systems represent data
* converting binary to decimal and vice versa
* images are represented in digital systems using binary
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Strand: Privacy and security

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Pre-primary | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| Some data is personal and owned by themFor example:* personal data, such as photographs of themselves with their families
* public data, such as photographs of local community sites
* photographs of students may become public, such as their username in a game or photographs of them on a parent’s social media account
* ask a friend for permission before taking their photograph
* personal data can be obtained and used by nefarious strangers
 | Some data is personal, owned by them and can be shared with trusted peopleFor example:* importance of asking permission from a parent or carer before entering personal details online, such as address, phone number and date of birth
* websites and apps used at home and school collect personal data, such as usernames and email addresses
* ask a friend before sharing a photograph of them
 | Some personal data may be safely shared online with specific people using trusted platformsFor example:* using a school learning app to share photographs or videos with a parent
* personal data is visible on some websites and apps, such as usernames or avatars on online games
 | Different types of personal data are shared and stored onlineFor example:* personal data stored in accounts at school and at home and who has access, such as documents in their school cloud storage that are accessible by the teacher, or a nickname in their online gaming accounts is visible to all players
 | Personal data that is shared and stored online can pose risksFor example:* personal data stored in online accounts forms a person’s digital identity and reveals detailed information about people, such as photographs reveal details about a person’s location, habits or home
* personal data, when shared online, cannot be removed
* age restrictions identified in terms and conditions of websites and apps
 | Personal data can be used to create a permanent digital footprintFor example:* the ability of websites and apps to safely store data and the level of trustworthiness can vary
* importance of protecting someone’s privacy and only collecting data when required, such as choosing not to collect information about someone’s birthdate when it is not necessary, ensures that private data cannot be stolen in a cyber attack
 | Digital footprint and privacy considerations when collecting user dataFor example:* data, images or both that have been posted online can lead to information resurfacing at a later date, such as a comment made on a social media post or video associating a person with their comment and the content
* individuals leave digital footprints, such as social media, online searches, and communication platforms
* when providing data to websites it is important to know how that data may be stored or used in the future and if this poses a risk
* sharing personal information increases the likelihood it will be revealed in the future
 |
| Steps to take when encountering unexpected inappropriate content, pop‑ups, or uninitiated contact | Access their school account, with assistance, using a recorded username and password | Independently access their school account with a recorded username and password, and log out | Access their school account, using a unique private memorised password, and logging out afterwards | Access their school account, using a memorised password. It should be easy to remember but difficult for others to guess. Risks of not logging out | Access multiple personal accounts using unique passphrases or biometrics. Risks of password reuse and not logging out | Access multiple personal accounts using unique passphrases or biometrics. Risks of password reuse and practices to reduce risk to their personal accounts |

Strand: Digital implementation

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Pre-primary | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|  |  | Create an algorithm (sequence of steps) including decisions made by the user  | Represent algorithms (sequence of steps), including decisions made by the user (branching) using flowcharts | Represent an algorithm (sequence of steps) involving decisions (branching) and repetition using flowcharts | Design algorithms in plain English and/or flowcharts that involve user input, variables and control structures (sequence, decisions and repetition) | Design algorithms in plain English and/or flowcharts that involve user input, variables and control structures (sequence, decisions and various types of iteration: For, Repeat, While) |
| Follow an algorithm (sequence of steps) to achieve an outcome | Follow a visual representation of an algorithm (sequence of steps) | Follow algorithms (sequence of steps) including decisions made by the user  | Implement algorithms (sequence of steps) in a visual programming environment to include decisions made by the user (branching) | Implement algorithms (sequence of steps) in a visual programming environment to include decisions (branching) and repetition | Implement algorithms in a visual programming environment involving variables and control structures (sequence, decisions and repetition) with user input | Implement algorithms in a visual programming environment involving variables and control structures (sequence, decisions, input and various types of iteration) |

Strand: Design thinking skills

Sub-strand: Project management

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Pre-primary | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| Share ideas to develop a solution | Share ideas and work with others to develop a solution | Plan, share ideas and work with others to develop a solution for a known user | Communicate ideas and follow a plan with consideration of time management, to develop a solution | Use agreed protocols and management roles to communicate ideas, plan and make decisions, to develop solutions | Use agreed protocols and management roles to communicate decisions, plan and manage time, to develop designed solutions | Use agreed protocols to set goals, manage competing factors, resources and time, to plan, develop and communicate decisions, when developing designed solutions for a given task |

Sub-strand: Investigating and defining

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Pre-primary | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| Explore the purpose for design | Explore ideas and design opportunities for a personal need | Explore ideas and design opportunities for a known user | Define ideas and design opportunities for individual and/or local needs | Define the features of a design brief and the requirements of a design task for a community need | Break down a design brief to define the purpose and requirements for a given task | Break down a design brief to define the purpose, requirements and constraints for a given task |
|  |  |  |  | Investigate and select resources based on properties for the given task | Investigate and select resources based on properties and functions for the given task | Investigate and select resources considering constraints, properties and functions appropriate for the given task |

Sub-strand: Designing

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Pre-primary | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| Design solutions through discussion, drawing and/or modelling to meet a personal need | Design solutions through drawing, modelling and/or a sequence of steps | Design solutions generated and communicated through discussion, drawing, modelling and/or a sequence of steps | Design solutions created with labelled drawings, use of technical terms and/or a sequence of steps | Design solutions through use of labelled drawings, technical terms, decision-making and/or a sequence of steps | Design solutions considering competing factors, with annotated diagrams, storyboards and/or a sequence of steps, using technical terms and an iterative process | Design alternative solutions achieved through an iterative process, including critical thinking, graphical representations, use of a range of technologies, techniques, technical terms and/or a sequence of steps |

Sub-strand: Producing and implementing

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Pre-primary | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| Use available technologies and materials to safely create a solution | Use available technologies and materials to safely create a preferred solution | Use given equipment and technologies to safely create a solution | Use appropriate technologies and components with given equipment and follow agreed protocols to produce a designed solution | Use appropriate technologies, components and/or equipment and follow agreed protocols to produce a designed solution | Use technologies, components and/or equipment to implement agreed protocols to produce a designed solution | Use a range of technologies, components and/or equipment to implement agreed protocols to produce a designed solution |

Sub-strand: Evaluating

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Pre-primary | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| Use personal preferences to evaluate the solution | Use personal preferences to evaluate the solution for a personal need | Use personal preferences and the needs of the known user to evaluate the solution | Use given criteria to evaluate diagrams, technologies and the components used for the designed solution | Use given criteria to evaluate design features, selected resources,decision-making processes and the designed solution | Use given criteria to evaluate design features, consideration of competing factors, processes and the designed solution | Develop negotiated criteria to evaluate design features, graphics, selected technologies, processes and functionality, with consideration of constraints for the designed solution |

Years 7–10

Strand: Digital systems

|  |  |  |  |
| --- | --- | --- | --- |
| Year 7 | Year 8 | Year 9 | Year 10 |
| Methods of data transmission in different types of networks including wired, wireless and mobile networksFor example:* wireless and wired connectivity has advantages and disadvantages
* mobile networks transfer data and transmission rates differ between mobile, wired and wireless (wi-fi) networks
* benefits of cloud storage include scalability, accessibility, security and can be cost‑effective
 | Methods of data transmission and security in wired, wireless and mobile networksFor example:* data is structured and transmitted through a network, such as broken up into data packets (small pieces) and passed from the source, through multiple devices, in order, to the destination
* strategies are necessary to mitigate common security threats, such as phishing
* common security strategies including VPNs, antivirus software, encryption, multifactor authentication, etc.
 | Role of hardware and software to manage, control and secure the movement of data in a digital systemFor example:* simple network configurations using real or simulated hardware allows for the observation of packets moving around the network, such as monitoring packets on simulated switches and networked devices
* domain names and IP addresses allow data to be transmitted to specific networked devices, such as DNS and routing tables
* the IoT (Internet of Things) is used as part of a networked digital system, such as using sensors and digital systems to collect and share data over the internet with identified security risks
* common network security mitigation strategies include firewalls, intrusion detection software, etc
* ping and/or traceroute commands show network connectivity
 | Hardware and software are used to manage, control and secure access to data in networked digital systems For example:* public key cryptography, such as TLS, and hashing
* secure storage and transmission of data, such as SHA-1
* private information moves through a system and can be identified as the most likely target of a cyber attack. Data packets can be mapped when moving between the user and server in a web application. Sending data in plain text becomes susceptible to a ‘man-in-the-middle’ attack
* networks can be configured by using real or simulated hardware where data packets move around the network, with various levels of network efficiency
* data moves through a network based on layers of the TCP/IP model
* cybersecurity threat models are essential tools to identify and understand potential threats to a system, enabling the design and implementation of appropriate security measures
* a cybersecurity threat model should consider assets, threats, attack vectors, vulnerabilities, risk, security controls and the environment
 |
| Hardware devices of networks and their purposesFor example:* common hardware devices in networks include router (home and corporate), switch and servers
* networks including their devices and transmission media can be illustrated through the use of simple network diagrams
* IoT (Internet of Things) devices include sensors, actuators, etc. to connect and exchange data typically wirelessly with other devices, such as fridges, to increase usability and functionality
 | The effect of hardware specifications on performance and the appropriateness of hardware for particular tasksFor example:* appropriate hardware is selected for particular tasks, such as choosing a powerful graphics card for computer gaming or large external storage for video editing
* network properties, such as the bandwidth, latency and reliability of wired, wireless and mobile networks can be compared
 |

Strand: Data representation

|  |  |  |  |
| --- | --- | --- | --- |
| Year 7 | Year 8 | Year 9 | Year 10 |
| Digital systems use binary to represent data in textFor example:* binary is used to represent electrical signals inside a computer circuit or system
* whole numbers can be represented in binary, recognising one byte = 8 bits, which can represent from 0 to 255
* digital systems represent text as a sequence of individual characters numbered using the Unicode character set, such as upper-case and lower-case letters, punctuation and emojis
* digital systems represent data in binary, such as by converting a character to its Unicode or ASCII value, then converting that value into binary
 | Digital systems represent image and audio data using binaryFor example:* digital systems represent bitmap images, such as PNG and JPEG, as the colour of each pixel in separate red, green and blue (RGB) channels ranging from 0 to 255, and represent vector graphics, such as scalable vector graphics (SVG) using the geometry of lines and shapes
* digital systems represent audio using whole numbers for the amplitude of soundwaves
 | Different methods of manipulation and storage of dataFor example:* video and sound manipulation software can affect file storage
* different image manipulation techniques (compression, cropping, exporting, etc.) have effects on file sizes
* file sizes are larger for augmented reality (AR) and virtual reality (VR) and can affect the amount of storage required
* manipulation of images/videos can occur through the use of artificial intelligence, such as ‘deepfakes’
 | Represent documents online as content (text), structure (mark-up) and presentation (styling) and the purpose of these distinctionsFor example:* documents are represented by separating content (the text in the document), structure (the document structure, such as headings and paragraphs) and presentation (document layout and style) in digital publications
* correct HTML tags to allow for accessibility, such as screen readers
* maintenance and updating of content and/or style is easier with correct document structure
* HTML (content data) and CSS (presentation data) are used in conjunction to create websites
 |
|  |  | Data compression techniques for an intended purposeFor example:* algorithms can be used to identify patterns in data and represent them in a compressed way, such as repeated pixels in an image with run length encoding
* explore the difference between ‘lossy and lossless’ compression and the consequences of each, by exploring audiovisual compression and the impact of different formats, such as MP3, MP4, JPEG, WAV or RAW on file size and quality
* virtual reality (VR) file types include FBX, OBJ, GLTF and VRML/X3D
 |  |

Strand: Acquiring, managing and analysing data

|  |  |  |  |
| --- | --- | --- | --- |
| Year 7 | Year 8 | Year 9 | Year 10 |
| Acquire, store and visualise data from a range of sources using spreadsheetsFor example:* datasets can be visualised by choosing appropriate graphs using spreadsheets, such as a scatter plot of food prices and sales coloured by each food’s sugar content, or diagrams, like a social network diagram, or mapping census data by location
 | Analyse and validate data using spreadsheets to draw conclusions and make predictions by identifying trendsFor example:* data based on its attributes can be used to identify trends and to make predictions, such as the use of a spreadsheet to filter and sort crime data by type of offence, to predict future trends
* spreadsheets can also be used for functions such as MIN, MAX, COUNT, COUNTIF, MEAN, MODE, MEDIAN, etc.
 | Acquire, store and validate data from a range of sources using software, including spreadsheets and/or databasesFor example:* different methods of data collection such as surveys, face-to-face interviews, phone interviews, observation, comments in response to a social media posting, phone logs, browser history and online webcam systems have strengths and weaknesses
* accessing, storing and manipulating data from the Australian Bureau of Statistics in a format that is useful for analysis, such as using a spreadsheet to acquire, filter, group and sort data on population growth across age groups in Australia
* systems can be developed that check data is correct and meaningful using automated techniques and manual analysis, such as validating movie review data using validation rules and input forms, and detecting bias and fake reviews through simple statistical analysis
 | Analyse and visualise data interactively using a range of software, including spreadsheets and/or relational databases, to draw conclusions and make predictions by identifying trends and outliersFor example:* interactive visualisations are used for exploring complex data, such as population, life expectancy and fertility rate in motion charts
* explore machine learning, a form of artificial intelligence (AI), where an algorithm is trained using a dataset, such as to classify images into categories
 |
|  | Evaluate the authenticity, accuracy and timeliness of acquired dataFor example:* critical thinking and scepticism should be employed when encountering data from unfamiliar or dubious sources, such as ‘deepfakes’
 | Single table (flat file) databases are created to store and manage dataFor example:* single table (flat file) databases are used to store data in a structured manner with tables, records, fields and primary keys
 | Model and query entities and their relationships using structured dataFor example:* modelling entities and processes, their attributes, and the relationships between them
* creating database tables for a movie, a user and their movie review, where a movie has a title, genre and release date, and a review has a movie, a user and their rating and comments
* interpreting and querying multi‑table databases using SQL queries with SELECT, WHERE and simple JOIN/GROUP BY clauses and counting, such as checking that each teacher is only allocated to one class at a time
 |

Strand: Privacy and security

|  |  |  |  |
| --- | --- | --- | --- |
| Year 7 | Year 8 | Year 9 | Year 10 |
| Issues relating to a user’s digital footprint and the permanence of dataFor example:* data and images, or both, posted online can lead to information resurfacing at a later date, such as a social media post or a video associating a person with both their comment and the content
* a Google search can reveal what data is stored about oneself through searching by name, specific details, email address or social media profile names
 | Ethical issues relating to the collection and ownership of dataFor example:* the importance of verifying the source and origin of data, in conducting research to assess the credibility and trustworthiness of data providers. Encourage critical thinking and scepticism when encountering data from unfamiliar or dubious sources
* fact-checking methodologies and tools to cross-reference sources and evaluate the authenticity of data collected
 | Australian Privacy Principles (APP) regarding the collection and ownership of dataFor example:* online services allow control access to user data in line with the APPs, such as assessing whether users’ social media accounts allow for them to update their contact information and who can see that information on the platform
* APPs can be used to reference and evaluate the steps users take to protect information, such as how companies store user information so a data breach does not expose users to security vulnerabilities
* websites contain individual privacy policies that differ and can be investigated
 | Australian Privacy Principles (APP) are used to critique systems and manage the digital footprint of individuals For example:* the APPs are a set of 13 guidelines that form the foundation of Australia's privacy law, specifically the *Privacy Act 1988*. These principles govern how organisations handle personal information, ensuring it is collected, used, and managed in a way to protect individuals' privacy
* when using the APPs to critique systems, such as websites, apps, or online services, individuals or regulators assess whether these systems comply with privacy laws. This involves examining how personal data is collected, stored, used, and shared; for example, a system can be critiqued based on transparency, data minimisation and security
 |
| Protecting accounts with multifactor authentication | Cybersecurity threats including phishing | Cybersecurity threat models | User or software supply chain vulnerabilities |

Strand: Digital implementation

|  |  |  |  |
| --- | --- | --- | --- |
| Year 7 | Year 8 | Year 9 | Year 10 |
|  |  | Define and decompose real-world problems by surveying stakeholders to create the requirements of the user | Define and decompose real-world problems by using data gathering techniques to create the client needs |
| Break down the user experience (UX) of a digital system | Design the user experience (UX) of a digital system | Design and prototype the user experience (UX) of a digital system based on user requirements  | Design and prototype the user experience and user interface (UX/UI) of a digital system based on client needs |
| Design algorithms involving control structures (selection, decision and iteration), and represent them using flowcharts and pseudocode | Design algorithms involving nested control structures and represent them using flowcharts and pseudocode | Design algorithms that use functions and represent them as flowcharts and/or pseudocode | Design modular algorithms involving functions and logical operators (AND, OR, NOT) and represent them as flowcharts and/or pseudocode |
|  | Trace algorithms to predict output for a given input and to identify and fix errors | Predict the output of an algorithm using a given range of test cases and compare against actual output | Validate algorithms and programs by comparing output against a range of test cases |
| Implement, modify, and debug programs involving control structures | Implement, modify and debug programs involving control structures in a general-purpose programming language | Implement, modify and debug programs that use functions in a general-purpose programming language | Implement, modify and debug modular programs, applying algorithms and data structures in a general-purpose programming language |

Strand: Design thinking skills

Sub-strand: Project management

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| --- | --- | --- | --- |
| Year 7 | Year 8 | Year 9 | Year 10 |
| Plan, develop and communicate, using project management processes, considering time and available resources to achieve solutions | Plan, develop and communicate, using project management processes, considering time, resources and costs to achieve solutions | Manage projects, using suitable technologies, with an agile and collaborative approach. Use project management processes to consider time, risk, economic and sustainable factors | Manage projects, using suitable technologies, with an agile and collaborative approach. Use project management processes to consider time, production processes, social, ethical, economic and sustainable factors, and legal responsibilities |

Sub-strand: Investigating and defining

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| --- | --- | --- | --- |
| Year 7 | Year 8 | Year 9 | Year 10 |
| Investigate and define the problem and requirements of a given design brief | Investigate a problem for a given need or opportunity | Ideate a problem and define the needs of an end user, through interviews and/or surveys | Ideate a problem and define the needs of the client/stakeholder through anecdotal evidence and/or data gathering techniques |
| Break down a given design brief, identifying and defining the purpose and competing considerations | Develop a design brief for a given need or opportunity | Develop a design brief for a solution based on end user needs | Develop a design brief for a solution or to innovate an existing product, service or environment |
| Consider given technologies, resources and/or components to develop solutions | Consider technologies, resources and/or components to develop solutions, identifying constraints | Investigate a range of technologies, resources and/or components to develop ideas and solutions, with consideration of social, ethical and other constraints | Investigate a range of technologies, resources and/or components to develop ideas and solutions, with consideration of social and ethical factors, legal responsibilities and competing constraints |

Sub-strand: Designing

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| --- | --- | --- | --- |
| Year 7 | Year 8 | Year 9 | Year 10 |
| Design processes and solutions with given technologies and techniques, using appropriate technical terms | Design processes and solutions considering a range of technologies and techniques, using appropriate technical terms | Design alternative solutions considering available technologies, usability and aesthetics, using appropriate technical terms | Design alternative solutions considering available technologies, functionality, accessibility, usability and aesthetics, using appropriate technical terms |

Sub-strand: Producing and implementing

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| --- | --- | --- | --- |
| Year 7 | Year 8 | Year 9 | Year 10 |
| Implement agreed protocols and use a range of technologies, components and/or equipment to produce designed solutions | Implement agreed protocols, a range of technologies, techniques, components and processes to produce designed solutions | Select, implement and test a range of technologies, techniques and processes to produce designed solutions and/or prototypes | Select, justify, implement and test a range of technologies, techniques and processes to produce solutions and/or prototypes |

Sub-strand: Evaluating

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| --- | --- | --- | --- |
| Year 7 | Year 8 | Year 9 | Year 10 |
| Use given contextual criteria to evaluate design processes and solutions | Use student-developed contextual criteria to evaluate design processes and solutions | Evaluate design processes and solutions against student‑developed criteria | Evaluate design processes and solutions against student‑developed criteria  |