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| **CURRICULUM AREA: Digital Technologies *toward* Level 8 Achievement Standard** |
| **Context: Big Data**Students explore large data sets and develop an understanding of their structure. They will also explore how data can be sorted. Students use this understanding to develop their own datasets based on a personal interest. The teaching and learning plan focuses on the strand of Data and Information.**Context Description:*** Acquire data from a range of sources and evaluate their authenticity, accuracy and timeliness [(VCDTDI037)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCDTDI037)
* Analyse and visualise data using a range of software to create information, and use structured data to model objects or events [(VCDTDI038)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCDTDI038)
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| **Digital Technologies Level 6 Achievement Standard** | **Example of Indicative Progress towards Level 8 Achievement Standard** | **Digital Technologies Level 8 Achievement Standard** |
| By the end of Level 6:* Students explain the functions of digital system components and how digital systems are connected to form networks that transmit data.
* Students explain how digital systems use whole numbers as a basis for representing a variety of data types.
* They manage the creation and communication of ideas, information and digital projects collaboratively using validated data and agreed protocols.
* 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 develop their digital solutions, including a visual program.
* Students explain how information systems and their developed solutions meet current and future needs taking sustainability into account.
 | **In Digital Technologies, indicative progression towards the Level 8 achievement standard may be when students:*** identify different types of data found in a variety of data sets and categorise them as strings, dates, numbers, etc.
* discover that different types of data sort in different ways.
 | By the end of Level 8:* Students distinguish between different types of networks and their suitability in meeting defined purposes.
* Students explain how text, image and sound data can be represented and secured in digital systems and presented using digital systems.
* They analyse and evaluate data from a range of sources to model solutions and create information.
* They manage the collaborative creation of interactive ideas, information and projects and use appropriate codes of conduct when communicating online.
* Students define and decompose problems in terms of functional requirements and constraints.
* They design user experiences and algorithms incorporating branching and iterations, and develop, test, and modify digital solutions.
* Students evaluate information systems and their solutions in terms of meeting needs, innovation and sustainability.
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| **CURRICULUM AREA: Digital Technologies *toward* Level 8 Achievement Standard** |
| **Context: Binary**Studentsexplore the links between binary and text, image and sounds. They develop an understanding of how file size and file type can impact the time it takes websites to load. The teaching and learning plan focuses on the strand of Data and Information.**Content Description:*** Investigate how digital systems represent text, image and sound data in binary [(VCDTDI036)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCDTDI036)
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| **Digital Technologies Level 6 Achievement Standard** | **Example of Indicative Progress towards Level 8 Achievement Standard** | **Digital Technologies Level 8 Achievement Standard** |
| By the end of Level 6: * Students explain the functions of digital system components and how digital systems are connected to form networks that transmit data.
* Students explain how digital systems use whole numbers as a basis for representing a variety of data types.
* They manage the creation and communication of ideas, information and digital projects collaboratively using validated data and agreed protocols.
* 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 develop their digital solutions, including a visual program.
* Students explain how information systems and their developed solutions meet current and future needs taking sustainability into account.
 | **In Digital Technologies, indicative progression towards the Level 8 achievement standard may be when students:*** recognise the different types of data used by digital systems. They make connections between the size, quality and type of the file and discuss how these influence the selection of a particular file (size, type) when creating websites.
 | By the end of Level 8:* Students distinguish between different types of networks and their suitability in meeting defined purposes.
* Students explain how text, image and sound data can be represented and secured in digital systems and presented using digital systems.
* They analyse and evaluate data from a range of sources to model solutions and create information.
* They manage the collaborative creation of interactive ideas, information and projects and use appropriate codes of conduct when communicating online.
* Students define and decompose problems in terms of functional requirements and constraints.
* They design user experiences and algorithms incorporating branching and iterations, and develop, test, and modify digital solutions.
* Students evaluate information systems and their solutions in terms of meeting needs, innovation and sustainability.
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| **CURRICULUM AREA: Digital Technologies *toward* Level 8 Achievement Standard** |
| **Context: Cloud Computing**Students develop an understanding of how the internet uses various protocols to enable data such as images on a website to be shared and transmitted around the world. The teaching and learning plan focuses on the strands of Digital Systems and Data and Information.**Content Descriptions:** * Investigate how data are transmitted and secured in wired, wireless and mobile networks [(VCDTDS035)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCDTDS035)
* Investigate how digital systems represent text, image and sound data in binary [(VCDTDI036)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCDTDI036)
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| **Digital Technologies Level 6 Achievement Standard** | **Example of Indicative Progress towards Level 8 Achievement Standard** | **Digital Technologies Level 8 Achievement Standard** |
| By the end of Level 6:* Students explain the functions of digital system components and how digital systems are connected to form networks that transmit data.
* Students explain how digital systems use whole numbers as a basis for representing a variety of data types.
* They manage the creation and communication of ideas, information and digital projects collaboratively using validated data and agreed protocols.
* 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 develop their digital solutions, including a visual program.
* Students explain how information systems and their developed solutions meet current and future needs taking sustainability into account.
 | **In Digital Technologies, indicative progression towards the Level 8 achievement standard may be when students:*** can name three common types of networks and describe a situation where the different aspects of these networks would be beneficial.
* can explain that encryption keeps data safe by only allowing ‘trusted’ systems to read it.
 | By the end of Level 8:* Students distinguish between different types of networks and their suitability in meeting defined purposes.
* Students explain how text, image and sound data can be represented and secured in digital systems and presented using digital systems.
* They analyse and evaluate data from a range of sources to model solutions and create information.
* They manage the collaborative creation of interactive ideas, information and projects and use appropriate codes of conduct when communicating online.
* Students define and decompose problems in terms of functional requirements and constraints.
* They design user experiences and algorithms incorporating branching and iterations, and develop, test, and modify digital solutions.
* Students evaluate information systems and their solutions in terms of meeting needs, innovation and sustainability.
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| **CURRICULUM AREA: Digital Technologies *toward* Level 8 Achievement Standard** |
| **Context: Game Development**Students will be introduced to the fundamentals of game making and software development through designing algorithms and user interfaces. They will transition from being content consumers to content creators. Students will develop higher order thinking skills including computational, design and systems thinking skills. The teaching and learning plan focuses on the strand of Creating Digital Solutions.**Content Descriptions:*** Design algorithms represented diagrammatically and in English, and trace algorithms to predict output for a given input and to identify errors [(VCDTCD042)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCDTCD042)
* Develop and modify programs with user interfaces involving branching, iteration and functions using a general-purpose programming language [(VCDTCD043)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCDTCD043)
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| **Digital Technologies Level 6 Achievement Standard** | **Example of Indicative Progress towards Level 8 Achievement Standard** | **Digital Technologies Level 8 Achievement Standard** |
| By the end of Level 6:* Students explain the functions of digital system components and how digital systems are connected to form networks that transmit data.
* Students explain how digital systems use whole numbers as a basis for representing a variety of data types.
* They manage the creation and communication of ideas, information and digital projects collaboratively using validated data and agreed protocols.
* 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 develop their digital solutions, including a visual program.
* Students explain how information systems and their developed solutions meet current and future needs taking sustainability into account.
 | **In Digital Technologies, indicative progression towards the Level 8 achievement standard may be when students:*** design games by designing algorithms and taking into account the user experiences.
* test existing or peer developed games and modify elements from these into their own digital solutions.
 | By the end of Level 8:* Students distinguish between different types of networks and their suitability in meeting defined purposes.
* Students explain how text, image and sound data can be represented and secured in digital systems and presented using digital systems.
* They analyse and evaluate data from a range of sources to model solutions and create information.
* They manage the collaborative creation of interactive ideas, information and projects and use appropriate codes of conduct when communicating online.
* Students define and decompose problems in terms of functional requirements and constraints.
* They design user experiences and algorithms incorporating branching and iterations, and develop, test, and modify digital solutions.
* Students evaluate information systems and their solutions in terms of meeting needs, innovation and sustainability.
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| **CURRICULUM AREA: Digital Technologies *toward* Level 10 Achievement Standard** |
| **Context: Algorithms**Students learn to write algorithms, using both flowcharts and structured English. They will design and create an algorithm for a café/restaurant ordering app for a mobile device. The teaching and learning plan focuses on the strand of Creating Digital Solutions.**Content Description:*** Design algorithms represented diagrammatically and in structured English and validate algorithms and programs through tracing and test cases [(VCDTCD052)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCDTCD052)
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| **Digital Technologies Level 8 Achievement Standard** | **Example of Indicative Progress towards Level 10 Achievement Standard** | **Digital Technologies Level 10 Achievement Standard** |
| By the end of Level 8:* Students distinguish between different types of networks and their suitability in meeting defined purposes.
* Students explain how text, image and sound data can be represented and secured in digital systems and presented using digital systems.
* They analyse and evaluate data from a range of sources to model solutions and create information.
* They manage the collaborative creation of interactive ideas, information and projects and use appropriate codes of conduct when communicating online.
* Students define and decompose problems in terms of functional requirements and constraints.
* They design user experiences and algorithms incorporating branching and iterations, and develop, test, and modify digital solutions.
* Students evaluate information systems and their solutions in terms of meeting needs, innovation and sustainability.
 | **In Digital Technologies, indicative progression towards the Level 10 achievement standard may be when students:*** design an algorithm (as a flowchart) and in structured English (pseudocode) for an ordering process in café/restaurant.
* test their algorithm to demonstrate a successful outcome.
 | By the end of Level 10:* Students explain the control and management of networked digital systems and the data security implications of the interaction between hardware, software and users.
* Students explain simple data compression, and why content data are separated from presentation.
* They take account of privacy and security requirements when selecting and validating data and use digital systems to analyse, visualise and model salient aspects of data.
* Students share and collaborate online, establishing protocols for the legal and safe use, transmission and maintenance of data and projects.
* Students define and decompose complex problems in terms of functional and non-functional requirements.
* They design and evaluate user experiences and algorithms, and develop and test modular programs, including an object-oriented program.
* Students evaluate their solutions and information systems in terms of risk, sustainability and potential for innovation.
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| **CURRICULUM AREA: Digital Technologies *toward* Level 10 Achievement Standard** |
| **Context:** **Decomposing App Requirements**Students read correspondence from a client to determine their needs in relation to creating an ordering app for a restaurant or cafe. They compile questions to ask the client to gain further information and identify potential stakeholders. Students then decompose the app requirements into functional and non-functional requirements. The teaching and learning plan focuses on the strand of Creating Digital Solutions.**Content Description:*** Define and decompose real-world problems precisely, taking into account functional and non-functional requirements and including interviewing stakeholders to identify needs [(VCDTCD050)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCDTCD050)
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| **Digital Technologies Level 8 Achievement Standard** | **Example of Indicative Progress towards Level 10 Achievement Standard** | **Digital Technologies Level 10 Achievement Standard** |
| By the end of Level 8:* Students distinguish between different types of networks and their suitability in meeting defined purposes.
* Students explain how text, image and sound data can be represented and secured in digital systems and presented using digital systems.
* They analyse and evaluate data from a range of sources to model solutions and create information.
* They manage the collaborative creation of interactive ideas, information and projects and use appropriate codes of conduct when communicating online.
* Students define and decompose problems in terms of functional requirements and constraints.
* They design user experiences and algorithms incorporating branching and iterations, and develop, test, and modify digital solutions.
* Students evaluate information systems and their solutions in terms of meeting needs, innovation and sustainability.
 | **In Digital Technologies, indicative progression towards the Level 10 achievement standard may be when students:*** Explain the difference between functional and non-functional requirements of an app solution and break down the solution needs into its two broad elements. Students identify obvious stakeholders.
 | By the end of Level 10:* Students explain the control and management of networked digital systems and the data security implications of the interaction between hardware, software and users.
* Students explain simple data compression, and why content data are separated from presentation.
* They take account of privacy and security requirements when selecting and validating data and use digital systems to analyse, visualise and model salient aspects of data.
* Students share and collaborate online, establishing protocols for the legal and safe use, transmission and maintenance of data and projects.
* Students define and decompose complex problems in terms of functional and non-functional requirements.
* They design and evaluate user experiences and algorithms, and develop and test modular programs, including an object-oriented program.
* Students evaluate their solutions and information systems in terms of risk, sustainability and potential for innovation.
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| **CURRICULUM AREA: Digital Technologies *toward* Level 10 Achievement Standard** |
| **Context: Legal Responsibilities**Students, who as part of a larger project are planning and developing a mobile application for a cafe or restaurant, will explore the legal responsibilities involved when collecting and storing data for use in a mobile application. The teaching and learning plan focuses on the strands of Data and Information and Creating Digital Solutions.**Content Description:*** Develop techniques for acquiring, storing and validating quantitative and qualitative data from a range of sources, considering privacy and security requirements [(VCDTDI047)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCDTDI047)
* Evaluate critically how well student-developed solutions and existing information systems and policies take account of future risks and sustainability and provide opportunities for innovation [(VCDTCD054)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCDTCD054)
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| **Digital Technologies Level 8 Achievement Standard** | **Example of Indicative Progress towards Level 10 Achievement Standard** | **Digital Technologies Level 10 Achievement Standard** |
| By the end of Level 8:* Students distinguish between different types of networks and their suitability in meeting defined purposes.
* Students explain how text, image and sound data can be represented and secured in digital systems and presented using digital systems.
* They analyse and evaluate data from a range of sources to model solutions and create information.
* They manage the collaborative creation of interactive ideas, information and projects and use appropriate codes of conduct when communicating online.
* Students define and decompose problems in terms of functional requirements and constraints.
* They design user experiences and algorithms incorporating branching and iterations, and develop, test, and modify digital solutions.
* Students evaluate information systems and their solutions in terms of meeting needs, innovation and sustainability.
 | **In Digital Technologies, indicative progression towards the Level 10 achievement standard may be when students:*** identify privacy and security requirements that existing social media platforms and mobile applications use when collecting personal data.
* describe potential risks in the storage and access to customer personal data when the student developed mobile application is used to place an order.
 | By the end of Level 10:* Students explain the control and management of networked digital systems and the data security implications of the interaction between hardware, software and users.
* Students explain simple data compression, and why content data are separated from presentation.
* They take account of privacy and security requirements when selecting and validating data and use digital systems to analyse, visualise and model salient aspects of data.
* Students share and collaborate online, establishing protocols for the legal and safe use, transmission and maintenance of data and projects.
* Students define and decompose complex problems in terms of functional and non-functional requirements.
* They design and evaluate user experiences and algorithms, and develop and test modular programs, including an object-oriented program.
* Students evaluate their solutions and information systems in terms of risk, sustainability and potential for innovation.
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