Years 5–6 band Digital Technologies Curriculum and assessment plan

Example

ACiQ v9.0

Level description	Context and cohort considerations
By the end of Year 6 students should have had the opportunity to apply computational thinking by creating digital solutions that involve defining problems, designing and modifying algorithms, and implementing them as visual programs. Students practise different strategies to develop their abstract thinking, such as thinking out aloud to simplify problems, which is needed when defining them. They represent algorithms involving branching and iteration and implement them as visual programs that include variables and respond to input. Students think in a more abstract way, exploring how on and off states and whole numbers can be used to represent data. They use design thinking techniques to generate multiple ideas about the design of solutions and how people interact with them. Based on given or co-developed design criteria and student-generated user stories, they select, and where appropriate modify, their preferred design ideas for further development. They extend the use of design criteria by evaluating their own and existing solutions, considering the impact of these solutions on their community. Through Digital Technologies and Mathematics (Statistics), students develop confidence and competencies in using digital systems to create displays of data, such as visualisations, which assist in interpreting data sets. Students apply systems thinking when investigating the functions and purpose of each component in a digital system and their interactions with others. They examine how data is broken up and sent through networks. Through frequent practice when completing tasks and projects, students develop competence and confidence in creating content that applies agreed conventions, such as heading hierarchies and labelling of charts, and they use a consistent file-naming system. When working in groups, students explore different ways of working collaboratively, such as agreeing on how tasks should be allocated and content shared. Students protect data stored in their personal accounts by creating separate passphrases for each account and explain how their personal data forms their permanent digital footprint. In Digital Technologies, students should have frequent opportunities for authentic learning by making key connections with other learning areas.	Digital Technologies is timetabled for a one-hour lesson per week with a specialist teacher for two terms in Year 5 and two terms in Year 6. Students also study Design and Technologies for two terms each year. Students access online platforms and software using available laptops and digital devices. They experience a range of apps and software platforms that engage with current technologies, such as augmented and mixed reality experiences. Learning is sequenced with consideration given to the knowledge and skills developed across the whole school program.

Unit 1 — Introduction to user interface/user experience design	Unit 2 — Story to solution with microcontrollers	Unit 3 — Is the system secure?	Unit 4 — Adventures in mixed reality
Duration: 10 weeks	Duration: 10 weeks	Duration: 10 weeks	Duration: 10 weeks
As students increasingly engage with online content, they need to understand and practise privacy and security skills to manage their digital footprint. In this unit, students investigate a range of familiar webpages on school devices, identifying their purpose and target users. They examine the user interface of the webpage including structure, navigation tools, user interaction and aesthetics. Students evaluate the webpage against co-developed design criteria, e.g. included a title and subheadings; included copyright-free images. Students explore eSafety resources and consider how the use of school and home webpages contribute to their digital footprint. They learn how the storage of their data may impact the permanency of their digital footprint. Students consider what content is appropriate to share online as well as what data is appropriate for a webpage to collect in order to protect the privacy of users. Students view a sample digital form and identify the impact on their digital footprint that completing this form may have. Students design, develop and modify a webpage prototype/wireframe to model the appropriate collection of content. Students present their webpage design plan and prototype to their peers.	The design of digital solutions involves developing empathy for, and consideration of the end user and the features they want from the digital solution. In this unit, students use stimuli (e.g. news articles) to identify opportunities to meet the needs of end users. They learn how to create user stories, co-develop design criteria for specific scenarios and evaluate existing digital solutions against the user stories and design criteria. Students learn how to design and implement algorithms with user input, and control structures and variables, using a microcontroller. They explore how the microcontroller displays data through off and on states (flashing lights) and using numbers. Students design and implement a prototype digital solution to meet the needs of primary-aged students, e.g. a clap-controlled night light, a digital pet for company, a timed alert as a reminder to drink water. They step through, modify and design algorithms involving branching and repetition (iteration). Students implement algorithms using a visual programming platform and test their prototype solution with their peers. They record their design ideas and evidence of the digital solution in a digital folio.	Students often use digital devices and access networks without being aware of how digital systems transfer data and the need for personal data protection. In this unit, students examine the network components of wired and wireless digital systems and identify security processes and types of data transmitted and stored between digital systems. They practise creating labelled visualisations (infographics) of digital systems in simple networks, using a digital tool. Through the exploration of real–world system examples (e.g. school library borrowing or tuckshop ordering systems) students learn about the importance of protecting data and securely accessing digital systems through unique passphrases, and the risks involved with password reuse. Students tour the school, mapping infrastructure and recording data about system components. Through interviewing information technology staff about network structure and security measures and additional small group investigations, students work collaboratively to develop a digital asset (infographic) to illustrate findings about the school network system.	A range of obstacles (e.g. isolation, location, cost, availability of resources) may limit students' opportunities to engage in varied learning experiences and build relationships. In this unit, students use contemporary and immersive technologies to connect with peers and consider ways to provide educational opportunities for others. Students access the capabilities of technologies, such as augmented reality and virtual reality platforms, to provide experiences that otherwise may be unavailable. Students explore and consider how learning opportunities can be experienced through mixed reality platforms. They engage in and reflect on a range of virtual learning experiences (e.g. frog dissection in Science) before developing an idea to provide a learning experience for peers in another location. Through a whole class video discussion with students at the different location, students share their initial ideas and seek feedback. These ideas are then developed to understand the learning needs of the audience and co-develop design criteria.

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	Unit 1		Unit 2		Unit 3		Unit 4	
	Assessment 1 — User interface design project	**Term/ week**	**Assessment 2 — Solution to meet needs project**	**Term/ week**	**Assessment 3 — Network infographic investigation**	**Term/ week**	**Assessment 4 — Show me your place project**	**Term/ week**
Assessment	**Description**: Students design the user interface of a school blog webpage with the purpose of teaching younger students protective behaviours and help-seeking strategies to encourage safe online behaviour. This includes students planning the structure of the webpage using design/wireframe illustrations. They create user stories to identify online safety risks to their users and suggest strategies to mitigate risks, including the use of unique passphrases. Students develop a prototype of the blog webpage using presentation software and a digital tool. They design an online form to gather feedback of their webpage prototype from their peers. Students gather feedback via the online form and then modify their solution after feedback. **Technique:** Project **Mode:** Multimodal **Conditions:** • 1–2 A3 pages or equivalent digital media design plan including graphical representations with annotations • designed solution	Term 1 Week 10	**Description**: Students design a prototype digital solution, responding to a selected user story, to meet a specific need of a primary-aged student. They define the problem in terms of the needs and characteristics of the user and context of the problem. Students generate possible digital solution design ideas and evaluate these against developed design criteria. They implement the algorithm (digital solution), including user input, control structures, iteration, and variables, using a visual programming platform, e.g. Scratch or Microsoft MakeCode. Where appropriate, students respond to peer review and feedback they have received to modify their solution. Each student produces a digital folio detailing their design process including design ideas and screenshots of the digital solution programming. **Technique:** Project **Mode:** Multimodal **Conditions:** • 200–400 words including graphical representations • designed solution	Term 2 Week 9	**Description**: Students select and use digital tools to develop an annotated infographic. Through the infographic, they represent the school network structure and describe the annotated components of a digital system and how a range of data types are processed and transmitted. Students will include an explanation of how data is transmitted, with a focus on understanding that data is transmitted via binary as part of the infographic. Finally, each student will communicate how to securely access this network by designing a poster for the audience of a younger student (Year 3 or 4). The poster will explain the permanence of a digital footprint and the importance of cyber security to protect personal data. **Technique:** Investigation **Mode:** Multimodal **Conditions:** • 1 A3 page or equivalent digital media including graphical representations with annotations • 1 A3 page poster	Term 1 Week 10	**Description**: Students collaboratively design and develop a prototype of a virtual tour of an area of the school for an end user in a remote location using an existing familiar digital tool (e.g. Microsoft PowerPoint). They individually use digital tools to document their planning through a shared online environment. Students evaluate the solutions of their peers against developed criteria and provide feedback. In response to feedback received, they modify their mixed reality experience prior to presenting it to an end user. **Technique:** Project **Mode:** Practical **Conditions:** • 1–2 minutes spoken/signed response • designed solution	Term 2 Week 9

	Unit 1	Unit 2	Unit 3	Unit 4
Achievement standard	By the end of Year 6 students develop and modify digital solutions, and define problems and evaluate solutions using user stories and design criteria. They process data and show how digital systems represent data. Students design algorithms involving complex branching and iteration and implement them as visual programs including variables. They securely access and use multiple digital systems and describe their components and how they interact to process and transmit data. Students select and use appropriate digital tools effectively to plan, create, locate and share content, and to collaborate, applying agreed conventions and behaviours. They identify their digital footprint and recognise its permanence.	By the end of Year 6 students develop and modify digital solutions, and define problems and evaluate solutions using user stories and design criteria. They process data and show how digital systems represent data. Students design algorithms involving complex branching and iteration and implement them as visual programs including variables. They securely access and use multiple digital systems and describe their components and how they interact to process and transmit data. Students select and use appropriate digital tools effectively to plan, create, locate and share content, and to collaborate, applying agreed conventions and behaviours. They identify their digital footprint and recognise its permanence.	By the end of Year 6 students develop and modify digital solutions, and define problems and evaluate solutions using user stories and design criteria. They process data and show how digital systems represent data. Students design algorithms involving complex branching and iteration and implement them as visual programs including variables. They securely access and use multiple digital systems and describe their components and how they interact to process and transmit data. Students select and use appropriate digital tools effectively to plan, create, locate and share content, and to collaborate, applying agreed conventions and behaviours. They identify their digital footprint and recognise its permanence.	By the end of Year 6 students develop and modify digital solutions, and define problems and evaluate solutions using user stories and design criteria. They process data and show how digital systems represent data. Students design algorithms involving complex branching and iteration and implement them as visual programs including variables. They securely access and use multiple digital systems and describe their components and how they interact to process and transmit data. Students select and use appropriate digital tools effectively to plan, create, locate and share content, and to collaborate, applying agreed conventions and behaviours. They identify their digital footprint and recognise its permanence.
Moderation	**Consensus:** Refer to QCAA moderation advice on the QCAA website under the Assessment tab in the learning area.	**Calibration:** Refer to QCAA moderation advice on the QCAA website under the Assessment tab in the learning area.	**Calibration:** Refer to QCAA moderation advice on the QCAA website under the Assessment tab in the learning area.	**Consensus:** Refer to QCAA moderation advice on the QCAA website under the Assessment tab in the learning area.

Content descriptions	Units				Content descriptions	Units			
Knowledge and understanding	**1**	**2**	**3**	**4**	**Processes and production skills**	**1**	**2**	**3**	**4**
Digital systems investigate the main internal components of common digital systems and their function AC9TDI6K01	☐	☐	☑	☐	**Investigating and defining** define problems with given or co-developed design criteria and by creating user stories AC9TDI6P01	☑	☑	☐	☑
examine how digital systems form networks to transmit data AC9TDI6K02	☐	☐	☑	☐	**Generating and designing** design algorithms involving multiple alternatives (branching) and iteration AC9TDI6P02	☑	☑	☐	☐
Data representation explain how digital systems represent all data using numbers AC9TDI6K03	☐	☐	☑	☐	design a user interface for a digital system AC9TDI6P03	☑	☐	☐	☑
explore how data can be represented by off and on states (zeros and ones in binary) AC9TDI6K04	☐	☐	☑	☐	generate, modify, communicate and evaluate designs AC9TDI6P04	☐	☑	☐	☑
					Producing and implementing implement algorithms as visual programs involving control structures, variables and input AC9TDI6P05	☐	☑	☐	☐
					Evaluating evaluate existing and student solutions against the design criteria and user stories and their broader community impact AC9TDI6P06	☑	☐	☐	☑

Content descriptions	Units	Content descriptions	Units			
		Collaborating and managing select and use appropriate digital tools effectively to create, locate and communicate content, applying common conventions AC9TDI6P07	☑	☑	☑	☑
		select and use appropriate digital tools effectively to share content online, plan tasks and collaborate on projects, demonstrating agreed behaviours AC9TDI6P08	☐	☐	☑	☑
		Privacy and security access multiple personal accounts using unique passphrases and explain the risks of password re-use AC9TDI6P09	☑	☐	☐	☐
		explain the creation and permanence of their digital footprint and consider privacy when collecting user data AC9TDI6P10	☐	☐	☑	☐

General capabilities	Units			
	1	2	3	4
Critical and creative thinking	☐	☐	☐	☑
Digital literacy	☑	☑	☑	☑
Ethical understanding	☐	☐	☐	☐
Intercultural understanding	☐	☐	☐	☑
Literacy	☐	☐	☐	☐
Numeracy	☐	☐	☐	☐
Personal and social capability	☐	☐	☐	☐

Cross-curriculum priorities	Units			
	1	2	3	4
Aboriginal and Torres Strait Islander histories and cultures	☐	☐	☐	☐
Asia and Australia's engagement with Asia	☐	☐	☐	☐
Sustainability	☐	☐	☐	☐

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