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

SAMPLE TEACHING AND LEARNING OUTLINE

TECHNOLOGIES

DIGITAL TECHNOLOGIES

YEAR 2

2018/30802v5 [PDF 2020/33382]

This document is an introduction to planning a teaching and learning outline with syllabus content for Year 2 Digital Technologies. It provides suggested sequencing and timing for teaching the syllabus content. For further details on curriculum requirements and available options, teachers should refer to the School Curriculum and Standards Authority's (the Authority's):

- *Policy Standards for Pre-primary to Year 10: Teaching, Assessing and Reporting*
- Table 1: *Western Australian Curriculum and Assessment Outline*: curriculum requirements and available options.

Sample plans provide a range of possible learning experiences from which assessment should be drawn. This *Year 2 Sample Teaching and Learning Outline* provides teachers with possible learning experiences over 36 hours and unpacks the syllabus content to assist teachers in their understanding.

A presentation (*Western Australian Curriculum Technologies Presentation*), which unpacks the process to develop this plan, is available on the Presentations page of the Authority website (https://k10outline.scsa.wa.edu.au/home/resources/presentations).

Year 2 Syllabus Content – Digital Technologies

Content	Description
Digital systems	Digital systems (hardware and software) are used for an identified purpose
Representation of data	Data can have patterns and can be represented and used to make simple conclusions
Collecting managing and analysing data	Present data using a variety of digital tools
Digital implementation	Use data to solve similar tasks/problems Share and publish information in a safe online environment, with known people
Investigating and defining	Explore design to meet needs or opportunities
Designing	Develop, communicate and discuss design ideas through describing, drawing, modelling and/or a sequence of steps
Producing and implementing	Use components and given equipment to safely make solutions
Evaluating	Use simple criteria to evaluate the success of design processes and solutions
Collaborating and managing	Work independently, or collaboratively when required, to organise information and ideas to create and safely share sequenced steps for solutions

Year Level Description

Learning in digital technologies builds on the dispositions developed in the early years. Learning focuses on broadening students prior skills in computational thinking and providing opportunities for engaging in personal and social experiences when using digital systems.

In Year 2, students have opportunities to create a range of solutions through guided learning and collaboration with peers.

Students explore common digital systems and patterns that exist within data they collect. They build their skills to organise, manipulate and present the data in creative ways, including numerical, categorical, text, image, audio and video data, to create meaning and communicate ideas.

Students begin to develop their design skills by conceptualising algorithms as a sequence of steps for carrying out instructions, such as identifying steps in a process, or controlling robotic devices.

Students explore how information systems meet information, communication and/or recreational needs. They build on their understanding of aspects of online safety when engaging with digital technologies.

Year 2 Learning Area: Technologies – Digital Technologies			
Year 2 Achievement Standard At Standard, students use digital systems for a specific purpose making connections between software and hardware. They identify patterns within data to make simple conclusions. Students select, present and use data using a variety of digital tools in an online environment. In Digital Technologies, students explore design to meet needs or opportunities. They develop, communicate and discuss design ideas through describing, drawing, modelling and/or sequenced steps. Students use components and given equipment to safely make solutions. They use simple criteria to evaluate the success of design processes and solutions. Students work independently, or collaboratively, to organise information and ideas to safely create and share sequenced steps for solutions.			
Approx. hours	**Syllabus content**	**Content unpacked**	**Suggested teaching and learning experiences**
4	**Digital systems** Digital systems (hardware and software) are used for an identified purpose	• Define hardware, i.e. the physical parts that make up a computer system. • Purpose of different hardware items that make up a computer system, such as: ▪ keyboard – input text, numbers and symbols ▪ mouse – select items and functions ▪ printer – produce a paper copy ▪ digital camera – photograph images ▪ speakers – output audio. • Software is the intangible elements of a computer system and consists of programs and applications created in order to perform specific tasks. • At a Year 2 level, students should have the ability to: ▪ make connections between how software affects hardware ▪ understand how hardware affects software ▪ understand how hardware and software interrelate to complete an intended goal or purpose.	• Discuss technology and use focus questions to explore understanding and personal experiences: ▪ view What is Technology? (https://www.youtube.com/watch?v=Giiz81_uzK8) ▪ expand understanding of technology to include new information. • Practical engagement to investigate and explore the physical nature of hardware: ▪ experiment and explain how different pieces of hardware capture, store or present data, such as: ○ taking a photo with a digital camera or tablet device ○ entering text via a keyboard ○ using a mouse to select a function ○ using a microphone to record ○ using speakers and/or headphones to listen to music or their recordings ○ using a printer to print their schoolwork ○ using a USB to save and retrieve files. • Discuss the relationship and the interdependence between hardware and software. • Describe the hardware and software that are used to complete a task: ▪ explain how the software and hardware relate to each other ▪ sort hardware into three categories, those used: ○ to input data ○ to output data ○ for both the input and output of data. Additional activities: • ABCYA Find the technology game (https://www.abcya.com/games/find_the_tech). • Changes in technology. Select Parts 1 to 3 in the Flow of Activities section of Digital Technologies Hub Scope and Sequence (F–10) (https://www.digitaltechnologieshub.edu.au/teachers/scope-and-sequence/f-2/digital-systems/changes-in-technology).
3	**Producing and implementing** Use components and given equipment to safely make solutions **Collaborating and managing** Work independently, or collaboratively when required, to organise information and ideas to create and safely share sequenced steps for solutions	• Safe, ergonomic ways to use computers and/or other digital devices, such as: ▪ need to take regular breaks ▪ posture ▪ set-up of computer equipment ▪ no food or drinks near computers.	• Discuss safe use of computers and/or other digital devices in the classroom. • Discuss different images that are representative of ‘computer rules’: ▪ select an image that best represents a shared understanding of the rules ▪ create a set of rules, as a class, for using computers and/or other digital devices in the classroom, e.g. Typing.com (https://www.typing.com/blog/10-classroom-rules-using-computers/). • Visit Stay Smart Online (https://www.staysmartonline.gov.au/): ▪ focus on sections that are relevant to the classroom and school environment ▪ specify tasks to gather and collate information around online safety.

Approx. hours	Syllabus content	Content unpacked	Suggested teaching and learning experiences
4	**Digital systems** Digital systems (hardware and software) are used for an identified purpose **Producing and implementing** Use components and given equipment to safely make solutions **Evaluating** Use simple criteria to evaluate the success of design processes and solutions	• Recognise and apply safe ergonomic practices to develop a digital solution. • Apps, websites and free software that can be accessed to add effects to images, e.g.: ▪ Glaze™ app ▪ Tayasui Sketches™ app ▪ PhotoMania™ (https://photomania.net/) ▪ FotoJet™ (https://www.fotojet.com/apps/?entry=edit). • Simple app or software to manipulate images, such as: ▪ converting to black and white ▪ converting image to resemble a painting or sketch ▪ adding an overlay. • Importance of using naming protocols when saving images.	• Discuss supplied sample images of ergonomics: ▪ explain why ergonomic practices are needed and their benefits to individuals ▪ create a collage from the images supplied to create a poster or flyer ▪ use software to add different effects to the ergonomics images ▪ apply simple criteria to assess the success of design processes and solutions. • Discuss naming protocols and the importance of naming a folder correctly: ▪ develop agreed naming protocol ▪ save edited images using agreed naming protocols ▪ annotate hard copies of posters with design elements, such as colours, fonts, and what effects they have added to create the image ▪ use simple criteria to assess the success of design processes and solutions ▪ discuss preferred effects ▪ record and tabulate data using apps and/or graphs. Resources may include: ○ Graphing for kids™ ○ Sketch2Graph™ ○ Hands-On Math Graph Cubes™ ○ Plotvar™ ○ infogram™ ○ chartgo™ ▪ discuss patterns and information the data provides. • Additional activity: ▪ Data Detective (https://www.digitaltechnologieshub.edu.au/teachers/lesson-ideas/data-detective).
3	**Collecting, managing and analysing data** Present data using a variety of digital tools **Digital systems** Digital systems (hardware and software) are used for an identified purpose **Representation of data** Data can have patterns and can be represented and used to make simple conclusions **Evaluating** Use simple criteria to evaluate the success of design processes and solutions	• Definition of software. a set of instructions that tells the computer's processor what it needs to do. • Frequently used software programs and what they do, such as: ▪ games/apps used in the classroom ▪ Microsoft® Word ▪ Microsoft PowerPoint® ▪ graphics software used in the classroom, e.g. Paint™. • Hardware and software are reliant on each other to work. • Collect and sort data to make simple conclusions, such as most and least popular. • Analyse data to arrive at simple conclusions, e.g. what do the most/least popular items have in common.	• Select and discuss software options that may be used to support tasks, including: ▪ writing ▪ drawing pictures ▪ playing music ▪ sending messages. • Develop simple criteria to evaluate the software options: ▪ make a list of all the software discussed ▪ select three pieces of software from the list ▪ as a whole class, determine which is the most popular software ▪ rank the software from most to least popular. • Categorise hardware and software with picture images and/or physical resources: ▪ discuss what is similar and what is different. • Choose a familiar software program: ▪ explain to a peer how it works ▪ use a simple set of criteria to evaluate the success of the software and justify the user's preference ▪ explain what happens when the hardware is removed. • Discuss the hardware required to run the software. Consider peripherals, such as stylus, drawing pad, speakers or microphones. • Use images and annotate the sequence of steps to demonstrate the connection, and the interdependence between hardware and software. • Additional activity: ▪ Changes in technology. Select 4: Choosing a digital system in the Flow of Activities section of Digital Technologies Hub Scope and Sequence (F–10) (https://www.digitaltechnologieshub.edu.au/teachers/scope-and-sequence/f-2/digital-systems/changes-in-technology).

Approx. hours	Syllabus content	Content unpacked	Suggested teaching and learning experiences
3	**Investigating and defining** Explore design to meet needs or opportunities **Evaluating** Use simple criteria to evaluate the success of design processes and solutions	• Design elements needed to create a digital solution, e.g. for a poster consider elements, such as: ▪ suitable pictures/graphics ▪ text/word to convey important information ▪ size of fonts ▪ colours. • Simple evaluation criteria to determine the success of design solutions, such as whether: ▪ the message is clear ▪ the images match the message ▪ it is well-organised and easy to follow ▪ it attracts attention ▪ the words are easy to read from a distance.	• Discuss movies and television shows and collate corresponding posters and advertising. • Demonstrate how to search on Google® image search (images.google.com) and select different usage rights in the tools. • Discuss copying people's ideas and work and introduce words, including copyright and plagiarism, consider the stakeholders. • Use simple evaluation criteria to assess the effectiveness and messaging of a given poster. • Work collaboratively to review a poster: ▪ allocate each group a different poster to evaluate ▪ complete a PMI chart (plus, minus, interesting) ▪ share responses with other groups.
4	**Digital implementation** Share and publish information in a safe online environment, with known people	• Information that is personal and should not be published online for others to see, such as: ▪ full name ▪ address ▪ school ▪ telephone number ▪ identifying photos ▪ bank details ▪ date of birth. • Reasons personal information should not be shared online. • Dangers of sharing personal information online. • Purpose of passwords, such as security and safety. • Characteristics of good passwords; for example: ▪ a mix of letters and numbers ▪ not using your name ▪ something that can be easily remembered. • Encryption: a network security measure that involves using a key called an encoder to mix-up the data to make it unreadable if it is intercepted during transmission. The data is decrypted with the key at the destination in order to be read.	• Discuss sharing of information and personal details online: ▪ what does this looks like? ▪ what are the consequences? • Discuss the creation of passwords and the importance of keeping these safe and secure: ▪ create secure passwords from a simple password, such as Password1 ▪ create an encoder that relates to passwords to represent encoding data for security. The encoder can be as simple as the number of the letter of the alphabet for each letter minus three (X-3); for example: ○ 'D' is the fourth letter of the alphabet. Encoded it is one (1) (i.e. 4-3=1). • Work collaboratively to 'crack' (decode) other students' passwords using their encoding strategy. • Discuss the success and/or failure of the decoding. Additional activity: • Complete a selection of activities from Digital Technologies Hub, Communicating Safely Online (https://www.digitaltechnologieshub.edu.au/teachers/lesson-ideas/communicating-safely-online).
2	**Digital implementation** Share and publish information in a safe online environment, with known people **Collaborating and managing** Work independently, or collaboratively when required, to organise information and ideas to create and safely share sequenced steps for solutions	• Importance of not sharing personal information online. • Importance of using and not sharing passwords. • Internet manners and etiquette when using internet.	• Complete a selection of activities from eSafety Commissioner (https://esafety.gov.au/education-resources/classroom-resources/stand-alone-lesson-plans-for-primary-schools). • Complete a selection of activities from Digital Technologies Hub, Communicating Safely Online (https://www.digitaltechnologieshub.edu.au/teachers/lesson-ideas/communicating-safely-online). • Watch the video Cyber-Five (https://www.abcya.com/games/cyber_five_internet_safety) and discuss messages from the video to develop a shared understanding of safe online environments and good practices.

Approx. hours	Syllabus content	Content unpacked	Suggested teaching and learning experiences
3	**Designing** Develop, communicate and discuss design ideas through describing, drawing, modelling and/or a sequence of steps **Collaborating and managing** Work independently, or collaboratively when required, to organise information and ideas to create and safely share sequenced steps for solutions	• Recognising sequences occur frequently in everyday life, e.g.: ▪ learning a dance routine ▪ setting up a computer game ▪ placing a lunch order at the canteen. • Importance of following sequences in order, i.e. to achieve the desired outcome. • Implications of not following sequences in order.	• Complete the introduction to coding section of the teacher worksheet, i.e. Make the Robot Dance (https://www.coolaustralia.org/wp-login.php?redirect_to=https%3A%2F%2Fwww.coolaustralia.org%2Factivity%2Fsteam-can-code-years-1-2%2F) (Note: a login is required.) • View and discuss exact instructions: ▪ watch the video Exact Instructions Challenge - THIS is why my kids hate me. Josh Darnit (https://youtu.be/cDA3_5982h8). • Provide an incorrect sequence of steps for collaborative discussion: ▪ identify and explain the implications of an incorrect sequence ▪ plan a sequence of steps, such as: ○ making breakfast ○ getting ready for school.
4	**Digital implementation** Share and publish information in a safe online environment, with known people **Investigating and defining** Explore design to meet needs and opportunities **Designing** Develop, communicate and discuss design ideas through describing, drawing, modelling and/or a sequence of steps **Collaborating and managing** Work independently, or collaboratively when required, to organise information and ideas to create and safely share sequenced steps for solutions	• Plan to create an amination that includes a sequence of events, background/s, character/s and motion, e.g. using a storyboard. • Email protocols, including safely sharing information online.	• Develop, plan and draw a simple animation: ▪ design and annotate a storyboard, clearly show the intended sequence of events before attempting to create the animation ▪ the selection of characters or sprites should be made available by the teacher. • Create and export a simple animation following a sequence of steps, programs may include an animation created: ▪ in one single session, e.g. Make an animation (https://www.abcya.com/games/animate) ▪ online over more than one session, e.g. Animaker (https://www.animaker.com) ▪ using free software over more than one session, e.g. Microsoft Photo Story™. • Share the animation with parents, e.g. send an email from students to parents with the animation attached or provide a link to the animation. • View animations as a class. • Peer evaluation of animations completed live and online and in class using an app, such as popplet™ (http://popplet.com/).
6	**Digital systems** Digital systems (hardware and software) are used for an identified purpose **Collecting managing and analysing data** Present data using a variety of digital tools **Digital implementation** Share and publish information in a safe online	• Scratch Jr™ (https://www.scratchjr.org/) and similar software allows students to explore computational thinking in a basic object-orientated environment. • Scratch Jr should be downloaded onto devices prior to introducing the concepts. • Programming tasks can be completed individually or in small groups. • Simple programming theory should be delivered, such as an understanding of: ▪ variables – a value that is attached to a word that changes value based on circumstance, e.g. a score starts at 0 and increases.	• Complete activities from Scratch Jr (https://www.scratchjr.org/teach/activities) in order of difficulty. • Discuss programming concepts, such as variables and constants, and categorise real-life values into constants or variables. Suggestions for values: ▪ weather (variable) ▪ school times (constant) ▪ canteen food (constant) ▪ different ways of getting to school (variable). • Create a simple game using Scratch Jr: ▪ games should have a theme based around hardware devices ▪ games can involve: ○ moving computer hardware peripherals, such as mice and keyboards to the correct position on the screen ○ catching falling hardware to be recycled ○ racing from computer to computer to mimic networking.

Approx. hours	Syllabus content	Content unpacked	Suggested teaching and learning experiences
	environment, with known people **Investigating and defining** Explore design to meet needs or opportunities **Evaluating** Use simple criteria to evaluate the success of design processes and solutions **Collaborating and managing** Work independently, or collaboratively when required, to organise information and ideas to create and safely share sequenced steps for solutions	▪ constants – a value that does not change and is consistent throughout a program, e.g. three lives in a game. • Data types that students interact with in this environment include text, numbers and symbols. • A sprite is a simple image consisting of pixels that can have behaviours added to it. These behaviours include move, turn, glide etc.	○ passing data between two devices, like a tennis match. • Create evaluation criteria to evaluate completed games: ▪ allocate time for students to become 'game testers' and play each other's games ▪ consider and discuss improvements based on feedback.

Note: the notional teaching hours for the Digital Technologies learning area is 40 hours. The notional hours assume a 25-hour teaching week over 40 teaching weeks per year. It is recognised that school teaching hours often exceed 25 hours per week and that the length of the school year may vary.