



CAM WOODFIELD INFANT SCHOOL

GROW – EXPLORE – DISCOVER

Computing (NC)

Expressive Arts and Design (and throughout the curriculum) (EYFS)

EYFS Foundation Stage – Expressive Arts and Design (Reception)

Expressive Arts and Design The development of children's artistic and cultural awareness supports their imagination and creativity. It is important that children have regular opportunities to engage with the arts, enabling them to explore and play with a wide range of media and materials. The quality and variety of what children see, hear and participate in is crucial for developing their understanding, self-expression, vocabulary and ability to communicate through the arts. The frequency, repetition and depth of their experiences are fundamental to their progress in interpreting and appreciating what they hear, respond to and observe.

ELG (Creating with Materials)

Children at the expected level of development will

- Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function
- Share their creations, explaining the process they have used
- Make use of props and materials when role playing characters in narratives and stories.

ELG (Being Imaginative)

Children at the expected level of development will:

- Invent, adapt and recount narratives and stories with peers and their teacher.
- Sing a range of well-known nursery rhymes and songs.
- Perform songs, rhymes, poems and stories with others, and – when appropriate – try to move in time with music.

National Curriculum – Computing (Years 1 and 2)

Purpose of study

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and

express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

Aims

The national curriculum for computing aims to ensure that all pupils:

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems are responsible, competent, confident and creative users of information and communication technology.

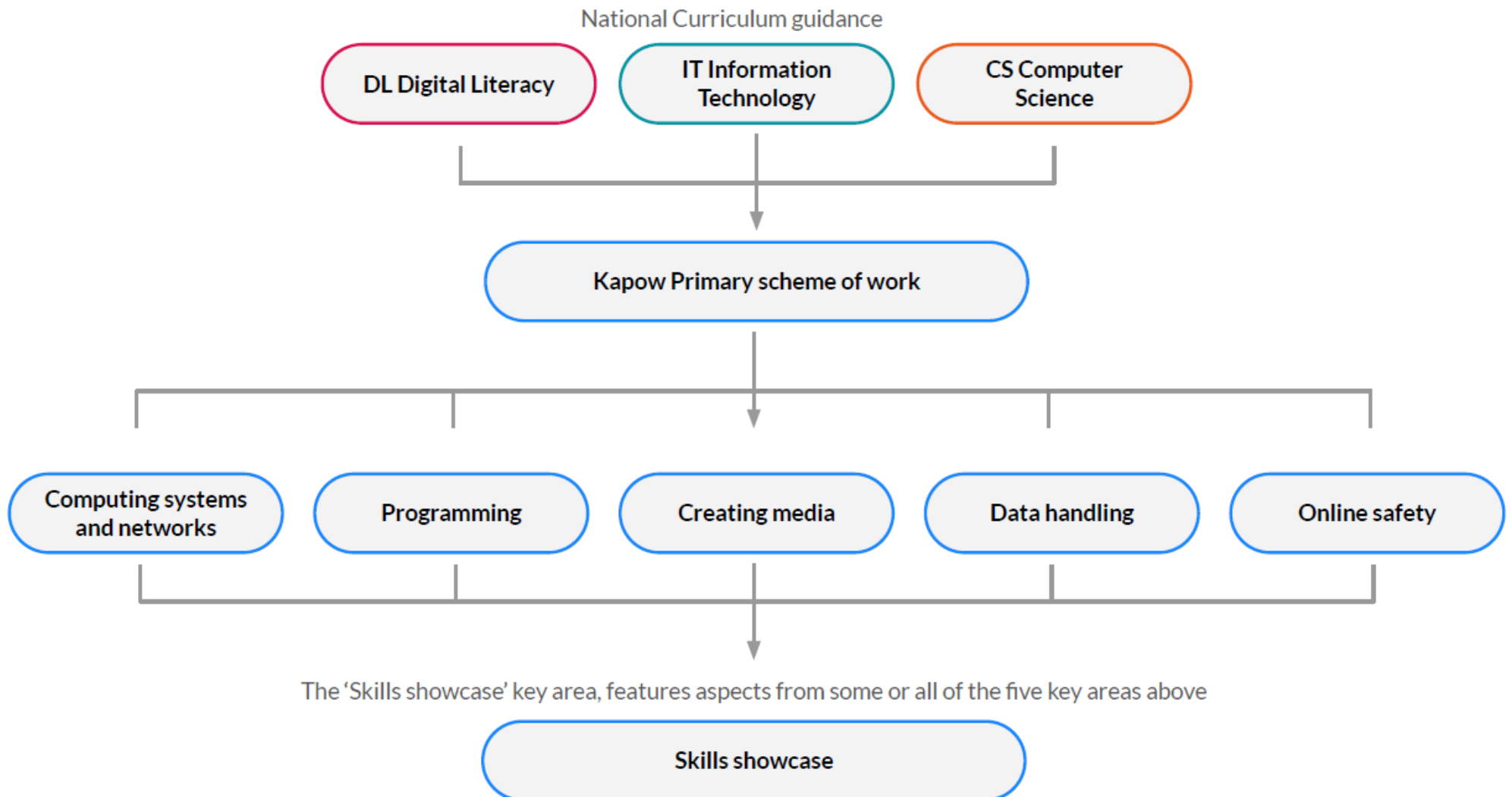
Key stage 1

Pupils should be taught to:

- understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
- create and debug simple programs
- use logical reasoning to predict the behaviour of simple programs
- use technology purposefully to create, organise, store, manipulate and retrieve digital content
- recognise common uses of information technology beyond school
- use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.

Progression of Key Skills and Knowledge in KS1:

How is Kapow's computing scheme of work organised?



Progression of Skills:

Computer Science		
	Year 1	Year 2
Hardware	• Learning how to operate a camera or tablet to take photos and videos. • Learning how to explore and tinker with hardware to find out how it works. • Recognising that some devices are input devices and others are output devices. • Learning where keys are located on the keyboard.	• Understanding what a computer is and that it's made up of different components. • Recognising that buttons cause effects and that technology follows instructions. • Learning how we know that technology is doing what we want it to do via its output. • Using greater control when taking photos with cameras, tablets or computers. • Developing confidence with the keyboard and the basics of touch typing.
Networks and data representation	N/A	N/A
Computational thinking	• Learning that decomposition means breaking a problem down into smaller parts. • Using decomposition to solve unplugged challenges. • Using logical reasoning to predict the behaviour of simple programs. • Developing the skills associated with sequencing in unplugged activities. • Following a basic set of instructions. • Assembling instructions into a simple algorithm.	• Articulating what decomposition is. • Decomposing a game to predict the algorithms used to create it. • Learning that there are different levels of abstraction. • Explaining what an algorithm is. • Following an algorithm. • Creating a clear and precise algorithm. • Learning that programs execute by following precise instructions. • Incorporating loops within algorithms.
Programming	• Programming a Floor robot to follow a planned route. • Learning to debug instructions when things go wrong.	• Using logical thinking to explore software, predicting, testing and explaining what it does.

	- Using programming language to explain how a floor robot works. - Learning to debug an algorithm in an unplugged scenario.	- Using an algorithm to write a basic computer program. - Using loop blocks when programming to repeat an instruction more than once.
Information Technology		
	Year 1	Year 2
Using software	- Using a basic range of tools within graphic editing software. - Taking and editing photographs. - Developing control of the mouse through dragging, clicking and resizing of images to create different effects. - Developing understanding of different software tools.	- Developing word processing skills, including altering text, copying and pasting and using keyboard shortcuts. - Using word processing software to type and reformat text. - Using software (and unplugged means) to create story animations. - Creating and labelling images.
Using email and internet searches	- Recognising devices that are connected to the internet. - Searching and downloading images from the internet safely. - Understanding that we are connected to others when using the internet.	- Searching for appropriate images to use in a document. - Understanding what online information is.
Using data	- Understanding that technology can be used to represent data in different ways: pictograms, tables, pie charts, bar charts, block graphs etc. - Using representations to answer questions about data. - Using software to explore and create pictograms and branching databases.	- Collecting and inputting data into a spreadsheet. - Interpreting data from a spreadsheet.
Wider use of technology	- Recognising common uses of information technology, including beyond school. - Understanding some of the ways we can use the internet.	Learning how computers are used in the wider world.

Digital Literacy

	Year 1	Year 2
Digital literacy	• Logging in and out and saving work on their own account. • When using the internet to search for images, learning what to do if they come across something online that worries them or makes them feel uncomfortable. • Understanding how to interact safely with others online. • Recognising how actions on the internet can affect others. • Recognising what a digital footprint is and how to be careful about what we post.	• Learning how to create a strong password. • Understanding how to stay safe when talking to people online and what to do if they see or hear something online that makes them feel upset or uncomfortable. • Identifying whether information is safe or unsafe to be shared online. • Learning to be respectful of others when sharing online and ask for their permission before sharing content. • Learning strategies for checking if something they read online is true.

Progression of Knowledge:

Computing systems and networks

Year 1

- To know that "log in and log out" means to begin and end a connection with a computer.
- To know that a computer and mouse can be used to click, drag, fill and select and also add backgrounds, text, layers, shapes and clip art.
- To know that passwords are important for security.
- To know that when we create something on a computer it can be more easily saved and shared than a paper version.
- To know some of the simple graphic design features of a piece of online software.

Year 2

- To know the difference between a desktop and laptop computer.
- To know that people control technology.
- To know that buttons are a form of input that give a computer an instruction about what to do (output).
- To know that computers often work together.
- To know that touch typing is the fastest way to type.
- To know that I can make text a different style, size and colour.
- To know that "copy and paste" is a quick way of duplicating text.

Programming

Year 1

- To understand that an algorithm is when instructions are put in an exact order.
- To know that input devices get information into a computer and that output devices get information out of a computer.
- To understand that decomposition means breaking a problem into manageable chunks and that it is important in computing.
- To know that we call errors in an algorithm 'bugs' and fixing these 'debugging'.
- To understand the basic functions of a Bee-Bot.
- To know that you can use a camera/tablet to make simple videos.
- To know that algorithms move a bee-bot accurately to a chosen destination.

Year 2

- To understand what machine learning is and how that enables computers to make predictions.
- To know that loops in programming are where you set a certain instruction (or instructions) to be repeated multiple times.
- To know that abstraction is the removing of unnecessary detail to help solve a problem.
- To know that coding is writing in a special language so that the computer understands what to do.
- To understand that the character in ScratchJr is controlled by the programming blocks.
- To know that you can write a program to create a musical instrument or tell a joke.
- That programming a computer or device involves giving it instructions to perform specific tasks.
- That video games, phones, websites and apps are all created using programming.
- That different devices and programs use different programming languages or 'codes'.
- That an algorithm becomes a program when it is coded.

	• That programs execute the exact instructions they are given, even if they are incorrect. • That a program is a series of instructions (algorithms) that are written for a computer to follow. • That a person can program a device by giving it an algorithm/algorithms to follow. • That there must be an error if a program does not execute as expected. • That an error in a computer program is known as a 'bug' and fixing errors is known as 'debugging'.
Creative media	
Year 1	Year 2
• To understand that holding the camera still and considering angles and light are important to take good pictures. • To know that you can edit, crop and filter photographs. • To know how to search safely for images online.	To understand that an animation is made up of a sequence of photographs. To know that small changes in my frames will create a smoother looking animation. To understand what software creates simple animations and some of its features e.g. onion skinning.
Data handling	
Year 1	Year 2
• To know how that charts and pictograms can be created using a computer. • To understand that a branching database is a way of classifying a group of objects. • To know that computers understand different types of 'input'.	• To understand that you can enter simple data into a spreadsheet. • To understand what steps you need to take to create an algorithm. • To know what data to use to answer certain questions. • To know that computers can be used to monitor supplies.
Online safety	
Year 1	Year 2
• To know that the internet is many devices connected to one another. • To know that you should tell a trusted adult if you feel unsafe or worried online. • To know that people you do not know on the internet (online) are strangers and are not always who they say they are.	• To understand the difference between online and offline. • To understand what information I should not post online. • To know what the techniques are for creating a strong password. • To know that you should ask permission from others before sharing about them online and that they have the right to say 'no.'

- To know that to stay safe online it is important to keep personal information safe.
- To know that 'sharing online means giving something specific to someone else via the internet and 'posting' online means placing information on the internet.

- To understand that not everything I see or read online is true.