Computing

Knowledge & Skills Progression – Year 1 to Year 6

This document aims to give guidance on the progression of Computing knowledge and skills across the year groups. It can also be used to differentiate work, and expectations, appropriately for pupils working above and below age-related expectations (particularly SEND pupils and GD pupils). As pupils advance through school, it is expected that they can demonstrate a wider range of independent skills and knowledge in the three strands of Computing, across the curriculum.

In Computing, like all other subjects, we recognise the importance of the methods and practice of teaching (the pedagogy) we choose to use in enabling pupils to **know more, understand more and remember more**. In Computing, the following approaches will be used, and be evident in pupil discussion, observations and work in books, in order to ensure that the Computing learning opportunities are as effective as possible and that pupils progress throughout the year and across year groups during their Computing experiences in school:

Teaching sequence in Computing	Previous knowledge and skills remembered and understood.	**Skills to use in lessons**	Teamwork	Direct teacher instruction; modelling of skills and techniques; demonstration.
	Independent research.		Leadership	
	Use critical evaluation to inform their own work.		Speaking	Inquiry-based learning; independent research.
	Experimenting and investigating with different techniques and methods.		Aiming High	Teacher modelling; questioning; mix of individual, paired and group instruction.
	Creating own work, applying new techniques, skills and media to their own computing file.		Creativity	Pupil-led learning; opportunities to showcase learning.
	Critically evaluating their own work;		Listening	
	Improving work after evaluation.		Problem Solving	Being introduced to the key vocabulary; defining the key vocabulary; having high expectations of pupils 'talking' like a technician.
	Reflection and re-cap of knowledge and skills remembered and understood.		Staying Positive	

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Digital Literacy	• To log in safely. • To learn how to find saved work in the Online Work area and find teacher comments. • To learn how to search Purple Mash to find resources. • To become familiar with the icons and types of resources available in the Topics section. • To start to add pictures and text to work. • To explore the Tools and Games section of Purple Mash. • To learn how to open, save and print. • To understand the	• To know how to refine searches using the Search tool. • To use digital technology to share work on Purple Mash to communicate and connect with others locally. • To have some knowledge and understanding about sharing more globally on the Internet. • To introduce Email as a communicatio n tool using 2Respond simulations. • To understand how we should talk to others in an online situation. • To open and send simple online communicatio ns in the form of email. • To understand that information	• To know what makes a safe password. • To learn methods for keeping passwords safe. • To understand how the Internet can be used in effective communicatio n. • To understand how a blog can be used to communicate with a wider audience. • To consider the truth of the content of websites. • To learn about the meaning of age restrictions symbols on digital media and devices. • To think about different methods of communicatio n. • To open and respond to an	• To understand how children can protect themselves from online identity theft. • To understand that information put online leaves a digital footprint or trail and that this can aid identity theft. • To identify the risks and benefits of installing software including apps. • To understand that copying the work of others and presenting it as their own is called 'plagiarism' and to consider the consequences of plagiarism. • To identify appropriate behaviour when participating or contributing to	• To gain a greater understanding of the impact that sharing digital content can have. • To review sources of support when using technology and children's responsibility to one another in their online behaviour. • To know how to maintain secure passwords. • To understand the advantages, disadvantages , permissions and purposes of altering an image digitally and the reasons for this. • To be aware of appropriate and inappropriate text, photographs and videos and the impact of	• To identify benefits and risks of mobile devices broadcasting the location of the user/device. • To identify secure sites by looking for privacy seals of approval. • To identify the benefits and risks of giving personal information. • To review the meaning of a digital footprint. • To have a clear idea of appropriate online behaviour. • To begin to understand how information online can persist. • To understand the importance of balancing game and screen time with other

	importance of logging out. • To walk around the local community and find examples of where technology is used. • To record examples of technology outside school.	put online leaves a digital footprint or trail. • To identify the steps that can be taken to keep personal data and hardware secure. • To understand the terminology associated with searching. • To gain a better understanding of searching on the Internet. • To create a leaflet to help someone search for information on the Internet.	email using an address book. • To learn how to use email safely. • To add an attachment to an email. • To explore a simulated email scenario.	collaborative online projects for learning. • To identify the positive and negative influences of technology on health and the environment. • To understand the importance of balancing game and screen time with other parts of their lives.	sharing these online. • To learn about how to reference sources in their work. • To search the Internet with a consideration for the reliability of the results of sources to check validity and understand the impact of incorrect information. To ensure reliability through using different methods of communicatio n.	parts of their lives. • To identify the positive and negative influences of technology on health and the environment.
Information Technology	• To understand that data can be represented in picture format. • To contribute to a class pictogram. • To use a pictogram to record the results of	• To use 2Calculate image, lock, move cell, speak and count tools to make a counting machine. • To learn how to copy and paste in 2Calculate. • To use the totalling tools.	• To use the symbols more than, less than and equal to, to compare values. • To use 2Calculate to collect data and produce a variety of graphs. • To use the advanced mode of	• To format cells as currency, percentage, decimal to different decimal places or fraction. • To use the formula wizard to calculate averages. • To combine tools to make spreadsheet	• To use formulae within a spreadsheet to convert measurements of length and distance. • To use the count tool to answer hypotheses about common letters in use.	• To use a spreadsheet to investigate the probability of the results of throwing many dice. • To use a spreadsheet to calculate the discount and final prices in a sale. • To use a spreadsheet to

	an experiment. • • To introduce e-books and the 2Create a Story tool. • To add animation to a story. • To add sound to a story, including voice recording and music the children have composed. • To work on a more complex story, including adding backgrounds and copying and pasting pages. • To share e-books on a class display board. • To know what a spreadsheet programme looks like. • How to open 2Calculate	• To use a spreadsheet for money calculations. • To use the 2Calculate equals tool to check calculations. • To use 2Calculate to collect data and produce a graph. • To learn about data handling tools that can give more information than pictograms. • To use yes/no questions to separate information. • To construct a binary tree to identify items. • To use 2Question (a binary tree database) to answer questions. • To use a database to answer more complex search questions. • To use the Search tool to find information.	2Calculate to learn about cell references. • To introduce typing terminology. • To understand the correct way to sit at the keyboard. • To learn how to use the home, top and bottom row keys. • To practise typing with the left and right hand. • To sort objects using just 'yes' or 'no' questions. • To complete a branching database using 2Question. • To create a branching database of the children's choice. • To understand the uses of PowerPoint. • To create a page in a presentation. • To add media to a presentation.	activities such as timed times tables tests. • To use a spreadsheet to model a real-life situation. • To add a formula to a cell to automatically make a calculation in that cell. • To discuss what makes a good animated film or cartoon. • To learn how animations are created by hand. • To find out how animation can be created in a similar way using the computer. • To learn about onion skinning in animation. • To add backgrounds and sounds to animations. • To be introduced to 'stop motion' animation. • To share animation on	• To use a spreadsheet to model a real-life problem. • To use formulae to calculate area and perimeter of shapes. • To create formulae that use text variables. • To use a spreadsheet to help plan a school cake sale. • To learn how to search for information in a database. • To contribute to a class database. • To create a database around a chosen topic. • To be introduced to 2Design and Make and the skills of computer aided design. • To explore the effect of moving points when designing. • To design a 3D Model to fit certain criteria.	plan how to spend pocket money and the effect of saving money. • To use a spreadsheet to plan a school charity day to maximise the money donated to charity. • To create a picture-based quiz for young children. • To learn how to use the question types within 2Quiz. • To explore the grammar quizzes. • To make a quiz that requires the player to search a database. • To make a quiz to test your teachers or parents.

	in Purple Mash. • How to enter data into spreadsheet cells. • To use 2Calculate image tools to add clipart into cells. • To use 2Calculate control tools: lock, move cell, speak and count.	• To learn the functions of the 2Paint a Picture tool. • To learn about and recreate the Impressionist style of art (Monet, Degas, Renoir). • To recreate Pointillist art and look at the work of pointillist artists such as Seurat. • To learn about the work of Piet Mondrian and recreate the style using the lines template. • To learn about the work of William Morris and recreate the style using the patterns template. • To explore surrealism and eCollage • To make music digitally using 2Sequence. • To explore, edit and combine sounds using 2Sequence. • To edit and refine	• To add animations to a presentation. • To add timings to a presentation. • To use the skills learnt to design and create an engaging presentation.	the class display board. • To locate information on the search results page. • To use search effectively to find out information. • To assess whether an information source is true and reliable. • To identify and discuss the main elements of music. • To understand and experiment with rhythm and tempo. • To create a melodic phrase. • To electronically compose a piece of music.	• To refine and print a model. • To know what a word processing tool is for. • To add and edit images to a word document. • To know how to use word wrap with images and text. • To change the look of text within a document. • To add features to a document to enhance its look and usability. • To use tables within MS Word to present information. • To introduce children to templates. • To consider page layout including heading and columns.	

		composed music. • To think about how music can be used to express feelings and create tunes which depict feelings. • To upload a sound from a bank of sounds into the Sounds section. • To record and upload environmental sounds into Purple Mash. • To use these sounds to create tunes in 2Sequence • To explore how a story can be presented in different ways. • To make a quiz about a story or class topic. • To make a fact file on a non-fiction topic. • To make a presentation to the class.				
Computer Science	• To compare the effects of adhering strictly to instructions	• To understand what an algorithm is. • To design algorithms and	• To understand what a flowchart is and how flowcharts are	• To begin to understand selection in computer programming.	• To begin to simplify code. • To create a playable game.	• To design a playable game with a timer and a score.

	to completing tasks without complete instructions. • To follow and create simple instructions on the computer. • To consider how the order of instructions affects the result. • To understand the functionality of the direction keys. • To understand how to create and debug a set of instructions (algorithm). • To use the additional direction keys as part of an algorithm. • To understand how to change and extend	then code them. • To compare different object types. • To use the repeat command. • To use the timer command. • To know what debugging is and debug programs. •	used in computer programming. • To understand that there are different types of timers and select the right type for purpose. • To understand how to use the repeat command. • To understand the importance of nesting. • To design and create an interactive scene.	• To understand how an IF statement works. • To understand how to use co-ordinates in computer programming. • To understand the 'repeat until' command. • To understand how an IF/ELSE statement works. • To understand what a variable is in programming. • To use a number variable. • To create a playable game. • To learn the structure of the coding language of Logo. • To input simple instructions in Logo. • Using 2Logo to create letter shapes. • To use the Repeat function in Logo to create shapes.	• To understand what a simulation is. • To program a simulation using 2Code. • To know what decomposition and abstraction are in computer science. • To a take a real-life situation, decompose it and think about the level of abstraction. • To understand how to use friction in code. To begin to understand what a function is and how functions work in code. • To understand what the different variables types are and how they are used differently. • To understand how to create a string. • To understand what concatenation is and how it works.	• To plan and use selection and variables. • To understand how the launch command works. • To use functions and understand why they are useful. • To understand how functions are created and called. • To use flowcharts to create and debug code. • To create a simulation of a room in which devices can be controlled. • To understand how user input can be used in a program. • To understand how 2Code can be used to make a text-adventure game. • To find out what a text adventure is. • To use 2Connect to plan a story adventure.

	the algorithm list. • To create a longer algorithm for an activity. • To set challenges for peers. • To access peer challenges set by the teacher as 2dos. • To understand what coding means. • To use design mode to set up a scene. • To add characters. • To use code blocks to make the character perform actions. • To use collision detection. • To save and share work. • To know the save, print, open and new icon.			• To use and build procedures in Logo. • To understand the different parts that make up a computer. • To recall the different parts that make up a computer.	• To plan a game. • To design and create the game environment. • To design and create the game quest. • To finish and share the game. • To self and peer evaluate.	• To make a story-based adventure using 2Create a Story. • To introduce an alternative model for a text adventure which has a less sequential narrative. • To use written plans to code a map-based adventure in 2Code • To learn about what the Internet consists of. • To find out what a LAN and a WAN are. • To find out how the Internet is accessed in school. • To research and find out about the age of the Internet. • To think about what the future might hold. • To examine how whole numbers are used as the basis for representing

						all types of data in digital systems. • To recognise that digital systems represent all types of data using number codes that ultimately are patterns of 1s and 0s (called binary digits, which is why they are called digital systems). • To understand that binary represents numbers using 1s and 0s and these represent the on and off electrical states respectively in hardware and robotics.