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

Technologies: Digital Technologies

Teaching, learning and assessment exemplar

Year 3

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).

Disclaimer

Any resources such as texts, websites and so on that may be referred to in this document are provided as examples of resources that teachers can use to support their learning programs. Their inclusion does not imply that they are mandatory or that they are the only resources relevant to the course. Teachers must exercise their professional judgement as to the appropriateness of any they may wish to use.

This resource utilises 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.

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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.

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 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.

In Year 3, students explore digital systems in terms of their components and peripheral devices. They develop an understanding of the characteristics of data and its representation. Students have opportunities to create digital solutions, such as interactive adventures and simple guessing games that involve user choice.

Students apply design thinking skills to generate multiple ideas for their designed solutions. They reflect on their learning and work practices and consider ways in which these might be improved, modified or adapted for different situations. Students develop their design skills by following prepared algorithms that include a choice of options through branching. They experiment with appropriate software, including visual programming environments to implement their solutions.

Achievement standard

By the end of the year:

Students explore and recognise peripheral devices and their purpose, identify that there are different types of data and that data can be represented, stored and shared online in different ways. They access their school account, using a unique, private, memorised password, and log out afterwards.

In Digital Technologies, students create, design and implement algorithms in a visual programming environment to include decisions made by the user to solve a given digital task. They develop and communicate ideas using labelled drawings and technical terms. Students select and safely use appropriate components with given equipment to create a solution. They design and communicate solutions, and follow a plan to produce designed solutions. Students use criteria to evaluate developed design processes and solutions.

Term 1

Weeks 1–8: Privacy and security and Data representation

Term 1 Week 1: Personal data

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Privacy and security Different types of personal data are shared and stored online	**Learning intention** • Understand what is meant by 'personal data' and how it is shared and stored online. **Focus questions** • What is personal data? • What information are you not happy to share online? • Why should you not share private information online? **Support notes** Personal data is any information that identifies an individual (e.g. full name, address, phone number). Personal data can be shared (e.g. signing up for accounts, uploading photos) and stored online (e.g. cloud storage, app databases). Students explore real-world examples of personal data and discuss the risks of oversharing. By navigating an engaging website from eSafety Australia, students deepen their understanding of how to protect personal data while using devices. Information that is safe to be shared includes: your first name, hobbies, your favourite things like colours, sports, pets and games you might enjoy.	**Introduction** Begin by asking students, 'When you save your schoolwork on your iPad or computer, where does it go?' Discuss familiar storage options, such as: • On the device – files saved directly to tablets, computers or USB drives. • In the cloud – files saved online (e.g. Google Drive, Seesaw) that can be accessed from any device. Explain that cloud storage allows them to access their files from different locations and devices. Show an image of a cloud storage data centre to help students visualise where their files are stored. Play a whole class game to introduce the concept of personal data and what might be safe to share online. Ask all students to stand up around the learning space. Make a statement about things the students might have in common and then things that might be personal to them. Students need to stand up if they agree with the statement or sit down if they disagree.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Information that is not safe to be shared includes: your full name, address, phone number, passwords, photos of yourself that include things that could identify you, or any private family information. **Suggested assessment points** Observe and make anecdotal notes about collaboration between students. Collect and display the footprints upon completion.	Make some statements where students will have many things the same, e.g. 'Stand up if your favourite colour is pink', 'Stand up if you have a pet dog'. This will show them how common these answers are and how they don't easily identify one person. Then make some statements that are more personal, 'Stand up if you have the same family name as someone in the class', 'Stand up if you live at the same address as someone in the class'. Discuss how these pieces of information are more identifiable and therefore need to be kept from being shared online. Following the game, show students several items representing personal data, such as a name tag, phone or family photo. Ask, 'What do these have in common?' 'Why might we need to protect this type of information?' Introduce the idea that, just like their schoolwork, personal data is also stored online. Discuss that when we share our personal data, websites and apps store this information, such as: • game progress – online games saving usernames and achievements • social media – apps storing photos and personal details on their servers • learning apps – websites storing login details and completed work.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		Learning activity Introduce the eSafety Australia Kids Privacy and Security page https://www.esafety.gov.au/kids/be-an-esafe-kid/security-and-privacy-for-my-device. As a class, navigate the website together. Explore the strategies presented on ways to keep their information safe. Have students draw the outline of their two feet on a piece of paper. On one foot write 'OK to share'; on the other write 'Not OK to share'. Students can then work with a partner to list all the information that they feel OK to share and the information that should not be shared. Bring students back together and share their feet. Respond to any incorrectly categorised information and provide an explanation of why. **Conclusion** Conduct a class discussion asking, 'Is there anything some people would share that others would not?' Recap personal data, where data can be stored, and why it is important that we protect personal data.

Term 1 Week 2: Rings of responsibility

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Privacy and security Different types of personal data are shared and stored online	**Learning intentions** • I understand the concept of responsibilities in digital and in-person environments. **Focus questions** • What are the 'rings of responsibility' and how do they apply to online behaviour? • What types of personal data are shared and stored online? • How can we protect personal data in digital spaces? **Support notes** Students learn to evaluate how their actions in digital spaces affect themselves, their communities and the broader world. The 'rings of responsibility' model introduces layers of influence and accountability, helping students recognise the effects of their online behaviour. The lesson highlights the types of personal data typically shared and stored online (e.g. usernames, passwords, photos, preferences). Students develop an understanding of privacy and digital responsibility, considering the consequences of sharing personal information without consent. They are encouraged to practise good digital habits by adhering to ethical sharing practices.	**Teaching** Show the 'Rings of Responsibility' video from the Common Sense Media lesson https://www.commonsense.org/education/videos/rings-of-responsibility. Have a discussion using the following questions: • 'What responsibilities do we have to ourselves when online?' • 'How do our actions online impact our community and the world?' Define 'responsibility' as a duty one has toward oneself and others. Introduce the 'rings of responsibility' model. Emphasise that sharing personal data irresponsibly can have a negative effect across all the rings. **Learning** Group students into pairs. Assign each group to brainstorm responsibilities related to one ring – self, community or world. Rotate groups to reflect on others' contributions. Provide a copy of *My Rings of Responsibility* handout. Instruct students to write actions and behaviours within each ring and illustrate one responsibility they hold in the digital world. Use 'I' statements, such as: • 'I don't share my personal information online' (**self**). • 'I don't post photos of friends without their permission' (**community**). • 'I verify the truth before sharing posts' (**world**).

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Rings of responsibility: • **self** – actions affecting personal safety and wellbeing (e.g. protecting login details) • **community** – actions affecting immediate social groups (e.g. respecting peers' privacy) • **world** – actions impacting the wider population (e.g. avoiding misinformation). **Resources** Resource is adapted from Commonsense education: • https://www.commonsense.org/education/digital-citizenship/lesson/your-rings-of-responsibility Grade 3, Your Rings of Responsibility	**Conclusion** Review the 'Rings of Responsibility' framework. Emphasise the importance of safeguarding personal data and respecting others online. **Suggested assessment points** Students write examples of actions within each ring (e.g. keeping passwords secure, respecting friends' information, avoiding harmful online behaviour). Create a class poster depicting the 'Rings of Responsibility' with student-generated examples for each ring.

Term 1 Week 3: Digital citizenship

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Privacy and security Different types of personal data are shared and stored online	**Learning intentions** • Understand how norms help online communities stay safe and supportive, and can create my own pledge for positive digital citizenship. **Focus questions** • What makes a community strong and supportive? • Why are norms important for online communities? • How can we contribute to healthy online communities while protecting personal data? **Support notes** Students explore the importance of creating healthy, respectful online communities by establishing norms for behaviour. The lesson helps students identify the similarities between in-person and online interactions, emphasising the role of personal responsibility and ethical behaviour in fostering positive digital spaces. **Resources** Resource is adapted from Commonsense education: https://www.commonsense.org/education/digital-citizenship/lesson/our-digital-citizenship-pledge *Grade 3, Our Digital Citizenship Pledge*	**Introduction** Ask the question, 'How would you describe your local community?' Discuss examples, such as the neighbourhood, classrooms, sports teams, shops, playgrounds and parks. Introduce the term 'community' as a group with a shared goal. Show students the images of two classrooms, one chaotic and the other organised and cooperative. Discuss which is better for achieving the learning goals and why. Define the word 'norms' as behaviours that are agreed upon by a group to achieve goals. **Learning activity** Brainstorm different online communities and have students write in their books or on a small whiteboard all the online community groups they belong to. This can include gaming, social platforms, school apps. Students may work in small groups with **one** student as the scribe, to help with idea generation. Have students write down the various norms/rules that they would need to follow for respectful and safe online behaviour. Link to last lesson on protecting personal data. Individually or in groups, students are to create a poster called *My digital citizenship pledge*.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		On the poster they will present their norms they will uphold online. **Conclusion** Review the lesson concepts by asking, 'How do our norms help keep online communities safe and supportive?' and 'What can we do if we see someone breaking these norms?' If time permits, it may be helpful to summarise the personal digital citizenship pledges into a whole class pledge and/or relate the statements made to the whole school digital citizenship agreement. Depending on when this lesson is conducted, it may be a good time to have students examine and sign the school's digital citizenship agreement, as a beginning of the year task.

Term 1 Week 4: Online identity

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Privacy and security Different types of personal data are shared and stored online	**Learning intentions** • I know how the information I share online shapes my identity and how to make safe, thoughtful choices about what I post. **Focus questions** • What is an online identity? • How can we share personal information online thoughtfully and safely? **Support notes** In this lesson, students consider how their online data and what they share affects how others perceive them, learning to make intentional choices about what they share. This process helps develop a critical perspective on the privacy and security implications of their online behaviour. • **Online identity:** How someone represents themselves on digital platforms. • **Assumptions:** Beliefs or ideas formed based on limited information. **Resources** Resource is adapted from Commonsense education https://www.commonsense.org/education/digital-citizenship/lesson/this-is-me *Grade 3, This Is Me*	**Introduction** Ask, 'When and where do people take selfies? Why do they take them?' Discuss ideas, such as expressing personality, sharing moments or connecting with others. **Learning activity** Ask the students to pretend you are going to take a selfie to post to a public website for anyone to see. Have them think about where they would take it? What would they be doing? What would they look like? Hand out to students a blank piece of paper or a piece of paper with a smartphone/tablet outline. Have the students draw a selfie using as much detail as possible. Alternatively, they could take an actual selfie. including as many details about themselves as possible. Once they have finished drawing or creating their selfies, have students rotate around the class meeting with various partners to discuss the assumptions that were made from their selfie. Encourage positive and respectful interpretations. Assumptions may include – appearance, hobby, personality, interest, emotions. Have students explain their thinking. Explain to students that it is important we critically think about what we share and how others might perceive it.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		Have students revisit their selfie and reflect on what they would change to better represent themselves or ensure their identity is accurate and safe. Draw attention to their school uniforms and how including their school logo is a common identifier that they need to consider how that information is shared. If time permits, they could take another selfie or redraw/modify their original. **Conclusion** Discuss how sharing personal data online can shape identity and invite assumptions. Ask students to always reflect by asking, 'What message do you want to send about yourself online?' 'Does what I am sharing reflect the truth about myself?' 'Is what I am sharing accurate and safe?'

Term 1 Week 5: What is data?

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Data representation Data is of different types and can be represented in various ways	**Learning intentions** • I can Identify different types of data (e.g. sound, images, numeric, text). **Focus questions** • What is data? • What are some examples of data in our daily lives? • How is data collected and why is it important? **Support notes** This lesson introduces data. Students learn to identify and categorise different types of data, such as sounds, images, numbers and text. The lesson emphasises how data is collected and stored, laying the foundation for future lessons on how data is represented and used: • **data** – information collected to be processed or used • **numeric data** – numbers, such as measurements or scores • **text data** – written or typed words • **visual data** – images, videos, symbols or charts • **sound data** – audio recordings or sound patterns. **Suggested assessment points** Students correctly identify and categorise examples of data. Reflect on how data helps people make decisions.	**Introduction** Ask, 'What do you think of when you hear the word "data"?'. Define 'data' as information that can be collected, stored and used to help us understand the world. Show examples (e.g. a weather app, a music playlist, a scoreboard or a photo library). Discuss how these examples are all related to or connected to data. Introduce the different types of data with examples: • **numeric data** e.g. game scores, temperature readings • **text data** e.g. a written message, a story • **visual data** e.g. a photo, a map • **sound data** e.g. a song, a recorded voice. **Learning activity** Explain to the students they will be going on a data hunt. Using a collage app like PicCollage or any other app where you can take photos or videos, students are to explore their environment to identify **three** examples of each of the different types of data. Students take a photo/or video (in the case of sound) of the example and categorise it into the above categories. **Conclusion** Share the different collages with the class identifying the similarities between the representation of the data.

Term 1 Week 6: My favourite animal

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Data representation Data is of different types and can be represented in various ways **Design thinking skills** **Producing and implementing** Use appropriate technologies and components with given equipment and follow agreed protocols to produce a designed solution	**Learning intentions** • I know how digital devices create and share data. **Focus questions** • How can different types of data represent information about an animal? • How does using multiple types of data provide a complete representation? • What digital tools can be used to create and share data? **Support notes** Students will engage with digital tools and data types to create a multi-modal representation of their favourite animal. This introduces how different media types contribute to a richer understanding of a subject. **Suggested assessment points** Students collect and create data types that accurately represent their favourite animal. Presentations include at least **three** different data types. **Resources** Lesson is adapted from Digital Technologies Hub Lesson: 'My favourite animal' https://www.digitaltechnologieshub.edu.au	**Prior to lesson** Prepare a presentation on an animal, such as a Green Tree Frog, using five different data types: • image of the frog • text describing the frog's habitat, diet and features • video showing the frog in motion • sound recording of the frog's call • drawing/symbol of the frog. **Introduction** Show the class your presentation on your animal. Ask, 'What information does each type of data provide?' and 'How do these data types work together to tell a full story?' **Learning activity** Introduce the task to create a presentation about your favourite animal using multiple data types. Discuss possible digital devices and tools: • camera for capturing images or video • audio recorders for sound. • apps like Tayasui Sketches School or Microsoft Paint for drawing. You may want to provide an organisational scaffold for the students who may require it; for example, an activity assigned to them on Seesaw or a template created in PowerPoint/Keynote.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		Students select their favourite animal and brainstorm the types of data they can collect or create. Students work independently or in small groups to gather and create their data. **Conclusion** Discuss the importance of using different data types. Ask, 'How do these types of data help us learn more about the animal?' and 'What challenges did you face in creating the data?' If time permits, share presentations with the class.

Term 1 Week 7: Digital images

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Data representation Data is of different types and can be represented in various ways **Design thinking skills** **Producing and implementing** Use appropriate technologies and components with given equipment and follow agreed protocols to produce a designed solution	**Learning intention** • I understand how digital images are created and edited using technology. **Focus questions** • How are digital images created and stored? • What tools and techniques are used to edit digital images? **Support notes** Student will learn about digital imaging, including the creation, editing and sharing of images. This is also a precursor to understanding peripheral devices and inputs. **Digital image versus photograph** – A digital image is one produced by a digital sensor. A photograph is an image created by light and converted into the image using photosensitive sensor or film. Students need to only understand that one is stored on the paper or film and the other is stored in a computer. **Suggested assessment points** Students collect and create data types that accurately represent their favourite animal. Presentations include at least **three** different data types.	**Introduction** Show the class a photo that has been developed by film. If you have an old film camera, show them this too. Compare this to a photo that is on the computer. Ask if they know the difference. **Optional activity** Show an online video of how an older film camera works. Define the photo on the computer is called a 'digital image' as it is stored on the computer and the photograph was developed from film. Explain that a digital image can be created in the following ways: • created using graphics software • imported using a digital camera or a scanner • combining the **two** methods, such as adding text to a photo. Display a high-resolution digital image and then zoom in to show the individual pixels. Discuss how these tiny squares (pixels) come together to create the full image. Demonstrate various ways that you can change the way a digital image looks by editing. Include: cropping, rotating and flipping. Using Canva or Photos Markup (on iPad) or Paint on a PC, Google Photos on Chromebook and demonstrate to students how to add drawing to a photo.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Resources Lesson uses definitions and materials from BBC Bitesize: How do we create and change digital images? https://www.bbc.co.uk/bitesize/topics/zrqr239/articles/zcjs3qt#zng76rd	**Learning activity** Have students take a photo of an interesting object around the class or school. Instruct students to first crop, rotate or flip the image so it is framed correctly. Then use the drawing/markup tools to turn the image into a creature or monster. For example, by adding some eyes, mouth with teeth, and tentacles to a picture of a chair, it can turn into a scary monster. Students will use this picture next lesson for the assessment task. **Conclusion** Recap the key points. • Digital images are made up of pixels and can be easily created and edited using technology. • Editing tools allow us to enhance and change images.

Term 1 Week 8: Data representation assessment

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Data representation Data is of different types and can be represented in various ways **Design thinking skills** **Producing and implementing** Use appropriate technologies and components with given equipment and follow agreed protocols to produce a designed solution	**Learning intention** • I can combine images, text, sound and other data types to create an engaging and informative presentation. **Focus questions** • How can you tell the story of your creature/monster using the different types of data? • What tools and techniques can you use to enhance your presentation? **Support notes** In this lesson, students will independently design and produce a presentation, sharing data to tell the story of their creature/monster. This is similar to my favourite animal task but is used as an assessment. This can include: • **Text** – description of the monster's backstory or abilities • **images** – photos or drawings of the monster • **maps** – the monster's origin or habitat • **sounds** – monster noises or background music • **numbers** – statistics about the monster (e.g. height, weight, speed). **Suggested assessment points** Students collect and create data types that accurately represent their creature/monster.	**Introduction** Revise the different types of data and the ways they can be represented (text, image, sound, etc.). Discuss how each type of data contributes to telling the story. **Learning activity** Demonstrate how to combine data in a slide-based presentation tool (e.g. Keynote, Google Slides, Canva). Brainstorm as a class, ideas for the kinds of information they might include about their monster: • Where does it live? (map). • What does it sound like? (audio). • What are its powers or abilities? (text, numbers). Give students time to outline and sketch their designs on a graphic organiser, specifying the types of data they will include on each slide. Provide adequate time for them to produce their presentation. **Conclusion** Students share their presentations with their peers. Each time, the teacher could choose **two** students to complete a 'two stars and a wish' for the presenter to provide feedback.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Presentations include at least **three** different data types. See Appendix B: Assessment: My monster presentation for additional details of task. **Resources** • Lesson is adapted from Digital Technologies Hub Lesson: 'My favourite animal' https://www.digitaltechnologieshub.edu.au	**Assessment task – My monster presentation** Full teaching instructions, assessment template, planning notes and marking key available in Appendix B.

Term 2

Weeks 1–8: Digital implementation

Term 2 Week 1: Represent algorithms

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital implementation Represent algorithms (sequence of steps), including decisions made by the user (branching) using flow charts **Design thinking skills** **Designing** Design solutions through use of labelled drawings, technical terms and/or a sequence of steps	**Learning intention** • I can create a clear sequence of steps to solve a problem or complete a task. **Focus questions** • Could someone follow these steps to complete the task? • Why is the order of steps important when undertaking tasks? **Support notes** An algorithm is a precise sequence of steps to solve a problem or perform a task. A computer requires explicit algorithms in order to complete a task. A high level of detail in the sequence of steps is required. Sequence is the logical order of steps it takes to complete the task. Computers work sequentially, line by line, top to bottom. If the order is incorrect, a logic error will be given. As an example, students cannot put shoes on before they put their socks on; a computer works in the same way. Students need to understand that logical sequence is very important in programming. Students can either draw a picture of each step or write each step in full.	**Introduction** Begin with a basic game where students are in pairs sitting back-to-back. One student gives instructions for how to draw a picture (unknown to their partner) and the partner listens and attempts to follow the steps. Students then stop and look at what was drawn. Was it what they expected? Were their instructions precise enough? On an interactive whiteboard or blackboard display a sequence of steps for brushing teeth with the steps out of logical order. Ask the first focus question and then collaboratively rearrange the steps to put them in a logical order. Briefly discuss the importance of sequence and logical order in digital systems. Use the second focus question to guide discussion. • Watch the video, Unplugged – Real-life Algorithms: Paper Airplanes (Code.org) https://www.youtube.com/watch?v=AWqo8Gxtrjs **Learning activity** Students develop basic algorithms (sequence of steps) for an everyday task, such as making toast or getting to school. Students share their algorithms with the class or test them with a peer, who act out the exact sequence of steps to check for accuracy.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		Conclusion • As a whole class, reflect on what happened when instructions weren't clear or steps were out of order. Reinforce the idea that computers don't 'fill in the gaps' the way people sometimes do – they need exact, step-by-step instructions. Remind students that the everyday algorithms they created today are just like the instructions programmers give computers.

Term 2 Week 2: Precision algorithms

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital implementation Represent algorithms (sequence of steps), including decisions made by the user (branching) using flow charts **Design thinking skills** **Designing** Design solutions through use of labelled drawings, technical terms and/or a sequence of steps	**Learning intention** • I understand how precise instructions are needed for a computer or robot to follow a task correctly. **Focus questions** • How would you modify the steps to make the instructions more precise? • How would you modify your algorithm from Week 1 to make it more precise? **Support notes** The steps provided to make a jam sandwich need to be literally followed. For instance, 'Put the butter on the bread,' would be interpreted as literally putting the container of butter on top of the bread. This literal interpretation of instructions will assist students to evaluate the effectiveness of their algorithm (sequence of steps) and make changes, if needed. If the teacher literally follows the steps given by the students, then bread, jam and butter will be required for this learning experience. Students may use software to share their sequence of steps (algorithms), such as Microsoft PowerPoint® or graphic organiser software.	**Introduction** As a class, write the instructions to make a jam sandwich. Write only the instructions given without any modification or guidance to make them more precise. Ask students to give you the steps to make a jam sandwich and follow each step literally. As students become aware of how precise their instructions need to be, modify the original steps given with the class and start the process again. As a class, reflect on the algorithms that the students wrote in Week 1. Discuss if the algorithms need to be modified, based on how the teacher followed the instructions to make a jam sandwich. **Learning activity** Students review the algorithms they developed in Lesson 1 and modify the steps to make the sequence more precise. For additional fun, let students 'code' another student to follow their new algorithm step-by-step and evaluate its precision.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Resources Jam Sandwich Algorithm – Primary Computing (Lesson Example Tech Train Teach) https://www.youtube.com/watch?v=U3TsVz_pJf4 provides an example of how explicit and detailed steps need to be given to a digital system as well as an example of how to follow instructions literally or 'like a robot would.' This video could also be used in place of the teacher following class steps.	**Conclusion** • Students swap their modified algorithms with a partner and follow the steps exactly as written to test for precision. Pairs provide feedback on how clear and accurate the instructions were and suggest any further improvements.

Term 2 Week 3: Graph paper programming

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital implementation Represent algorithms (sequence of steps), including decisions made by the user (branching) using flow charts **Design thinking skills** **Designing** Design solutions through use of labelled drawings, technical terms and/or a sequence of steps	**Learning intention** • I can follow and interpret a sequence of steps (algorithm) to create a design or solve a problem. **Focus questions** • How precise was my sequence of steps? • Which instructions could have been interpreted differently? **Support notes** Writing a sequence of steps for someone to replicate an image or pattern using squares on graph paper is called 'unplugged programming'. The types of instructions for colouring squares on a graph paper are: • move **one** square left • move **one** square right • move **one** square up • move **one** square down • colour in the square. **Resources** Two simple sample graph paper images/patterns (Appendix A.4). Students need to begin at the star on the graph paper. Sequence of steps for both graph paper images (Appendix A.5).	**Introduction** Have a pre-built simple object made from small, coloured blocks which is not shown to students. Give step-by-step instructions for students to build the object so it looks exactly like the pre-built object. **Students follow teacher instructions to build the object.** Show students the original object and compare the differences and similarities between the teacher's object and the students' object. **Learning activity** • Display one of the graph paper images on the interactive whiteboard. • Discuss the types of instructions which would be given for someone to recreate the coloured squares on another piece of graph paper without seeing the original. Remind students of the need for precision. • List all of the instructions that could be given on the board for recreating an image on graph paper. • Work with students to write the sequence of steps someone would give to recreate the image, if their starting position is the star on the top left corner of the graph. • On blank graph paper model following the steps. Check the recreated image against the original.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Blank graph paper (Appendix A.6). **Suggested assessment point** Use the unplugged programming graph paper as an indication of the students' understanding of algorithms and design skills.	• Distribute blank graph paper to students for them to develop their own images and instructions. Set the criteria of having a minimum of six squares coloured. • In pairs, students create their own image or pattern on the graph paper and write the list of steps for someone to follow to recreate the image or pattern. **Conclusion** Student pairs test their instructions by following the instructions exactly to recreate the patterns and identify any unclear or missing steps. As a class, reflect on the importance of writing precise instructions and how small errors can affect the final outcome.

Term 2 Week 4: Graph paper programming (continued)

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Data representation Data is of different types and can be represented in various ways **Digital implementation** Represent algorithms (sequence of steps), including decisions made by the user (branching) using flow charts **Design thinking skills** **Designing** Design solutions through use of labelled drawings, technical terms and/or a sequence of steps	**Learning intention** • I can use symbols to make instructions faster and easier to follow. **Focus questions** • How precise was the sequence of steps? • Could the sequence of steps be written in another format to speed up the process? • What are the benefits of using code instead of writing each step in full? **Support notes** The instructions for colouring squares on a graph paper are: • move **one** square left • move **one** square right • move **one** square up • move **one** square down • colour in the square. To reduce the time spent developing and providing a sequence of steps (or program), each instruction could be represented in code. For instance, 'move **one** square left' could simply be a small arrow pointing to the left, 'colour **one** block' could be a shaded square.	**Introduction** Students review their instructions from Week 3. Each pair swaps their instructions for a graph paper image (from Week 3) with another pair of students. Encourage one student from each pair to read the instructions while the other student draws on blank paper. Check against the original image/pattern. Ask: • 'How time consuming was it to write out the sequence of steps in full?' • 'Could the sequence of steps be written in another format to speed up the process?' Have the students come up with symbols they could use to write their code instead of writing it out in full. • Model how to write the instructions using the new symbols. **Learning activity** • In pairs, students rewrite the sequence of steps using the code developed. Have students test their coded instructions with a partner to see if they get the same result. **Conclusion** • Discuss with the students: 'What are the benefits of using code instead of writing each step in full?'

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Resources The sequence of steps using the arrows for the pre-developed graph paper images from Lesson 3 (Appendix A.4). **Suggested assessment points** Use the unplugged programming graph paper as an indication of the students' understanding of algorithms, data representation and design skills.	

Term 2 Week 5: Algorithms and branching

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital implementation Represent algorithms (sequence of steps), including decisions made by the user (branching) using flow charts **Design thinking skills** **Designing** Design solutions through use of labelled drawings, technical terms and/or a sequence of steps	**Learning intention** • I can represent a sequence of steps (algorithm) using flow chart symbols. **Focus questions** • How could you show a sequence of steps (algorithm) in a flow chart? **Support notes** Sequenced steps refer to the order of a program. They must be logical and precise. 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. Flow charts assist in demonstrating the relationship between the content and the processes. Common symbols used to demonstrate algorithms in a flow chart include: • 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.	**Introduction** Discuss how flow charts can be used to represent algorithms which involve branching/decisions. Tell students that in the decision-making process the words ‘if’ and ‘then’ are often used. For instance, ’If it is raining, then I will need an umbrella.’ Brainstorm with students’ real-world situations which involve the need to make a decision. • Model developing a flow chart using one of the real-world situations which includes the decision. • Discuss the symbols used in the flow chart. **Learning activity** In pairs, students choose a real-life scenario which involves the need to make a decision. Students jointly develop a flow chart which includes the decision. Use a cooperative learning strategy for students to share and compare their flow charts. Discuss the decision which was needed to be made in each case. For instance, the decision in the sample flow chart (Appendix A.3) is to decide if it is raining or not. Briefly discuss the relevance of flow charts in digital technologies and to digital systems. For example: • A login system – if the username and password match, grant access; if they don’t match, show an error message.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	The digital solution must have choices. These are called selection. The three types of selection are: • one-way selection (if-then) • two-way selection (if-then-else) • multi-way selection. For the Year 3 content description, the focus is on one-way selection (if-then) and two-way selection (if-then-else). Real-world scenarios could include choosing between toast and cereal for breakfast, choosing which spread to have on toast, choosing what to put on a sandwich, deciding what to wear. 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). Provide a template for students to use for the flow chart. **Resources** Sample flow chart showing an 'if-then-else' option (Appendix A.3). Links for sample flow charts involving branching and more information about flow charts in digital technologies (Appendix A.2).	• A robot – if the sensor detects an obstacle, turn left; if no obstacle is detected, move forward. Have students discuss with a partner other digital systems and technology that use decisions to work effectively. Examples can include: • **smart home devices** – if motion is detected, lights turn on; otherwise, they stay off • **fitness trackers** – if the step goal is reached, a notification appears; otherwise, tracking continues • **security systems** – if motion is detected, the alarm sounds; otherwise, it remains off. **Conclusion** Pairs present their flow charts to the class, explaining their decisions and process. Reflect as a class: • How did flow charts help organise the steps? • Why is it important to use correct symbols and logical sequences?

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Suggested assessment points Use the flow charts as further evidence of the students' understanding of algorithms, with the added layer of branching.	

Term 2 Week 6: Choose your own adventure 1

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital implementation Represent algorithms (sequence of steps), including decisions made by the user (branching) using flow charts **Design thinking skills** **Project management** Communicate ideas and follow a plan, with consideration of time management, to develop a solution **Designing** Design solutions through use of labelled drawings, technical terms and/or a sequence of steps	**Learning intention** • I can represent story pathways using flow charts with branching decisions. **Focus questions** • How can decisions in a story lead to different endings? • How can flow charts help organise story choices and outcomes? **Support notes** Choose your own adventure stories allow readers to make decisions at key points, leading to different events or endings. Each decision changes the pathway, making the story interactive and fun. Common symbols are used to demonstrate algorithms in a flow chart. For instance: • start and finish is a rounded rectangle or oval • process or action is a rectangle • decision is a diamond • line connectors are arrows. For the flow chart showing the steps to brush your teeth, the decision (diamond) could be, 'Will I brush my teeth?'. If the answer is yes, then each rectangle (process or action) has a single step written in them until the task is finished. This will result in more actions (rectangles) and therefore line connectors, than the flow chart completed in Week 3.	**Prior to the lesson** Prepare an example of a 'Choose your own adventure' story. **Introduction** Introduce a 'Choose your own adventure' story to the class. Read a short example, allowing the class to make the decision as a group. Discuss how their choices affected the story's outcome. Review the flow charts from Week 5 and the symbols used in flow charts. Show an example for a decision-based scenario (e.g. 'Do you eat sandwiches or salad?'). Highlight how decisions (diamonds) lead to branching pathways. Brainstorm a simple flow chart with at least **one** decision point and **two** endings. Use labelled drawings or short text to represent the events. **Learning activity** In pairs, students create a short story where the reader makes at least **two** decisions. Students sketch a flow chart of their story, starting with a beginning (oval), adding a storyline (rectangle), decisions (diamonds) and showing an ending (oval). Students write or draw their main events and outcomes for each pathway in their flow chart.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Students can either draw their own flow charts or a template can be provided for them. **Resources** Links for sample flow charts involving branching and more information about flow charts in digital technologies (Appendix A.2). **Suggested assessment points** Assess if the flow chart includes at least **one** decision point with **two** possible outcomes and correct use of symbols. Evaluate the clarity and logic of story pathways and whether students contributed ideas collaboratively.	**Conclusion** Reflect as a class: • How did your decisions change the story? • Why is it important to organise story pathways clearly in a flow chart? Show some of the student flow charts and how the decisions lead to unique outcomes.

Term 2 Week 7: Choose your own adventure 2

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital implementation Represent algorithms (sequence of steps), including decisions made by the user (branching) using flow charts **Design thinking skills** **Project management** Communicate ideas and follow a plan, with consideration of time management, to develop a solution **Designing** Design solutions through use of labelled drawings, technical terms and/or a sequence of steps **Evaluating** Use given criteria to evaluate diagrams, technologies and the components used for the designed solution	**Learning intention** • I can represent story pathways and decisions clearly using flow charts. **Focus questions** • How can we use flow charts to organise the choices in a story? • How can we make sure each story pathway is clear and easy to follow? **Support notes** Flow charts are essential for organising stories with decisions. They visually represent: • start and finish (rounded rectangle or oval) • events or action (rectangle) • choices or decision (diamond) • line connectors are arrows. Encourage students to expand their story events by adding details and consequences for each decision. For example: • If you go into the cave, you might find treasure or encounter a bear. • If you climb the mountain, you might enjoy a great view or face a storm. **Suggested assessment points** Check if pathways are expanded with detailed, unique events that align with decisions.	**Introduction** Review the flow chart symbols and discuss their use in organising story pathways. Show an example flow chart with multiple branching decisions and outcomes. Take **one** pathway from an example flow chart and add detailed events or consequences, such as: • decision – do you move left or right in the maze? • left – find a hidden treasure • right – face a dangerous monster. Highlight the importance of making each pathway unique and engaging. Remind students to use labelled drawings or brief text for clarity. **Learning activity** In pairs, students use their flow charts from Week 6 and develop detailed events for each choice. Include at least **one** new consequence or event for each decision. Students add labelled drawings to represent the key events in their story. Check the flow chart to ensure every decision leads to a clear and logical outcome.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Assess the accuracy and completeness of flow charts and the creativity shown in the story.	**Conclusion** Student pairs swap flow charts and storyboards with another pair. Each pair 'plays' through the other's story by following the flow chart and giving feedback. Reflect as a class: • What made some pathways more interesting or engaging? • Why is it important to refine and test our flow charts before creating the final story?

Term 2 Week 8: Choose your own adventure 3

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital implementation Represent algorithms (sequence of steps), including decisions made by the user (branching) using flow charts **Design thinking skills** **Project management** Communicate ideas and follow a plan, with consideration of time management, to develop a solution **Designing** Design solutions through use of labelled drawings, technical terms and/or a sequence of steps **Evaluating** Use given criteria to evaluate diagrams, technologies and the components used for the designed solution	**Learning intention** • I can use feedback to refine and improve the clarity and engagement of story pathways. **Focus questions** • How can feedback help improve your story and flow chart? • What makes a story pathway interesting and easy to follow? **Support notes** Sharing allows students to 'test' their flow charts and see how others interact with their branching stories. This process mirrors real-world debugging in programming, where user feedback ensures the system works as intended. Feedback should focus on: • **clarity** – are all decisions and outcomes easy to follow? • **engagement** – are the story pathways creative and interesting? • **logic** – do decisions lead to logical and unique outcomes? **Suggested assessment points** Assess whether students provided and used feedback to refine their flow chart and story pathways. Evaluate if the final product includes logical branching, multiple outcomes and engaging content.	**Introduction** Discuss why feedback is important, comparing it to testing a game or an app. Model how to provide constructive feedback: • I liked … • Even better if … Provide students some time to ensure their flow charts show detailed pathways. Set up a gallery-walk or pair-swapping system for the sharing of stories. Provide each student with a feedback recording sheet that outlines the three criteria: clarity, engagement and logic. Also provide 'two stars and a wish'. **Learning activity** Students pair up with another pair to share their flow charts and storyboards. One pair follows the other's flow chart, making decisions and experiencing the story. After completing the story, pairs discuss what they enjoyed and suggest improvements. Students record the feedback. Using the feedback, students refine their flow charts and story pathways to improve clarity, engagement or logic.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		Conclusion Reflect on the sharing experience. • What was the most interesting part of another group's story? • What changes did you make after receiving feedback? Celebrate the completed flow charts by displaying them for others to explore. **Optional activity** Students can publish these stories using presentation software like PowerPoint or Keynote and control the decisions using hyperlinking to different slides.

Term 3

Weeks 1–8: Digital implementation

Term 3 Week 1: Digital implementation Assessment

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital implementation Represent algorithms (sequence of steps), including decisions made by the user (branching) using flow charts **Design thinking skills** **Designing** Design solutions through use of labelled drawings, technical terms and/or a sequence of steps	**Learning intention** • I can write and follow an algorithm to create a pattern or image. **Focus questions** • How can I write a clear algorithm for my pattern? • What do the symbols in my code mean and how do they help? • How do decisions (branching) change how an algorithm works? **Support notes** Students have previously learnt unplugged algorithms in Term 2. This lesson will review and assess their representation of algorithms and application of decisions within a flow chart. In the summative assessment task, students work collaboratively and independently to complete unplugged algorithms. Students also visually represent branching with at least two possible outcomes.	**Introduction** Review developing an algorithm for graph paper images or patterns. (Term 2, Lesson 4) Ask: • What steps do we follow to create this pattern? • How do symbols like arrows or loops make our instructions easier to follow? Provide students with a blank grid (graph paper) (Appendix A.6) and ask them to create their image or pattern by colouring the squares. Review the code developed in Term 2, Lesson 6 where symbols, such as arrows replaced writing the instructions in full. **Assessment task – Unplugged algorithms** Full teaching instructions, assessment template, planning notes and marking key available in Appendix C.

Term 3 Week 2: Digital maze game 1

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 made by the user (branching)	**Learning intention** • I can use ScratchJr to represent sequence and branching **Focus questions** • What is important when working with another student on a computer? • What are the blocks used for in ScratchJr? **Support notes** In Term 3, students work in pairs to develop their own maze game using coding software, an app or software. The project in this learning exemplar is being created using ScratchJr. This is an app designed for tablets. Blockly coding is used in online software and apps such as Scratch and ScratchJr. The code is a series of blocks which are stacked on top of each other to create a sequence of steps the computer must follow. When projects are created digitally, the programmer makes decisions to cause the computer to make choices. Students will explore ScratchJr using online tutorials. The 'Learn' and 'Teach' tabs on the ScratchJr website provide tutorials on the functions of ScratchJr. Tips and Hints under the 'Learn' tab also contains videos. Extra time may be needed for students to practise.	**Introduction** Discuss the task to create a digital maze game, clarifying the need for students to understand and be familiar with programming. • Watch Pair Programming,Code.org https://www.youtube.com/watch?v=vgkahOzFH2Q and highlight the key roles of working with another person on the computer. Ask the first focus question and list student responses as pair programming guidelines or rules. Display the pair programming guidelines for all students to follow. • On the interactive whiteboard, display the ScratchJr website https://www.scratchjr.org/learn/interface Discuss how students will first be learning about the functions of ScratchJr. Explain the blocks used in ScratchJr and how they are used to develop an algorithm (sequence of steps). **Learning activity** In pairs, students visit the ScratchJr website https://www.scratchjr.org/learn/interface and read through the interface descriptions by selecting each number on the number panel. Watch the first **four** videos under *Tips and Hints*.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Resources ScratchJr is an app that will be needed to be downloaded on students' tablets. Accounts can be created or the game can be built without an account. If there is no account, make sure students use the same tablet each time to prevent them losing their work. Refer to your sector's third-party permissions and guidelines before selecting a platform.	• In pairs, students follow the steps provided by the teacher using the ScratchJr app. • Explore using some of the features in ScratchJr on a new project page. **Optional activity** • Students can complete tasks on the Code.org website https://code.org/student/elementary to practise Blockly coding further. Depending on student need, select Course B or Course C via the link in learning experiences for interactive tutorials.

Term 3 Week 3: Digital maze game 2

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Design thinking skills **Project management** Communicate ideas and follow a plan, with consideration of time management, to develop a solution **Investigating and defining** Define ideas and design opportunities for individual and/or local needs **Designing** Design solutions through use of labelled drawings, technical terms and/or a sequence of steps	**Learning intention** • I can define ideas and design opportunities for a maze game that meets individual or user needs. **Focus questions** • What theme, character and goal will make your maze game fun and interesting for players? • How can your maze game meet the needs or interests of your audience? **Support notes** Students should explicitly plan out the elements of their game, including: • theme – ideas for their game (e.g. jungle, space, undersea) • main character – the sprite that the main character controls (e.g. an animal, explorer or robot) • goal (treasure) – the prize or objective at the end of the maze (e.g. a hidden gem, treasure chest or rescued friend). Students can develop their stories in pairs or independently depending on the number of devices available. If completing the task in pairs, review pair programming guidelines each lesson.	**Introduction** Begin by showing the students a simple maze game in ScratchJr or by discussing a familiar game with a maze theme. Ask the students: • What makes this game fun? • What would you change or improve to make it better? Introduce the concept of designing for user needs. Discuss what makes games interesting to different people (e.g. themes, colourful designs, an exciting goal). **Learning activity** Guide the students to brainstorm creative ideas for their maze game. Use a 'Think-Pair-Share' activity: • theme – what is the theme of your maze? • main character – who or what will navigate through your maze? • goal (treasure) – what will the character try to find or achieve? Discuss how the choices make your game fun and match the audience's interests.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Suggested assessment points • Collect and annotate students' labelled drawings to assess creativity, clarity and alignment with user needs. • Use an observation checklist to note how well students articulate ideas and apply the success criteria (fun, functionality and challenge). • Facilitate peer feedback and self-reflection to evaluate understanding of audience needs and engagement with the design process.	Introduce the three criteria they will be using to ensure their game is successful. 1. Fun – is the game exciting and engaging for players? 2. Functional – does the game work? 3. Challenge – is the game appropriately challenging (not too hard or too easy)? Instruct the students to draw their main character and goal (treasure) adding detail to show creativity and appeal. **Conclusion** Discuss the following questions. • What theme, character and goal did you choose for your maze game? • How will your game be fun or engaging for your audience?

Term 3 Week 4: Digital maze game 3

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Design thinking skills **Project management** Communicate ideas and follow a plan, with consideration of time management, to develop a solution **Investigating and defining** Define ideas and design opportunities for individual and/or local needs **Designing** Design solutions through use of labelled drawings, technical terms and/or a sequence of steps	**Learning intention** • I can design a maze layout with pathways, obstacles and a goal using labelled drawings. **Focus questions** • How can you design a maze background that is clear and engaging for players? • What buttons will players need to navigate the maze and how will they be labelled or designed? **Support notes** **Maze background design:** Students should design a game that has clearly defined pathways, dead ends and obstacles to make the maze visually appealing and functional. They should leave a space in their maze rectangle for their buttons that meets the user needs - where the thumbs are comfortable on the tablet. **Button design:** When creating buttons that control your main character in ScratchJr, each button is its own unique sprite. When the sprite is clicked, it tells the main character sprite to move a certain direction. Buttons should match the main character's actions (up, down, left, right). Use arrows, symbols or simple words to label the buttons clearly.	**Introduction** Show an example of a maze design and button interface. Ask the students: • What makes the maze easy to understand and fun and appealing? • How do the buttons help players navigate the maze? Introduce the planning sheet section of the maze background and the button design. Before you sketch the maze background and the maze, discuss with the students the best place to put the buttons that control the main character. Instruct the students to pretend to be a user and hold their iPad as if they are playing the game. Ask students what the most comfortable location for the controls are. This should be at either the bottom left or bottom right of the screen. Model how to sketch a maze background with a ruler, planning a starting point for the main character, the end goal and a space for the buttons. Students can think about where they might like to put some obstacles in the maze too. **Learning activity** Students sketch their maze background on the planning sheet. Show different examples of button designs. Instruct students to design clear and usable button designs.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Suggested assessment point Review students' labelled maze and button designs to evaluate creativity, clarity and technical accuracy. Facilitate a brief student self-reflection on how well their designs meet the lesson's focus questions and success criteria.	Students design the game interface by sketching a button layout (e.g. up, down, left, right). They should label buttons with arrows, symbols or words to represent their function. **Conclusion** Students to share their designs with whole class or partners. Ask students to provide feedback on their designs including: challenging without being too challenging, exciting and fun.

Term 3 Week 5: Digital maze game 4

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital implementation Represent algorithms (sequence of steps), including decisions made by the user (branching) using flow charts **Design thinking skills** **Project management** Communicate ideas and follow a plan, with consideration of time management, to develop a solution **Designing** Design solutions through use of labelled drawings, technical terms and/or a sequence of steps **Producing and implementing** Use appropriate technologies and components with given equipment and follow agreed protocols to produce a designed solution	**Learning intentions** • I can create a maze background, main character and button sprites using ScratchJr. **Focus questions** • How can we create the maze and sprites based on our designs? • How do symbols help us simplify and organise our code? **Support notes** In this lesson, students build on their designs by creating a maze background and functional sprites (main character and directional buttons) in ScratchJr. They will learn to use the 'when clicked' block with the send and receive message (color-coded) between sprites to control the movement of the main character. Students will use the previously taught concept of flow charts, which are used to plan the logic of the code. This helps students visualise and organise their code before implementation.	**Introduction** Review the previous lesson including the maze background, buttons, main character and goal. Discuss the importance of following the design plan to save time and meet project goals. Show a ScratchJr project with an example maze background, buttons and a main character; highlighting how the buttons send messages to control the main character. Model how to build the maze background using shapes. Show each of the tools available in the digital platform you are using, then model how to create a sprite using the same tools. **Learning activity** Students use ScratchJr to create the maze background and individual sprites for the main character and each of the buttons. Demonstrate how button sprites can send messages to the main character using your platform. For example: • when the button sprite is clicked → send message (colour) • when the main character receives the message (colour) → move in the corresponding direction.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Suggested assessment points Observe if students create maze backgrounds and sprites that match their designs. Analyse their flow charts for logical steps, showing how button interactions control the main character. Use peer feedback and student reflections to check engagement, clarity and understanding of coding concepts.	Discuss how using symbols (e.g. arrows for directions) can streamline the coding process and make it easier to understand. Students create a simple flow chart on paper to plan their code for each button. **Conclusion** Students share their maze designs, sprites and flow charts with a partner or small group. An example of feedback criteria for reflection: • Are the maze and buttons clear and easy to use? • Is the main character engaging? • Does the flow chart show logical steps? Reflect on what went well while they were creating their maze and sprites.

Term 3 Week 6: Digital maze game 5

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 made by the user (branching) **Design thinking skills** **Project management** Communicate ideas and follow a plan, with consideration of time management, to develop a solution **Designing** Design solutions through use of labelled drawings, technical terms and/or a sequence of steps **Producing and implementing** Use appropriate technologies and components with given equipment and follow agreed protocols to produce a designed solution	**Learning intention** • I can use testing and feedback to improve my game. **Focus questions** • Does the main character move as planned when each button is clicked? • What happens when the main character reaches the goal? • How can setting a time goal help you complete your work efficiently? **Support notes** In this lesson, students will manage their time by setting specific goals for coding, testing and creating the winning screen. Encourage them to reflect at the end of the lesson to assess if their goals were achieved and why. Students will use ScratchJr or a different platform to code their maze game and test it to ensure functionality. They will use the 'when clicked' block for buttons to send messages to the main character, moving it in the correct direction. Introduce the 'when sprite bumps another sprite' block to trigger the winning sequence. Students will use this to change the background to a victory screen when the main character reaches the goal.	**Introduction** Recap the previous lesson, focusing on how flow charts help organise and simplify coding. Show how buttons can be used to send messages to move the main character towards the goal. Hand each student a Post-it note and ask students to set a specific goal for today's lesson (e.g. 'I will code all the buttons and test the game by the end of this lesson'). **Learning activity** Students use their flow charts to code the directional buttons to control the main character. Instruct students to test their mazes with a peer, ensuring the main character navigates the maze correctly. Model how to create a winning screen. For example, when the main character bumps the goal sprite → change background to victory screen. Ask: • What will the new background look like? • Will it include a 'congratulations' message, animation or sound? • How does this match the theme of your game?

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Note: the maze walls are part of the background and are not 'solid'. Students must rely on careful movement to navigate the maze. **Suggested assessment point** • Observe if students' coding aligns with their flow charts and designs. • Check whether the main character responds correctly to button interactions and triggers the winning screen. • Use peer testing and feedback to identify and resolve coding errors.	Have students plan out a sketch and a short flow chart of the sequence of events that will happen when the main character wins. This can be done on a small whiteboard or paper. After students have shown you their plan, they can proceed with creating and coding the victory background. **Conclusion** Students share their games with peers for final testing and feedback. Reflect on the time management goals students wrote on Post-it notes. • Did you complete what you set out to do? Why or why not? • How did setting a time goal help or challenge you? • What could you do differently next time to improve? **Optional extension** Start screen – Students can create a similar background that includes a Title and Play button. They can add things like instructions and rules for the game.

Term 3 Week 7: Digital maze game 6

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 made by the user (branching) **Design thinking skills** **Project management** Communicate ideas and follow a plan, with consideration of time management, to develop a solution **Producing and implementing** Use appropriate technologies and components with given equipment and follow agreed protocols to produce a designed solution	**Learning intention** • I can add an obstacle to the game that interacts with the main character and triggers an outcome. **Focus questions** • How can obstacles make your game more challenging and interesting? • What happens when the main character touches an obstacle? • How can you refine your game to make it enjoyable and functional for players? **Support notes** Students will add an obstacle sprite to their game. When the main character touches the obstacle, it will trigger an event, such as sending the player to a different background or back to the start screen (if the game has one). As extension, introduce the concept of adding a second level with a new maze background. Instead of a victory screen, the character will move to the next level after reaching the goal. **Suggested assessment points** Observe if students successfully code the obstacle to trigger the appropriate action.	**Introduction** Introduce obstacles as a way to make their games more engaging. Show an example where touching an obstacle sends the player back to the start screen or a new background. Discuss what would make an obstacle interesting and engaging and suit the theme of the game. For example, an adventure game with a dragon guarding the treasure or a shark in an undersea game. Discuss what happens when the main character touches the obstacle: • send to a new background (e.g. 'Game Over' screen) • send back to a start screen. **Learning activity** Students create the obstacle and add it to their maze. Students can add the code that triggers an outcome like 'Game Over' or back to the start screen. Ask students to think about what the obstacle might do and how they can animate it to do so; for example, a dragon can be coded to patrol (move back and forth) or a bat might fly up and down. Once they have added their obstacle, have students play and refine their game from start to finish. Check for functionality of all buttons, obstacles and the winning

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		screen. Adjust the maze, sprites or coding, if needed, to improve gameplay. **Conclusion** Discuss as a class: • How did adding obstacles make your game more interesting? • Did your obstacle and second level (if added) work as planned? • What improvements did you make to refine your game? **Optional extension – Adding a second level** Students create a new background with a more difficult maze. They can then code the first level goal sprite to trigger the next level background.

Term 3 Week 8: Digital maze game 7

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Design thinking skills **Project management** Communicate ideas and follow a plan, with consideration of time management, to develop a solution **Evaluating** Use given criteria to evaluate diagrams, technologies and the components used for the designed solution	**Learning intention** • I can use peer feedback to identify strengths and areas for improvement. **Focus questions** • How does your game meet the design criteria? • What feedback did you receive and how could it help you improve your game? • What went well in creating your game and what would you do differently next time? **Support notes** Students will test their completed games with peers, using given evaluation criteria to assess design elements such as fun, functionality and challenge level. Feedback should be constructive and specific, allowing students to reflect on how their game aligns with their original design goals and how it could be improved. Encourage students to consider the overall process, including their planning, coding and testing phases, as part of their evaluation. **Suggested assessment points** Evaluate whether the game works as intended, including clear navigation, responsive buttons, and correct interactions with obstacles and the winning screen.	**Introduction** Review the success criteria of the task. • Fun – is the game exciting and engaging for players? • Functional – does the game work? • Challenge – is the game appropriately challenging – not too hard or too easy? Discuss with students the purpose of testing/evaluating the game: • to see how well the game meets design goals • to identify what works well and what could be improved. **Learning activity** Students take turns testing each other's games. Encourage students to play through the entire game, including obstacles, winning screens and additional levels if implemented. Provide a way for students to give feedback. This can be in the form of 'two stars and a wish' or a simple table with three columns and the criteria at the top – each student ticks if the game met the criteria. Students then reflect on their feedback and evaluate their own game using the given criteria.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Assess the quality of peer feedback provided and how effectively students reflect on their game using the given criteria, identifying specific strengths and areas for improvement.	Provide a simple evaluation sheet or template with prompts, such as: • What is the best part of your game? • What feedback did you receive and how could you use it to improve your game? • How does your game meet the design criteria? **Conclusion** Discuss as a class: • What feedback did you receive and how will it help you improve your next game? • What part of your game are you most proud of? • What was the biggest challenge you faced in creating your game? Reflect on the overall project process: • How did planning, coding and testing help you create a better game?

Term 4

Weeks 1–8: Passwords and digital systems

Term 4 Week 1: Passwords

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Privacy and security Access their school account using a unique, private, memorised password, and log out afterwards	**Learning intention** • I understand the importance of using a unique password to access their school account or device. **Focus questions** • Why is it important to use a strong and unique password? • What could happen if someone else knows your password? • How can you create a password that is easy for you to remember but hard for others to guess? **Support notes** Year 3 students are starting to develop independence and responsibility, making it important to introduce password security. Focus on helping them create memorable but unique passwords using simple strategies (e.g. combining a favourite colour, animal and number). Reinforce the importance of keeping passwords private and logging out of shared devices to protect their work and accounts. **Suggested assessment points** Observe students as they discuss and create their passwords, ensuring they follow the rules for strong passwords.	**Introduction** Display the list of most commonly used passwords (e.g. 123456 or password) from Appendix A.9. Ask students: • What do you notice about these passwords? • Why do you think so many people use them? • What might be the problem with using these passwords? Explain that a unique password is one that only you know. The password should be hard for others to guess and keeping it private protects your information and keeps your account safe. Discuss what could happen if someone else knows your password? (e.g. they could log into your account, change your work or send messages pretending to be you). Show examples of strong versus weak passwords: • Strong passwords – Koala27Tree, Blue4Ocean, Star3Moon. • Weak passwords – 12345, password, your name. Navigate to https://www.security.org/how-secure-is-my-password/. Show students how commonly used passwords can be guessed/cracked by others very quickly.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		Learning activity Ask students to create their own unique password following these rules: • use at least six characters • use a mix of letters, numbers and/or symbols • make it memorable to them (e.g. favourite animal, colour or number). Have students upgrade the difficulty of a single word password. • Start by asking a student for a single random word (e.g. apple or chicken) • Add some capital letters (e.g. Apple or ChickeN) • Change a letter to a number (e.g. App1e or Chick3N) • Add a symbol (e.g. @pp1E or Ch!ck3N) • Add a number at the end (e.g. @pp1E2025 or Chi!ck3N18) Show students how an upgraded password is far harder for the someone to guess than a single word. Have students record their password on a secret piece of paper, fold it in half (this is for them to practise so they remember it, not for sharing). Discuss with the students why they should never show their password to anyone except a trusted adult (like their parent or teacher).

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		Conclusion Discuss the following scenarios: • Someone tries to guess your password – how would a strong password stop them? • You accidentally tell your password to a friend – what could happen? Reflect with the class: Why is it important to keep your password unique and private?

Term 4 Week 2: Hardware and software review

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital systems Digital systems and peripheral devices are connected and used together for various purposes **Design thinking skills** **Designing** Design solutions through use of labelled drawings, technical terms and/or a sequence of steps	**Learning intention** • I understand how hardware and software work together to perform tasks. **Focus questions** • What is hardware and what is software? • How do hardware and software work together in digital systems? • What digital systems do we use at home and in the classroom? **Support notes** In this lesson, Year 3 students will briefly review the concepts of hardware and software, building on their prior knowledge from Pre-primary to Year 2. Students will revisit the distinction between hardware (physical components like keyboards and monitors) and software (programs or instructions like apps and games) through interactive activities and discussion. This review serves as a foundation for the next lessons, which focus on peripherals and their roles as input, output or dual-purpose devices. **Resources** Links to digital systems and hardware and software videos can be found in Appendix A.8.	**Before the lesson** Prepare a slide deck, including: • definitions of hardware and software with visuals (e.g. images of a computer, tablet and gaming console). • examples of hardware components • examples of software • common digital systems found in homes and classrooms (e.g. laptops, smartboards, tablets, gaming consoles). Also prepare a printed handout or cards with hardware and software examples for a ‘hardware versus software’ sorting activity. **Introduction** Ask students, 'What digital systems do you use at home or in school? List the examples on the board. Display your slide deck reviewing hardware and software. **Learning activity** Provide students a handout or cards with titles like keyboards, screens, microphones, apps and games. They can work individually or in pairs to sort the cards into hardware and software. Review as a class. Point out examples from around the classroom of hardware and software and review the digital systems the students listed on the board.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Suggested assessment points Review students' diagrams to assess their prior knowledge of digital systems and their components, focusing on the accuracy and detail of their labels. Use the 'hardware versus software' sorting activity as an informal assessment to evaluate students' ability to categorise examples correctly and their reasoning behind the choices.	Provide blank paper and ask students to draw a diagram of their chosen digital system. They should label as many parts of the system as they can, using their current knowledge (e.g. screen, keyboard, mouse, apps, games). **Conclusion** Once complete, students share their diagrams with the class or in small groups. Encourage students to explain how they think the parts of their system work together. Use this opportunity to gauge their understanding of hardware and software and identify areas for further clarification.

Term 4 Week 3: Peripheral devices 1

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital systems Digital systems and peripheral devices are connected and used together for various purposes	**Learning intention** • I know what a peripheral device is and can discuss its purpose. **Focus questions** • What is a peripheral device? • What does an input device do? • What does an output device do? • What are examples of input devices? • What are examples of output devices? **Support notes** A peripheral device is anything connected to a digital system (e.g. computer, tablet, gaming console) to provide input, output or storage capabilities. These devices are not required for the digital system to function but enhance its usability. Input devices allow users to send data to the system. Examples: keyboard, mouse, touch screen, scanner, joystick, microphone and digital camera. Output devices display or project information from the system. Examples: monitor, printer, speakers, projector, TV screen and gaming headsets. Some devices serve as both input and output devices, such as touch screens, controllers and headsets with microphones. Peripheral devices can connect via cables or wirelessly (e.g. Bluetooth or wi-fi).	**Introduction** Ask, 'How do you interact with a desktop computer, tablet or gaming console?' 'What devices help you do this?' Record responses on the board, grouping them under potential input, output and storage categories. Define a peripheral device and its purpose, using examples from current technologies like gaming consoles and tablets. Highlight input, output and dual-purpose peripherals, explaining their roles with relatable examples (e.g. a gaming controller as an input device, a TV screen as an output device). **Learning activity** Organise students into small groups and provide images of various peripheral devices, including keyboards, speakers, microphones, touch screens, gaming controllers and USB drives. Instruct students to sort the devices into categories: input, output or both. Each group shares their sorting decisions, explaining why they categorised devices as input, output or both. Select and watch one of the suggested videos about peripheral devices and input/output devices (Appendix A.8) and facilitate a guided discussion using the focus questions to clarify key concepts and correct misconceptions.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Each peripheral device has an intended purpose in order to make the user's experience more efficient and beneficial. **Resources** Suggested videos about input and output devices (Appendix A.8).	**Conclusion** Provide students with the opportunity to revisit their 'hardware versus software' sorting activity based on what they learned from the video and discussion. Students could also group images into columns for input devices and output devices on a classroom display.

Term 4 Week 4: Peripheral devices 2

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital systems Digital systems and peripheral devices are connected and used together for various purposes **Design thinking skills** **Designing** Design solutions through use of labelled drawings, technical terms and/or a sequence of steps	**Learning intention** • I understand the purpose of peripheral devices and how they are used in digital systems. **Focus questions** • What is the purpose of the peripheral device? • What helps to identify if a peripheral device inputs data or outputs data? **Support notes** Building on the previous lesson, this lesson develops students' understanding of how peripheral devices function within digital systems. Peripheral devices have specific purposes: • input devices – send data to a computer (e.g. keyboard inputs text, camera inputs images) • output devices – receive data from a computer and present it (e.g. printer outputs text/images, screen displays visuals). Examples can include current technologies like gaming consoles (controllers as input, TV as output), tablets (touch screen as both input and output) and classroom devices like projectors and printers. **Suggested assessment points** Students complete a table to classify peripheral devices based on their purpose, data flow, and whether they are input or output devices.	**Introduction** Recap key concepts from the previous lesson about input, output and dual-purpose peripherals. Show a video from Appendix A.8 about peripheral devices (or a slide from the Term 4 Lesson 2, if used). Select an example peripheral device (e.g., a keyboard). Show a picture using a slide or draw it on the whiteboard. Discuss its purpose and how data flows from the keyboard (input) into the computer. Compare this with an output device like a printer, where data flows out from the computer to the printer. **Learning activity** Provide students a table template with columns for: • drawing and naming the peripheral device • identifying the flow of data (input or output) • describing the purpose of the device. Students select three peripheral devices from the classroom or provided images (e.g. microphone, digital camera, monitor). Complete the table based on their observations and prior knowledge.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		Optional activity Have a range of peripheral devices set up in the classroom for students to try and ask students to discuss the type of peripheral device and its purpose. Encourage students to explain what helps them to identify if the peripheral device is an input device or output device. **Conclusion** Invite a few students to share their completed tables. Discuss what helped them identify whether the devices were input or output. Ask: • What helped you decide if a device is input or output (e.g. direction of the data)? • Why is it important to know the purpose of a peripheral device (e.g. understanding the purpose helps students connect peripheral devices and troubleshoot/fix it when something goes wrong)?

Term 4 Week 5: Digital systems in society

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital systems Digital systems and peripheral devices are connected and used together for various purposes **Design thinking skills** **Designing** Design solutions through use of labelled drawings, technical terms and/or a sequence of steps	**Learning intention** • I understand how digital systems use peripheral devices for input, output or both. **Focus questions** • What digital systems do we see in everyday life? • What peripherals do these digital systems use for input, output or both? • How do these systems and peripherals make tasks easier or more efficient? **Support notes** This lesson builds on prior knowledge of peripherals by connecting these concepts to real-world technologies. At Year 3 level, there is no expectation for students to understand the complex sensors or technical details of some technologies. Instead, these examples provide exposure to spark curiosity and encourage students to start thinking about how everyday digital systems work. Examples include: • phones/tablets – touch screens (input/output), cameras (input) and speakers (output) • supermarket self-checkout – scanners (input), receipt printers (output), touch screens (both) • VR headsets – controllers (input), displays (output) • car technology – touch screens (input/output), parking sensors (input), speakers (output)	**Introduction** Brainstorm the different digital systems students see in their everyday life. Write responses on the board (e.g. phones, tablets, self-checkouts, gaming consoles, car technology). Review input, output and dual-purpose peripherals. Use examples from brainstormed systems (e.g. gaming console controller as input, TV as output). Show some pre-prepared images of digital systems in society (e.g. self-checkouts, VR headsets, smart devices). For each system, ask: • What does this system do? • What peripherals does it use for input or output? • How does this system help people? **Learning activity** Students work in pairs to choose one digital system they have seen or used (see examples in support notes). On a blank piece of paper or digitally, students need to: • draw and label the digital system and its peripherals • identify whether each peripheral is input, output or both • write a sentence describing the system's purpose. **Conclusion** Student pairs present their diagrams to the class or small groups. Encourage students to explain how the peripherals work together with the system to achieve its purpose.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	• gaming consoles – controllers (input), microphones (input), TV screens (output), speakers (output), vibration feedback on controllers (output) • smartwatches and fitness trackers – touch screens (input/output), heart rate sensors (input), motion sensors (input), display screens (output), vibration for alerts (output) • drones – controllers (input), GPS (input), camera footage (output), movement feedback (output). **Suggested assessment points** Evaluate diagrams for accuracy in labelling peripherals as input, output or both and their descriptions of the system's purpose. Assess students' ability to explain their system and its peripherals clearly and confidently during sharing.	Ask students: • Which system do you think is most helpful in everyday life? • How are these systems making our lives easier?

Term 4 Week 6: Dancing robots 1

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
Digital systems Digital systems and peripheral devices are connected and used together for various purposes **Digital implementation** Represent algorithms (sequence of steps), including decisions made by the user (branching) using flow charts Implement algorithms (sequence of steps) in a visual programming environment to include decisions made by the user (branching) **Design thinking skills** **Project management** Communicate ideas and follow a plan, with consideration of time management, to develop a solution **Investigating and defining** Define ideas and design opportunities for individual and/or local needs **Designing** Design solutions through use of labelled drawings, technical terms and/or a sequence of steps	**Learning intentions** • I can use an algorithm to program a robot. **Focus questions** • What can the robot do and how can we program it to move? • How can we sequence movement commands to create a dance? • What makes a dance routine engaging and creative? **Support notes/prior preparation** Programmable driving robots (e.g. Dash, Sphero and Lego Spike – see Appendix A.10 for full list of options) help students learn coding by visually programming the robots to move and perform actions. Using these robots encourages problem-solving, sequencing and creativity while making STEM concepts engaging and hands-on. If robots are not available, students can pretend to be a 'dancing machine' and program themselves. Provide paper and have students write a sequence of instructions for their own dance moves (e.g. step forward, spin, pause). **Suggested assessment points** • Monitor how well students explore the robot's basic functions and begin to sequence movements. • Check students' initial sketches for creativity and thoughtfulness in sequencing.	**Before the lesson** • Robot set-up: Ensure all robots (e.g. Dash, Sphero Robot, Blue-Bot, Lego Spike Essential or Prime) are charged and ready to use. • App requirements: Install the appropriate programming app for each robot on classroom devices. • Music: Prepare a selection of short, upbeat tracks (approximately 30 seconds each) for students to choose from. • Materials: Provide planning sheets for students to sketch their initial ideas for a dance routine. **Introduction** Introduce the project to the students by explaining they will need to program a robot to perform a creative dance routine to music. Show a video or demonstration of a robot performing a simple dance. Ask students: • What makes a dance routine fun and engaging? • How could a robot be programmed to move to a beat?

		Introduce the robot students will be working with. Explain that it is a driving robot and can be programmed to move in multiple directions. Point out features like wheels, sensors and any unique components. Demonstrate how to make the robot move around in a square – forward, backward, turn and stop. Show how to sequence the movements. **Learning activity** In pairs or small groups, students experiment with the robot's basic commands to see how it moves. Encourage them to try combining movements into short sequences. Play a sample song and ask, 'How could your robot move to match this beat?' Discuss how to 'time' movements to the rhythm of the music. Introduce the success criteria for the project. This could include the following: • Creativity – the routine should be original and engaging. • Variety of movement – the robot should show a variety of types of movement. • Synchronisation – the robot's movement aligns well with the rhythm and beat of the music. Provide students with planning sheets to sketch their ideas for the robot's dance. Encourage creative elements like spins, pauses and repeated movement. **Conclusion** Students share their initial ideas with their group and get feedback to refine their routines. Prepare for the next lesson by explaining that students will sequence their routines fully and start synchronising them to music.

Term 4 Week 7: Dancing robots 2

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 made by the user (branching) **Design thinking skills** **Project management** Communicate ideas and follow a plan, with consideration of time management, to develop a solution **Producing and implementing** Use appropriate technologies and components with given equipment and follow agreed protocols to produce a designed solution	**Learning intentions** • I can code a robot to perform a dance routine that matches music. **Focus questions** • How can we make the robot's movements match the music? • What makes the robot's dance fun and creative? • How can we fix problems if the robot's routine doesn't work as planned? **Support notes** At Year 3 level, students create simple, sequenced dance routines using basic commands, focusing on creativity and alignment with the rhythm or beat. Coding a robot to dance helps students develop key computational thinking skills. This includes: • algorithms -– by creating a step-by-step sequence of instructions • decomposition – breaking the task into smaller steps • pattern recognition – identifying repeated movements in their routine • abstraction – focus on essential actions that align with the music while ignoring unnecessary details. Students also learn to structure their thinking and debug effectively.	**Introduction** Recap the previous lesson by asking: • What movements did you plan for your robot's routine? • How did you ensure your routine would match the music? Explain that students will program their routines and test the robot's movements with the music. Highlight the importance of testing and debugging to refine their code. Show how to sequence movements using the app, including adjusting timing and adding pauses to match the music. Remind students to break the routine into smaller parts if needed (e.g. first sequence forward movements, then add turns). **Learning activity** In pairs or small groups, students program their robot to perform their planned dance routine. Encourage them to work collaboratively, with one student coding and another observing and testing. Students test their robots, playing the chosen music to check if the movements are synchronised with the rhythm. Have students observe whether the robot moves as expected and stays within any defined boundaries.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Suggested assessment points Monitor how well students sequence commands, synchronise movements to music and debug errors during testing.	Students should identify and fix issues in their code, such as timing errors or missed movements. Encourage them to make notes on changes to their routine or coding. **Conclusion** Discuss the following questions: • What changes did you need to make to your routine or code? • What makes your routine unique or creative? Prepare the students for the next lesson by explaining that the focus will be on showcasing the routines to the class. Provide students with additional time if they have not finished their routines.

Term 4 Week 8: Dancing robots 3

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 made by the user (branching) **Design thinking skills** **Project management** Communicate ideas and follow a plan, with consideration of time management, to develop a solution **Producing and implementing** Use appropriate technologies and components with given equipment and follow agreed protocols to produce a designed solution **Evaluating** Use given criteria to evaluate diagrams, technologies and the components used for the designed solution	**Learning intention** • I can evaluate my dance routine based on given criteria and provide constructive feedback to peers. **Focus questions** • How does your robot's dance routine demonstrate creativity and coding skills? • What worked well in your coding process and what could you improve? • How can we provide helpful feedback to our peers? **Support notes** Encourage students to provide specific, constructive feedback, highlighting strengths and offering respectful suggestions for improvement. Manage time by setting clear limits for presentations (e.g. 2–3 minutes per group) and ensure all students have a chance to share. Focus self-reflections on the learning process, including challenges overcome and creative decisions, and celebrate effort, creativity and teamwork, emphasising the showcase as a celebration of learning. **Suggested assessment point** Observe the students' presentations for their ability to explain their routine and coding process. Review peer feedback for thoughtfulness and alignment with the evaluation criteria.	**Prior to lesson** Prepare a reflection sheet with the following questions: • What part of your routine are you most proud of? • What was the biggest challenge you faced and how did you solve it? • What would you do differently next time? **Introduction** Recap the learning journey, from planning and coding to refining the robot's dance routine. Discuss the importance of giving constructive and specific feedback (e.g. I liked how your robot spun to match the music, instead of saying, 'It was good'). Review the success criteria: • Creativity • Variety of movement • Synchronisation **Learning activity** Each group presents their robot's dance routine to the class, explaining their design choices and any challenges they overcame. Play the chosen music while the robot performs the routine. After each performance, have different students provide feedback based on the success criteria. Encourage positive and constructive comments, focusing on what worked well and what could be improved.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		Conclusion Students to complete reflection sheets and share some reflections as a class, focusing on common challenges, creative ideas and lessons learned. Discuss: How can the skills we used in this project, like planning, problem-solving and coding, be applied to other tasks or real-world situations?

Appendix A

Resources

Appendix A.1: Resources – Term 1

Week	Resource	Link/information
1	eSafety Australia Kids Privacy and Security page	• eSafety Commissioner – Security and privacy for my device https://www.esafety.gov.au/kids/be-an-esafe-kid/security-and-privacy-for-my-device
2	Lesson and Video on digital citizenship – The Rings of Responsibility	• common sense education – Rings of Responsibility https://www.commonsense.org/education/videos/rings-of-responsibility
3	Grade 3 Lesson, Our Digital Citizenship Pledge	• common sense education – Our Digital Citizenship Pledge https://www.commonsense.org/education/digital-citizenship/lesson/our-digital-citizenship-pledge
4	Grade 3 Lesson, This Is Me	• common sense education – This Is Me https://www.commonsense.org/education/digital-citizenship/lesson/this-is-me
6 & 8	Grade 3 Lesson, My favourite animal	• Digital Technologies Hub – My favourite animal https://www.digitaltechnologieshub.edu.au
7	Definitions and materials from BBC Bitesize: How do we create and change digital images?	• BBC Bitesize – How do we create and change digital images? https://www.bbc.co.uk/bitesize/topics/zrqr239/articles/zcjs3qt

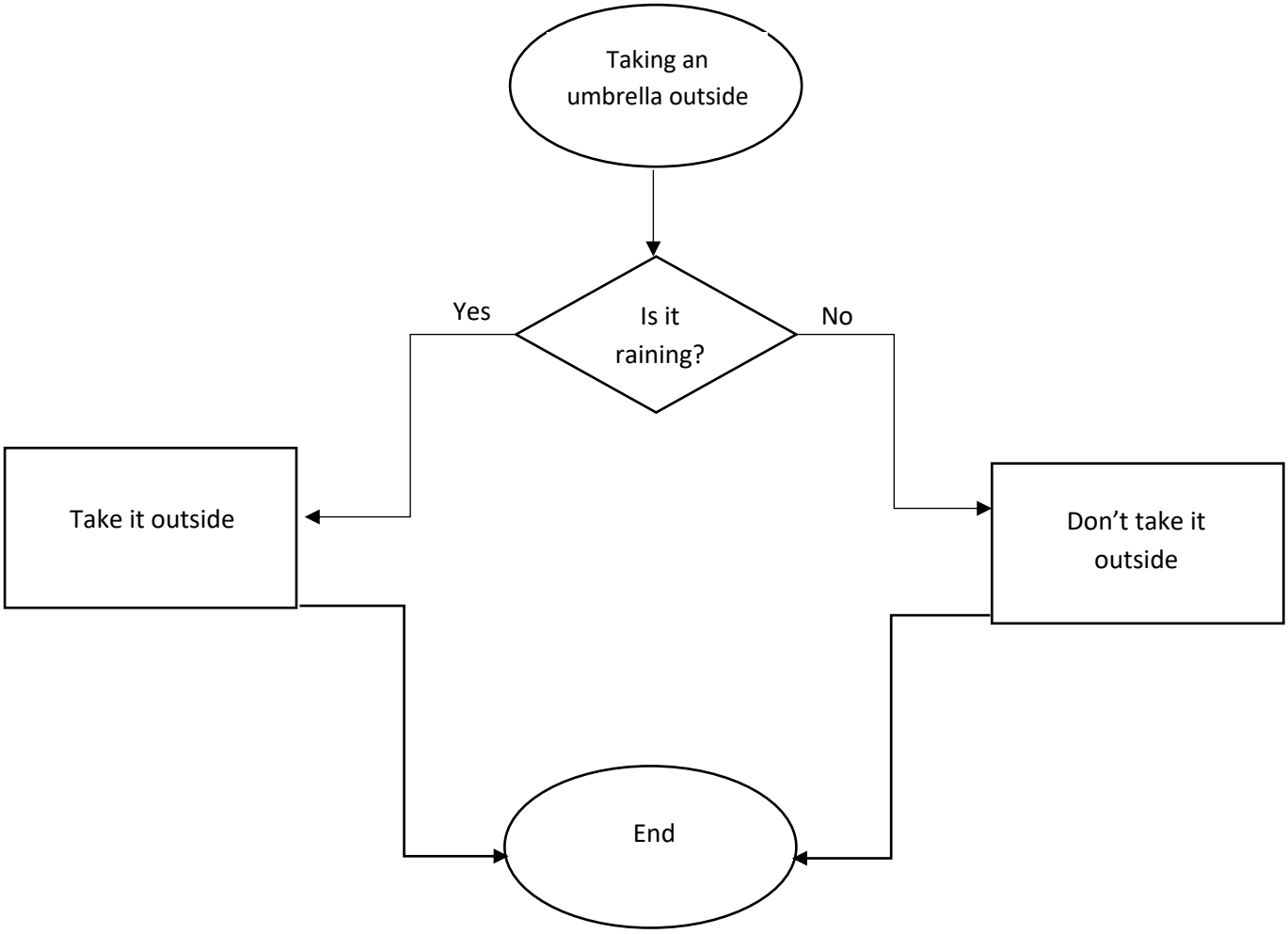
Appendix A.2: Resources – Term 2

Week	Resource	Link/information
1	Video on real-life algorithms	• Code.org. – Unplugged – Real-life algorithms: Paper airplanes https://www.youtube.com/watch?v=AWqo8Gxtrjs
2	Video demonstrating following instructions like a computer	• Tech Train Teach – Jam Sandwich Algorithm – Primary Computing Lesson Example https://www.youtube.com/watch?v=U3TsVz_pJf4
5–6	Flowcharting Basics: All You Need to Know About Flowcharting	• Creately – Flowcharting Basics: All You Need to Know About Flowcharting https://creately.com/blog/diagrams/all-you-need-to-know-about-flowcharting/
	Sample flow charts	• Digital Technologies Hub – Learn together https://www.digitaltechnologieshub.edu.au/families/learning-at-home Search for 'Flow chart'

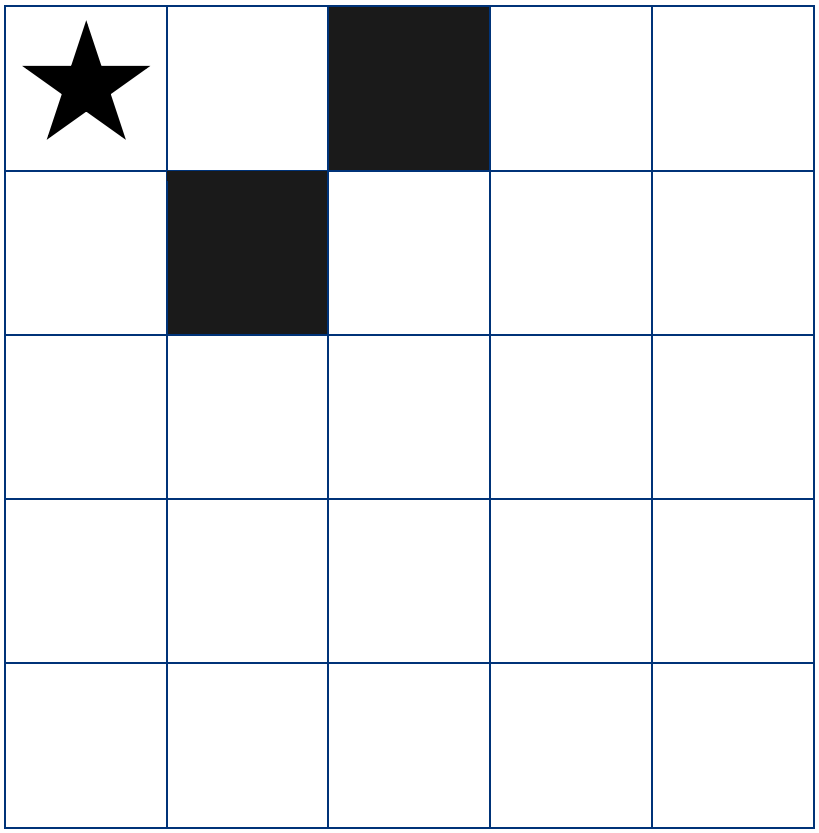
Appendix A.3: Sample flow chart – Term 2 Weeks 5–6

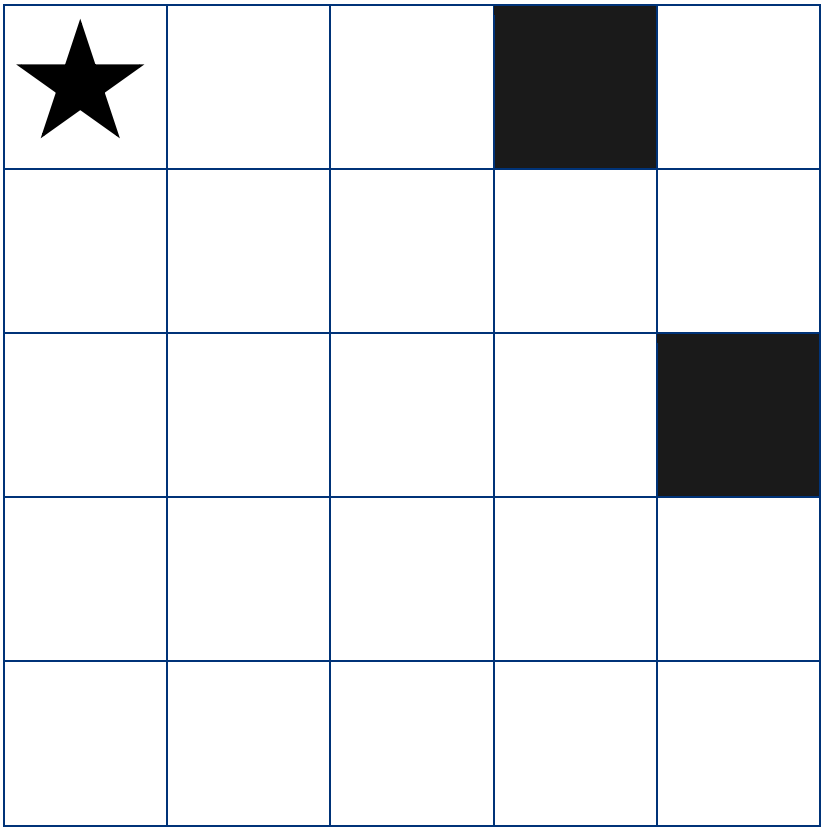
Key

- 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: Graph paper images – Term 2 Weeks 3–4





Appendix A.5: Graph paper images algorithms – Term 2 Weeks 3–4

First table possible algorithm

Start on the star

Move **one** square down

Move **one** square right

Colour **one** square

Move **one** square right

Move **one** square up

Colour **one** square

First table algorithm in code (Term 2, Week 8)

Second table possible algorithm

Start on the star

Move **three** squares to the right

Colour the square

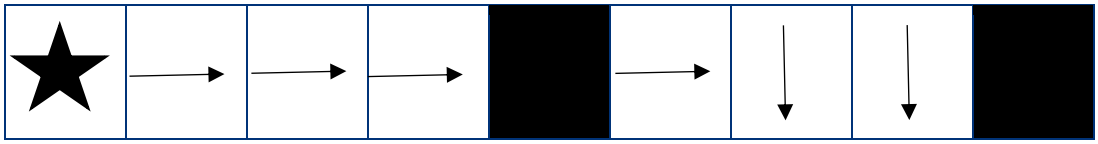
Move **one** square right

Move **two** squares down

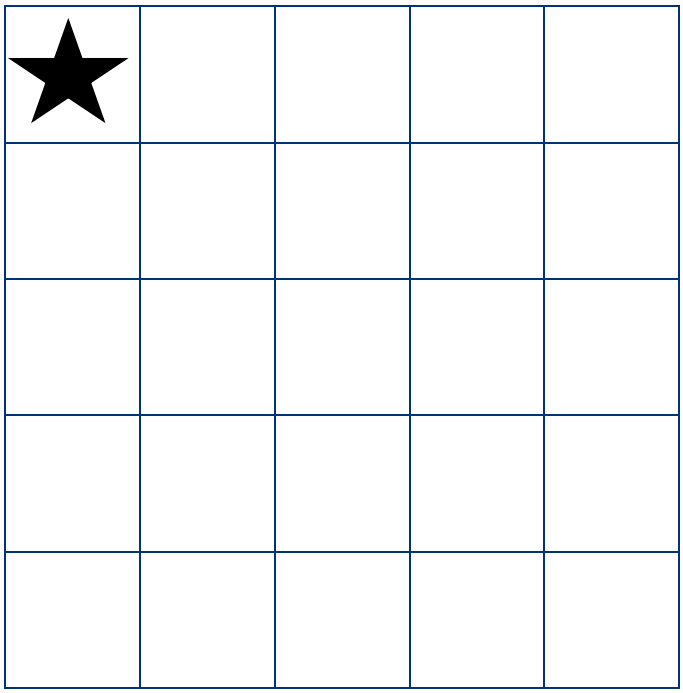
Colour **one** square

Note: students may provide a sequence of steps where they move down first instead of to the right. They may also write each step as **one** step at a time; for example, instead of 'move **three** squares to the right' they write 'move **one** square to the right' **three** times. They are still providing an algorithm (sequence of steps) but a discussion around the most efficient algorithm would be needed.

Second table algorithm in code (Term 2, Week 8)



Appendix A.6: Blank graph paper – Term 2 Weeks 3–4



Write the sequence of steps someone else would need to follow to recreate the picture or pattern starting from the star.

Appendix A.7: Resources – Term 3

Week	Resource	Link/information
2	Video explaining key roles in pair programming.	• Code.org – Pair Programming https://www.youtube.com/watch?v=vgkahOzFH2Q
	Website introducing ScratchJr interface and functions for beginners.	• ScratchJr – ScratchJr Interface Guide https://www.scratchjr.org/learn/interface • ScratchJr – Activities https://www.scratchjr.org/teach/activities
	Website offering coding practice with Blockly for primary students.	• Code.org – Explore learning for ages 5 to 11 https://code.org/student/elementary
3–8	Tutorial on creating a maze game in ScratchJr.	• ScratchJr Tutorials. (n.d.). *Maze game tutorial for ScratchJr* [Video]. YouTube. https://youtu.be/N254_ZF9L4w?si=pPFLY5CG4bQ_FgqM

Appendix A.8: Resources – Term 4

Week	Resource	Link/information
2	How computers work: What makes a Computer, a Computer?	• Code.org – How computers work: What makes a Computer, a Computer? https://www.youtube.com/watch?app=desktop&v=mCq8-xTH7jA&list=PLzdnOPI1iJNcsRwJhvksEo1tJqjIqWbN-&index=2
	How computers work: Hardware and Software	• Code.org – How computers work: Hardware and Software https://www.youtube.com/watch?v=xnyFYiK2rSY&list=PLzdnOPI1iJNcsRwJhvksEo1tJqjIqWbN-&index=6
3–4	Input and output devices	• Micro:bit Educational Foundation – Input and output devices https://www.youtube.com/watch?v=NkoS2JXaBuM

Appendix A.9: Most commonly used passwords – Term 4

Top 20 most common passwords
1. 123456 2. 123456789 3. 12345678 4. password 5. qwerty123 6. qwerty1 7. 111111 8. 12345 9. secret 10. 123123 11. 1234567890 12. 1234567 13. 000000 14. qwerty 15. abc123 16. password1 17. iloveyou 18. 11111111 19. dragon 20. monkey

NordPass. (n.d.) *Top 200 Most Common Passwords*. https://nordpass.com/most-common-passwords-list/

Appendix A.10: Example programmable driving robots – Term 4

Robot	Information and software needed
Dash	• http://www.makewonder.com/en/dash/ Requires the Blockly or Wonder app.
Sphero Robot	• https://sphero.com/ Requires the Sphero Edu or Sphero Play app.
Lego Spike Prime	• https://education.lego.com/en-au/shop/primary/ Requires the LEGO Spike app.
Ozobot	• https://ozobot.com/ Requires the Ozobot Blockly app.
Blue-Bot	• Requires the Bee-Bot app
Codey Rocky or mBot	• *Makeblock Codey Rocky* https://www.makeblock.com/pages/codey-rocky-robot-toys-for-kids OR • *Make mBot* https://www.makeblock.com/pages/mbot-robot-kit Requires the mBlock app.
Root Robot	• *Root Coding Robots* https://edu.irobot.com/what-we-offer/root-robot Requires the Root Coding app.

Appendix A.11: Other resources – Term 4

Resource	Link/information
Find lesson ideas based on the Digital Technologies Curriculum	• Education Services Australia – Digital Technologies Hub https://www.digitaltechnologieshub.edu.au/
Professional Association for teachers	• ECAWA Educational Computing Association of Western Australia – Home page https://ecawa.wa.edu.au/
CS Unplugged is a collection of free learning activities that uses hands-on (no digital device) games and puzzles to teach elements of the Digital Technologies Curriculum (from University of Canterbury, NZ).	• CS Unplugged – Computer Science without a computer https://csunplugged.org/en/
Code.org A non-profit (US based) site with a vision to ensure every student in every school has an opportunity to learn computer science. The link takes you to a range of 'unplugged' lessons for the classroom.	• Code.org – CS Fundamentals Unplugged https://code.org/Curriculum/unplugged
eSafety Toolkit for Schools Resources for schools to create safer online environments, this toolkit focuses on preventing and responding to online safety issues.	• eSafety Commissioner, Australian Government – Toolkit for Schools https://www.esafety.gov.au/educators/toolkit-schools

Appendix B

Assessment task 1

My monster presentation

Task details

Title	My monster presentation
Description	Students will create a slide-based presentation about an imaginary monster, combining different types of data, such as text, images, audio and drawings to effectively communicate information.
Type of assessment	Summative
Ways of assessing	Slide-based presentation (e.g. Keynote, Google Slides, Canva) and a short reflection.
Suggested time	One to two hours Additional time may be required for planning and sourcing data
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

Data representation

- Data is of different types and can be represented in various ways

Design thinking skills

Project management

- Communicate ideas and follow a plan, with consideration of time management, to develop a solution

Designing

- Design solutions created with labelled drawings, use of technical terms and/or a sequence of steps

Evidence

Students will submit their completed slide-based presentations, which should include a variety of data types`, such as text, images, audio and drawings. A printout of the presentation can be provided for display purposes if required. Additionally, students will complete a short, written reflection outlining their choices of data types and how they contributed to effectively communicating information about their monster.

Instructions for teacher

1. Review the different types of data students have previously explored (text, image, audio and drawing).
2. Discuss how these data types can be used to represent ideas effectively in digital presentations.
3. Guide a class brainstorming session on what information could be included in the monster presentation using the following focus questions:
   - Where does your monster live? (map – image data)
   - What does it sound like? (audio recording)
   - What are its powers or abilities? (text, numbers)
4. Record ideas on the whiteboard to help inspire students.
5. Provide students with a planning document to outline and sketch their ideas for each slide.
6. Encourage them to label the types of data they will use and consider how they will make their presentation engaging.
7. Use a *Pair up, share, refine* strategy where students share their plans with a partner and discuss improvements or additions. Have students refine their plans based on peer suggestions.
8. Students independently create their slide-based presentation using a digital tool, such as PowerPoint, Keynote, Google Slides or Canva.
9. Encourage them to include at least **four** types of data and ensure their slides are organised and visually appealing.
10. After completing their presentations, guide students through a short reflection session to consider:
    - How did using different types of data help communicate their monster's story?
    - What challenges did they face and how did they overcome them?

Monster presentation planning template

Name: _____ Date: _____

Step 1: Brainstorm your monster

Use the questions below to help plan the details of your monster.

What is your monster's name? _____

Identify where the monster lives.

_____

_____

Identify what it sounds like?

_____

_____

List the monster's powers or abilities.

_____

_____

Illustrate your monster.

Step 2: Slide outline

Plan and sketch what information will go on each slide and what types of data you will use.

Don’t forget to include at least **four** types of data (text, image, audio and drawing).

Marking key

Description	Marks
Data representation – Data is of different types and can be represented in various ways	
Effectively represents **four** or more types of data (text, image, audio, drawing) in a clear and relevant way to describe the monster.	4
Represents **three** types of data clearly and relevantly to describe the monster.	3
Uses **two** types of data to present basic information about the monster.	2
Uses **one** type of data with minimal description of the monster.	1
Subtotal	**/4**
Project management – Communicate ideas and follow a plan, with consideration of time management, to develop a solution	
Follows the plan effectively to create a well-organised presentation, completing all elements within the given timeframe.	3
Follows the plan and completes most elements within the timeframe.	2
Requires assistance to follow the plan and complete key elements within the timeframe.	1
Subtotal	**/3**
Designing – Design solutions created with labelled drawings, use of technical terms and/or a sequence of steps	
Creates clearly labelled slides with appropriate technical terms and accurate labels.	3
Prepares slides with some labels and use of technical terms.	2
Attempts to create slides with minimal labels and technical terms.	1
Subtotal	**/3**
Total	**/10**

Appendix C

Assessment task 2

Unplugged algorithms

Task details

Title	Unplugged algorithms
Description	Students work collaboratively and individually to complete unplugged algorithms and explore how computers need to be programmed to tell them how to make decisions. Students work individually to develop flow charts to visually represent how a computer is programmed to make decisions.
Type of assessment	Summative
Purpose of assessment	To assess students' understanding of developing algorithms which includes decisions made by the user (branching) by using codes.
Ways of assessing	Graph paper pictures with algorithms. Flow chart with branching (paper copy plus print outs of digital copy).
Suggested time	Two one-hour lessons.
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 algorithms (sequence of steps), including decisions made by the user (branching) using flow charts

Design thinking skills

Designing

- Design solutions created with labelled drawings, use of technical terms and/or a sequence of steps

Resources

- assessment task
- computers or tablets

Instructions for teacher

Unplugged algorithms

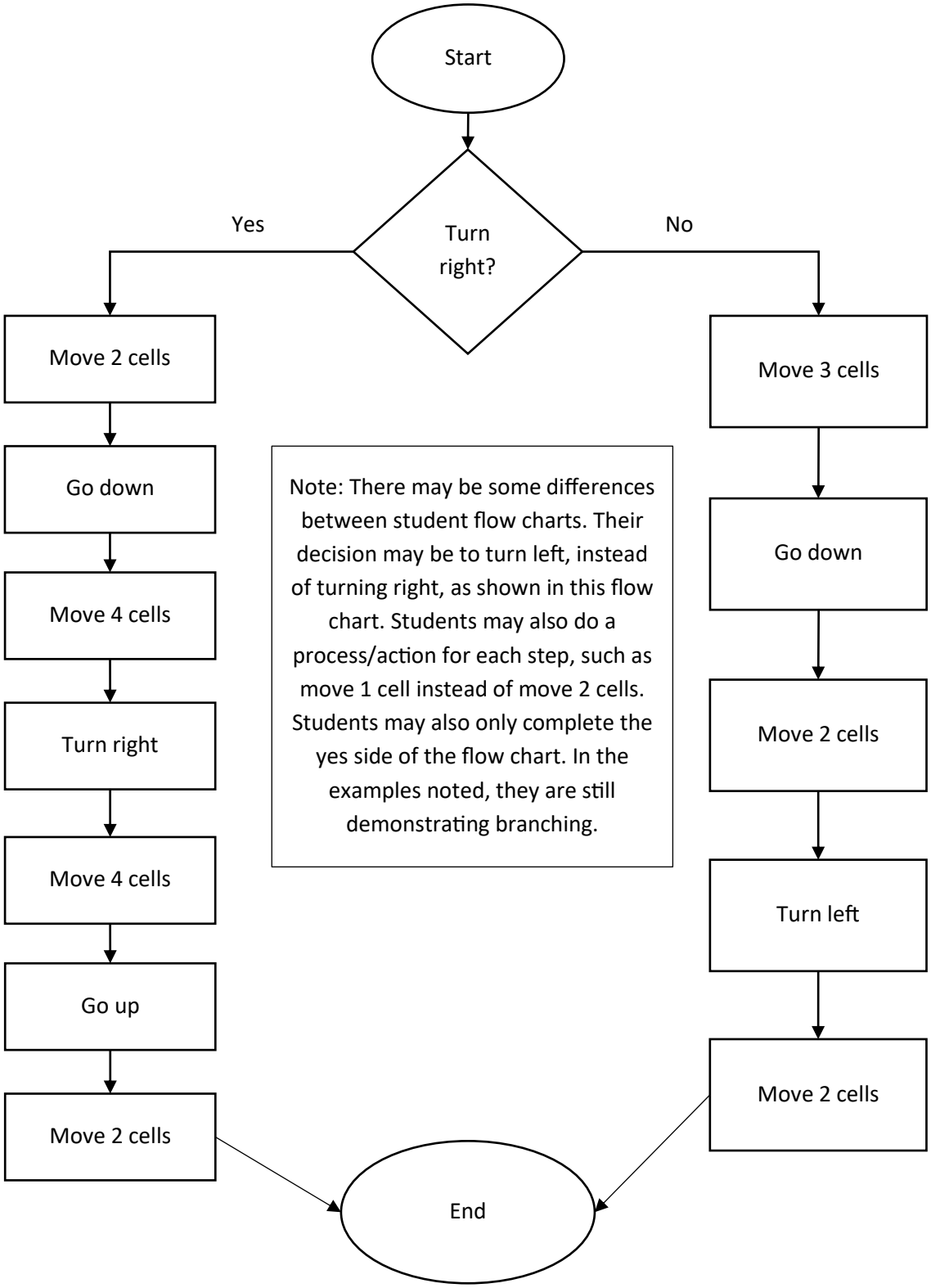
1. Review developing an algorithm for graph paper images or patterns (Term 2, Week 5).
2. Provide students with a blank grid (graph paper) and ask them to create their image or pattern by colouring the squares.
3. Review the code developed in Term 2, Week 6 where symbols such as arrows replaced writing the instructions in full.
4. Students create a sequence of steps (algorithm) that reflect the movement and colour in their grid.
5. Give the algorithm to a peer so they can reproduce the original image on another grid.
6. Evaluate the success of the graph paper program, incorporating any peer feedback.
7. Evaluate a peer's graph paper program.

Branching (flow charts)

1. Discuss the graph paper maze provided in the task booklet and identify where decisions need to be made to move from the star at the top to being on top of the star in the middle while avoiding the coloured cells. (User can turn left or right from the star at the top.)
2. Discuss and identify the two paths to the star in the middle and identify the most efficient path.
3. Review the symbols/shapes used when branching.
   - 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
4. Students identify the sequence of steps they would follow to move from the star at the top to being on top of the star in the middle, avoiding the coloured cells. Use the code developed in Term 2 where symbols, such as arrows replace writing the instructions in full.
5. Students visually represent branching on paper by developing a flow chart of the decision and processes to reach the star in the middle of the table.
6. Provide either the blank template of the flow chart for students to use or have students draw their own shapes/symbols for the flow chart.
7. Students evaluate their chosen path from the maze.
8. Optional: Students can visually represent branching using software, such as flow chart creator in Microsoft Word or similar.

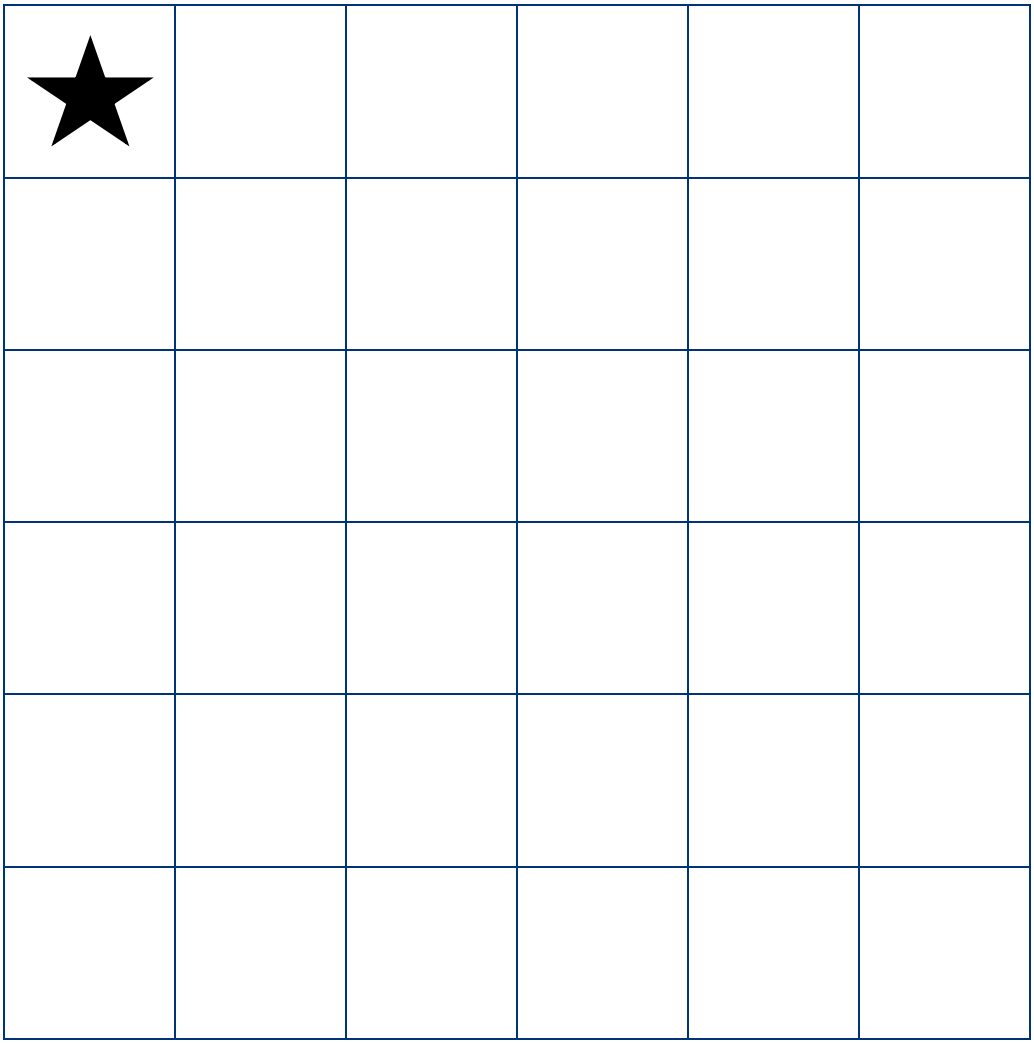
Instructions for teacher

Completed graph paper maze flow chart (teacher reference only).



Unplugged algorithms

Create your own image using the grid below by colouring in squares.



Write the sequence of steps for the image you created. The star on your image is the starting point. You will then give this program to another student to follow using the grid below.

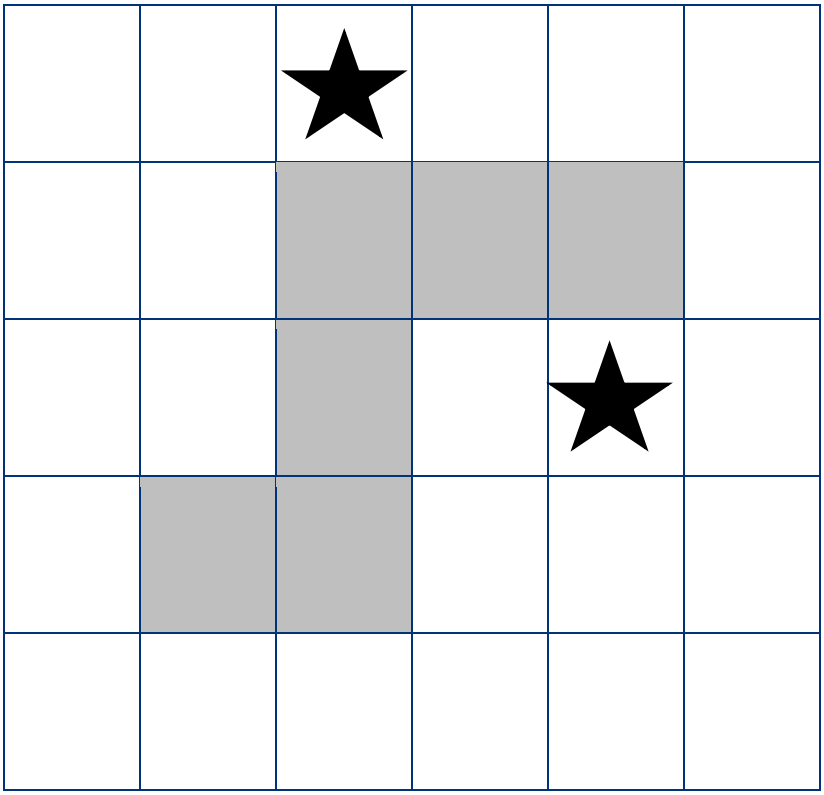
Evaluation

Did the student following your program complete the image as you programmed? Yes/No

If no, what went wrong? If yes, why do you think they were able to complete it without a mistake?

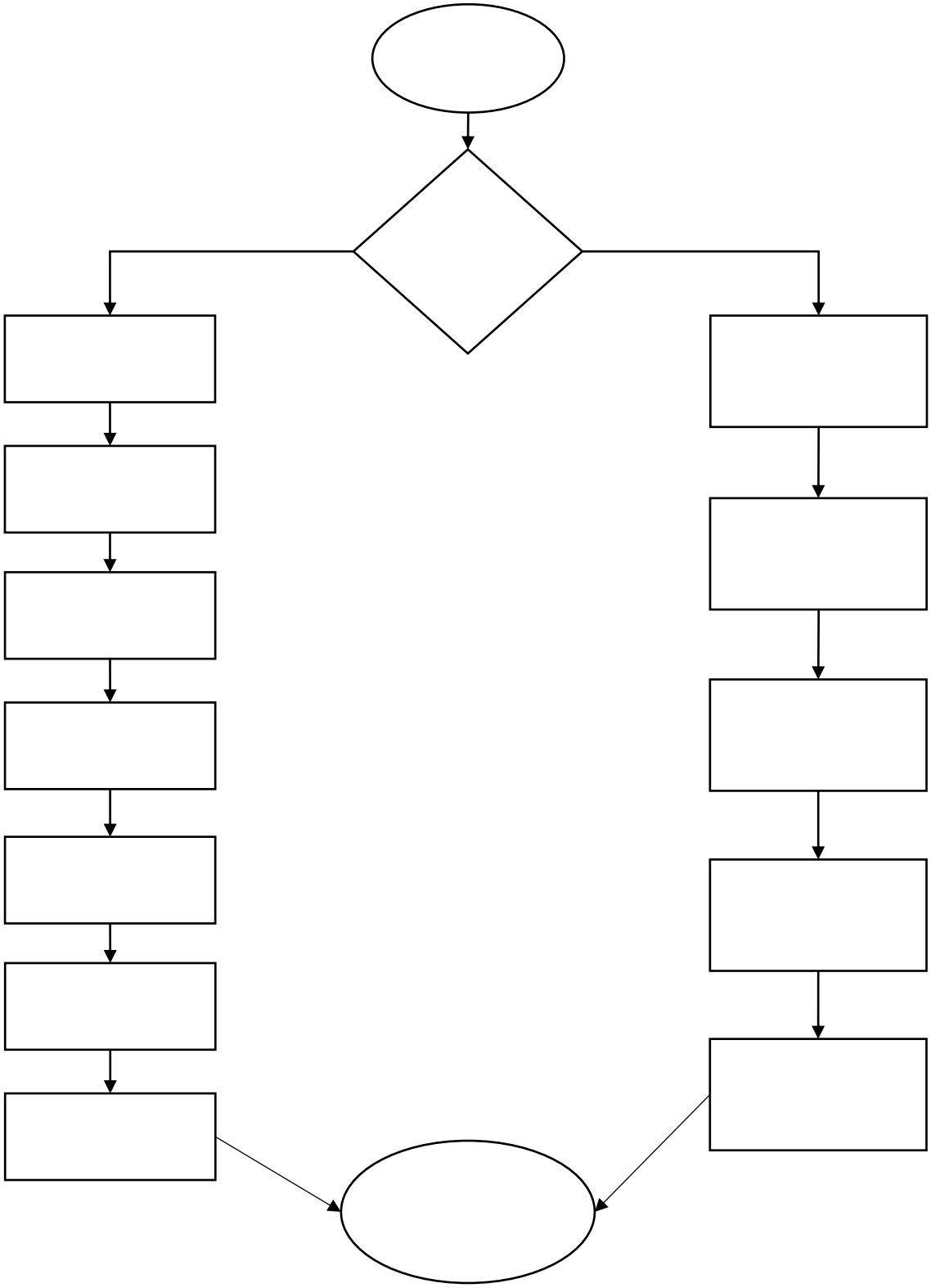
You also had to follow another student's program. How easy or hard was this? Why?

Using the maze below, identify the sequence of steps you would take to get to the star in the middle of the maze. Start at the star at the top and step through the empty cells, avoiding coloured cells.



Using the maze, create a flow chart showing the decision and steps you would take to reach the star in the middle of the table.

Using the maze, create a flow chart showing the decision and steps you would take to reach the star in the middle of the table.



Evaluation

How many steps did you take to reach the star in the middle of the maze?

Was your chosen path the most efficient path to reach the star? Why/why not?

Marking key

Description	Marks
Digital implementation – algorithms	
Creates a logical and complex sequence of steps using the key of arrows.	4
Creates a sequenced program to represent the shaded image using the key of arrows.	3
Provides a set of unclear instructions using both written words and arrows.	2
Creates a set of simple unclear instructions with assistance.	1
Subtotal	**/4**
Digital implementation – branching	
Creates a flow chart with more than **two** possible outcomes.	4
Creates a flow chart with at least **two** possible outcomes.	3
Attempts to create a flow chart with at least **two** possible outcomes.	2
Creates a basic flow chart with assistance.	1
Subtotal	**/4**
Evaluating	
Evaluates the success of the peer-based activity against the criteria and explains improvements.	3
Evaluates the success of the peer-based activity against the criteria and identifies improvements.	2
Provides a simple statement to evaluate the success of the code.	1
Subtotal	**/3**
Total	**/11**