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

SAMPLE TEACHING AND LEARNING OUTLINE

TECHNOLOGIES

DIGITAL TECHNOLOGIES

PRE-PRIMARY

2020/26570v3 [PDF 2020/33377]

This document is an introduction to planning a teaching and learning outline with syllabus content for Pre-primary 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 *Pre-primary Sample Teaching and Learning Outline* provides teachers with possible learning experiences over 35 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).

Pre-primary Syllabus Content – Digital Technologies

Content	Description
Digital systems	Digital systems (hardware and software) are used at home, in the school and in the community
Representation of data	Data can have patterns and can be represented as pictures and symbols
Collecting, managing and analysing data	Collect and use data of any kind
Digital implementation	Use data to complete a task Engage with information known people have shared in an online environment, and model strategies to stay safe online
Investigating and defining	Explore needs for design
Designing	Generate and record design ideas through describing, drawing, modelling and/or a sequence of written or spoken steps
Producing and implementing	Use given components and equipment to safely make simple solutions
Evaluating	Use personal preferences to evaluate the success of simple solutions
Collaborating and managing	Work independently, or with others when required, for solutions

Year Level Description

Learning in digital technologies builds on the dispositions developed in the early years. Learning focuses on developing foundational skills in computational thinking and an ability to engage in personal experiences using digital systems.

In Pre-primary, students explore the uses of technologies in everyday life. They develop an understanding that symbols are a powerful means of communication and how they can represent ideas, thoughts and concepts.

Students explore common patterns, pictures and symbols that exist within data they collect, and present this data in creative ways to make meaning.

Students learn to experiment with expressing ideas and make meaning when defining problems. Students draw on their memory of a sequence of steps to complete a task (algorithm), such as packing away play equipment or completing a puzzle.

Students explore how information systems meet recreational needs. They develop an awareness of the importance of online safety when engaging with digital technologies.

Pre-primary Learning Area: Technologies – Digital Technologies			
Pre-primary Achievement Standard At Standard, students label digital systems (hardware and software) and where they are used. They represent data using pictures, symbols and patterns. Students follow safety strategies while they collect and use information from an online source. In Digital Technologies, students explore needs for designing simple solutions. They generate and record design ideas through describing, drawing, modelling and/or a sequence of written or spoken steps. Students safely use given components and equipment, to make simple solutions and evaluate their success using personal preferences.			
Approx. hours	**Syllabus content**	**Content unpacked**	**Suggested teaching and learning experiences**
6	**Digital systems** Digital systems (hardware and software) are used at home, in the school and in the community	• Hardware is defined as the tangible components of a computer – focus on peripheral devices. • Software is the intangible elements of a computer system and consists of programs and applications created in order to perform specific tasks. • Hardware includes mice, keyboards, monitors etc. • Software includes applications (apps), Microsoft® Word, drawing software etc. • Pre-primary students should be able to identify different devices, mobile devices and the similarities and differences between these devices. • Mobile devices are portable and include tablets, smartphones, laptops and smart watches.	• Investigate the physical nature of hardware: ▪ label computer components ▪ classify images of computer hardware in a table (hardware versus non-hardware) ▪ discuss and label the physical parts of the body (hardware) ▪ investigate emotions and relevant images (icons) used to represent them (software). • Discuss the similarities and differences between a desktop system and a mobile device (focus specifically on apps). • Use the app icon on a mobile phone to collate a list of familiar classroom apps (software): ▪ discuss the visual representation of the icon and its meaning ▪ explain that apps are software. • Explore understanding of computer hardware/physical body and software/emotions through drama and/or play-based learning. • Explain the difference between hardware and software (make connections between desktop computers and mobile devices). • Investigate why a computer is not working (e.g. unplugged mouse) and engage in a troubleshooting exercise: ▪ explain the message transfer that occurs ▪ engage in the physical transfer of messages (e.g. in a line, students share non-verbal communication through a series of simple hand squeezes and check the message received at the end. Activity may also include whispers and a discussion at the end about the accuracy of the message received) ▪ annotate a diagram using student voices and explain the flow of information for both the hand squeezing/whispers exercise and the mouse troubleshooting exercise ▪ discuss the interconnectedness of how hardware can control software and the relationship between the two (use the body and emotion analogies to help develop this connection and understanding of learning).

Approx. hours	Syllabus content	Content unpacked	Suggested teaching and learning experiences

6	**Representation of data**
	Data can have patterns and can be represented as pictures and symbol
	
	Collaborating and managing
	Work independently, or with others when required, for solutions
		• Data is everywhere and in many forms. Data types include:
		  ▪ text
		  ▪ symbols
		  ▪ numbers
		  ▪ graphs
		  ▪ sound.
		• Data can be represented collectively in places, such as:
		  ▪ a comic book
		  ▪ a warning sign
		  ▪ a bus timetable.
		• A pattern is the repetition of something.
		• Assumptions can be made about patterns, such as what number/s come next, i.e. 2, 4, 6, 8; what colour combinations can be made; what shape patterns can be made.
			• Discuss the meaning of written text in a foreign language (ensure the text is a message that can be translated into an image, for example; Do Not Run, Stop, Danger):
			  ▪ investigate patterns in letter combinations
			  ▪ predict the meaning
			  ▪ share and discuss the symbol meaning
			  ▪ investigate simple messages that use symbols that are common to students (hearts, stars, letter U, image of an eye).
			• Discuss common signs/symbols and what they represent.
			• Design signs/symbols for students' own needs.
			• Use signs/symbols to substitute communication in a game/play setting.
			• Design app icons/symbols that are representative of the individual.
			• Select activities from School Curriculum and Standards Authority – I like to move it! (Making connections across learning environments) (https://k10outline.scsa.wa.edu.au/home/assessment/assessment-activities/pre-primary).
			• Represent data using pictures and/or simple posters:
			  ▪ discuss patterns seen in the data
			  ▪ Example activity: Australian Curriculum. Digital project: The beach (https://australiancurriculum.edu.au/resources/work-samples/samples/digital-project-the-beach-at/).

4	**Collecting, managing and analysing data**
	Collect and use data of any kind
		• Collect relevant and meaningful data, for example, tally of events, counting birds in the sky, hair colour, colour of cars etc.
		• Manage data in a file or workbook.
			• Collect and record data in a variety of ways.
			• Represent data in a variety of ways.
			• Discuss patterns and the information the data provides.
			• Use apps to manage and represent data.
			• Apps can include:
			  ▪ Graphing for kids
			  ▪ Sketch2Graph™
			  ▪ Hands-On Math Graph Cubes™.
			• Useful graphing websites:
			  ▪ Plotvar™
			  ▪ Infogram™
			  ▪ chartgo™.

5	**Investigating and defining**
	Explore needs for design
	
	Designing
	Generate and record design ideas through describing, drawing, modelling and/or a sequence of written or spoken steps
		• Examples of design are evident in house floorplans, in the layout of a playground, in a school and in a classroom.
		• The production of digital technologies requires well-planned and sequenced designs, usually in the form of:
		  ▪ storyboards (drawn diagrams representing a sequence of images. Can include website design, a logo etc.)
		  ▪ sitemaps (diagram showing the interconnection of pages or links)
		  ▪ flowcharts (graphical representation of an intended sequence of steps, used in programming designs).
		• Design solutions (or the need for design) require an understanding of a problem. Real world problems facilitate a genuine purpose for design.
		• Solutions and designs may differ or pivot from the original plan. Evaluation and change are part of the design process.
			• Use hand signals to direct peers through a maze or path.
			• Use cards to instruct direction (non-verbal):
			  ▪ discuss the success of either options.
			• Draw or write a sequence of steps for students to follow (use technology to record information):
			  ▪ test the instructions/data and make adjustments.
			• View and discuss exact instructions with students:
			  ▪ watch the video Exact Instructions Challenge. THIS is why my kids hate me. Josh Darnit (https://youtu.be/cDA3_5982h8).
			  ▪ review and refine instructions and retest.
			• Additional activity: School Curriculum and Standards Authority – Treasure hide and seek ideas from the Judging Standards section of the extranet (access requires registration).

<table>
<tr><th>Approx. hours</th><th>Syllabus content</th><th>Content unpacked</th><th>Suggested teaching and learning experiences</th></tr>
<tr><td>2</td><td>Producing and implementing
Use given components and equipment to safely make simple solutions</td><td>• Equipment can include desktop computers or other devices, such as tablets, mobile phones, smart watches and laptops.
• Safely use equipment to make solutions:
▪ in a physical sense
▪ in an online environment, including software, apps and webpages.
• Equipment requires careful, physical handling.
• Respect for devices, personal and otherwise.
• Use of given components and equipment to safely make simple solutions is embedded throughout teaching and learning of Digital Technologies.</td><td>• Discuss the consequence of mishandling equipment and devices in the classroom.
• Photograph individuals handling equipment safely:
▪ carrying equipment with two hands
▪ walking with equipment
▪ sitting when using a device
▪ ensuring the power cable is correctly plugged in.
• Annotate images collaboratively.</td></tr>
<tr><td>4</td><td>Digital implementation
Use data to complete a task</td><td>• Data is defined as raw, unprocessed information. Once data is given a context or meaning it becomes information
• Data can be gathered from a variety of sources, including surveys, interviews and personal observations.
• Data should be used to help inform solutions to problems.
• Sharing and publishing information can be carried out in a variety of applications, for example, students can create a class blog or use their learning management systems to complete an activity, such as weekly show and tell.
• Data can be collected and used as a primary source from information and for activities.</td><td>• Collect data that is relevant to students (e.g. likes, dislikes, interests, hair colour etc.):
▪ expand the data collection to another group, e.g. another class
▪ use the data to inform discussion, develop questions and make comparisons
▪ publish information in a variety of ways and engage in discussion and questioning.</td></tr>
<tr><td>4</td><td>Evaluating
Use personal preferences to evaluate the success of simple solutions

Collaborating and managing
Work independently, or with others when required, for solutions</td><td>• Design should focus around a solution to a set problem in the digital world.
• Designs can be hand drawn or made using software applications.
• Designs at this age can be created using a collage.
• Sequence and steps are important for logical understanding in computational thinking. Computers simply work in order (top to bottom) and require specific instructions.
• Using personal preferences to evaluate a solution can include identifying favourite colours or features of the solution. Understanding the difference between other people’s personal preferences can be indicated.
• Example of a simple feedback template:
Feedback Template
Name: _____
Colour in 1, 2 or 3 stars to rate the treasure map you followed.<table><tr><th>Criteria</th><th>Rating</th><th>Why did you choose this rating?</th></tr><tr><td>Map</td><td></td><td></td></tr><tr><td>My map was clear.</td><td>☆ ☆ ☆</td><td>because it's easy to follow</td></tr><tr><td>My pictures were clear.</td><td>☆ ☆ ☆</td><td>because you can see them really well</td></tr><tr><td>Directions</td><td></td><td></td></tr><tr><td>My number of steps were correct.</td><td>☆ ☆ ☆</td><td>N/A</td></tr><tr><td>My instructions were clear and easy to follow.</td><td>☆ ☆ ☆</td><td>N/A</td></tr><tr><td>My map leads to the treasure.</td><td>☆ ☆ ☆</td><td>N/A</td></tr></table></td><td>• Select an activity from the digital implementation task completed during previous teaching and learning (e.g. likes, dislikes, interests, hair colour etc.) to model evaluation.
▪ discuss the given simple evaluation criteria
▪ consider personal preferences when making decisions regarding the success of a simple solution
▪ discuss the range of preferences and reasons for the decisions made
▪ work collaboratively and independently to make judgements against other activities
▪ discuss personal preferences and use technology to capture the information
▪ use simple feedback templates to facilitate independent evaluations.</td></tr>
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Approx. hours	Syllabus content	Content unpacked	Suggested teaching and learning experiences
4	**Digital implementation** Engage with information known people have shared in an online environment, and model strategies to stay safe online	• Strategies to stay safe online include: ▪ appropriate sharing of personal information ▪ privacy settings ▪ passwords ▪ permissions (inbuilt digital and parental) ▪ speaking out if feeling unsafe ▪ respect for self and others online. • Students model the above strategies when in an online environment. • Known people is a reference to the student's immediate community. • Online environments include: ▪ schools learning management system ▪ blogs ▪ social media ▪ websites.	• Additional resources to support content delivery: ▪ eSafety Commissioner Family tech agreement (https://www.esafety.gov.au/parents/children-under-5/family-tech-agreement) ▪ Early Childhood Australia Learning Hub. eSafety: Professional Learning Modules (https://learninghub.earlychildhoodaustralia.org.au/esafety-early-years-program/) ▪ ABC Kids. Play School. Kiya's Excellent eBirthday (https://www.abc.net.au/abckids/shows/play-school/kiya-ebirthday/12172742) ▪ Digital Technologies Hub. Online Safety. (https://www.digitaltechnologieshub.edu.au/teachers/scope-and-sequence/f-2/online-safety/online-safety) ▪ Digital Technologies Hub. Communicating Safely Online (https://www.digitaltechnologieshub.edu.au/teachers/lesson-ideas/communicating-safely-online).

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.