

# NATURAL DISASTERS & DIGITAL TECHNOLOGY

Levels 5-6



This unit of work was created in collaboration with St Patrick's Primary School, Murrumbeena, Victoria.

## Unit Overview

These lessons have been designed to complement a unit of work that investigates natural disasters. Prior to this, students will have demonstrated knowledge and understanding of natural disasters from around the world and the geographical impacts this has on Earth and the impact on humans. The Digital Technology Curriculum will be used as a catalyst to look at current digital systems in place to help prepare humans for natural disasters. The three ways of thinking (systems thinking, design thinking and computational) are the foci for these lessons. Students will evaluate current systems focusing on the strengths and weaknesses and use this information to design their own digital system. The design is in 2D format that will consist of drawings, labels and written information on how their new systems work through explicit instructions displayed as flow charts (algorithms).

## Other Curriculum Targeted Areas

Other curriculum areas can be targeted and assessed within this unit. Areas of interest may include:

- Design and Technology
- Personal Capabilities
- Science
- Geography

Further investigation into these areas is required to ensure they align with the following activities. Activities may need to be modified to ensure content descriptions and achievement standards are met.

## Australian Curriculum Alignment

The following sessions have been created using the Australian Curriculum: Digital Technologies Curriculum. Activities may need to be modified to ensure state Digital Technologies Curriculum Standards/Syllabus are met. ACS has support and documents to help align this unit to other Digital Technology Curricular.

## Session

'Session' has been used to define the order of tasks to complete the unit. It does not define a set time required to complete the task. Time allocated to complete a session is the teacher's discretion. This allows for flexibility for to drive the duration of the task and make modifications if necessary. Sessions can be merged into one allocated class period or may run over multiple periods.

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## Key Preparation

### ACS Resources

Resources have been created to help teachers and students unpack and understand topics found within the Digital Technologies Curriculum. These give brief explanations of the top expectations to teach the topic at the curriculum year level. It is intended the information is presented in a way that will set the foundation for further research.

### Technology Resources

Examples of technology used for natural disasters:

<b>General Information</b>	<a href="https://mill-all.com/blog/2017/08/31/how-does-technology-help-during-natural-disasters/">https://mill-all.com/blog/2017/08/31/how-does-technology-help-during-natural-disasters/</a> <a href="http://www.abc.net.au/local/stories/2014/10/20/4110903.htm">http://www.abc.net.au/local/stories/2014/10/20/4110903.htm</a> <a href="http://www.crcsi.com.au/assets/Resources/48098b8b-27fb-447d-a5d6-f5b88396bb16.pdf">http://www.crcsi.com.au/assets/Resources/48098b8b-27fb-447d-a5d6-f5b88396bb16.pdf</a>
<b>Floods</b>	<a href="https://wwwen.uni.lu/university/news/latest_news/reducing_the_impact_of_floods_by_advanced_simulation_technology">https://wwwen.uni.lu/university/news/latest_news/reducing_the_impact_of_floods_by_advanced_simulation_technology</a> <a href="http://www.ingerop.fr/en/technology-protect-against-flood-risks">http://www.ingerop.fr/en/technology-protect-against-flood-risks</a> <a href="https://www.smh.com.au/technology/new-tech-weapon-to-help-fight-natural-disasters-20130315-2g4e0.html">https://www.smh.com.au/technology/new-tech-weapon-to-help-fight-natural-disasters-20130315-2g4e0.html</a>
<b>Bushfires</b>	<a href="http://www.firewatchaustralia.com/the-firewatch-system">http://www.firewatchaustralia.com/the-firewatch-system</a>
<b>Tornadoes</b>	<a href="https://edition.cnn.com/2013/04/12/tech/mobile/tornado-apps/index.html">https://edition.cnn.com/2013/04/12/tech/mobile/tornado-apps/index.html</a> <a href="https://www.npr.org/2011/06/17/137199914/advanced-tornado-technology-could-reduce-deaths">https://www.npr.org/2011/06/17/137199914/advanced-tornado-technology-could-reduce-deaths</a>
<b>Twister Excerpt</b>	<a href="https://www.youtube.com/watch?v=vEOMfGGM6U0">https://www.youtube.com/watch?v=vEOMfGGM6U0</a> <a href="https://www.youtube.com/watch?v=1zh0x8tX7AI">https://www.youtube.com/watch?v=1zh0x8tX7AI</a>

## Key Understandings

Students will:

- Identify the role of digital technology for a chosen natural disaster.
- Explain and evaluate how the digital system operates (looking at the hardware, software and the transmission of data), impacts and how it assists with the natural disaster.
- Design and explain their own digital system that uses current technology to improve the current systems.

## Key Questions

- How is digital technology associated with natural disasters?
- What digital technology is used to help with a natural disaster?
- How does the digital technology operate? How is data collected and interpreted?
- What are the strengths and weaknesses of that system?
- How could you design a new system that incorporates today's technology?
- How would your system operate?

## Key Vocabulary

Protocols, online collaboration, transmission of data, binary code, networks, digital system, systems thinking, computational thinking, design thinking, design solution, hardware, software, algorithms, iteration, branching, user experience, user interface, user input.

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Session Number	Session Topic Focus	Learning Intention and Success Criteria	Introduction/Teacher Instruction	Whole Class Activity
1.	Using technology to collaborate	<p><b>Learning Intention</b> Students will identify a set of protocols to follow when working in online spaces.</p> <p><b>Success Criteria</b> I can generate a list of dos and don'ts and explain why they are important protocols to follow. When working in online spaces, I am an active member of my team and the workload is shared evenly between us.</p>	Discuss the similarities and differences of working in the classroom and online and the importance of continually abiding by these protocols (rules).	Students work in small groups and connect with each other in an online document that allows them to collaborate. They create a list of 'dos and don'ts' to successfully work online. They explain why it is important that the protocols are upheld.
<b>Session Resources</b>	<p><b>Student Resources</b></p> <ul style="list-style-type: none"> <li>ACS Student Resource: Online Collaboration</li> </ul>		<p><b>Teacher Resources</b></p> <ul style="list-style-type: none"> <li>ACS Teacher Resource: Online Collaboration</li> <li>Chosen digital platform to allow users to collaborate online</li> </ul>	
2.	Making a connection with natural disasters and digital systems	<p><b>Learning Intention</b> Students will examine the technologies that is used to monitor natural disasters.</p> <p><b>Success Criteria</b> I can identify and explain current technologies that are used to monitor and assist with natural disasters.</p>	<p>Play the 'Twister' movie excerpt where the systems are put into the tornado and data is retrieved</p> <p><b>Key questions:</b> Would this happen in real life? Why is technology and systems important? Why would they need to collect data?</p>	<p>Make a list of all the natural disasters identified to date within the unit. In groups, students research into how technology is assisting with one chosen natural disasters. To help the investigation, students answer key questions. As a class discuss the commonalities between the systems.</p> <p><i>*Note: some natural disasters do not have any systems in place. To go further into this unit, it is recommended students choose a natural disaster that has a system. However, the system does not need to be digital.</i></p>
<b>Session Resources</b>	<p><b>Student Resources</b></p>		<p><b>Teacher Resources</b></p> <ul style="list-style-type: none"> <li>Key questions: Natural Disaster Digital Technology (located at the end of the unit)</li> <li>Articles and links related to different natural disasters (located above in 'Key Preparation')</li> </ul>	

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Session Number	Session Topic Focus	Learning Intention and Success Criteria	Introduction/Teacher Instruction	Whole Class Activity
3.	Data transmission (explicit teaching)	<p><b>Learning Intention</b> Students will investigate how the data in the system is transmitted.</p> <p><b>Success Criteria</b> I can explain how data is transmitted in the natural disaster system.</p>	<p>Students pair up in partners and write small message on a note. They separate standing on different sides of the classroom. They answer the question – without moving, how will you send your note to your partner? One student becomes point A, the other point B. They cannot move.</p> <p>Students devise a plan on how an email is transmitted from one user to another (they don't need to know the exact detail for this activity).</p>	<p>Bring the discussion back to digital systems and how data travels from point A to point B.</p> <p>Students use the information sheets and continue to complete research into their system to identify how data is transmitted to and from natural disaster digital system. To help the investigation, students answer key questions around data transmission.</p>
<b>Session Resources</b>	<p><b>Student Resources</b></p> <ul style="list-style-type: none"> <li>• ACS Student Resource: Networks</li> <li>• ACS Student Resource: Data Transmission</li> </ul>		<p><b>Teacher Resources</b></p> <ul style="list-style-type: none"> <li>• ACS Teacher Resource: Data</li> <li>• ACS Teacher Resource: Networks</li> <li>• Key Questions: Data Transmission (located at the end of the unit lessons)</li> </ul>	



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Session Number	Session Topic Focus	Learning Intention and Success Criteria	Introduction/Teacher Instruction	Whole Class Activity
4.	Binary code (explicit teaching)	<p><b>Learning Intention</b> Students will identify and explain how binary code is used to represent data in digital systems.</p> <p><b>Success Criteria</b> I can investigate how binary code is used to represent data in digital systems.</p>	<p>Students pair up again and this time write a note only using abbreviated language. Give students a limit of characters they can use to send a message.</p> <p>Students create 'code' for the same sentence e.g.: How are you today? Focus how letters, spaces and characters are represented.</p>	Students share their message with the class and look at the different messages that are used. Students read through information about binary code. Students will use this knowledge to further understand how the natural disaster digital system operates and sends data as binary code. They identify the type of data it will send and articulate that the data is sent as whole numbers (if the system monitors sound – the data is represented as binary code).
<b>Session Resources</b>	<p><b>Student Resources</b></p> <ul style="list-style-type: none"> <li>ACS Student Resource: Binary Code</li> </ul>		<p><b>Teacher Resources</b></p> <ul style="list-style-type: none"> <li>ACS Teacher Resource: Whole Number Representation</li> <li>Key questions: Binary Code (located at the end of the unit lessons)</li> </ul>	
5.	Systems thinking	<p><b>Learning Intention</b> Students will examine the main parts of a digital system used for natural disasters and explained how these systems create networks.</p> <p><b>Success Criteria</b> I can identify and explain what common components are needed for the natural disaster system to operate.</p>	<p>Use a household smoke alarm as an example of a digital system to help with an emergency. Identify all the components of the system that are needed for the smoke alarm to complete the task.</p> <p><i>*Note: although this system is not one for a natural disaster, it is a common system that is used to help alert a fire, it is also a system student would all have some understanding of.</i></p>	<p>Students read through resources and videos that outlines the information, adding information about the parts of a computer to their diagram.</p> <p>They follow the design of: Input, Storage, Processing, Output to identify the different components that their system will be required to use.</p>
<b>Session Resources</b>	<p><b>Student Resources</b></p> <ul style="list-style-type: none"> <li>ACS Student Resource: Common Components</li> <li>Code.org 'How Computers Work' Video (access within ACS Student Resource: Common Components)</li> </ul>		<p><b>Teacher Resources</b></p> <ul style="list-style-type: none"> <li>ACS Teacher Resource: Components of a Digital System</li> </ul>	



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Session Number	Session Topic Focus	Learning Intention and Success Criteria	Introduction/Teacher Instruction	Whole Class Activity
6.	Systems thinking	<p><b>Learning Intention</b> Evaluate current technologies that are used to monitor and assist with natural disasters.</p> <p><b>Success Criteria</b> I can evaluate the current technology by identifying its strengths and weaknesses.</p>	Use a household smoke alarm as an example of a digital system to help with an emergency. As a group, evaluate the smoke alarm by identifying its strengths and weaknesses.	Bring the example of the smoke alarm back to the digital systems they have been investigating. Continuing to work in groups, students evaluate the digital system based on strengths and weaknesses. Use the key questions as guide to help students evaluate the system.
<b>Session Resources</b>	<b>Student Resources</b>		<b>Teacher Resources</b>	
7.	Design thinking	<p><b>Learning Intention</b> Student will design a new system based on the strengths and weaknesses identified.</p> <p><b>Success Criteria</b> I can design a user interface that is consistent in design and easy to navigate based on other designs I can have seen.</p>	Using the household smoke alarm example, students create a list of strengths and weaknesses and any possible issues that could occur. Students redesign a 'new and improved' smoke alarm. Encourage students to use current technologies (Bluetooth, WIFI, smartphone technology) to enhance a smoke alarm.	<p>Students focus on the weaknesses of the natural disasters system and redesign a new system. This design will be created through drawings and sketches.</p> <p>The design will include:</p> <ul style="list-style-type: none"> <li>• Details of the different screens and functions that are available for the user (user interface).</li> <li>• Details of the type of hardware and software to use (computer components).</li> <li>• How data is transmitted (data transmission).</li> </ul>
<b>Session Resources</b>	<b>Student Resources</b>		<b>Teacher Resources</b>	
			<ul style="list-style-type: none"> <li>• ACS Teacher Topic Resource: User Interface</li> </ul>	

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Session Number	Session Topic Focus	Learning Intention and Success Criteria	Introduction/Teacher Instruction	Whole Class Activity
8.	Computational thinking	<p><b>Learning Intention</b> Explain the digital system that operates using algorithms in the form of explicit English statements and flow charts.</p> <p><b>Success Criteria</b> I can explain how my design would operate by using explicit instructions written in English.</p>	Student share and explain their designs.	After students have completed the design, they will write out in English the steps and actions required for the system to operate. These will be written in English language that will detail the operation of the digital system
<b>Session Resources</b>	<p><b>Student Resources</b></p> <ul style="list-style-type: none"> <li>• ACS Student Resource: Algorithms</li> <li>• ACS Student Resource: Flowcharts</li> </ul>		<p><b>Teacher Resources</b></p> <ul style="list-style-type: none"> <li>• ACS Teacher Resource: Algorithms</li> </ul>	
9.	Computational thinking	<p><b>Learning Intention</b> Student will create a flowchart to organise their ideas and explain the functions of the new digital system.</p> <p><b>Success Criteria</b> I can create a flowchart that explains the functions of my digital system. I can identify where user input, iteration and branching has been used.</p>	<p>Commence by introducing students to flowcharts and the purpose of a flow chart.</p> <p>Video to watch Friendship Algorithm scene from The Big Bang Theory. Discuss how the flowchart helps the layout of instructions.</p>	Using their design brief from the previous session they create a flow chart to show how the app will function. This includes how the user will move between the screens and the layout of each screen. Ensure repeats (iteration) and multiple options (branching) are found within the instructions.
<b>Session Resources</b>	<p><b>Student Resources</b></p> <ul style="list-style-type: none"> <li>• ACS Student Resource: Algorithms</li> <li>• ACS Student Resource: Flowcharts</li> </ul>		<p><b>Teacher Resources</b></p> <ul style="list-style-type: none"> <li>• ACS Teacher Resource: Algorithms</li> <li>• <a href="#">The Big Bang Theory 'Friendship Algorithm' Scene</a></li> </ul>	

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Session Number	Session Topic Focus	Learning Intention and Success Criteria	Introduction/Teacher Instruction	Whole Class Activity
10.	Evaluation of design	<b>Learning Intention</b> Student will evaluate their design against a set criterion.  <b>Success Criteria</b> I can evaluate my design and app based on a set criterion.	Students share their designs and digital prototypes with their peers. They explain their functions and include how it meets the need of the community.	Students are to complete an evaluation of their design and the design process on a set criterion to focus on meetings community needs and it's sustainability.
<b>Session Resources</b>	<b>Student Resources</b>		<b>Teacher Resources</b> <ul style="list-style-type: none"><li>• ACS Teacher Resource: Evaluating Digital Solutions (located at the end of the unit lessons)</li><li>• Key questions: Final Evaluation (located at the end of the unit lessons)</li></ul>	



## Natural Disasters Key Questions

### Session 2 Natural Disaster Systems

What is the systems name?  
What natural disaster is it associated with?  
Describe how it works.  
How does it help people to prepare or overcome a natural disaster?  
How has this system helped people? What are the statistics (e.g.: how many lives has it saved)?  
Is it a digital system?

### Session 3 Data Transmission

What data does the natural disaster collect (temperature, ocean movement)  
How does this data help to prepare for the natural disaster?  
How is data moved from one point to another?  
Does the system show this data?

### Session 4 Binary Code

What data is represented in the system as binary code?

### Session 5 Components of a digital system

What digital technology is used to create the system?  
What digital components make up the system?  
How is data transmitted from the device to another location?  
What are the benefits of this technology?

### Session 6 Strengths and Weaknesses

What are the strengths?  
What are the weaknesses?  
The following are suggested factors to consider when evaluating: time, size, components, effect, impact, response rate, response rate etc.

### Session 11 Final Evaluation

How is your system different to the current system?  
How does your new system meet the needs of the community that could be affected by the natural disaster?  
How could your system 'stand the test of time'?

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Assessment – Australian Digital Technologies Curriculum			
Content Description	Session	Assessment Piece	Assessment Statement
Examine the main components of common digital systems and how they may connect together to form networks to transmit data (ACTDIK014)	5	Identifying the parts of the digital system	Students explained how a system works to help identify a chosen natural disaster. They identified how it connects to a network and transmits data to provide information on the natural disaster.
Examine how whole numbers are used to represent all data in digital systems (ACTDIK015)	4	Binary code activity	Students identified how the digital systems represents data as 0 and 1's and explained how Binary Code is used for representing data.
Acquire, store and validate different types of data, and use a range of software to interpret and visualise data to create information (ACTDIP016)	N/A		
Define problems in terms of data and functional requirements drawing on previously solved problems (ACTDIP017)	7	Evaluation of a current digital	Students evaluated a digital system by identifying strengths and weaknesses including how the system functions and how well it completes a task.
Design a user interface for a digital system (ACTDIP018)	8	Design of a new natural disaster digital system	Students designed a new user interface for an updated digital system.
Design, modify and follow simple algorithms involving sequences of steps, branching, and iteration (repetition) (ACTDIP019)	9	Flowchart and written English statements	Students represented algorithms using a flowchart and include sequence of steps, branching (multiple options) and iteration (repeats) to show how their digital system would operate.
Implement digital solutions as simple visual programs involving branching, iteration (repetition), and user input (ACTDIP020)	N/A		
Explain how student solutions and existing information systems are sustainable and meet current and future local community needs (ACTDIP021)	N/A		
Plan, create and communicate ideas and information, including collaboratively online, applying agreed ethical, social and technical protocols. (ACTDIP022)	1	Evidence of working collaboratively in an online environment	Students used a digital platform to generate and communicate their ideas to develop their app design.

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Assessment – Victorian Curriculum			
Content Description	Session	Assessment Piece	Assessment Statement
Examine the main components of common digital systems, and how such digital systems may connect together to form networks to transmit data (VCDTDS026)	5	Identifying the parts of the digital system	Students explained how a system works to help identify a chosen natural disaster. They identify how it connects to a network and transmits data to provide information on the natural disaster.
Examine how whole numbers are used as the basis for representing all types of data in digital systems (VCDTDI027)	4	Binary code activity	Students identified how the digital systems represents data as 0 and 1's and explained how Binary Code is used for representing data.
Acquire, store and validate different types of data and use a range of software to interpret and visualise data to create information (VCDTDI028)	N/A		
Plan, create and communicate ideas, information and online collaborative projects, applying agreed ethical, social and technical protocols (VCDTDI029)	1	Evidence of working in an online environment	Students used a digital platform to generate and communicate their ideas to develop their app design.
Define problems in terms of data and functional requirements, drawing on previously solved problems to identify similarities (VCDTCD030)	7	Evaluation of a current digital	Students explained how their natural disaster system meets needs of people and is an improvement to the current system. Explained how their developed solution meets current and future needs.
Design a user interface for a digital system, generating and considering alternative design ideas (VCDTCD031)	8	Design of a new natural disaster digital system	Students designed a new user interface for an updated digital system.
Design, modify and follow simple algorithms represented diagrammatically and in English, involving sequences of steps, branching, and iteration (VCDTCD032)	9	Flowchart and written English statements explaining how the digital system functions	Students represented algorithms using a flowchart and include sequence of steps, branching (multiple options) and iteration (repeats) to show how their digital system would operate.
Develop digital solutions as simple visual programs (VCDTCD033)	N/A		
Explain how student-developed solutions and existing information systems meet current and future community and sustainability needs (VCDTC034)	10	Evaluation of their digital system	Students explained how their natural disaster system meets needs of people and is an improvement to the current system. They explained how their developed solution meets current and future needs.

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Assessment – New South Wales Science and Technology Syllabus (Stage 3)			
Outcomes and Objectives	Session Number	Assessment Piece	Assessment Statement
Explains how digital systems represent data, connect together to form networks and transmit data (ST3-11DI-T)	5	Identifying the parts of the digital system and explain where and how data is transmitted	Students explained how a system works to help identify a chosen natural disaster. They identify how it connects to a network and transmits data to provide information on the natural disaster.
Acquire, store, access and validate different types of data, and use a range of software to present, interpret and visualise data (ACTDIP016)	N/A		
Examine and critique needs, opportunities or modification using a range of criteria to define a project define a need or opportunity according to functional and aesthetic criteria Consider availability and sustainability of resources when defining design needs and opportunities Examine and determine functional requirements to define a problem	7	Evaluation of a current digital	Students explained how their natural disaster system meets needs of people and is an improvement to the current system. Explained how their developed solution meets current and future needs.
Identify data required to formulate algorithms to improve a process (ACTDIP017)	N/A		
Defines problems, and designs, modifies and follows algorithms to develop solutions (ST3-3DP-T) Design, modify and follow simple algorithms extend sequences of steps to provide a series of possibilities through branching Develop solutions through trialling and refining using iterations (ACTDIP019)	9	Flowchart and written English statements explaining how the digital system functions	Students represented algorithms using a flowchart and include sequence of steps, branching (multiple options) and iteration (repeats) to show how their digital system would operate.
Implement digital solutions as visual programs involving branching, iteration and user input (ACTDIP020)	N/A		
Plans and uses materials, tools and equipment to develop solutions for a need or opportunity (ST3-2DP-T) negotiate criteria for success, based on defined needs, sustainability and aesthetics Develop appropriate and fair processes to test a designed solution according to criteria	8	Design of a new natural disaster digital system	Students designed a new user interface for an updated digital system.
Explain how students' solutions and existing information systems meet current and future local community needs (ACTDIP021)	10	Evaluation of their digital system	Students explained how their natural disaster system meets needs of people and is an improvement to the current system.
Work collaboratively to share, appraise and improve ideas to achieve design purposes Identify, organise and perform strategic roles within a group to solve a problem	1	Evidence of working collaboratively in an online environment	Students used a digital platform to generate and communicate their ideas to develop their app design.



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## Assessment – Western Australian Digital Technologies Syllabus

### Year 5

Content Description	Session	Assessment Piece	Assessment Statement
Digital systems have components with basic functions that may connect together to form networks which transmit data (ACTDIK014)	5	Identifying the parts of the digital system	Students explained how a system works to help identify a chosen natural disaster. They identified how it connects to a network and transmits data to provide information on the natural disaster.
Data is represented using codes (ACTDIK015)	4	Binary code activity	Students identified how the digital systems represents data as 0 and 1's and explained how Binary Code is used for representing data.
Collect, store and present different types of data for a specific purpose using software (ACTDIP016)	N/A		
Design solutions to a user interface for a digital system (ACTDIP018)	8	Design of a new natural disaster digital system	Students designed a new user interface for an updated digital system.
Design, follow and represent diagrammatically, a simple sequence of steps (algorithm), involving branching (decisions) and iteration (repetition) (ACTDIP019)	9	Flowchart and written English statements	Students represented algorithms using a flowchart and include sequence of steps, branching (multiple options) and iteration (repeats) to show how their digital system would operate.
Implement and use simple programming environments that include branching (decisions) and iteration (repetition) (ACTDIP020)	N/A		
Create and communicate information, including online collaborative projects, using agreed social, ethical and technical protocols (codes of conduct) (ACTDIP022)	1	Evidence of working collaboratively in an online environment	Students used a digital platform to generate and communicate their ideas to develop their app design.
Define a problem, and set of sequenced steps, with users making a decision to create a solution for a given task (WATPPS27)	9	Flowchart and written English statements	Students represented algorithms using a flowchart and include sequence of steps, branching (multiple options) and iteration (repeats) to show how their digital system would operate.
Identify available resources (WATPPS28)	8	Design of a new natural disaster digital system	Students identified the types of resources they would need to create their digital system.
Develop and communicate alternative solutions and follow design ideas, using annotated diagrams, storyboards and appropriate technical terms (WATPPS29)	8	Design of a new natural disaster digital system	Students created diagrams and designs of their natural disasters digital system.
Select, and apply safe procedures when using components and equipment to make solutions (WATPPS30)	N/A		
Develop negotiated criteria to evaluate and justify design processes and solutions (WATPPS31)	10	Evaluation of their digital system	Students evaluated their design based on a set of questions and criteria.
Work independently, or collaboratively when required, to plan, develop and communicate ideas and information for solutions (WATPPS32)	10		Students worked collaboratively to plan and develop their solutions to help in natural disaster situations.

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Assessment – Western Australian Digital Technologies Syllabus			
Year 6			
Content Description	Session	Assessment Piece	Assessment Statement
Digital systems have components with basic functions and interactions that may be connected together to form networks which transmit different types of data (ACTDIK014)	5	Identifying the parts of the digital system	Students explained how a system works to help identify a chosen natural disaster. They identified how it connects to a network and transmits data to provide information on the natural disaster.
Whole numbers are used to represent data in a digital system (ACTDIK015)	4	Binary code activity	Students identified how the digital systems represents data as 0 and 1's and explained how Binary Code is used for representing data.
Design, modify, follow and represent both diagrammatically, and in written text, simple algorithms (sequence of steps) involving branching (decisions) and iteration (repetition) (ACTDIP019)	9	Flowchart and written English statements	Students represented algorithms using a flowchart and include sequence of steps, branching (multiple options) and iteration (repeats) to show how their digital system would operate.
Implement and use simple visual programming environments that include branching (decisions), iteration (repetition) and user input (ACTDIP020)			
Manage the creation and communication of information, including online collaborative projects, using agreed social, ethical and technical protocols (ACTDIP022)	1	collaboratively in an online environment	Students used a digital platform to generate and communicate their ideas to develop their app design.
Define a problem, and a set of sequenced steps, with users making decisions to create a solution for a given task (WATPPS33)	7	Evaluation of a current digital	Students evaluated a digital system by identifying strengths and weaknesses including how the system functions and how well it completes a task.
Identify available resources (WATPPS34)	N/A		
Design, modify, follow and represent both diagrammatically, and in written text, alternative solutions using a range of techniques, appropriate technical terms and technology (WATPPS35)	8	Design of a new natural disaster digital system	Students created diagrams and designs of their natural disasters digital system.
Select, and apply safe, procedures when using a variety of components and equipment to make solutions (WATPPS36)	N/A		
Develop collaborative criteria to evaluate and justify design processes and solutions (WATPPS37)	10	Evaluation of their digital system	Students evaluated and justified the purpose of their natural disaster digital design.
Work independently, or collaboratively when required, considering resources, to plan, develop and communicate ideas and information for solutions (WATPPS38)	1	Evidence of working collaboratively in an online environment	Students used a digital platform to generate and communicate their ideas to develop their app design.