Technologies – Digital Technologies scope and sequence: Foundation to Level 10

| **Foundation to Level 2** | **Levels 3 and 4** | **Levels 5 and 6** | **Levels 7 and 8** | **Levels 9 and 10** |
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| **Achievement standard** |  |  |  |  |
| By the end of Level 2, students access and show familiarity with digital systems and use them for a purpose.  Students identify patterns and represent data in different ways. They use the basic features of common digital tools to create, locate and share content for an audience. Students share content and collaborate following agreed behaviours. They recognise and explain how digital tools may store their personal data online.  Students explain and solve simple problems. They follow and represent basic algorithms involving a sequence of steps, branching and iteration. Students explain how digital systems meet the needs of known users. | By the end of Level 4, students securely access and use digital systems and their peripherals for a range of purposes. They explain how data is transmitted between digital systems.  Students represent different types of data for different purposes. They organise and present different types of data using software tools. Students use the core features of common digital tools to create, locate and communicate content for an audience. They use digital tools to plan tasks, share content and collaborate following agreed behaviours. Students identify and recognise the risks to their personal data in online accounts.  Students describe simple problems and list requirements. They describe and represent simple algorithms involving branching and iteration. Students design simple user interfaces and compare their designs. They implement simple algorithms as visual programs. Students describe how student-created solutions meet the provided requirements. | By the end of Level 6, students securely access and use multiple digital systems and accounts, and describe their components. They describe how data is transmitted within networks.  Students describe how digital systems represent data. They acquire and manipulate data using spreadsheets. Students interpret and visualise data using spreadsheets. They select and use appropriate digital tools to create, locate and communicate content, applying common conventions. Students use digital tools to plan tasks, share content online and collaborate on projects, following agreed behaviours. They identify their digital footprint, recognise its permanence and consider privacy when collecting data.  Students define problems with functional requirements. They design algorithms involving complex branching and iteration. Students design and modify user interfaces and evaluate the designs. They implement algorithms as visual programs including variables and input. Students explain how student-created digital solutions meet the functional requirements of users. | By the end of Level 8, students select appropriate hardware for particular tasks. They explain how data is transmitted and secured in networks. Students identify and describe cyber security threats.  Students represent data using integers and binary. They acquire, manipulate and validate data using spreadsheets and single-table databases. Students interpret, model and visualise data using spreadsheets and database queries to draw conclusions. They select and use a range of digital tools to create, locate and communicate content, applying common conventions. Students use a range of digital tools to plan tasks, share content online, and manage individual and collaborative iterative projects. They manage their digital footprint and privacy when collecting data.  Students define and decompose real-world problems, and determine functional requirements and constraints. They design and trace algorithms using flowcharts and pseudocode. Students design and modify user interfaces and user experiences, and evaluate alternative designs. They implement algorithms and debug programs using a general-purpose programming language. Students evaluate digital solutions against the functional requirements. | By the end of Level 10, students explain how digital systems manage, control and secure access to data in networks. They model and evaluate cyber security threats and vulnerabilities.  Students describe a range of data compression techniques. They represent documents as content, structure and markup. Students acquire, manipulate and validate data using spreadsheets and relational databases. They interpret, model and visualise data using spreadsheets, and relational databases using queries, to draw conclusions and identify trends. Students use advanced features of digital tools to create and communicate interactive content for an audience. They use project management tools to plan and manage individual and collaborative iterative projects. Students identify and apply privacy principles to manage digital footprints.  Students decompose real-world problems, identify needs, and determine functional and non-functional requirements. They design, validate and test algorithms using flowcharts and pseudocode. Students design and prototype user interfaces and user experiences, and evaluate alternative designs against design criteria. They implement algorithms and debug programs using an object-oriented programming language. Students critically evaluate digital solutions against user needs and the functional and non-functional requirements. |
| Content descriptions | | | | |
| Strand: Digital Systems and Security | | | | |
| *Students learn to:* | | | | |
| identify and explore digital systems including hardware and software components for a purpose  VC2TDI2S01 | explore and describe a range of digital systems and their peripherals for a variety of purposes  VC2TDI4S01 | investigate the main internal components of common digital systems and their function  VC2TDI6S01 | explain how hardware specifications affect performance and select appropriate hardware for particular tasks and workloads  VC2TDI8S01 | investigate how hardware and software manage, control and secure access to data in networked digital systems  VC2TDI10S01 |
|  | explore transmitting different types of data between digital systems  VC2TDI4S02 | examine how digital systems form networks to transmit data  VC2TDI6S02 | investigate how data is transmitted and secured in wired and wireless networks including the internet  VC2TDI8S02 |  |
| identify some data that is personal and access their school account with a recorded username and password  VC2TDI2S02 | access their school account using a memorised password and explain why it should be easy to remember, but hard for others to guess  VC2TDI4S03 | access multiple personal accounts using unique passphrases and explain the risks of password re-use  VC2TDI6S03 | explain how multi-factor authentication protects an account when the password is compromised and identify phishing and other cyber security threats  VC2TDI8S03 | develop cyber security threat models, and explore a software, user or software supply chain vulnerability  VC2TDI10S02 |
| Strand: Data, Information and Privacy | | | | |
| *Students learn to:* | | | | |
| explore patterns in data and represent data as objects, pictures, symbols, numbers and words  VC2TDI2D01 | recognise different types of data and explore how the same data can be represented differently depending on the purpose  VC2TDI4D01 | explain how digital systems represent all data using numbers and explore how data can be represented using binary  VC2TDI6D01 | investigate how digital systems represent text, image and audio data using integers and binary  VC2TDI8D01 | investigate simple data compression techniques  VC2TDI10D01 |
|  |  |  |  | represent documents online as content (text), structure (markup) and presentation (styling) and explain why such representations are important  VC2TDI10D02 |
|  | collect, organise and present different types of data using software tools to create information and solve problems  VC2TDI4D02 | acquire and manipulate different types of data from a range of sources using software tools, including spreadsheets  VC2TDI6D02 | acquire, store, manipulate and validate data from a range of sources using software tools, including spreadsheets and single-table databases  VC2TDI8D02 | develop techniques to acquire, store, manipulate and validate data from a range of sources using software tools, including spreadsheets and relational databases  VC2TDI10D03 |
|  |  | analyse and visualise data using a range of software, including spreadsheets to create information and solve problems  VC2TDI6D03 | analyse and visualise data using a range of software, including spreadsheets and simple database queries, draw conclusions and make predictions by identifying trends  VC2TDI8D03 | analyse and visualise data interactively using a range of software, including spreadsheets and relational databases and queries, to draw conclusions and make predictions by identifying trends and outliers  VC2TDI10D04 |
| explore and use the basic features of common digital tools to create, locate and communicate content for a diverse audience  VC2TDI2D02 | use the core features of common digital tools to create, locate and communicate content, following agreed conventions for a diverse audience  VC2TDI4D03 | select and use appropriate digital tools effectively to create, locate and communicate content, applying common conventions for a diverse audience  VC2TDI6D04 | select and use a range of digital tools effectively, including unfamiliar features, to create, locate and communicate content, consistently applying common conventions for a diverse audience  VC2TDI8D04 | select and use emerging digital tools and advanced features to create and communicate interactive content for a diverse audience  VC2TDI10D05 |
| explore and use the basic features of common digital tools to share content and collaborate, demonstrating agreed behaviours and supported by trusted adults  VC2TDI2D03 | use the core features of common digital tools to share content, plan tasks and collaborate, demonstrating agreed behaviours, supported by trusted adults  VC2TDI4D04 | select and use appropriate digital tools effectively to share content online, plan tasks and collaborate on projects, demonstrating agreed behaviours, supported by trusted adults  VC2TDI6D05 | select and use a range of digital tools effectively and responsibly to share content online, and plan and manage individual and collaborative iterative projects  VC2TDI8D05 | use simple project management tools to plan and manage individual and collaborative iterative projects, accounting for risks and responsibilities  VC2TDI10D06 |
| recognise and discuss that some websites and apps store their personal data online  VC2TDI2D04 | identify what personal data is stored and shared in their online accounts and discuss any associated risks  VC2TDI4D05 | explain the creation and permanence of their personal digital footprint and consider privacy when collecting personal data  VC2TDI6D06 | investigate and manage the digital footprint that existing systems and student solutions collect, and assess if the data is essential to their purpose  VC2TDI8D06 | apply the Australian Privacy Principles to critique and manage the digital footprint that existing systems and student solutions collect  VC2TDI10D07 |
| Strand: Creating Digital Solutions | | | | |
| *Students learn to:* | | | | |
| investigate simple problems for known users that can be solved with digital systems  VC2TDI2C01 | define simple problems with teacher-provided requirements  VC2TDI4C01 | define problems with teacher-provided or co-developed functional requirements  VC2TDI6C01 | define and decompose real-world problems by taking into account functional requirements and constraints  VC2TDI8C01 | define and decompose real-world problems, taking into account functional and non-functional requirements and by interviewing and surveying stakeholders to identify needs  VC2TDI10C01 |
| follow, describe and represent algorithms involving a sequence of steps, branching (decisions) and iteration (repetition) needed to solve simple problems  VC2TDI2C02 | follow, describe and represent algorithms involving sequencing, comparison operators (branching) and iteration  VC2TDI4C02 | design and represent algorithms involving multiple alternatives (branching) and iteration  VC2TDI6C02 | design algorithms involving nested control structures and represent them using flowcharts and pseudocode, and use tracing techniques to test and identify errors  VC2TDI8C02 | design algorithms involving logical operators and represent them as flowcharts and pseudocode, and validate algorithms and programs by comparing their output against a range of test cases  VC2TDI10C02 |
|  | design a simple user interface, generate, communicate and compare the designs  VC2TDI4C03 | design and modify a user interface for a digital system, and generate, communicate and evaluate the designs  VC2TDI6C03 | design and modify the user interface and user experience of a digital system; generate, communicate and evaluate the alternative designs  VC2TDI8C03 | design, modify and prototype the user interface and user experience of a digital system; generate, communicate and critically evaluate alternative designs against design criteria  VC2TDI10C03 |
|  | implement simple algorithms as visual programs involving control structures and input  VC2TDI4C04 | implement algorithms as visual programs involving control structures, variables and input  VC2TDI6C04 | implement, modify and debug programs involving control structures and functions in a general-purpose programming language  VC2TDI8C04 | implement, modify and debug modular programs, applying selected algorithms and data structures, including in an object-oriented programming language  VC2TDI10C04 |
| discuss how existing digital systems satisfy identified needs for known users  VC2TDI2C03 | discuss how existing and student-created solutions satisfy the given requirements  VC2TDI4C05 | evaluate existing and student-created solutions against the requirements and their broader community impact  VC2TDI6C05 | evaluate existing and student-created solutions against the requirements, constraints and possible future impacts  VC2TDI8C05 | evaluate existing and student-created solutions against the requirements and design criteria, user needs, possible future impact and opportunities for enterprise and innovation  VC2TDI10C05 |

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