Unit plan: Band 5–6 Digital systems to encourage fit and healthy activity

Key: indicates focus of unit (unhighlighted sections are not addressed or optional) indicates this is related to the student portfolio

Content descriptions
Examine the main components of common digital systems and how they may connect together to form networks to transmit data (ACTDIK014) Explain how student solutions and existing information systems are sustainable and meet current and future local community needs (ACTDIP021) Plan, create and communicate ideas and information, including collaboratively online, applying agreed ethical, social and technical protocols (ACTDIP022)

Achievement standard
By the end of Year 6, students explain the fundamentals of digital system components (hardware, software and networks) and how digital systems are connected to form networks. They explain how digital systems use whole numbers as a basis for representing a variety of data types. Students define problems in terms of data and functional requirements and design solutions *by developing algorithms* to address the problems. *They incorporate decision-making, repetition and user interface design into their designs and implement their digital solutions, including a visual program.* They explain how information systems *and their solutions* meet needs and consider sustainability. Students manage the creation and communication of ideas and information in collaborative digital projects using validated data and agreed protocols.

Unit sequence

Skills	**Key concepts**	**Lesson sequence**	**Assessment opportunities**
Prior learning		*Students will previously have <include content descriptions and background context here to show collection of data and prior learning.>*	***Prior assessment:*** *Summative:* *• Portfolio item:*
• Knowledge and understanding of **digital systems** • Investigating and **Defining** • **Evaluating** • **Collaborating** and **Managing**	• digital systems • abstraction • data representation • interactions • impacts	• Examine the main components of common digital systems and how they may connect together to form networks to transmit data (ACTDIK014) • Explain how student solutions and existing information systems are sustainable and meet current and future local community needs (ACTDIP021) • Acquire, store and validate different types of data, and use a range of software to interpret and visualise data to create information (ACTDIP016) • Plan, create and communicate ideas and information, including collaboratively online, applying agreed ethical, social and technical protocols (ACTDIP022)	Formative Portfolio items: • Add answers to questions in PowerPoint slide deck to assessment portfolio for whole group and small group discussions at teacher discretion. • For individual activity (indicated by pencil icon on slide deck), have students complete the task/answer questions. Portfolio items can be recorded in written, audio or video format.

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		Systems Use PowerPoint slide deck as a visual aid to guide students through revision of what systems are. **Digital systems** Use PowerPoint slide deck as a visual aid to guide students through revision of what digital systems are. When prompted, ask students: • What happens if part of a digital system stops working? • Can you name these digital systems pictured on the slide?* **Networks** Use PowerPoint slide deck as a visual aid to guide students through what networked digital systems are. When prompted, ask students: • Can you name some networked digital systems?* **Information systems** Use PowerPoint slide deck as a visual aid to guide students through revision of what information systems are. When prompted, ask students: • What information systems can you think of?* • Write down two ways to keep your information safe.* • Can you name some networked information systems? **Geographic information systems (GIS)** Use PowerPoint slide deck as a visual aid to guide students through what GIS are. When prompted, have students compare two different online map systems and, in groups, record answers to the following: • What features do they have that are: – similar?* – different?* – sustainable?* • What might online maps be able to do in the future?* • What features of online maps are not available on traditional paper maps?* • Why are number plates blurred on online maps?	

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		• What are some more reasons for personal information to be kept private in networked information systems?* Use PowerPoint slide deck as a visual aid to guide students through GIS discussions: When prompted: • Discuss how the Digital Earth Australia Hotspots map could be useful.* • Discuss how National Geographic MapMaker Interactive could be useful.* When prompted in the slide deck, have students work through the following individually (or in pairs): • Go to Scribblemaps.com • Type in the school address. • Use the polygon tool to draw a polygon around the perimeter of the school. • Use the measuring tool and hover over the polygon. • Take a screen shot.* Ask: • What data does it show?* • How could this be useful?* Use Scribble Maps to look at your school in Satellite view. • Use the polygon tool to draw a series of polygons around the buildings of your school. • Calculate the total area of the buildings. • Use the polygon tool to draw a series of polygons around the outdoor shade spaces in your school (include shady trees). • Calculate the total area of outdoor shade spaces. • What do you notice? • How could you use Scribble Maps to help your local community? • Take a screenshot of your ScribbleMap* * *Add item to assessment portfolio.*	
• Generating and **Designing** • **Collaborating** and Managing	• abstraction • data collection • data interpretation • specification • interactions • impacts	• Acquire, store and validate different types of data, and use a range of software to interpret and visualise data to create information (ACTDIP016) • Plan, create and communicate ideas and information, including collaboratively online, applying agreed ethical, social and technical protocols (ACTDIP022)	Formative Optional portfolio item: Add answers to questions in PowerPoint slide deck to assessment portfolio for whole group and small group discussions at teacher discretion.

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		• Explain how student solutions and existing information systems are sustainable and meet current and future local community needs (ACTDIP021) **Designing digital solutions** **Gather data** When prompted in the slide deck, pose the questions: • How could we promote healthy physical activity at break time?* • How do we ensure we stay sun-safe during our physical activity?* How can we make use of a geographic information system to find out how much usable shade is in our school? (What shady areas can be used for exercise activities?)*	
• Generating and **Designing** • **Collaborating** and **Managing**	• abstraction • data interpretation • specification • algorithms • interactions • impacts	• Plan, create and communicate ideas and information, including collaboratively online, applying agreed ethical, social and technical protocols (ACTDIP022) • Explain how student solutions and existing information systems are sustainable and meet current and future local community needs (ACTDIP021) **Designing digital solutions** **Designing solutions** When prompted in the slide deck (Part B), have students work in groups to answer the following questions: • How can an awareness of the shady areas of our school be combined with a digital system to create activities that promote fun and fitness?* • What could be invented to make people want to exercise in shady areas at lunchtimes?* Each group must design one digital system to promote physical activity in the shade at lunchtimes.*	Summative Portfolio items: answers to questions and design diagrams and notes

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		Once each group design is complete, it should be submitted to teacher for approval. Students should: • Create a portfolio as they plan to solve the problem. • Include screen shots, images and files in their portfolio. • Gather data about which shady spots exist in the school and which ones are the most popular. • Make suggestions about how they could increase the shady areas in our school and where these could be placed. • Explain how their design will be sustainable and meet needs.	

Optional section

• Producing and **Implementing** • **Collaborating** and **Managing** • **Evaluating**	• abstraction • data interpretation • algorithms • implementation • interactions • impacts	• Implement digital solutions as simple visual programs involving branching, iteration (repetition), and user input (ACTDIP020) • Explain how student solutions and existing information systems are sustainable and meet current and future local community needs (ACTDIP021) **Designing digital solutions** **Implementing solutions** When prompted in the slide deck, have students work in groups to build their digital solution. Ensure they: • Continue to enter evidence in their portfolio as they solve the problem. • Include screen shots, images, photos, filenames and videos in their portfolio. Have groups present their digital system to the class once they've built it. During their presentation, they must show how it meets needs and is sustainable.	Summative Portfolio items: Digital solution and oral presentation

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