Digital Technologies – Years F - 2 _ Digital systems

	Strand		Knowledge and understanding				Strand: Processes and production skills							
			Digital systems		Representation of data		Collecting, managing and analysing data		*Creating digital solutions by:*					
									Investigating and defining		Evaluating		Collaborating and managing	
	Content Description		Recognise and explore digital systems (hardware and software components) for a purpose (ACTDIK001)		Recognise and explore patterns in data and represent data as pictures, symbols and diagrams (ACTDIK002)		Collect, explore and sort data, and use digital systems to present the data creatively (ACTDIP003)		Follow, describe and represent a sequence of steps and decisions (algorithms) needed to solve simple problems (ACTDIP004)		Explore how people safely use common information systems to meet information, communication and recreation needs (ACTDIP005)		Create and organise ideas and information using information systems independently and with others, and share these with known people in safe online environments (ACTDIP006)	
Sequence of Lessons / Unit	**Approx. time rq'd**	**Year A or B**	CD	Achievement standard #	CD	Achievement standard #	CD	Achievement standard #	CD	Achievement standard #	CD	Achievement standard #	CD	Achievement standard #
Hardware and software	5	F-1	☑	1	☐		☐		☐		☐		☐	

Years F–2 Achievement Standard	**Years 3 and 4 Achievement Standard**
By the end of Year 2 • Students identify how common digital systems (hardware and software) are used to meet specific purposes. (1) • They use digital systems to represent simple patterns in data in different ways. (2) • Students design solutions to simple problems using a sequence of steps and decisions. (3) • They collect familiar data and display them to convey meaning. (4) • They create and organise ideas and information using information systems, and share information in safe online environments. (5)	By the end of Year 4 • Students describe how a range of digital systems (hardware and software) and their peripheral devices can be used for different purposes. (1) • They explain how the same data sets can be represented in different ways. (2) • Students define simple problems, design and implement digital solutions using algorithms that involve decision-making and user input. (3) • They explain how the solutions meet their purposes. (4) • They collect and manipulate different data when creating information and digital solutions. (5) • They safely use and manage information systems for identified needs using agreed protocols and describe how information systems are used. (6)

Hardware and software
Students explore and carry out some key functions on digital systems to meet a purpose.

Changes in technology
Use the focus of changing technology to explore digital systems and their use.

Hardware and software

A computer is a common digital system. A tablet device, laptop and smartphone are also digital systems. At the F-2 level, students develop understandings of digital systems (hardware and software) when they use some key functions to undertake authentic curriculum tasks. A modelled approach supports students to understand how to match familiar forms of software and hardware with their purpose. Students can use materials such as modelling clay or boxes to construct/ build their own digital systems such as a desktop computer, tablet device, laptop or smartphone.

Flow of activities				
Activity title	Common digital systems	Familiar software	Use familiar software	Make a model
Short text	Model the use of common digital systems to experience their purpose.	Discuss different types of software familiar to students commonly used in class.	Use software familiar to students for a particular purpose.	Make a model of a digital system such as a desktop computer.
AC Alignment	Digital systems (ACTDIK001)	Digital systems (ACTDIK001)	Digital systems (ACTDIK001)	Digital systems (ACTDIK001)
Questions to guide exploration	*What does a computer help me do?*	*What is software and what Is its purpose?*	*What software can I use?*	*How can I make a model of a digital system?*
What's this about?	A computer is a common digital system. A tablet device, laptop and smartphone are also digital systems. The digital system uses hardware and software component to enable a user to complete specific tasks. Hardware refers to the physical parts of the computer that you can touch. A desktop computer includes the case (or tower), the monitor, keyboard and mouse. The software refers to the applications that make the computer work and tell it what to do. These might include word processing and presentation software, a drawing program, photo editing, video playing and other applications.	Software consists of the applications that make the computer work and tell it what to do. • Word processing software enables the user to type reports and stories and include images and tables. • Email software enables a user to send and receive messages including attaching files. • Graphics and drawing applications enable the user to create digital images that can be inserted into other applications. • Digital games are a form of software that allow the user to interact with a virtual world. • Photo editing software enables the user to add effects to their photos. • Music software allows users to create and record music.	At this level the expectation would be for students to have an opportunity to use a desktop computer as well as a tablet device. In some cases, a tablet device may be more suitable particularly when an image or video needs to be captured and stored. The software (in the form of mobile apps) on a tablet device are usually discoverable on the home screen identified by a distinctive icon. On a desktop computer a short cut to relevant software programs may be provided on the home screen.	A computer is a common digital system. A tablet device, laptop and smartphone are also digital systems. Hardware refers to the physical parts of the computer that you can touch. In a desktop computer it includes the case (or tower), the monitor, keyboard and mouse. The software are the applications that make the computer work and tell it what to do. These might include word processing and presentation software, a drawing program and other applications. Digital systems such as laptop, tablets and smartphones have their monitors and keyboard integrated into the one device. A touch screen is used instead of a mouse.
The focus of the learning (in simple terms)	Model the use of some common digital systems (hardware and software components) using a relevant class context so students experience their purpose. In each case, identify the type of digital system, be explicit about the software being used and ask what the software enables the user to do. Some examples may include: • using a laptop with email application software to compose and send an email to a person; for example, inviting an expert to speak to the class or asking them a question to assist with the class inquiry • when learning about algorithms, model how to use arrow commands on a Bee-Bot app used on an iPad to move the Bee-Bot in a sequence of steps • Use video function on a tablet device/ smartphone to record the movement of the Bee-Bot. • use a drawing package application such as Paint or app such as Draw and Tell to make a representation of a dog and cat for a graph about favourite pets.	Discuss the different types of software familiar to students and software that is commonly used in class. Refer to the icons of each as a way of knowing which application they are using. Match familiar software with its purpose. Create and use icons of the software such as  for MS Word or an app that students are familiar with; for example, the Bee-Bot app. Students can cut out the icons and paste them with the relevant 'simplified' purpose that may include: • Send a message • Write a story • Move a character • Draw a picture • Present ideas. Other purposes can be added, depending on the software with which students are familiar.	Provide students with an opportunity to carry out some key functions on digital systems (hardware and software components) to meet a purpose. Using a relevant curriculum context, identify a digital system such as a computer, laptop or tablet device that can be used to complete set tasks. Discuss the hardware used and the software required to undertake simple tasks. In the task, include requirements such as: • Add text • Draw a picture (digitally) • Capture a photo and insert it into the project • Record a video, save the file and upload. Potential curriculum contexts may include: • About me • Capture and share images of living things in the local environment • Sort and record information and data in tables and on plans and labelled maps. • My family • Places I like to visit.	Ask students to make their own digital system. They can choose to make a desktop computer, tablet device, laptop or smartphone depending on the purpose. Provide a problem to solve to guide the activity; for example, make a model of a digital system that you can use to: • take a selfie, add a caption and send to someone else • play a video game using a game controller and listen to the sound effects without annoying others • make voice calls, send emails and play mobile apps • write a story and print it to share with a friend. Talk through the requirements and have students draw their design before making. Use this to clarify student thinking and consider how they will show how a device may be sued and the software that might be needed to be shown.

	Match hardware and software with purpose (task). Summarise the modelling activity with pre-made cards that have an image of the hardware, an image of the software and a description of the (task) purpose; for example, send messages. Use the images and text to link the hardware, software and the (task) purpose.			Provide cardboard boxes of various sizes, coloured card and other recycled materials. Assist students to cut materials safely. Materials such as modelling clay or playdough could be used instead of cardboard. Ask how students to consider how they can display or show the different types of software that are available for use in their digital system. Look at the actual devices to see what is visible on home screens. How might they represent these in their model? Students use their model to identify the hardware and software and any peripheral devices they may add to their digital system to complete a specific task.
Supporting resources and tools and purpose/ context for use				DIY chalk and cardboard computer Ideas to help make a computer using cardboard Play Doh How to make a Play-Doh iPad tablet DIY RainbowLearning Make a tablet device using playdough
Assessment	**Suggested approaches may include:** Level of engagement in discussion about modelling the use of some types of software **Achievement standard** **Identify** how common digital systems (hardware and software) are used to meet specific purposes.	**Suggested approaches may include:** Software icons matched to a purpose **Achievement standard** **Identify** how common digital systems (hardware and software) are used to meet specific purposes.	**Suggested approaches may include:** Completed task showing the use of a particular software application **Achievement standard** **Identify** how common digital systems (hardware and software) are used to meet specific purposes.	**Suggested approaches may include:** Presentation of model of a digital system for a particular purpose **Achievement standard** **Identify** how common digital systems (hardware and software) are used to meet specific purposes.