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 #
Changes in technology	6	2	☑	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.

Changes in technology

Use the focus of changing technology to explore digital systems and their use. Current digital systems such as computers, smartphones, tablets and laptops have evolved over time. The Internet provides us with ready access to information. The connectivity provides opportunity to do online shopping and banking and stay in touch with instant communication. Set students the task of identifying and presenting a digital solution to solve a specific problem. Compare the suggested digital solution with the way this might have been solved in the past.

Flow of activities				
Title:	New and old	Compare old and new	Using a digital system	Choosing a digital system
Short text:	Order images of technology in chronological order to examine changes over time.	Choose relevant technologies to compare old with newer forms of technology.	Compare the use of a digital system with a non-digital technology approach.	Identify a digital solution to suit a particular need and describe hardware and software required.
AC Alignment	Digital systems (ACTDIK001)	Digital systems (ACTDIK001)	Digital systems (ACTDIK001)	Digital systems (ACTDIK001)
Questions to guide exploration	*How have telephones changed overtime?*	*Why does technology get better over time?*	*What software should I use?*	*What devices connect to a digital system?*
What's this about?	Current digital systems such as computers, smartphones, tablets and laptops have evolved over time. The typewriter was replaced by digital systems such as a computer and word processing software. Telephones over time have evolved into versions that are portable such as mobile phones and, more recently, smartphones. A smartphone is a mini computer and has many more functions than just making voice calls including taking and storing photographs and video, storing and playing music and video, connecting to the Internet, sending and receiving email and SMS's, as well as access to a range of mobile apps.	Technology has changed over time. The Internet provides us with ready access to information. The connectivity provides opportunity to do online shopping and banking and stay in touch with instant communication. Many homes these days have access to tablet computers These 'mobile computers' include a camera for stills and video, and a microphone. The touchscreen has eliminated the need for a mouse or keyboard.	This section integrates ICT capabilities with their exploration of digital systems. 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. • Spreadsheet software enables a user to use simple formulas such as Auto sum. • 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.	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. 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, photo editing, video playing and other applications. Peripheral devices can be connected to the computer.
The focus of the learning (in simple terms)	Provide students with images and/or artefacts of technology and household items past and present such as old phones, typewriters, slates, quills, clocks, floppy discs, audio cassette recorder, gramophone, film projector, video tape, cassettes. Ask students to consider the function of each item and describe how each has changed over time. Ask students to compare a smartphone and its functionality to telephones of the past. Students record and share their ideas. Identify features that have stayed the same and functions that are new or have changed. Present the pictures of telephones as a game; for example, order these in correct chronological order.	Explore using older technology with the use of current technology. Discuss how technology improves over time and reasons for these improvements. Compare finding out facts from an encyclopaedia with using a computer and a search engine such as Google. If possible, locate and use a typewriter to compose a letter. Compare that with using a desktop computer and a print out. Locate a handicam or video camera and compare the use of this to the camera functionality of a tablet or smartphone. View a video or DVD and compare with watching a G-rated program on Netflix, YouTube or similar. Compare an older style desktop computer with a tablet device or laptop.	Students further develop their understanding of digital systems including hardware and software and their purpose. Discuss familiar tasks and suggest how a digital system may be used instead, for example: • taking attendance (a tablet device and spreadsheet) • writing a story (computer and word processing software with spellcheck) • drawing a picture (a tablet and graphics package) • sending a letter by post (sending an email). Discuss the benefits of using a digital system. Provide opportunities for students to select relevant familiar software to undertake a particular task using a classroom context.	Review students' understanding of hardware and software. Set students the task of identifying and presenting a digital solution to solve a specific problem. Compare the suggested digital solution with the way this might have been solved in the past. Starting points may include: • 'I want a way to record my fitness activity to see if I'm improving.' (Eg time the activity with a stopwatch and compare over time with the use of wearable technology such as a Fitbit.) • 'I want to listen to my music as I walk around my local area.' (Eg compare the iPod with a smartphone and Internet service.) • 'I need help to find the street where my friend lives and get directions to follow.' (Eg read a hard copy map compared with mapping software and smartphone.)

		Create a flipbook that can be used to animate a line-drawn stick figure. Use Lego movie software or similar to create an animated scene. (This would be a great opportunity for a Year 6 buddy activity.)		Evaluate its usefulness compared with a past technology.
Supporting resources and tools and purpose/ context for use	Clever computers Explore elements of a digital system, including hardware, software and some commonly used peripheral devices. Technology past and present Use this presentation to initiate discussion about how technology has changed over time and relate it to current digital systems.	Seven ways technology has developed over the last 10 years Use this resource to familiarise yourself with ways technology has developed over time.		Digital systems Use this presentation to develop and consolidate students' understanding of hardware, software and peripheral devices.
Assessment	**Suggested approaches may include:** • Level of engagement in discussions • Recorded ideas on Smartphone functionality **Achievement standard** **Identify** how common digital systems (hardware and software) are used to meet specific purposes.	**Suggested approaches may include:** Presentation of a particular peripheral device **Achievement standard** **Identify** how common digital systems (hardware and software) are used to meet specific purposes.	**Suggested approaches may include:** • Demonstration of using a particular software for its intended purpose • Checklist of student capability to use familiar software **Achievement standard** **Identify** how common digital systems (hardware and software) are used to meet specific purposes.	**Suggested approaches may include:** Presentation of a particular peripheral device **Achievement standard** **Identify** how common digital systems (hardware and software) are used to meet specific purposes.**)**