Government of **Western Australia**
School Curriculum and Standards Authority

Technologies:
Digital Technologies

Teaching, learning and assessment exemplar

Year 4

Acknowledgement of Country

Kaya. The School Curriculum and Standards Authority (the Authority) acknowledges that our offices are on Whadjuk Noongar boodjar and that we deliver our services on the country of many traditional custodians and language groups throughout Western Australia. The Authority acknowledges the traditional custodians throughout Western Australia and their continuing connection to land, waters and community. We offer our respect to Elders past and present.

Background

This teaching, learning and assessment exemplar (the exemplar) has been developed by the School Curriculum and Standards Authority (the Authority) as part of the *School Education Act Employees (Teachers and Administrators) General Agreement 2017* (Clause 61.1–61.3).

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Contents

The Western Australian Curriculum

The *Western Australian Curriculum and Assessment Outline* (the *Outline* – https://k10outline.scsa.wa.edu.au/) sets out the mandated curriculum, guiding principles for teaching, learning and assessment, and support for teachers in their assessment and reporting of student achievement. The *Outline* recognises that all students in Australian schools, or international schools implementing the Western Australian Curriculum, are entitled to be given access to the eight learning areas described in the *Alice Springs* (*Mparntwe*) *Education Declaration*, December 2019.

The Technologies curriculum

The mandated curriculum is presented in the year level syllabus documents.

The Technologies curriculum delivers a sequential and age-appropriate progression of learning with the following key elements:

- a year level description that provides an overview of the context for teaching and learning in the year
- a series of content descriptions, populated through strands and sub-strands, that sets out the knowledge, understanding and skills that teachers are expected to teach and students are expected to learn
- an achievement standard that describes an expected level that the majority of students are achieving by the end of a given year of schooling. An achievement standard describes the quality of learning (e.g. the depth of conceptual understanding and the sophistication of skills) that would indicate the student is well placed to commence the learning required in the next year.

This exemplar

This Technologies exemplar articulates the content in the *Outline* and approaches to teaching, learning and assessment reflective of the Principles of Teaching, Learning and Assessment. This exemplar presents planning for eight weeks of teaching and learning for each of the four terms, with a time allocation of one hour per week.

Catering for diversity

This exemplar provides a suggested approach for the delivery of the curriculum and reflects the rationale, aims and content structure of the learning area. When planning the learning experiences, consideration has been given to ensuring that they are inclusive and can be used in, or adapted for, individual circumstances. It is the classroom teacher who is best placed to consider and respond to (accommodate) the diversity of their students. Reflecting on the learning experiences offered in this exemplar will enable teachers to make appropriate adjustments (where applicable) to better cater for students' gender, personal interests, achievement levels, socio-economic, cultural and language backgrounds, experiences and local area contexts.

Using this exemplar

This teaching, learning and assessment exemplar provides suggestions to support the delivery of the mandated curriculum content. The exemplar provides:

- a teaching and learning sequence
- the mandated curriculum content to be taught at each point of the teaching and learning sequence, suggested resources, sample assessment tasks and marking keys
- the number of lessons to deliver the teaching and learning experiences
- learning intentions and support notes that may provide focus questions and additional information and/or examples to assist with the interpretation of curriculum content
- support notes to assist teachers to unpack the content and support teaching and learning experiences
- teaching and learning experiences that outline the structure of the lesson. These explicitly state each activity that the lesson will progress through and the key focus area for that activity.

Links to electronic resources

This sequence of lessons may utilise electronic web-based resources, such as videos and image galleries. Teachers should be present while an electronic resource is in use and close links immediately after a resource, such as a video, has played to prevent default 'auto play' of additional videos. Where resources are referred for home study, they should be uploaded through Connect, or an equivalent system, that filters advertising content.

Best practice

Teaching and learning

The teaching and learning opportunities offered in this exemplar are not exhaustive. Thus, teachers are encouraged to make professional decisions about which learning experiences, and the sequence in which they are delivered, are best suited to their classroom context, taking into account the availability of resources and student ability.

This sample may prove a useful starting point for amplifying creativity in the classroom, while presenting the embedded expectations of the Western Australian Curriculum: Technologies.

Teachers may find opportunities to incorporate the General Capabilities and the Cross-curriculum Priorities into the teaching and learning program.

Ways of teaching – teachers can locate additional information on the Ways of teaching from the School Curriculum and Standards Authority (the Authority) website at https://k10outline.scsa.wa.edu.au/home/wa-curriculum/learning-areas/technologies/digital-technologies/p-10-digital-technologies-teaching/digital-technologies-ways-of-teaching.

Assessing

Assessment, both formative and summative, is an integral part of teaching and learning. Assessment should arise naturally out of the learning experiences provided to students. In addition, assessment should provide regular opportunities for teachers to reflect on student achievement and progress. As part of the support it provides for teachers, this exemplar includes suggested assessment points. It is the teacher's role to consider the contexts of their classroom and students, the range of assessments required, and the sampling of content descriptions selected to allow their students the opportunity to demonstrate achievement in relation to the year level achievement standard. Teachers are best placed to make decisions about whether the suggested assessment/s are used as formative or summative assessment and/or for moderation purposes.

Ways of assessing – a range of assessment strategies that can enable teachers to understand where students are in their learning is available on the Authority website https://k10outline.scsa.wa.edu.au/home/wa-curriculum/learning-areas/technologies/digital-technologies/p-10-digital-technologies-assessing/digital-technologies-ways-of-assessing.

Reflecting

Reflective practice involves a cyclic process during which teachers continually review the effects of their teaching and make appropriate adjustments to their planning. The cycle involves planning, teaching, observing, reflecting and replanning.

This exemplar supports reflective practice and provides flexibility for teachers in their planning. The exemplar shows how content can be combined and revisited throughout the year. Teachers will choose to expand or contract the amount of time spent on developing the required understandings and skills according to their reflective processes and professional judgements about their students' evolving learning needs.

Year level description

In the middle to late childhood phase of schooling, students develop a sense of self, their world expands, and they begin to see themselves as members of larger communities. Learning experiences emphasise and lead to an appreciation of both the commonality and diversity of human experience and concerns.

Digital Technologies builds on concepts previously acquired, and students continue to develop understanding and skills in computational thinking, such as categorising and outlining procedures. They have opportunities to create a range of solutions, such as interactive adventures that involve user choice, modelling simplified real-world systems.

In Year 4, students explore digital systems in terms of peripheral devices. They experiment with refining their designing skills, representing algorithms that support decisions (branching) and repetition using flow charts. Students explain the risks of personal data that is shared and stored online. They experiment with digital systems to investigate the advantages of different representational forms and different technologies, their purposes and situations.

Students implement solutions using appropriate software, including visual programming environments that use a variety of graphical elements. They design solutions to meet specific needs and consider how society uses digital systems to meet community requirements.

Achievement standard

By the end of the year:

Students identify different purposes for digital systems, hardware components and peripheral devices. They identify how data can be represented in a range of ways. In a visual programming environment, students design and implement algorithms that involve decisions and repetition, and create and communicate ideas and information. Students identify that personal data that is shared and stored online can pose risks. They access their school account, using a memorised password, and describe the risks of not logging out.

In Digital Technologies, students develop and communicate design ideas and decisions, using labelled drawings and technical terms. Students use agreed protocols and management roles to plan, make decisions and communicate ideas to develop solutions. They use given criteria to evaluate design features, selected resources, their decision-making process and the designed solution for a given digital task.

Term 1

Weeks 1–8: Privacy and security and digital systems

Term 1 Week 1 Private and personal information

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Privacy and security Personal data that is shared and stored online can pose risks	**Learning intention** Students will learn to identify the difference between private and personal information and understand why it is crucial to protect their privacy and security online by keeping certain information private. **Focus questions** • What is personal data? • How do we share personal data online? • Why should we protect our personal data? **Support notes** Information, such as full name, address, phone number, passwords, and school details, should be kept secure and not shared online with others. Information, such as first name or favourite hobby, may be shared under specific circumstances, but still requires careful consideration before sharing online. The practice of safeguarding personal and private information is to ensure it is not misused or accessed without permission. **Suggested assessment point** Use students' written reflections to evaluate their understanding of the difference between private and personal information and their ability to apply this knowledge to protect their online privacy.	**Introduction** Start with a game where students respond to statements by standing or sitting – this will help them recognise common experiences and introduces the concept of sharing information. For example: • 'I have the same name as someone in this room' • 'I live on the same street as someone in this room'. Discuss why people share information online, focusing on the benefits and potential risks. Discuss examples of what is safe to share and what should remain private. Watch a video that explains the difference between private and personal information. Students then discuss what they have learned, identifying examples of each type. Choose an appropriate video from commonsense.org (see Appendix A.1). **Learning activity** Present scenarios where students must decide if a piece of information is private or personal. They will physically respond by standing if they believe the information is private and sitting if they believe it is personal. This activity reinforces the importance of keeping private information secure.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		Conclusion Students complete a reflection task (see Appendix B) where they write about the importance of protecting private information.

Term 1 Weeks 2–3 Risks of Sharing

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Privacy and security Personal data that is shared and stored online can pose risks	**Learning intentions** Understand the risks associated with sharing personal information online. Identify and develop strategies to reduce these risks and stay safe online. **Focus questions** • What is online privacy and security? • What risks can occur with sharing information online? • How might you reduce the risks of sharing information online? **Support notes** Sharing personal details online can lead to others accessing and misusing your accounts without permission. Some websites or apps can trick you into spending money through hidden purchases or subscriptions. Clicking on suspicious links or downloading harmful files can damage your device or make it unusable. Sharing personal information can lead to strangers contacting you in ways that feel uncomfortable or unsafe.	**Introduction** Begin with a discussion on what happens when personal information is shared online. Ask students to share their thoughts on why people post things online, and what kinds of information are commonly shared, e.g. photos, names and locations. Explain the risks of sharing personal information online (see supporting notes). Show the *Be Secure* video to the class to introduce them to the risks of posting online. https://www.esafety.gov.au/educators/classroom-resources/be-secure/student-home Discuss key takeaways from the video, reinforcing the importance of being cautious with personal information. • What risks did the characters in the video face? • How could they have protected themselves better? **Learning activity** As a class, brainstorm strategies to reduce the risks of posting online. Use the 'Ask–Check–Think' framework from the Be Secure lesson: • Ask: Who might see this? Is it safe to share? • Check: Are there privacy settings in place? Is my account secure? • Think: What could happen if this information is shared widely? Is this something I want everyone to see? • Complete activities from the *Be Secure* Program.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Suggested assessment points Students will use knowledge of their Personal Online Security Plan to answer the questions within the Personal Online Security Plan Assessment. For full materials, see Appendix B. This lesson draws on resources and strategies from eSafety's *Be Secure* program, which provides guidance on understanding online risks and practical ways to stay safe. For more details, visit eSafety Be Secure. Hand out the *My Personal Online Security Plan* worksheet (page 10 of the Be Secure lesson plan resource: Be Secure | eSafety Commissioner. Students write in strategies they will use to protect their privacy and data online, such as creating strong passwords, using privacy settings, and thinking before posting. Questions could include: • How can I keep my device and personal information safe online? • What should I check when I get a new app to keep my information private? • What are some ways I can respect others' privacy online? • How can I tell if a website or app is safe to use, and how can I control spending? • Who can I talk to if something online makes me feel sad or worried?	

Term 1 Week 4 Your digital reputation

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Privacy and security Personal data that is shared and stored online can pose risks	**Learning intention** Students will learn to identify situations where it is unsafe to share personal data online, understand the risks associated with oversharing, and develop strategies to protect their privacy. **Focus questions** • When is it unsafe to share personal data online? • What are the risks of oversharing? • How can we protect our privacy by being careful about what we share? **Support notes** Oversharing: Sharing too much personal information online, which can lead to privacy and security risks. Private information: Information that should be kept secure and not shared online, such as home addresses, phone numbers, and passwords. Trustworthy source: A person or website that is reliable and safe, where sharing personal information might be appropriate, but still with caution. Digital reputation: How others see you based on your online actions, posts and shared content. It reflects your behaviour on social media and other digital platforms, which may affect how people perceive you. Being careful about what you share helps maintain a positive digital reputation.	**Introduction** Review personal versus private information. Explain that once something is shared, it can be seen by many people, even those we don't know, and it can be hard to take it back. Use simple examples to illustrate how something shared as a joke could be misunderstood by others who see it later or out of context. • Silly face photo Posting a picture of your friend making a funny face with the caption 'Goofball!' might make others think you're making fun of them, even if it's just a joke • Funny dance video Posting a video of your friend doing a silly dance might be funny to you, but others may think you're teasing them. Discuss how a 'digital reputation' is made up of all the things we share online, and how important it is to have control over this by thinking carefully before sharing. **Learning activity** Have each student make up a pretend secret (something silly or fun, not a real secret). Discuss the need for appropriate 'secrets' that are not about people in the class. Pair up students and ask them to share their pretend secrets with each other.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Suggested assessment points Observe students during discussions and activities, noting their understanding of the concepts of privacy and sharing. Use students' participation and answers to the questions during the *Make Up a Secret* activity to assess whether they can identify when it's safe to share information and when it's better to keep it private.	After sharing, each pair to discuss: • Would you tell this secret to anyone else? Why or why not? • Who would you trust to keep this secret, and why? • How would you feel if someone told your secret to everyone without asking you? After student discussions, invite them to share their pretend secret with the whole class and talk about how they felt sharing it. Lead a group discussion on how important it is to think before sharing something personal online, and how it would feel if that information was shared without permission. Discuss that once something has been shared online, they're no longer in control of where it can go. **Conclusion** Discuss the main points and the importance of thinking carefully before sharing anything online, especially if it's personal or involves someone else. Emphasise that sometimes, the best choice is not to share at all, particularly when it comes to private information, such as our home address or someone else's secret. Provide questions for students to discuss with their families at home, such as: • Why is it important not to share your full name or address online? • When is it okay to share a photo or video of someone else? • Is it ever okay to share someone else's secret? Why or why not?

Term 1 Week 5 Strong and memorable passwords

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Privacy and security Access their school account using a memorised password. It should be easy to remember but difficult for others to guess. Risks of not logging out	**Learning intention** Create strong and memorable passwords to protect our school accounts and understand the importance of logging out to keep our personal information safe. **Focus questions** • Why is it important to have a strong password? • How can we create a password that is easy to remember but hard for others to guess? • What are the risks of not logging out of our accounts? **Support notes** • Password: A secret word or phrase that is used to access a computer system, account or data. • Security: Measures taken to protect a system, account or data from unauthorised access. • Logout: The process of exiting an account to prevent others from accessing it without permission. **Suggested assessment points** Assess students based on their participation in the password creation activity and their ability to explain why strong passwords are important. Evaluate their understanding of the risks of not logging out through their responses to the scenario discussions.	**Introduction** Start by asking students to think about items they protect in their everyday lives, such as a diary (with a lock) or a toy (kept in a safe place). Discuss why they protect these items and how this relates to protecting information online. Explain that passwords are a way to protect digital information, just like a lock protects physical items. Discuss what makes a password strong and why this is important. Explain that a strong password is difficult for others to guess, even if they know some information about them. A strong password typically includes a mix of uppercase and lowercase letters, numbers and symbols. Provide examples of strong and weak passwords. Discuss why some passwords are better than others, emphasising that strong passwords help keep accounts secure. **Learning activity** Have students practise creating their own strong passwords. Guide them to start with a phrase or sentence that is easy to remember, such as ‘I love reading books every night,’ and then transform it into a password by using the first letter of each word (e.g. ‘Ilrben’) and adding numbers or symbols to make it stronger (e.g. ‘Ilrb3n!’). Discuss strategies for remembering strong passwords without writing them down, such as creating a meaningful phrase or using a mnemonic device.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	This lesson teaches students the critical importance of strong passwords and safe online practices, such as logging out of accounts. It is based on the *Password Power-Up* lesson from Common Sense Education.	Explain that logging out is an essential step in protecting their accounts. Discuss the risks of staying logged in, such as someone else accessing their account and making changes or stealing information. Provide real-life examples or scenarios where failing to log out has caused problems and discuss how logging out helps prevent these risks. Present scenarios where a password might be compromised or where someone forgets to log out of their account. For example; If you leave your account open on a school computer, what might happen? Have students discuss these scenarios, in pairs or small groups, focusing on the importance of using strong passwords and always logging out of accounts when finished. **Conclusion** Recap the key points about creating strong passwords and the importance of logging out of accounts. Encourage students to think about how they can apply these lessons to their school accounts and any other online accounts they might use. Encourage students to review their current passwords and consider updating them to make them stronger, using the techniques discussed in the lesson.

Term 1 Week 6 Hardware and software

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital systems Digital systems, including peripheral devices, are used to transfer and store different types of data **Design thinking skills** **Project management** Use agreed protocols and management roles to communicate ideas, plan and make decisions to develop solutions	**Learning intentions** Investigate and analyse the different types of digital systems used in school. Create a visual representation to demonstrate how these digital systems are used. **Focus questions** • What is a digital system? • What parts make up the digital system? • What are examples of a digital system? • What is the difference between hardware and software? • What is a network? • Which digital systems would you find at school? • How are those digital systems used? **Support notes** Digital systems are made up of hardware and software components that work together to receive data, process and store data, or output data in some way. Hardware refers to the physical parts of the system that you can touch, such as the computer and internal components. Software, on the other hand, is the set of non-physical instructions that tells the hardware what to do. Examples of digital systems include desktop computers, laptops, tablets, smartphones, and smart TVs.	**Introduction** Select and watch the video, *How computers work: Hardware and software* https://www.youtube.com/watch?app=desktop&v=xnyFYiK2rSY Brainstorm a list of different types of digital systems (these can be classified into personal devices, portable devices or desktop devices). **Learning activity** In pairs or small groups, students are to survey rooms around the school and/or the admin block to find and photograph/draw digital systems used at school and how they are used. With teacher direction, students are to sort digital systems into personal, portable or desktop. Discuss how the survey results of digital systems and their use across school, will be presented. The method could be either an unplugged representation (no digital system use) or a plugged representation (using software like spreadsheet or presentation tools).

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	In a school setting, digital systems include a variety of devices used for teaching and learning, such as interactive whiteboards, tablets, desktop computers and projectors. These systems are essential for creating and sharing digital content, conducting research, and facilitating communication between students and teachers. When multiple digital systems are connected, they form a network. Networks allow digital systems to share data and resources, such as files, printers, and internet connections. The most common type of network in schools is a Local Area Network (LAN), which connects devices within a specific location, such as a school building. See Appendix A.1 for suggested videos about digital systems and how computers work.	Students to independently develop a visual representation of the survey results. Possible ways this can be done include: • recreating the school and the location of the devices using apps like Microsoft® Minecraft® • poster using PicCollage or Canva • presentation using Microsoft® PowerPoint® or Apple® Keynote® • a recorded video. **Conclusion** Share and discuss the visual representations with the class using the questions below to guide discussion: • What is the most used digital system in the school? • Why do you think this is the most frequently used? • Which digital system is mostly used for photos, creating documents, recording? • Why is this digital system more often chosen for that purpose than other digital systems?

Term 1 Weeks 7–8 Peripheral devices

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital systems Digital systems, including peripheral devices, are used to transfer and store different types of data **Design thinking skills** **Designing** Design solutions through use of labelled drawings, technical terms, decision-making and/or a sequence of steps	**Learning intentions** Identify and classify different peripheral devices connected to digital systems, and understand their roles as input, output or storage devices. Explore how digital systems connect with peripheral devices, and make a visual representation that shows how these devices help digital systems work better. **Focus questions** • What is a peripheral device? • What is the purpose of the different types of peripheral devices? **Support notes** Peripheral devices are non-essential devices that are used to increase usability and function, but aren't required for the operation of the system. Input peripherals send information from the user to a computer, such as a hard drive, keyboard, game controller or mouse. On a sketch of a desktop computer, this could be shown with an arrow pointing from the input peripheral to the hard drive. Output peripherals receive processed information from the computer, such as a printer, speaker, monitor or touchscreen, to the user. On a sketch of a desktop computer, this could be shown with an arrow pointing from the hard drive to the output peripheral.	**Introduction** Discuss and review the terms peripheral devices, input and output. Use the video in Appendix A.1 on peripheral devices to support discussion, if required. Use a computer or laptop that is setup within the class or a photo of a desktop computer to discuss with students the different components. Model labelling input/output/storage peripherals and indicate, using arrows or letters, such as 'I' for input, 'O' for output or 'S' for storage, whether the devices are for input, output or storage. **Learning activity** Students independently select a digital system to draw and label, including arrows and letters showing whether peripheral devices provide input or output. Examples of digital systems students can draw and annotate are: • desktop computer setup: keyboard (input), monitor (output), mouse (input), printer (output), external hard drive (storage) • tablet with accessories: touchscreen (input/output), stylus (input), bluetooth keyboard (input), wireless headphones (output) • gaming console: game controller (input), TV/monitor (output), virtual reality headset (input/output), external storage (storage).

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Storage peripherals, such as external hard drives, store data from the computer. Peripherals send or receive data, either wirelessly or via cable. A suggested video link explaining computer parts for the optional learning experience has also been included in Appendix A.1. **Suggested assessment point** Students identify peripheral devices and their purpose in a digital system.	**Optional extension** Students can create a model within an online game to show a digital system with peripherals. For example, students can show how computers are connected around the school with Redstone in Minecraft. Students visit electronic shop websites to select and create their ideal digital system setup, e.g. choosing a gaming console, TV, controller, speakers and other peripherals. Students to then create a visual representation of their setup, labelling each component and explaining the function of each peripheral. Students gather images of various digital systems and peripherals from magazines, online sources or printed materials. Students then create a collage, labelling each part and categorising them as input, output, or storage devices. This can be done digitally or on paper.

Term 2

Weeks 1–8: Digital implementation

Term 2 Week 1 Sequence of steps

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital Implementation Represent an algorithm (sequence of steps) involving decisions (branching) and repetition using flow charts	**Learning intentions** Follow and analyse a sequence of steps to create an image and identify how clear and detailed instructions lead to accurate results. Explore how decisions and repetition can be used to improve efficiency in following these steps. **Focus questions** • Did you follow all the instructions? • Did you miss any of the instructions? • Did you understand all the instructions? • Were the instructions clear? **Support notes** Following a sequence of steps occurs in many areas of everyday life; for example: • a simple maths problem • playing a board game or card game • making a sandwich. To achieve the intended solution, instructions need to be followed explicitly and carefully. When providing a sequence of steps for an intended solution, it is important that the instructions provided are detailed, explicit and clear.	**Introduction** Read aloud the instructions for the example in *The Draw My Picture Game* https://www.homeschoolwithlove.com/2013/11/07/draw-picture-game/, or use a similar example and have students create the image following instructions given by the teacher. **Learning activity** Students follow the instructions read aloud by the teacher to create the image, without anyone else seeing their image. Compare the images students have drawn with the image from the online example. Use the focus questions to discuss possible reasons why images may differ. Repeat the process, this time refining the instructions to draw the picture. Give students 13 shapes and see how many moves it takes them to can create the image. Compare results.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		Optional extension Students work in pairs with toy building blocks (like Lego). Students are to sit back-to-back, so they can't see each other's work. One student to act as the 'instructor' and the other as the 'builder.' The instructor describes how to build a minifigure, piece by piece without showing or pointing. The builder must follow the verbal instructions to assemble the minifigure. The goal is to see if the builder can accurately recreate the minifigure using only the verbal instructions. **Conclusion** Conclude with a discussion highlighting the importance of clarity and explicit language when giving instructions. The simplest confusion can lead to very different results.

Term 2 Weeks 2–3 Unplugged algorithms

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital implementation Represent an algorithm (sequence of steps) involving decisions (branching) and repetition using flow charts **Design thinking skills** **Investigating and defining** Investigate and select resources based on properties for the given task **Designing** Design solutions through use of labelled drawings, technical terms, decision-making and/or a sequence of steps **Evaluating** Use given criteria to evaluate design features, selected resources, decision-making processes and the designed solution	**Learning intentions** Define and create a sequence of steps (algorithm) to accomplish an everyday task, ensuring that each step is clear, explicit, and in the correct order. Evaluate the effectiveness of the sequence by testing it with peers, and reflect on the importance of detailed instructions in achieving the desired outcome. **Focus questions** • How will you know if your sequence of steps is successful? • Did you follow each step exactly as it was provided? • Why is the order of steps important when undertaking tasks? • If the sequence of steps was followed exactly, did they achieve the required outcome? • If the required outcome was not achieved, what was missing from the instructions? **Support notes** Students develop a sequence of instructions for an everyday task. This provides the learning hook into using simple visual programming environments that include a sequence of steps (algorithm).	**Introduction** Recap the steps in the *Draw my Picture Game* activity carried out in the previous lesson, and emphasise the importance of explicit and detailed instructions. Use the first focus question to aid in the development of a criteria for task feedback. This can be practised with a sequence of steps (algorithm), such as putting on shoes or tying a shoelace. **Learning activity** Individually, or in pairs, students develop a sequence of instructions for an everyday task, such as putting on shoes, for another student to follow. Students swap the sequence of steps with another student/pair, and have them follow the steps and evaluate the outcome. Alternatively, students could orally provide the steps to another student or pair. Use the focus questions to guide students to reflect upon, and evaluate, the sequence of steps they followed. Show students the video *Exact instruction challenge* https://youtu.be/cDA3_5982h8.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	An algorithm is a precise sequence of steps to solve a problem or perform a task. A computer requires explicit algorithms to complete a task. Computers work sequentially, line by line, top to bottom. If the order is incorrect, a logic error may occur. Suggestions for an everyday task for students to develop a sequence of instructions for, include: • How to make a sandwich that has to be cut in half – a similar example is *Exact Instructions Challenge* https://youtu.be/cDA3_5982h8 • How to upload and then insert an image into PowerPoint or similar software • How to make a paper plane • Criteria for the task could include the steps being in order, the steps including explicit information and the final product being the intended product. **Suggested assessment points** Collect the written sequence of steps and evaluation, if any. Observe collaboration between students.	Students research where algorithms occur in real life, and identify when they have a sequence of steps to follow. **Conclusion** Students post results, with an explanation of the process of the algorithm, in a class blog or online classroom discussion forum. Students can add a process in their peers' algorithms.

Term 2 Week 4 Flow chart algorithms

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital implementation Represent an algorithm (sequence of steps) involving decisions (branching) and repetition using flow charts **Design thinking skills** **Investigating and defining** Investigate and select resources based on properties for the given task **Designing** Design solutions through use of labelled drawings, technical terms, decision-making and/or a sequence of steps	**Learning intentions** Represent algorithms using flow charts that include decisions (branching) and repetition, demonstrating how different choices lead to different outcomes. Design flow charts using appropriate symbols and labelled drawings to clearly represent a sequence of steps, decisions and actions in a process. **Focus questions** • What is the decision that needs to be made in this flow chart? • What are the two possible solutions in the flow chart? • What are the processes? **Support notes** Sequenced steps (algorithms) are the step-by-step instructions that tell a program exactly what to do and in what order to do it. Branching is a term that refers to having more than one intended outcome and making a decision between one of two or more actions. Decisions in digital technologies allow actions to change based on input. An interactive or online game often involves the user needing to make a decision between two or more choices.	**Introduction** View a simple sequential algorithm as written instructions. Introduce students to the same algorithm using flow chart symbols. Explain/reinforce to students the importance of flow charts to see the possible inputs, processes and outputs in the algorithm. Use the same algorithm, but with a decision in it and two possible solutions. A sample flow chart, *Do I want toast?* Yes or No is in Appendix A.2. Reinforce each symbol in the flow chart. In small groups, students solve the problem with the algorithm. **Learning activity** Discuss, and brainstorm, with students, simple problems that have two possible solutions. In pairs or independently, students to select one problem and develop a flow chart showing the sequence of steps. The flow chart must have at least two possible solutions. The sample flow chart in Appendix A.3 shows a simple if–then–else decision. Use this to demonstrate the symbols used in flow charts. Students develop their own flow chart template using the symbols outlined above.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Flow charts assist in demonstrating the relationship between the content and the processes. They are used to represent an algorithm (sequence of steps) that involves decisions (branching). Common symbols are used to demonstrate algorithms in flow charts. For instance: • start and finish is a rounded rectangle or oval • process or action is a rectangle • decision is a diamond • input/output is a parallelogram • line connectors with arrow heads. The digital solution must have choices. This is called selection. Decisions or branching is important in digital systems. The input of data may allow actions to be changed. Computers follow pathways which can be represented by a flow chart.	**Conclusion** Students share their flow charts with the class, reflecting on the use of symbols and the clarity of the flow chart.

Term 2 Week 5 Creating a flow chart for an animal guesser application

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital implementation Represent an algorithm (sequence of steps) involving decisions (branching) and repetition using flow charts **Design thinking skills** **Investigating and defining** Investigate and select resources based on properties for the given task **Designing** Design solutions through use of labelled drawings, technical terms, decision-making and/or a sequence of steps	**Learning intention** Create a branching flow chart that uses classifying questions to guess an animal selected by the user. **Focus questions** • How do decisions guide the flow of an algorithm? • What questions can help classify different animals? • How do you structure a flow chart to guess an animal based on these questions? **Support notes** These are yes/no questions used to differentiate between options; for example, 'Does it have fur?' or 'Does it have four legs?' These questions serve as decision points in the flow chart. Branching occurs when a decision point leads to two possible paths. Each path represents a different answer to the question, ultimately leading to the identification of the animal. In flow charts, repetition allows the process to loop back to a previous step, enabling the path to repeat until a specific condition is met or the process is complete. **Suggested assessment point** See Appendix C for the Assessment task outline, worksheets and marking key for this task.	**Introduction** Begin by reviewing the purpose of flow charts and how decision points create branching paths. **Learning activity** Have students select four different animals. Encourage them to choose animals that are easy to classify using basic physical characteristics, e.g. fur, number of legs or size. Discuss what makes a good classifying question. Explain that these questions should be simple yes/no questions that help narrow down the options until the correct animal is identified. Students will create a flow chart using their selected animals. They will start with a decision point, such as 'Does it have fur?' and continue branching out with further questions, such as 'Does it have four legs?' or 'Is it larger than a cat?'. Each decision point should lead to either another question or the identification of an animal. Students add a 'Play Again' button at the end of their flow chart. This button should loop back to the first question, allowing the user to start the guessing game again. The sample flow chart in Appendix A.4 shows a simple if-then-else decision. Use this to demonstrate the symbols used in flow charts.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		Conclusion Once the flow charts are created, students will pair up to review each other's work. They will check for clarity, logical flow, and whether the flow chart correctly leads to the identification of one of the selected animals.

Term 2 Weeks 6–8 Creating the animal guesser application

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital implementation Implement algorithms (sequence of steps) in a visual programming environment to include decisions (branching) and repetition **Design thinking skills** **Project management** Use agreed protocols and management roles to communicate ideas, plan and make decisions to develop solutions **Producing and implementing** Use appropriate technologies, components and/or equipment and follow agreed protocols to produce a designed solution **Evaluating** Use given criteria to evaluate design features, selected resources, decision-making processes and the designed solution	**Learning intentions** Create an interactive animal guesser app by turning the flow chart from the previous week into a digital game using presentation software. Use hyperlinks to connect different slides of the game. **Support Notes** The flow chart created in the previous week serves as a blueprint for the app. Each decision point in the flow chart will correspond to a slide or page in the presentation software, e.g. PowerPoint or Keynote. Hyperlinks are essential for making the app interactive. By linking different slides, users can navigate through the questions based on their answers, ultimately leading to the correct animal. The teacher should create a PowerPoint or Keynote template for the students. This template should include pre-made slides with unlinked buttons and designated spots for the animals and questions. The template is designed to save time and allow students to focus on learning how to link slides and match them to their flow chart rather than on how to create a presentation from scratch. **Suggested assessment point** See Appendix C for the Assessment task outline, worksheets and marking key for this task.	**Introduction** Begin by demonstrating how to use hyperlinks in presentation software. Show students how to link text, images or shapes to other slides within the presentation. Discuss the importance of clear navigation, and how to make sure each hyperlink leads to the correct slide based on the user's answer. Guide students as they add their classifying questions and animals to the template. They will use hyperlinks to connect the slides, creating a smooth and interactive experience for the user. **Learning activity** Students will work independently or in pairs to build their animal guesser app using the provided template. They will focus on adding the content to the slides and linking the buttons to create the branching paths outlined in their flow chart. Encourage students to incorporate visuals, such as images of the animals, to make the app more engaging. Once the app is created, students should test it by having a classmate use the app to guess an animal. They should observe how their peers interact with the app and note any issues or areas for improvement.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		Students should then refine their app based on feedback, ensuring that hyperlinks work, and that the app accurately leads to the correct animal. The example slide template/scaffold in Appendix A.5 shows what the slides might look like. **Conclusion** Once students have completed their animal guesser app, invite students from another class to test the apps.

Term 3

Weeks 1–8: Digital implementation and design thinking

Term 3 Week 1 Introduction to Blockly

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital implementation Represent an algorithm (sequence of steps) involving decisions (branching) and repetition using flow charts **Design thinking skills** **Investigating and defining** Define the features of a design brief and the requirements of a design task for a community need Investigate and select resources based on properties for the given task **Designing** Design solutions through use of labelled drawings, technical terms, decision-making and/or a sequence of steps	**Learning intention** Explore a visual programming environment by using block-based coding to create simple sequences, decisions, and loops to control characters and actions. **Focus questions** • What is visual programming? • How do you move characters in different directions? • How do you add sounds? • How do you repeat or loop actions? **Support notes** Programming is the process that makes it possible to create computer software, applications and websites. Currently, computers are unable to think for themselves; they require users to give them sets of ordered instructions to know what to do. This is referred to as 'code'. Most of the resources you use on the computer and internet are made with code. Visual programming is also known as block-based programming. This lets users create programs using graphics rather than text. Users can manipulate and represent steps with the graphic blocks or icons.	**Introduction** Introduce and discuss what visual programming is. Using the interactive whiteboard show the website https://code.org/learn. **Learning activity** Students to explore some examples of block-based coding appropriate to their age/skill level. Good examples include: • Star Wars: Building a Galaxy with Code (Blockly): https://studio.code.org/s/starwarsblocks/ • Make a Flappy game https://studio.code.org/flappy/1. **Conclusion** Discuss how students used visual programming to create simple sequences, decisions and loops. Reflect how this controlled the on-screen character and its actions.

Term 3 Week 2 Game planning

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital implementation Represent an algorithm (sequence of steps) involving decisions (branching) and repetition using flow charts **Design thinking skills** **Project management** Use agreed protocols and management roles to communicate ideas, plan and make decisions to develop solutions **Investigating and defining** Define the features of a design brief and the requirements of a design task for a community need Investigate and select resources based on properties for the given task **Designing** Design solutions through use of labelled drawings, technical terms, decision-making and/or a sequence of steps	**Learning intentions** Understand the concept of virtual pets and basic game design principles. Plan the key elements of your virtual pet game, including the pet character, background and basic interactions. Establish success criteria to guide the design and development of an engaging virtual pet game. **Focus questions** • What is a virtual pet, and how can it be used in a game? • What elements make a virtual pet game engaging and fun? • How can we design a game that allows us to interact with a pet? **Support notes** A virtual pet is a digital character that you can interact with, feed, and take care of within a game environment. A community need is a problem or challenge that people in your community face: creating solutions – like a virtual pet game – can address this need by teaching valuable skills, providing safe entertainment or offering companionship.	**Introduction** Show examples of popular virtual pet games, e.g. Tamagotchi, the biggest craze in 1997 https://youtu.be/kIxyvcqh4jE?si=10iET5VA2q6UkPfU. Discuss with students what makes these games engaging, e.g. taking care of the pet, animations and sounds. Discuss the community need for a virtual pet in Japan: • Pet/toy that can be taken anywhere • Teaches responsibility • Pet that doesn't require as much space/time – Japanese apartment living conditions and busy lifestyle. Discuss the basic elements that will go into the students' games, such as the pet, background, and actions (feeding and animations). Ask students to brainstorm possible pets and environments, e.g. garden, space or underwater. **Learning activity** Guide students in creating success criteria for their games. Discuss what makes a virtual pet game fun and engaging, then collaboratively decide on key criteria such as: • creativity • engaging interactions • teaching responsibility.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Game elements are the pet, the background, and the interactions you can have, such as feeding, playing or animations. Success criteria are the agreed standards that your game should meet to be considered successful. These are created collaboratively to define what makes a game fun, creative, and engaging.	Provide students with a planning workbook (see Appendix A.7) where they are to: • decide on a pet character, considering what makes it desirable and engaging • think about an environment that fits their pet, e.g. garden or space • think about how the player will interact with the pet, such as feeding or playing. Encourage students to think creatively, exploring both realistic and imaginative ideas for their game. **Conclusion** Have a few students share their pet designs and game ideas with the class. Highlight creative choices and how they align with the success criteria, reinforcing the importance of meeting these standards in their game design.

Term 3 Week 3 Sprites and backgrounds

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital implementation Implement algorithms (sequence of steps) in a visual programming environment to include decisions (branching) and repetition **Design thinking skills** **Investigating and defining** Investigate and select resources based on properties for the given task **Designing** Design solutions through use of labelled drawings, technical terms, decision-making and/or a sequence of steps **Producing and implementing** Use appropriate technologies, components and/or equipment and follow agreed protocols to produce a designed solution	**Learning intentions** Set up your virtual pet and game environment using a visual programming tool. Program an introduction for your pet, that runs when the game starts, using event handling blocks. **Focus questions** • How will you set up and design the environment for your virtual pet? • What will your pet do or say when the game starts? • How can you use event blocks to program your pet's introduction? **Support notes** In visual programming tools like Scratch, you create your game by selecting a sprite (your pet) and a backdrop (the environment). Sprites are characters or objects that can perform actions in the game, and backdrops set the scene for where your game takes place. Event handling is how the program responds to specific actions, such as starting the game. In Scratch, this is done using blocks like 'when green flag clicked', which triggers the start of your pet's introduction sequence. Setting up a sequence of blocks that run when the game starts, helps students understand the basics of coding flow.	**Introduction** Recap the virtual pet designs and environments brainstormed in the previous lesson. Explain that today, students will start setting up their game by adding their chosen pet and background in Scratch (or their chosen platform). Highlight the importance of creating an engaging introduction for their pet to make the game interactive from the start. Show how to select a pet sprite by clicking 'Choose a Sprite' and picking an animal or character. Encourage creativity – students can use anything from pets like dogs and cats to dragons or robots. Demonstrate how to select a backdrop by clicking 'Choose a Backdrop' and picking an environment, e.g. garden, space or underwater. Walk through adding the 'when green flag clicked' block to start the game and a 'say' block for the pet's introduction, e.g. 'Hi! I'm Buddy the Puppy!'. **Learning activity** Students will set up their pet sprite/character and background/ environment in Scratch or another chosen platform. Guide them to add an introductory sequence using event handling blocks, e.g. 'when green flag clicked'.

	For instance, making the pet introduce itself with a 'say' block when the green flag is clicked, sets a friendly tone for the game and engages players right away. This basic sequence is foundational for building more complex interactions later. Students will be planning and developing their virtual pet using Scratch™ 3.0 Offline Editor. https://scratch.mit.edu/download The offline editor for Scratch will need to be downloaded prior to student use. Teachers should refer to their system/sector's Third-Party consent requirements if planning to use the online version. Alternatively, students can use other visual programming platforms, such as Code.org, specifically the Sprite Lab – Virtual Pet, which also allows students to create interactive virtual pets using a similar block-based coding approach. This provides a great alternative for students who may prefer a different interface or who are working on tablets. See Appendix A.9 for a list of alternative platforms and additional resources for this project. Each platform offers unique features and capabilities, allowing teachers to choose the tool that best suits the learning styles, access needs, and creative goals of their students. A video walkthrough is available here: How to Make a Virtual Pet in Scratch | Tutorial. (n.d.). [Video]. The Scratch Team. YouTube. https://youtu.be/irhNLRWwhv0?si=3ZiNFMQlkBucOtnS	Encourage students to personalise their pet's introduction – what will it say or do when the game starts? **Conclusion** Invite a few students to share their game setups and the introductory sequence they created for their pet. Use this as an opportunity to highlight creativity, troubleshoot any errors, and provide feedback on how to make the introduction more engaging. **Optional extension** Encourage students to add a small animation or sound to their pet's introduction to make it more dynamic, such as a bounce, wiggle or greeting sound. This will enhance the interactive experience and make the game more fun.

Term 3 Week 4 Animating your pet

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital implementation Implement algorithms (sequence of steps) in a visual programming environment to include decisions (branching) and repetition **Design thinking skills** **Investigating and defining** Investigate and select resources based on properties for the given task **Designing** Design solutions through use of labelled drawings, technical terms, decision-making and/or a sequence of steps **Producing and implementing** Use appropriate technologies, components and/or equipment and follow agreed protocols to produce a designed solution	**Learning intentions** Animate your virtual pet using basic coding blocks for movement, costume changes and sound effects. Plan and create a sequence of steps to bring your pet to life with interactive animations. **Focus questions** • How can you use coding blocks to animate your virtual pet with movement and sounds? • What steps will you plan to make your pet come to life? • How can costume changes make your pet's animations more interactive? **Support notes** Animating the virtual pet involves making it move, change appearance, or perform actions that bring it to life. This is achieved by combining coding blocks that control the sprite's actions, such as switching costumes, moving across the screen, or playing sounds. Animation is essential for engaging the player and making the game feel interactive. Costumes are different poses or looks for the sprite. By switching between costumes with 'switch costume' blocks and adding wait times, it can create simple animations, such as blinking, jumping or waving. Costumes give your pet a dynamic appearance and make its actions feel more real.	**Introduction** Introduce the concept of animation and explain why it's important for making the virtual pet engaging and interactive. Highlight that the focus of the lesson is on using costume changes and movement commands to bring their pet to life. Show students how to access the costume tab in Scratch. Demonstrate how switching between different costumes can create a simple animation, such as blinking or waving. Demonstrate using movement blocks, such as 'move 10 steps', 'glide to', or 'change y by 10' to animate the pet. Explain how these commands make the pet feel responsive and dynamic. Students to investigate what resources are already available in Scratch. **Learning activity** In their workbooks, students will plan the animation sequence for their pet. They should: • draw or describe the costumes their pet will switch between, e.g. idle or happy • outline the movement actions their pet will perform, e.g. jump, slide or bounce • decide on sound effects or any other interactive elements they want to include

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Movement blocks, such as ‘move’, ‘glide’, or ‘change x/y’ allow the pet to move around the screen. These commands are critical for adding life to the pet’s actions, such as jumping up when clicked or gliding smoothly to a new position. Movement not only enhances animations but also increases the interactivity in the game. **Suggested assessment points** Check students’ workbook plans for clear sequences of costume changes, movements and sounds. Observe if students' coded animations match their planned sequence with smooth transitions and correct use of blocks.	• create a simple sequence of steps showing the order of these actions. Using their planned sequence as a guide, students will code their animations. They will use ‘switch costume’ blocks, movement commands and sound effects to bring their pet’s planned actions to life. Encourage students to test their animations and adjust as needed to match their planned sequence. **Conclusion** Have a few students demonstrate their animations, comparing the final product to their initial plan. Discuss what worked well, what needed adjusting, and how planning helped guide their coding.

Term 3 Week 5 Adding interactive elements: Feeding your pet

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital implementation Implement algorithms (sequence of steps) in a visual programming environment to include decisions (branching) and repetition **Design thinking skills** **Project management** Use agreed protocols and management roles to communicate ideas, plan and make decisions to develop solutions **Investigating and defining** Investigate and select resources based on properties for the given task **Designing** Design solutions through use of labelled drawings, technical terms, decision-making and/or a sequence of steps **Producing and implementing** Use appropriate technologies, components and/or equipment and follow agreed protocols to produce a designed solution	**Learning intentions** Create interactive elements in your game by adding actions, such as feeding your virtual pet. Use coding blocks to make the pet respond to player inputs, enhancing the interactivity of the game. **Focus questions** • How can you use coding blocks to make your pet respond when it's fed? • What actions can you add to make your game more interactive? • How does player input make your game more engaging? **Support notes** Adding interactive elements, such as feeding the pet, increases engagement and makes the game more dynamic. It allows players to directly interact with the pet, giving it a sense of care and response. Event blocks like 'when this sprite clicked' are used to trigger new actions. For instance, when a food sprite is clicked, the pet can move to the food and play a sequence of actions. This enhances the interactivity of the game by allowing players to see immediate responses to their actions.	**Introduction** Introduce the concept of interactivity in games, focusing on how elements, such as feeding a pet, make the game feel more alive and engaging. Explain that today's lesson will focus on adding a feeding interaction where the pet responds when food is clicked, simulating real-life care. Show how to add a new sprite, e.g. an apple, that will act as the food for the pet. Explain that this will be the interactive element players click on. Demonstrate how to use the 'when this sprite clicked' block on the food sprite and add a 'broadcast message' block, e.g. 'food'. Explain that broadcasting sends an invisible signal to trigger actions in other sprites. Show how to set up the pet sprite to respond to the broadcast message with a 'when I receive (food]' block. Demonstrate how to code the pet to move towards the food, play a sound (e.g. a munching noise), and then glide back to its original position. **Learning activity** Students use their workbooks to plan the sequence of actions for the feeding interaction, e.g. 'Click food > Broadcast (food) > Pet moves > Pet plays sound > Pet returns.'

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	In Scratch, broadcast blocks send a message from one sprite to another, triggering actions like feeding the pet. This is a key method for creating interactivity between game elements. Use movement blocks to make the pet move towards the food and add sound effects to simulate actions like eating. These elements make the interaction more realistic and engaging. **Suggested assessment points** Check students' workbook plans to ensure they have identified the correct sequence of actions for the feeding interaction. Observe if the feeding interaction works correctly, focusing on the broadcast, pet movement and sound response.	Students add a food sprite to their game, using 'when this sprite clicked' to start the interaction. They will code the food sprite to broadcast a message, e.g. food, when clicked. Students will then code their pet to respond to the broadcast message by moving towards the food, playing an eating sound, and returning to its starting position. Encourage testing and adjusting to ensure smooth animation and interaction. **Conclusion** Invite a few students to demonstrate their feeding interaction to the class. Provide feedback on how well the interaction works, focusing on the flow of the sequence, the realism of the movement, and any creative touches added. Discuss any troubleshooting steps if parts of the interaction didn't work as planned.

Term 3 Week 6 Adding more interactive Features: Expanding pet interactions

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital implementation Implement algorithms (sequence of steps) in a visual programming environment to include decisions (branching) and repetition **Design thinking skills** **Project management** Use agreed protocols and management roles to communicate ideas, plan and make decisions to develop solutions **Producing and implementing** Use appropriate technologies, components and/or equipment and follow agreed protocols to produce a designed solution	**Learning intentions** Expand your game by adding additional interactive features, such as playing with the pet or adding toys. Enhance interactivity by using event blocks, movement commands and repeat blocks, to create varied and continuous responses from the pet. **Focus questions** • What new interactive features can you add to make your game more fun? • How can you use event and repeat blocks to make your pet's responses continuous? • How do movement commands make playing with your pet more engaging? **Support notes** Adding more interactive elements, such as toys or play actions, keeps the game engaging. It gives players multiple ways to interact with their pet, making the gameplay feel more dynamic and varied. Repeat blocks are used to loop actions, such as making the pet bounce repeatedly when playing with a ball. They allow animations and movements to feel more fluid and realistic, creating a sense of continuous play or reaction.	**Introduction** Discuss how adding more interactive elements, such as toys or play actions, makes the game more enjoyable and realistic. Explain the use of repeat blocks to create continuous actions, such as a pet repeatedly bouncing or wagging its tail. Show how to add a new sprite, such as a toy, e.g. ball or stick, that the pet can interact with. Demonstrate using event blocks ('when this sprite clicked') to start the interaction sequence. Use repeat blocks to loop movements, such as the pet repeatedly jumping or rolling when playing with the toy. **Learning activity** In their workbooks, students outline a new interaction, specifying how repeat blocks will be used to enhance actions, e.g. repeating jumps, rolls or sounds. Students add a new sprite, e.g. toy, and code an interactive sequence using event handling, movement and repeat blocks. Students use repeat blocks to loop movements, such as bouncing or tail wagging, to make actions feel lively.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Using repeat blocks alongside movement and sound commands can make interactions more engaging. For example, having the pet repeatedly jump or wag its tail when happy adds an extra layer of liveliness to the game. **Suggested assessment points** Effective use of repeat blocks: Check if repeat blocks are used correctly to loop actions like bouncing or jumping. Integration in sequence: Ensure repeat blocks enhance the flow without disrupting the intended behaviour of the pet.	**Conclusion** Select students to demonstrate their pet interactions, focusing on how repeat blocks were used to improve animations.

Term 3 Week 7 Testing and debugging the game

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital implementation Implement algorithms (sequence of steps) in a visual programming environment to include decisions (branching) and repetition **Design thinking skills** **Project management** Use agreed protocols and management roles to communicate ideas, plan and make decisions to develop solutions **Producing and implementing** Use appropriate technologies, components and/or equipment and follow agreed protocols to produce a designed solution	**Learning intentions** Test and debug your virtual pet game to ensure all interactions and animations work correctly. Refine and improve your game by identifying and fixing coding errors. **Focus questions** • How can you test your game to make sure everything works correctly? • What steps can you take to find and fix any coding errors? • How does debugging improve the overall experience of your game? **Support notes** Testing involves playing through the game to identify issues or bugs, such as animations not playing correctly, movements being too fast, or interactions not responding as intended. Encourage students to check if blocks are connected properly, event triggers are correct, and repeat blocks are not causing infinite loops. Emphasise the importance of testing frequently and making small adjustments to improve the overall functionality and flow of the game.	**Introduction** Discuss the importance of testing games to ensure everything works smoothly. Explain basic debugging techniques, such as checking connections between blocks and reordering steps for better flow. Show examples of common coding issues, such as repeat blocks looping too many times or movement blocks being out of order. Walk through the steps to fix these issues, demonstrating how to make small adjustments to improve gameplay. **Learning activity** Students play through their games, testing each interaction, movement and animation to identify any bugs. They use debugging techniques to refine their code, ensuring all actions are functioning as intended. **Conclusion** Students share their debugging experiences, highlighting what they fixed and how they improved their game. **Optional extension** Introduce the concept of variables, such as hunger, happiness or boredom, that can be added to the game to make it more complex and interactive.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		Discuss how variables track changes over time, e.g. hunger increasing, and can trigger actions when certain levels are reached. Guide students through setting up a simple variable like hunger, coding it to change over time, and linking it to actions, e.g. feeding reduces hunger.

Term 3 Week 8 Game showcase and reflection

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital implementation Implement algorithms (sequence of steps) in a visual programming environment to include decisions (branching) and repetition **Design thinking skills** **Project management** Use agreed protocols and management roles to communicate ideas, plan and make decisions to develop solutions **Producing and implementing** Use appropriate technologies, components and/or equipment and follow agreed protocols to produce a designed solution **Evaluating** Use given criteria to evaluate design features, selected resources, decision-making processes and the designed solution	**Learning intentions** Present and share your completed virtual pet game with classmates. Provide and receive feedback based on the student-created success criteria in previous lessons. **Focus questions** • What feedback can you give to others to improve their game? • How does sharing your game with others help you reflect on your work? **Support notes** Setting up the games at the start of the lesson ensures a smooth rotation, allowing students ample time to explore each game. Students will provide feedback by placing a tick next to each criterion that the game meets, focusing on constructive evaluation. **Suggested assessment point** Ask students to write a brief reflection in their workbooks, focusing on insights gained from playing others' games, potential improvements for their own, and aspects they enjoyed about the project. This reflection will help assess their understanding of game design principles and their ability to evaluate both peer and personal work.	**Introduction** Explain the showcase process, where students will play each other's games and use the success criteria to provide feedback. Review the student-created success criteria briefly, emphasising key aspects to look for, such as fun, creativity, and smooth gameplay. Students set up their games on devices around the classroom, ensuring each game is ready for peers to play. **Learning activity** Students rotate around the room, playing each game for a few minutes. As they play, students use a feedback form or checklist to place a tick next to each success criterion that the game meets, e.g. fun, creative or smooth interactions. After the rotation, students to return to their own games and review the feedback from their peers. Discuss key points as a class, celebrating creative solutions, and identifying common strengths and areas for improvement. **Conclusion** Students write a reflection in their workbooks about what they learned from playing others' games, what they might improve in their own, and what they enjoyed about the project.

Term 4

Weeks 1–8: Data Representation & Digital Systems

Term 4 Week 1 The purpose of symbols

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Data representation Data of the same type can be represented in different ways depending on the purpose	**Learning intention** Understand how data can be represented in different ways, including text and emojis, and how these representations can convey information and emotions. **Focus questions** • What is data? • What are emojis? • When are emojis used? • Why are emoji used? • What are the meanings behind different emojis? • What message or feeling does your emoji convey? • How does text become an emoji? **Support notes** In Digital Technologies, data refers to the discrete representation of information using number codes. Data may include characters (e.g. alphabetic letters, numbers and symbols), images, sounds and/or instructions that, when represented by number codes, can be manipulated, stored and communicated by digital systems. For example, characters may be represented using ASCII code, or images may be represented by a bitmap of numbers representing each 'dot' or pixel. Emoticons began in 1982 and are punctuation marks, numbers, letters and symbols that are used to display an emotion such as the smiley face :-) and the frowning face :-(.	**Introduction** Use the first focus question to clarify students' understanding of data. Brainstorm different ways data can be represented. Accept and list all responses. Refer to the definition of data to identify incorrect responses. Discuss how data becomes information, and information is sometimes presented in different formats, e.g. a number can be presented in different ways, as an image, on a clock, on a die, or as a beat of a sound. Use an interactive whiteboard to show at least three different emojis, such as smiling face, laughing face and crying face, and discuss how emojis have replaced text. Show the video quiz, *Can You Guess The Food By The Emoji?* https://youtu.be/IEDyHPaJSYQ. Using a word processing program, such as Microsoft® Word® or Google Docs™ or notes on an iPad, demonstrate to students how to create a message with emojis. **Learning activity** Place students into groups of two, to create their own messages using emojis. Students create a sentence or two demonstrating the use of emojis as a replacement for text, a word or an item.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Emojis are pictographs of faces, people, objects and symbols, and were invented in the 1990s. They are popular because of their simple design and their ability to convey a clear message and/or feeling. Characteristics of popular emojis include their simple design and their ability to convey a clear message and/or feeling without using words.	**Conclusion** Students collaboratively try and solve each of the other groups' messages. **Optional extension** Using the Emoji chart at https://unicode.org/emoji/charts-12.0/emoji-released.html, discuss the other keywords used to represent emojis.

Term 4 Week 2 The purpose of symbols

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Data representation Data of the same type can be represented in different ways depending on the purpose	**Learning intentions** Recognise that data can be represented in various forms, including symbols, images and numbers. Understand the purpose of symbols and visual representations in simplifying communication and quickly conveying meaning. **Focus questions** • What are different ways data can be represented? • How do symbols and images help us understand information without words? • Why are some representations better than others in certain situations? **Support notes** Data can be displayed in many ways, such as numbers, text, symbols or images. Choosing the right way depends on what message you want to convey. Symbols like traffic signs or emojis help us quickly understand rules, emotions or actions, without reading. The way we choose to represent data can make communication easier, faster and more effective, especially in public spaces.	**Introduction** Begin by introducing the concept of data representation. Explain that data can take many forms – numbers, words, pictures and symbols – all of which help us understand information. Show some common symbols, such as a heart for love or a thumbs-up for approval, and discuss how these symbols represent ideas without needing words. **Learning activity** Tell each student that they will be drawing a picture of a pig or a dog and that they are not to tell their partner which they are drawing. It should be a simple picture without using any words or labels. Once the drawings are complete, students to compare their pictures with a partner and guess which animal they drew. Guide them to discuss how their representations are similar or different, even though they may have been drawing the same animal. Prompt them with questions like: • What did you include in your drawing that your partner didn't? • How did you choose to represent certain features of the animal? Show students a selection of public signs, starting with clear, well-known signs such as a 'No Dogs Allowed' sign. Discuss what the sign means and why it is effective.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		Highlight the use of simple images and symbols that communicate the message quickly, even without words. Ask students why this sign is so effective. Discuss how the clear image of a dog with a red line through it immediately tells the viewer that dogs are not allowed, without needing to read any text. Emphasise the purpose: to communicate a rule quickly and clearly to everyone, regardless of language or reading ability. Present an example of a sign that is ambiguous or unclear, e.g. a poorly designed or overly complex sign that could be interpreted in different ways. Ask students to guess what the sign is trying to communicate. Discuss why this sign is confusing. Questions to prompt discussion could include: • What makes this sign hard to understand? • How could it be misinterpreted? • Why do you think it doesn't work as well as the 'No Dogs Allowed' sign? Explain that the purpose of public signs is to communicate important information quickly and effectively, often in situations where safety or clarity is crucial. The goal is to ensure everyone understands the message, no matter their background or language. Students design a school sign using symbols to clearly communicate a rule, like 'No Running' or 'Quiet Zone,' focusing on simplicity and universal understanding.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		Conclusion After designing, students will share their signs with a partner, discussing what makes the sign effective, and any improvements needed.

Term 4 Week 3 Schoolyard biodiversity data detectives

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Data representation Data of the same type can be represented in different ways depending on the purpose	**Learning intentions** Understand how to collect and represent biodiversity data using different formats, such as pictures, drawings and graphs. Learn how to effectively communicate information by choosing the most suitable data representation method. **Focus questions** • What types of animals and plants can be found in our schoolyard? • How can we represent the data we collect in a way that makes it easy to understand? • Why do different data representations, e.g. pictures, drawings and graphs, help us communicate information more effectively? **Support notes** Data can be visually represented in various ways, such as through photographs, drawings or graphs, each serving a different purpose depending on the audience and the message you want to convey. Using colours, shapes and distinct features helps make digital representations of plants and animals immediately recognisable and engaging for the viewer. Choosing the right representation method helps make information clear and accessible, such as using graphs to compare biodiversity in different areas, or pictures to capture the visual details of observed species.	**Introduction** Use a suitable learning hook to engage students in the task of gathering data about schoolyard biodiversity. Ideas may include: • Predict what animals might be seen in the schoolyard. • Show images of a local bird, butterfly, bee or 'minibeasts' such as worms, beetles and bugs. Where might you see these animals in the school? • What 'minibeast' can you find and where will you look? **Learning activity** Organise a walk around the school to take photographs of garden beds and locations where animals might be seen. (You may wish to allocate students in small groups to study and collect data on a particular area). Students could take photos of the different plants, animals and/or insects they see. Have students count the plants and describe them; for example, six small bushes, four grassy plants, three trees and a large bush. Discuss ways to represent each plant. Students may draw a representation of each plant or use a coloured shape to represent different plants. As students present the information, discuss the need for a title or other text that may help others 'read' or interpret the information. Students could take photos of the things they saw using a camera and then use the photos back in the classroom.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Suggested assessment points Consider how well students: • Represent the data using symbols, images and text. • Present the data using a picture graph or bar graph. • Interpret the results.	Discuss ways to represent the animals observed. Before the task, ask students to show how they would digitally represent a ladybug, worm and ant. You may use software such as Paint or an app, such as Explain Everything. Share some examples using an interactive whiteboard, or similar approach, to enable class discussion. Discuss the use of colour and identifying features that would help make their representation immediately recognisable. **Conclusion** Present the data using picture graphs or bar graphs. Discuss different ways to present the information. Present and compare the group data to the class. Which garden beds have the most biodiversity?

Term 4 Week 4 Onomatopoeia

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Data representation Data of the same type can be represented in different ways depending on the purpose	**Learning intentions** Learn how onomatopoeia is used to represent animal sounds in language. Recognise that the same sound can be represented differently depending on the purpose and culture. **Focus questions** • How do we use words to represent animal sounds? • Why do different cultures have different words for the same animal sounds? • What is the purpose of using onomatopoeia in communication? **Support notes** Onomatopoeia are words that imitate sounds, like 'oink' for a pig. They help us represent sounds in a fun and simple way, especially in stories and comics. The words we use for animal sounds can change depending on where you are. For example, in English, pigs say 'oink', but in German, they say 'grunz'; and in English horses say 'neigh', but in Swedish the same sound 'nej' means 'no', so, horses say 'aiee' in Swedish. These sound words are not just fun – they help us quickly understand and imagine sounds without hearing them. They also show how people from different places hear the world in their own way.	**Introduction** Start with a class discussion about how we represent animal sounds using words. Explain that words like 'oink' are just ways we agree to write down sounds that animals make, and different languages write them differently. Show examples of how the same animal sounds are represented in different languages. For instance, a dog's bark is 'woof' in English but 'wan wan' in Japanese. Students can be asked about their experiences with other languages. Discuss why these differences exist, and how they help us communicate the sounds animals make. **Learning activity** In groups, students pick an animal and research how its sound is written in English and at least two other languages. They create a simple poster or digital slide showing the animal and its sound in different languages, illustrating how sounds are represented differently. **Conclusion** Each group presents their poster to the class, explaining the different words they found for their animal's sound. Discuss why these words are different, and what makes them useful for storytelling or everyday communication.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Suggested assessment points Check students' understanding of how onomatopoeia works and why it's used. Observe students' ability to creatively represent animal sounds in different languages, and explain the differences.	

Term 4 Week 5 Peripherals: Data storage

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital systems Digital systems, including peripheral devices, are used to transfer and store different types of data	**Learning intention** Understand what data storage is, and how different devices are used to store information. **Focus questions** • What is data storage? • How do different devices store data? • Why do we need different types of storage? **Support notes** Data storage is where information, such as pictures, videos and documents, is kept so it can be used later. It can be on a device, such as a computer, USB stick or online, i.e. in 'the cloud'. Storage devices include USB sticks, CDs, hard drives and the cloud. Each has its own use, size and capacity. We need storage to keep our information safe and accessible. Different types of storage suit different needs, such as saving photos on your phone, or saving important documents in the cloud. The cloud or cloud server refers to the virtual storage of information that is accessible using any device from any location with an internet connection, and is located external to the network. Ensure you have a small range of peripheral storage devices to show students, such as floppy disk, CD, USB stick etc.	**Introduction** Begin by asking students where they think photos, videos and their schoolwork are stored when saved on a device. Discuss what happens when they save something on an iPad or computer. Show students real-life examples of storage devices: a USB stick, CD or even a printed photo. Let them touch and see these items up close. Explain how each device stores data and how it's used, e.g. USB sticks are portable and used for schoolwork, and CDs were used for music and games. Use simple terms to explain data storage: 'It's like a school bag for your information – you put things in so you can find them later when you need them.' Discuss how data storage keeps information safe and available, e.g. a photo album stores photographs. **Learning activity** Show students several storage devices and get them to order them based on the perceived age, e.g. floppy disk, CD, USB stick, picture of a cloud/external server etc. Brainstorm what is meant by the term: 'the cloud'. Show students *The Cloud – Kids Explain IT - Worksighted* video: https://youtu.be/ad-NTOuye4I and discuss with students again if they understand what the cloud is.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		Divide the class into two groups. One group of students will explore storing data on a device, and the other will focus on the cloud. Ask each group to brainstorm the advantages and disadvantages of their assigned storage type. Use guiding questions like: • Device: What happens if the device is lost or damaged? Is data easy to access? • Cloud: Do you need the internet to access your data? Can you access it from different devices? **Optional extension** Students will design a file storage organisation system for their schoolwork, deciding how to organise folders, name files, and select storage locations (device versus the cloud). Students will create a visual or written plan detailing where they would store different types of data, e.g. photos, homework or videos and explain their choices. This activity will help students understand the benefits of organised storage and efficient file management.

Term 4 Week 6 Community problem

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Design thinking skills **Project management** Use agreed protocols and management roles to communicate ideas, plan and make decisions to develop solutions **Investigating and defining** Investigate and select resources based on properties for the given task **Designing** Design solutions through use of labelled drawings, technical terms, decision-making and/or a sequence of steps	**Learning intentions** Identify real-world problems and brainstorm creative digital solutions using basic knowledge of inputs and outputs. Design the initial concept of a digital device that uses input sensors and output reactions to solve an identified problem. **Focus questions** • What everyday problems can we solve with a digital device? • How can a device use inputs and outputs to react to a situation? • How can we design a digital device that meets the success criteria? **Support notes** Guide students to think about common issues they see around them, such as littering, safety concerns or noise. This sets the foundation for designing meaningful solutions. Inputs are how a device senses the environment (e.g., seeing through a camera, hearing through a microphone, feeling through a motion sensor). Outputs are how the device reacts, e.g. making sound, moving part, or displaying visuals.	**Introduction** Start with a brainstorming session where students think about everyday problems they notice in their surroundings. Use prompts like: • What problems do you notice in our school or community? • Are there things that could be safer, cleaner or more fun? • What challenges might elderly people or people in wheelchairs face in our school or community? Divide students into small groups to discuss and list problems they think could be solved with a digital device. Each group should choose one problem to focus on. Introduce the concept of inputs and outputs in simple terms. Explain how devices 'sense' the world through inputs like cameras (seeing), microphones (hearing), and motion sensors (feeling). Show examples of everyday devices, such as a security camera (input: camera; output: video feed) or a motion-activated light (input: motion sensor; output: light).

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Guide students in understanding the success criteria: • The device solves a real-world problem. • The device uses an input sensor to see, hear or feel. • The device has an output that reacts to the input, e.g. sound or movement.	**Learning activity** As a class, develop three success criteria for students' digital devices: • Solves a real community problem • Uses an input sensor to detect something, e.g. see, hear or feel • Has an output that reacts to the input. Connect these criteria to previous learning about peripherals – highlighting how sensors act as inputs and outputs. Students collaborate to identify problems and begin thinking about how a digital device could help. They focus on defining what the device would 'sense' and how it would 'react'. **Conclusion** Groups share their problem and initial ideas with the class, discussing how their device would meet the success criteria and solve the identified issue.

Term 4 Week 7 Digital design

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital systems Digital systems, including peripheral devices, are used to transfer and store different types of data **Design thinking skills** **Project management** Use agreed protocols and management roles to communicate ideas, plan and make decisions to develop solutions **Investigating and defining** Investigate and select resources based on properties for the given task **Designing** Design solutions through use of labelled drawings, technical terms, decision-making and/or a sequence of steps	**Learning intentions** Develop a detailed concept and design for a digital device that solves a real-world problem. Create a visual representation of the digital product, including a flow chart to outline how it operates. **Focus questions** • How will your device work to solve the problem? • What actions will your device take in response to different inputs? • How can you visually represent your product and its functionality? **Support notes** Emphasise creativity and big ideas over technical details. Students do not need to know exactly how the sensors work. Encourage them to use terms like 'sensor' and focus on what the device will do rather than the specifics of how it operates. Encourage students to create detailed drawings and diagrams of their devices. Visuals should show key components like inputs (sensors) and outputs (actions). Flow charts can help outline the sequence of operations in a simple, accessible format.	**Introduction** Briefly review the problems identified in Week 6 and the initial ideas for solving them. Emphasise that today is about turning those big ideas into detailed designs. Highlight the importance of thinking through how the device will sense and respond. Display simple examples of smart products, e.g. smart bins that open when your hand is near, or smart locks that open with a fingerprint). Discuss how these devices use sensors (e.g. motion sensor or touch sensor) and outputs (e.g. opening lid or light turning on). Show a basic flow chart example to demonstrate how to represent the sequence of actions in a product, e.g. 'sensor detects motion' → 'light turns on'. **Learning activity** Have students create a detailed drawing of their digital device, including annotations that explain how it works. Encourage them to think about the user experience, e.g. what the device looks like, how it is used, and what it does. Flow chart creation: Students can explain how it operates using a flow chart.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Suggested assessment points Assess students on their ability to present their design clearly, receive constructive feedback, and apply it to refine their work. Evaluate whether the purpose and function of the device are well-represented and aligned with the success criteria.	**Conclusion** Groups share their designs with peers and receive constructive feedback against their recorded success criteria. Encourage students to refine their designs based on feedback, making sure the purpose and operation of the device are clearly represented.

Term 4 Week 8 Pitch

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital systems Digital systems, including peripheral devices, are used to transfer and store different types of data **Design thinking skills** **Project management** Use agreed protocols and management roles to communicate ideas, plan and make decisions to develop solutions **Designing** Design solutions through use of labelled drawings, technical terms, decision-making and/or a sequence of steps	**Learning intentions** Create and deliver a persuasive pitch that effectively communicates the features and benefits of a designed digital device. Evaluate the effectiveness of a digital solution based on peer feedback. **Focus questions** • How can we clearly communicate the problem our device solves? • What are the key features of our device, and why are they important? • How can we make our pitch convincing and engaging? **Support notes** A pitch should explain the problem, describe the device, highlight the input-output function, and convince the audience of its benefits. Teach students to focus on being clear, concise and engaging in their presentations. Use visuals from their designs to support their explanation.	**Introduction** Explain the elements of a good pitch. Show a simple example, such as a short product ad, to illustrate how to present an idea convincingly. Emphasise the importance of clearly stating the problem, showing how the device works, and highlighting its benefits. **Learning activity** Groups of students refine their designs and practice their pitch, deciding who will speak and how they will use visuals. Encourage them to use their annotated designs to help explain their device. Allow groups to rehearse their pitch, focusing on clear and confident communication. Each group present their pitch to the class, using their design sketches to illustrate the device's features and benefits. After each pitch, classmates provide feedback on the effectiveness of the device and the clarity of the presentation.

Appendix A

Resources

Appendix A.1: Resources – Term 1

Week	Resource	Link/information
1	Common Sense Education - *Private and Personal Information*	Common Sense Education. (n.d.). *Private and Personal Information* [Lesson Plan]. https://www.commonsense.org/education/digital-citizenship/lesson/private-and-personal-information
2–3	E-Safety Commission – *Be Secure*	This lesson draws on resources and strategies from eSafety's *Be Secure* program, which provides guidance on understanding online risks and practical ways to stay safe. For more details, visit eSafety Be Secure. eSafety Commissioner. (n.d.). *Be Secure*. https://www.esafety.gov.au/educators/classroom-resources/be-secure
4	Google: Be Internet Awesome – *When Not to Share*	This lesson is adapted from the *Be Internet Awesome* curriculum by Google, specifically the *Share with Care: When Not to Share* lesson. For more information and resources, please refer to: Google. (n.d.). *Be Internet Awesome: Share with Care – When Not to Share*. https://beinternetawesome.withgoogle.com/en_us/educators
5	Common Sense Education – *Password Power-Up*	This lesson teaches students the critical importance of strong passwords and safe online practices, such as logging out of accounts. It is based on the *Password Power-Up* lesson from Common Sense Education. Common Sense Education. (n.d.). *Password Power-Up*. https://www.commonsense.org/education/digital-citizenship/lesson/password-power-up
6	How Computers Work: Hardware and Software	How Computers Work: Hardware and Software. (2018, January 30). [Video]. YouTube. https://www.youtube.com/watch?v=xnyFYiK2rSY
7–8	*Inputs and Outputs: Peripheral Devices* [Video]	https://study.com/academy/lesson/what-are-peripheral-devices-of-a-computer-definition-examples-types.html
	What are Peripheral Devices of a Computer? – Definition, Examples and Types	Study.com | Take Online Courses. Earn College Credit. Research Schools, Degrees & Careers. (n.d.). Study. https://study.com/academy/lesson/what-are-peripheral-devices-of-a-computer-definition-examples-types.html
	What does what in your computer? Computer parts explained	What does what in your computer? Computer parts Explained. (2018, January 18). [Video]. YouTube. https://www.youtube.com/watch?v=ExxFxD4OSZ0

Appendix A.2: Resources – Term 2

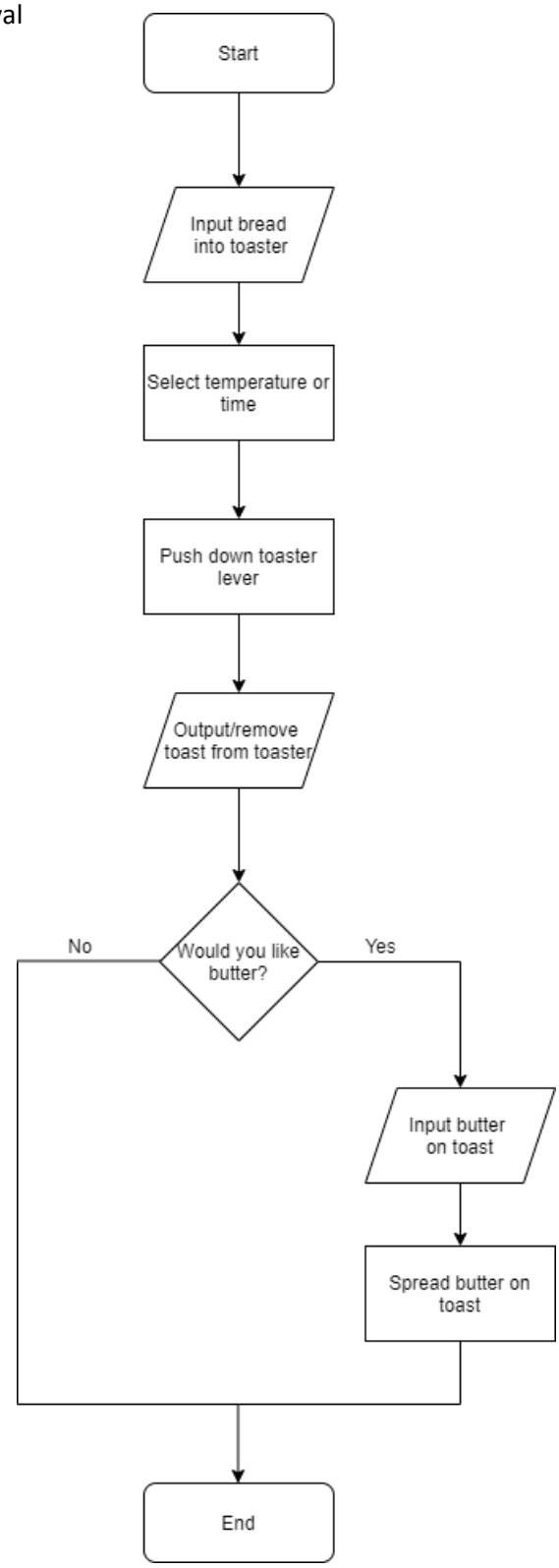
Week	Resource	Link/information
1	Sequence of Steps – Draw my Picture Game	Draw My Picture Game. (2013, November 7). [Activity]. Homeschool with Love. https://www.homeschoolwithlove.com/2013/11/07/draw-picture-game/
2	Unplugged Algorithms – Exact Instructions Challenge	Exact Instructions Challenge – Josh Darnit. (2018, July 10). [Video]. YouTube. https://youtu.be/cDA3_5982h8

Appendix A.3: Sample Flow chart – Term 2, Week 4

Do I want toast?

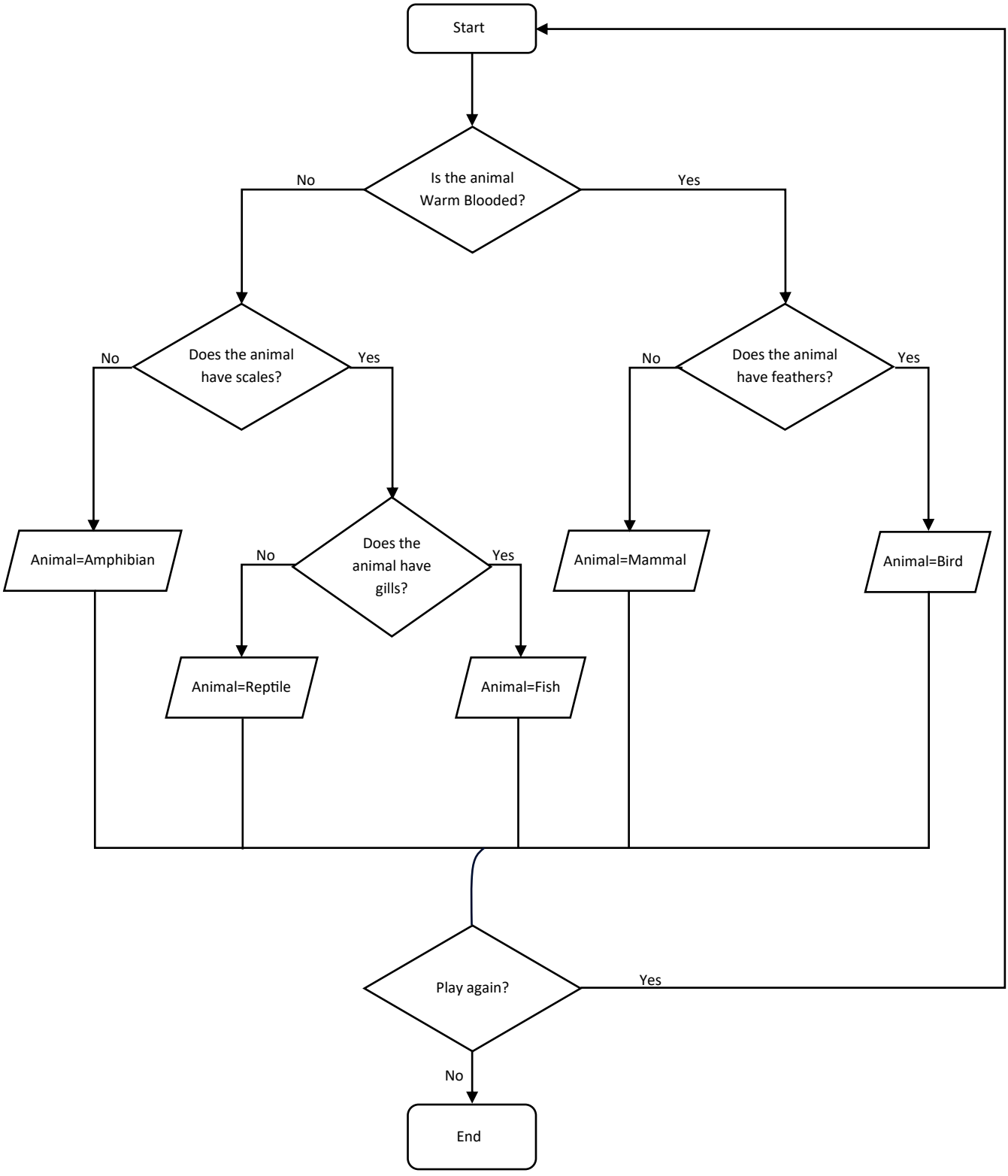
Key

- Start and finish is a rounded rectangle or oval
- Process or action is a rectangle
- Decision is a diamond
- Input/output is a parallelogram
- Line connectors are arrows

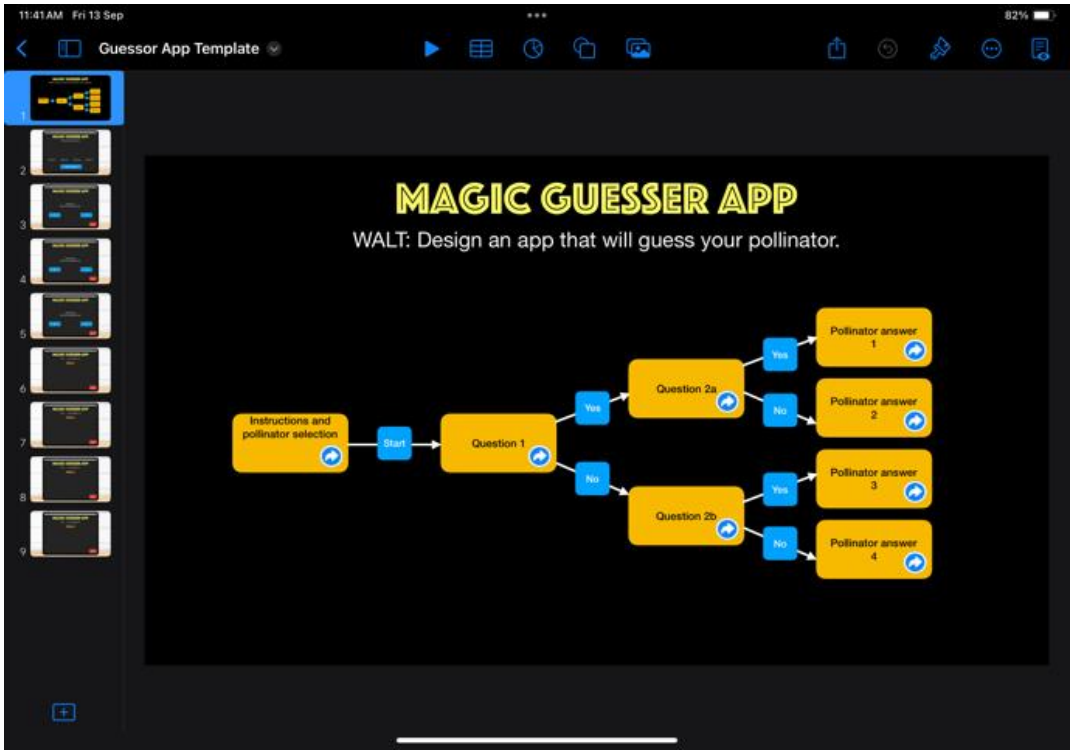


Appendix A.4: Sample Flow chart – Term 2, Weeks 7–8

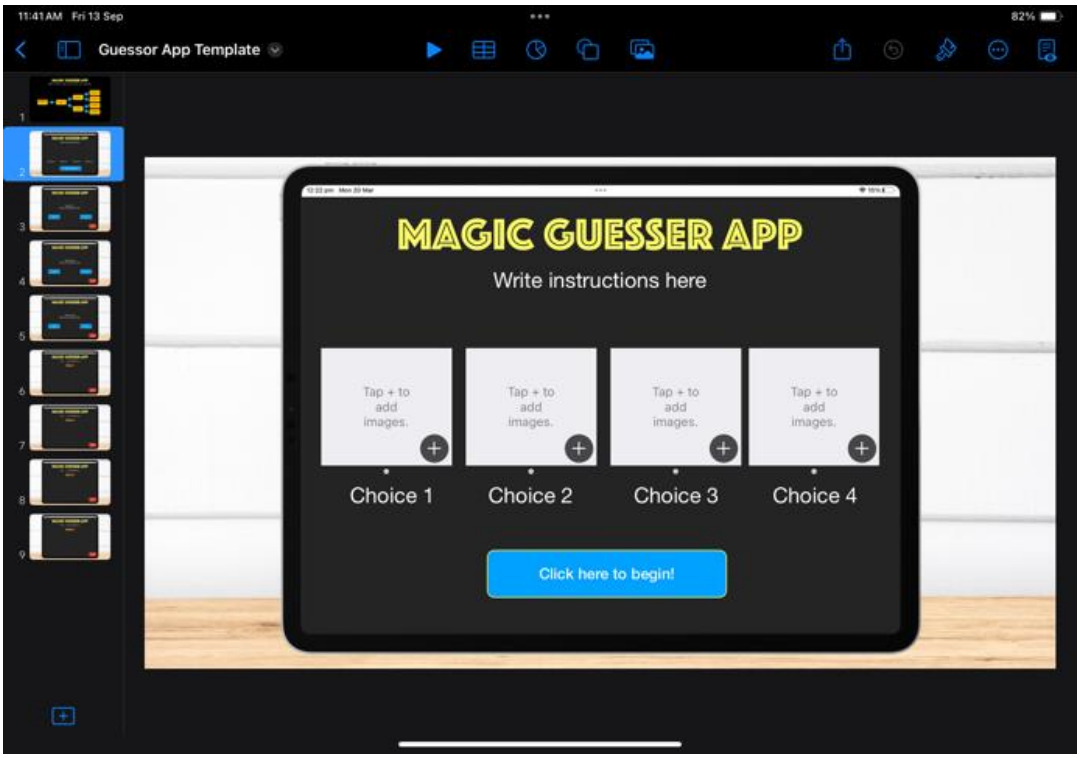
Animal guesser



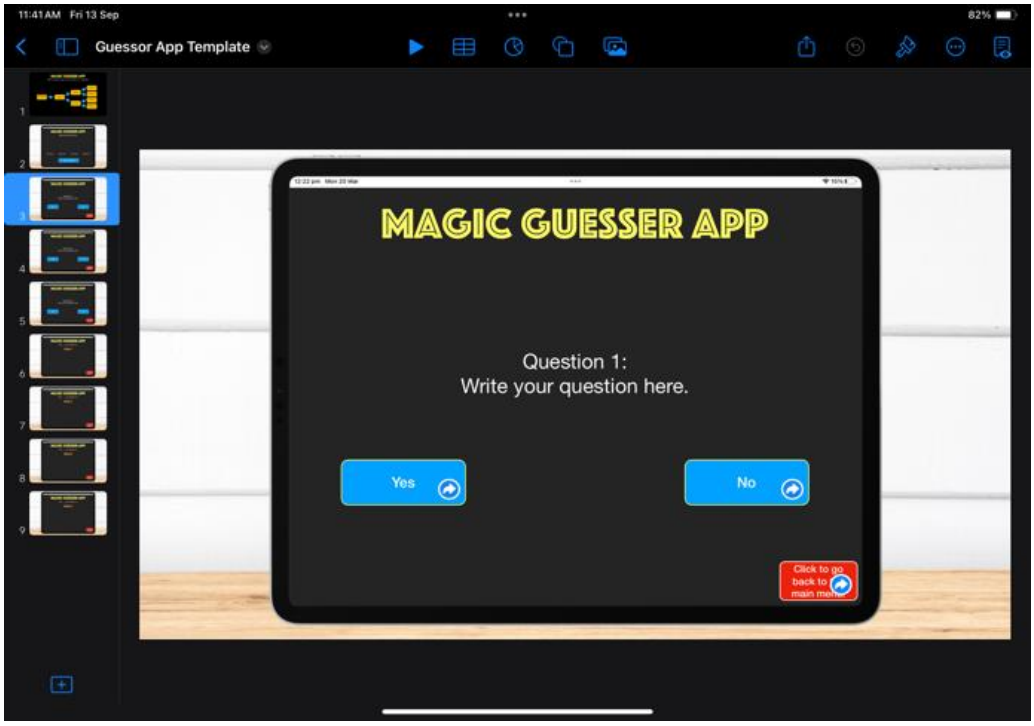
Appendix A.5: Example slide template/scaffold – Term 2, Weeks 6–8



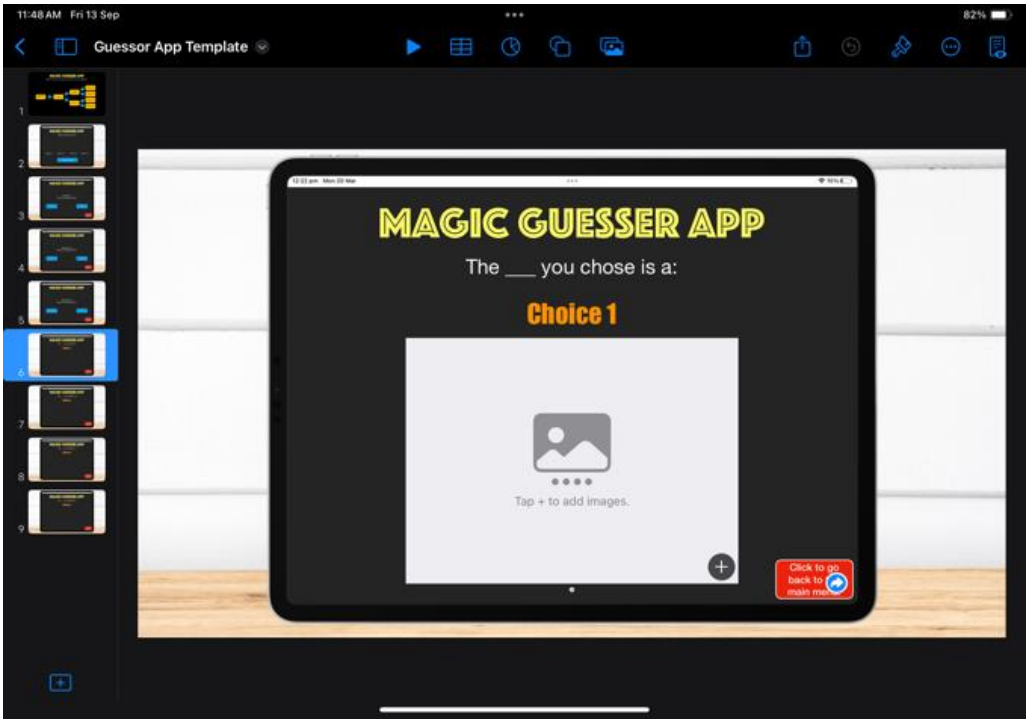
Example Branching Diagram Overview



Selection Slide



Question Slide



Answer Slide

Appendix A.6: Resources – Term 3

Week	Resource	Link/information
1	Code.Org	Star Wars: Building a Galaxy with Code (Blockly): https://studio.code.org/s/starwarsblocks/ Make a Flappy game https://studio.code.org/flappy/1
2	Introduction to virtual Pets – Tamagotchi	Tamagotchi: The Biggest Craze in 1997 – Nostalgic 90s. (2023, September 3). [Video]. YouTube. https://youtu.be/kIxyvcqh4jE?si=10iET5VA2q6UkPfU
3	Alternatives to Scratch 3.0	• Hopscotch • Code.ord Game Lab • Tynker • MakeCode Arcade • Snap! • Blockly • Lightbot • Teachers should refer to their System/Sector's Third-Party consent requirements if planning to use the online version.
	Virtual Pet Tutorial	How to Make a Virtual Pet in Scratch | Tutorial. (n.d.). [Video]. The Scratch Team. YouTube. https://youtu.be/irhNLRWwhv0?si=3ZiNFMQlkBucOtnS

Appendix A.7: Sample virtual pet game design workbook – Term 3, Weeks 2 5

Week 2: Game planning

Understanding virtual pets

Explain: What is a virtual pet?

Write a short explanation of what a virtual pet is and why people like to play with them in games.

_____

_____

_____

_____

Success criteria

Explain what makes a good virtual pet game?

List what makes a game fun, creative, and exciting. Use these ideas to help design your own game.

1. _____
2. _____
3. _____

Game elements brainstorm

My pet ideas

Think about what kind of pet you want to create. It could be a real pet like a dog or cat, or something more imaginative like a dragon or robot. Draw or write your ideas below.

Pet idea	What does it look like?	Why it's fun
Example: Puppy	**Draw a picture** 	Puppies are playful, love to do tricks, wag their tail and have big eyes.

Background ideas

Describe where will your pet live? Will it be in a garden, space, or somewhere else?
Draw or list your ideas.

_____

_____

_____

_____

_____

_____

Interaction ideas

Describe how will players interact with your pet? Think about actions like feeding, playing, or watching it move.

_____

_____

_____

_____

_____

_____

Week 3: Sprites and backgrounds

Sequence the steps for your animation. Think about how your pet will move or change when it interacts with the player. Will it jump, blink, or play a sound?

_____

_____

_____

_____

Week 4: Animating your pet

Plan what happens when the player feeds the pet. How does the pet move? What does it do? What blocks will you use to code this?

_____

_____

_____

_____

Week 5: Adding interactive elements: Feeding your pet

Plan what happens when the player feeds the pet. How does the pet move? What does it do? What blocks will you use to code this?

_____

_____

_____

_____

Appendix A.8: Resources – Term 4

Week	Resource	Link/information
1	Video Quiz	Video quiz, *Can You Guess The Food By The Emoji?* https://youtu.be/IEDyHPaJSYQ.
	Emoji chart	Emoji chart at https://unicode.org/emoji/charts-12.0/emoji-released.html,

Appendix B

Assessment task 1

Personal online security plan assessment

Task details

Title	Personal online security plan assessment
Description	Students will create a personalised online security plan by considering real-life scenarios related to online safety. They will respond to questions that guide them in understanding essential practices to protect themselves and their information while online. This task includes identifying private information, creating strong passwords, and knowing how to assess online content safety.
Type of assessment	Summative
Ways of assessing	Completed personal online security plan assessment Annotations and observations by the teacher Student reflections on privacy and security strategies
Suggested time	One lesson
Differentiation	Teachers should differentiate their teaching and assessment to meet the specific learning needs of their students, based on their level of readiness to learn and their need to be challenged. Where appropriate, teachers may either scaffold or extend the scope of the assessment tasks.

Content descriptions

Privacy and security

Personal data that is shared and stored online can pose risks

Resources

- printed worksheet: My personal online security plan
- access to computers or tablets for research (optional)
- internet access for exploring further information on online safety (optional)
- access to eSafety resources, such as the ‘Be Secure’ lesson plan from eSafety.gov.au

Instructions for teacher

NOTE: Before beginning this task, ensure that students have been introduced to basic concepts of online privacy and security, including identifying personal information, understanding privacy settings, and recognising potential online risks. The task should be explained clearly, with a focus on the purpose and expected outcomes. Familiarise yourself with the provided worksheet and be prepared to guide students in discussing and applying the security strategies.

Actual task instructions

1. **Introduce the Task:**
   Explain the importance of staying safe online. Highlight key areas: keeping devices secure, managing privacy settings, and respecting others' privacy.
2. **Distribute the Worksheet:**
   Give students the *Personal online security plan assessment* worksheet. Read the instructions together and answer any questions.
3. **Complete the Worksheet:**
   Allow students to fill out the worksheet independently, thinking about how they can protect themselves online.

Optional multimodal submission

Offer students the option to submit their responses through a video or voice recording if they prefer.

Name: _____

Date: _____

Personal online security plan assessment

My personal online security plan

When you are playing games, researching for school, watching videos and chatting to people online, it is important to prevent online security risks. These risks could include losing your information, spending money even though you did not mean to, damaging your device, or having someone contact you in a way that does not feel safe.

Read the scenarios and answer the questions below to create your own plan for staying safe.

1. You just received a tablet as a gift, and you want to use it safely. (6 marks)

   Describe three ways you can keep yourself and the device safe.

   _____

   _____

   _____

   _____

   _____

2. While signing up for an online game, it asks you for personal details like your full name and where you live. (3 marks)

   Identify three examples of personal data you should keep safe while you are online.

   _____

   _____

   _____

   _____

3. You need to create a new password for your school account, and you want to make sure it's strong so no one can guess it. (3 marks)

   Explain how to make a strong password and why it's important.

   _____

   _____

   _____

   _____

4. You're playing a game online and see something that makes you feel worried or upset. (3 marks)

   List three people you could talk to if you see something online that worries or upsets you.

   _____

   _____

   _____

   _____

Marking key

Description	Marks
Q1. Describe three ways you can keep yourself and the device safe	
For three different ways:	
Describes a way you can keep yourself and the device safe	2
Provides a limited description of a way you can keep yourself and the device safe	1
Subtotal	**/6**
Q2. Identify three examples of personal data you should keep safe while you are online	
Identifies one, two or three examples of personal data you should keep safe while you are online	1–3
Subtotal	**/3**
Q3. Explain how to make a strong password and why it's important	
Explains how to make a strong password and why it's important	3
Describes how to make a strong password and why it's important	2
Provides a limited description of how to make a strong password and why it's important	1
Subtotal	**/3**
Q4. List three people	
List one, two or three people you could talk to if you see something online that worries or upsets you	1–3
Subtotal	**/3**
Total	**/15**

Appendix C

Assessment task 2

Designing and representing an algorithm with flow charts

Task details

Title	Designing and representing an algorithm with flow charts
Description	This assessment focuses on students' ability to design and represent an algorithm using a flow chart that incorporates decision-making (branching) and a clear sequence of steps. Students will create a flow chart for an 'animal guesser app'.
Type of assessment	Formative/summative
Ways of assessing	Labelled flow chart representing the animal classification process.
Suggested time	One 60-minute lesson
Differentiation	Teachers should differentiate their teaching and assessment to meet the specific learning needs of their students, based on their level of readiness to learn and their need to be challenged. Where appropriate, teachers may either scaffold or extend the scope of the assessment tasks.

Content descriptions

Digital implementation

- Represent an algorithm (sequence of steps) involving decisions (branching) and repetition using flow charts

Design thinking skills

Designing

- Design solutions through use of labelled drawings, technical terms, decision-making and/or a sequence of steps

Investigating and defining

- Investigate and select resources based on properties for the given task

Evaluating

- Use given criteria to evaluate design features, selected resources, decision-making processes and the designed solution

Resources

- **Paper and drawing tools:** The primary resources needed for this task are simple: paper and drawing tools (e.g. pencils, rulers). These are sufficient for creating the flow charts manually.
- **Digital options:** For students who prefer or are ready for a digital approach, the flow chart can be created using apps such as:
  - **Popplet:** A free and user-friendly app that allows students to create flow charts and mind maps.
  - **Apple Freeform:** A versatile and free app for Apple devices that allows students to create diagrams and flow charts with ease, offering a range of tools and templates.
  - **Google Drawings:** A free tool within Google Workspace that allows for basic flow chart creation.
  - **Diagrams.net (formerly Draw.io):** A free online diagramming tool that offers various templates and is straightforward enough for primary students to use.
  - **Canva** – While primarily a design tool, Canva offers free templates for creating flow charts that are visually appealing and easy to use.

Instructions for teacher

Introduction:

- Briefly review flow charts and decision-making (branching) with the class.
- Discuss how classifying questions like ‘Does it have fur?’ or ‘Does it have four legs?’ can be used as decision points in the flow chart.

Animal selection and flow chart creation:

- Students identify four animals and develop classifying questions for each.
- Students create one flow chart that uses these questions to guide the flow and identify the selected animal.

Peer review:

- Students pair up to review each other's flow charts, checking for logical flow and correct identification of animals.
- Provide feedback on clarity and structure.

Formative/summative assessment:

- Assess the flow charts for logical structure, effective use of decision points, and clear outcomes.
- Ensure each flow chart accurately represents an algorithm that leads to the correct animal identification.

Instructions to students

Creating the animal guesser application

Step 1: Choose your animals

Select four animals that you will use in your Animal classifier application. Think about animals that have clear and different characteristics.

My animals:

1. _____

2. _____

3. _____

4. _____

Step 2: Brainstorm classifying questions

For each animal, brainstorm yes/no questions that can help distinguish it from the others.
These questions will be the decision points in your flow chart.

Example questions:

- Does it have fur?
- Does it have four legs?
- Is it larger than a cat?
- Does it live in water?

Step 3: Create your questions

Now, create classifying questions for your selected animals. Make sure each question can help narrow down the choices.

Animal 1 (_____):

1. _____

2. _____

Animal 2 (_____):

1. _____

2. _____

Animal 3 (_____):

1. _____

2. _____

Animal 4 (_____):

1. _____

2. _____

Step 4: Plan your flow chart

Using the questions you've brainstormed, think about how you will structure your flow chart. Start with a general question and branch out from there. Use the space below for your flow chart.

Marking key

Description	Marks
Logic	
Provides a logical simple sequence of steps	3
Provides a logical simple sequence of steps with some errors	2
Attempts to provide a sequence of steps	1
Subtotal	**/3**
Flow chart symbols	
Uses all correct symbols; rectangle, parallelogram, diamond, arrow for direction of flow	4
Uses mostly correct symbols; rectangle, parallelogram, diamond, arrow for direction of flow	3
Uses some correct symbols; rectangle, parallelogram, diamond, arrow for direction of flow	2
Makes limited use of correct symbols; rectangle, parallelogram, diamond, arrow for direction of flow	1
Subtotal	**/4**
Decisions (branching)	
Consistently and correctly uses decisions (branching) to guide the flow chart effectively.	4
Correctly uses decisions (branching).	3
Uses decisions (branching), but with some mistakes or incomplete branches.	2
Incompletely or incorrectly uses decisions (branching).	1
Subtotal	**/4**
Repetition	
Consistently and correctly uses repetition to guide the flow chart.	3
Uses repetition, but with some mistakes or incomplete branches.	2
Incompletely or incorrectly uses decision points and repetition.	1
Subtotal	**/3**
Total	**/14**

Acknowledgements

Term 3 Week 1

'Teaching and learning intentions' dot point 6 from: Digital Technologies Hub. (n.d.). *Learn Together: Programming*. Retrieved October, 2025, from https://www.digitaltechnologieshub.edu.au/for-families/ideas-to-get-started/learn-together/

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Term 4 Week 3

'Teaching and learning intentions' Suggested assessment points adapted from: Digital Technologies Hub. (n.d.). *Schoolyard Biodiversity Detectives*. Retrieved October, 2025, from https://www.digitaltechnologieshub.edu.au/teach-and-assess/classroom-resources/lesson-ideas/schoolyard-biodiversity-detectives/

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'Learning Experiences' Adapted from: Digital Technologies Hub. (n.d.). *Schoolyard Biodiversity Detectives*. Retrieved October, 2025, from https://www.digitaltechnologieshub.edu.au/teach-and-assess/classroom-resources/lesson-ideas/schoolyard-biodiversity-detectives/

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Appendix A

'My pet ideas' Abramov, D. (2018). [Graphic of a brown puppy]. Retrieved October, 2025, from https://pixabay.com/vectors/dog-puppy-cute-cartoony-3542195/

Appendix B

'Personal online security plan assessment' Paragraph 1 from: eSafety Commissioner. (2020, September). *Be Secure – Lesson Plan and Student Worksheet*. Retrieved October, 2025, from https://www.esafety.gov.au/educators/classroom-resources/be-secure

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