Computing

Learning Outcomes

Content of this grid is from the National Curriculum in England: Computing Programme of Study with adapted outcomes.

Computing – Computer Science; including, coding, programming, computer systems and networks			
	Redway Pre-Formal Pathway Encounter → Foundation	**Redway Semi-Formal Pathway** Core → Development	**Redway Formal Pathway** Enrichment → Enhancement
	The pupil can:	**The pupil can:**	**The pupil can:**
Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions **(NC - KS1)**	a. Experience sharing by following a sequence of movement and action. b. Anticipate routine events – that is see a pattern in the event (eg: action songs, eating, being hoisted) c. Make a change in vocalisations/body movements when an activity has finished. d. Make a change in vocalisations/body movement when an activity is changed. e. Make a change in vocalisations/body movements when an activity is about to finish. f. React when a different member of staff is present. g. React when a favourite member of staff leaves. h. Respond to Objects of Reference.	a. To act out a given word. (e.g., jump, clap, shout, etc) b. Follow a familiar routine. (e.g., getting ready for swimming) c. Follow key word instructions. d. Follow 2 key word instructions. e. Follow a sequence of actions to follow out a routine – e.g. getting dressed in the correct order or washing hands. f. Complete simple patterns. g. Produce a sequence of commands for others using symbols	Scratch Jr App and Turtle Logo can support this area. a. To know that a sequence of commands has a start. b. To know that a sequence of events has an outcome. c. To follow a simple set of instructions. d. To create a simple set of instructions for others to follow. e. Can move an on-screen turtle using single commands f. To combine forwards and backwards commands to make a sequence. g. To combine 4 direction commands to make a sequence (forward, backwards, left, right) h. To describe a series of instructions as a sequence. i. To design an algorithm (set of instructions) j. To programme basic toys. k. Outlines what input, output and program means for a robot.

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Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs **(NC - KS2)**			a. To explain how a sprite moves in an existing project. b. To adapt a program to a new context c. To recognise that a sequence of commands can have an order d. To control a simple circuit connected to a computer
Create and debug simple programs (NC - KS1)	a. Request assistance – vocalising, eye contact, body movement, etc. b. Recognise when something is missing. c. Awareness that something is different in the environment (different member of staff, new activity, etc). d. Will react when something is taken away. e. Will react when something appears.	a. Picks up and looks at a new/unfamiliar object. b. Recognise there is a problem. c. Alerts adult/member of staff to the problem. d. Recognise when mistakes are made, e.g. – need to put socks on before shoes. e. Changes their action in order to see how it changes the outcome. E.g., alert a different person if the first person hasn't given them a drink. f. Combines actions to create desired effect. E.g., gain attention and point to what they would like.	Scratch Jr App and Turtle Logo can support this area. a. To plan a simple program. b. To find more than one solution to a problem. c. To choose a command for a given purpose. d. To show a series of commands can be joined together. e. To use their algorithm to create a program. f. To plan algorithms for different parts of a task. g. Test and debug each part of the program. h. To create a program using a given design. i. To change a given design. j. To decide how the project can be improved.
Design, write, and debug programs that accomplish specific goals, including controlling or simulating physical systems: solve problems by			a. To explore a new programming environment. b. To identify that commands have an outcome. c. To explain that a program has a start d. To change the appearance of my project

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decomposing them into smaller parts (NC - KS2)			e. To create a project from a task description f. To create a program to run on a controllable device g. To explain that selection can control the flow of a program. h. To update a variable with a user input i. To use a conditional statement to compare a variable to a value j. To design a project that uses inputs and outputs on a controllable device k. To develop a program to use inputs and outputs on a controllable device l. To create a program to move a sprite in four directions m. To develop my program by adding features n. To identify and fix bugs in a program o. To create a program in a text-based language p. To explain what 'repeat' means q. To modify a count-controlled loop to produce a given outcome r. To decompose a task into small steps
Use logical reasoning to predict the behaviour of simple programs (NC - KS1)	a. Begins to link cause and effect. b. Uses a switch purposefully to create a desired effect; knows something will happen but doesn't know what. c. Investigates what will happen when a switch is pressed.	a. Using prior knowledge to make predictions. b. Remember learned responses over increasing periods of time and may anticipate known events. c. Recall information from previous learning. d. Interacts logically with a new/unfamiliar object, e.g., presses	Scratch Jr App and Turtle Logo can support this area. a. To explain what a given command will do. b. To predict the outcome of a command on a device. c. To explain what happens when we change the order of instructions.

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	d. Anticipates the effect when pressing switch. e. Repeats an action to gain a desired effect e.g., knocking over a tower. f. Remember an outcome over a short period of time short period of time e.g., a few minutes. g. Remember a response over a longer period of time e.g., one week to the next.	a button on a new object expecting it to make a noise. e. Using two switches to make choices. f. Performs actions by trial and improvement when experiencing failed attempts. g. Tries new strategy when first one fails.	d. Match a command to an outcome. e. Make a prediction about what the program will do.
Recognise common uses of information technology beyond school (NC - KS1)	a. Press buttons to make toy work (eg: keyboard, musical toys) b. Operate a toy that requires a single action (e.g.: button on Jack-in-the-box, switch for bubble tube). c. Operate toys that require more than one action to complete (e.g.: bubble tube controlled by latched switch, CD player knobs)	Use tablet screen to make something happen. Touch screens Press switches to operate simple toys such as remote-control cars Operate everyday technology including: CD player and kitchen items in cooking Can explore activities online Can record own voice and other sounds	a. To identify technology. b. To identify information technology. c. To identify different types of technology beyond school. d. To identify a computer and its main parts e. List different uses IT f. Recognise uses and features of information technology. g. Describe uses of computers.
Use technology purposefully to create, organise, store, manipulate and retrieve digital content (NC - KS1)	a. Press a switch to make something happen – cause and effect. b. Respond to what happens when the switch is pressed. c. Persist in making simple toys do something (e.g.: keep swiping wobble toys or	a. Use a range of cameras to take photographs. b. To know what a camera and photograph are. c. To switch a camera on. d. To operate a camera either manually or through a switch. e. To swipe through photographs on a table.	a. Log onto a computer b. Save work on a computer c. To use a mouse in different ways d. To use a keyboard to type on a computer e. To use the keyboard to edit text f. To use a computer to paint a picture.

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	pressing a switch to keep the toy active. d. Will use a range of switch-controlled computer programs. e. Will explore switch operated toys f. Will show an interest in small electronic devices connected to a mains controller, items in the sensory room. h. Recognise own belongings	f. To use a touch screen. g. To recognise items that belong to themselves and to others.	g. To use a computer to write (letter/email, etc.) h. To add and remove text on a computer. i. To identify that the look of text can be changed on a computer. j. Explain we can present information using a computer. (Graphs, pictograms) k. To describe what different freehand tools do. l. To use the shape tool and line tools. m. To explain why I choose the tools I use. n. To use a digital device to take a photograph. (Digital camera, iPad, etc.) o. To use tools to change an image (crop picture, change lighting, etc.). p. To recognise photos can be changed. q. To create music for a purpose. r. To review and refine music on computer work. s. Recognise own retrieved work.

Use sequence, selection and repetition in programmes; work with variables and various forms of input and output (NC - KS2)			a. To explain how digital devices function b. To identify input and output devices c. To recognise how digital devices can change the way we work d. To identify that accuracy in programming is important e. To create a program that uses count-controlled loops to produce a given outcome

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			f. To explain that data gathered over time can be used to answer questions g. To use a digital device to collect data automatically h. To explain that a data logger collects 'data points' from sensors over time i. To use data collected over a long duration to find information j. To identify the data needed to answer questions k. To use collected data to answer questions
Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration (NC - KS2)			a. Is aware the internet holds information on web pages. b. Can use the internet to view different sites and find information with support. c. Can add a website to a Favourites folder d. Can describe how to access websites on the WWW e. Identifies the key words they will use in a search. f. Moves from one page to another easily on a website. g. Download material to the correct place. h. Understands the hardware and software components that make up a computer system. i. Designs and creates programs. j. Designs programs that achieve specific goals. k. To explain how a computer network can be used to share information.

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			l. To explore how digital devices can be connected m. To recognise the physical components of a network l. To describe how networks physically connect to other networks. m. To recognise how networked devices make up the internet n. To outline how websites can be shared via the World Wide Web (WWW) o. To describe how content can be added and accessed on the World Wide Web (WWW) p. To recognise how the content of the WWW is created by people q. To evaluate the consequences of unreliable content
Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information (NC - KS2)			a. To explain that animation is a sequence of drawings or photographs. b. To relate animated movement with a sequence of images. c. To plan an animation. d. To identify the need to work consistently and carefully e. To review and improve an animation f. To evaluate the impact of adding other media to an animation. g. To create questions with yes/no answers. h. To identify the object attributes needed to collect relevant data i. To create a branching database

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			j. To explain why it is helpful for a database to be well structured k. To identify objects using a branching database l. To compare the information shown in a pictogram with a branching database m. To add content to a desktop publishing publication n. To consider how different layouts can suit different purposes o. To consider the benefits of desktop publishing
Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content (NC - KS2)			a. To recognise how text and images convey information. b. To recognise that text and layout can be edited. c. To choose appropriate page settings d. To identify that sound can be digitally recorded e. To use a digital device to record sound f. To explain that a digital recording is stored as a file g. To explain that audio can be changed through editing h. To show that different types of audio can be combined and played together i. To evaluate editing choices made j. To explain that digital images can be changed

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			k. To change the composition of an image l. To describe how images can be changed for different uses m. To make good choices when selecting different tools n. To recognise that not all images are real o. To evaluate how changes can improve an image