

# Computing Progression Document

## Computing Progression in knowledge and skills

### Curriculum Intent

A high-quality computing curriculum will help equip pupils with the confidence and capability to use computing throughout their later life.

It inspires and encourages children to use computational thinking and creativity to understand the world. The curriculum is planned so children are given opportunities to play and gain hands on experience. This will equip children with the knowledge and skills they need to teach children how to be responsible, competent, confident, and creative users of information and communication technology (ICT)

Our curriculum will help children to:

- develop the understanding of how to use computing safely and responsibly so children understand how to be a responsible online citizen
- develop children's understanding of computational knowledge through high quality teaching and carefully thought-out sequences of lessons.
- teach children how to be responsible, competent, confident, and creative users of information and communication technology (ICT)
- allow children time to explore and play with a range of technologies both digital and non-digital.
- help children to understand and apply the fundamental principles of computer science, including logic, algorithms, data representation, and communication.
- Encourages children to be digitally literate so they can use ICT.
- Express themselves and develop ideas through ICT
- Create digital programs
- Provide deep links with mathematics, science and design and technology.
- evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems.

### Curriculum Implementation

- Through professional development all staff gain the necessary subject knowledge to teach computing to a high standard. Teachers have access to in-depth planning, resources, and curriculum maps.
- We will develop children's understanding of computing through high quality teaching and carefully thought-out sequences of lesson.
- We will ensure children understand how to be responsible, competent, confident, and creative users of information and communication technology (ICT).
  - We will ignite children's enthusiasm and curiosity enabling them to be computational thinkers by expressing themselves and developing their ideas through ICT
- We will enable children to think critically developing skills of enquiry, debate, interpretation, and problem solving so they understand that how to use technology in different ways.
- We will develop the fundamental principles of computer science skills, using subject specific vocabulary.

### Substantive and disciplinary knowledge in computing

Substantive knowledge in computing is understanding how to use technology, how to be safe and knowing how to program. This is developed through deliberate practice and by children applying their knowledge of how to be computational thinkers.

Disciplinary knowledge in computing is the use and interpretation of substantive knowledge in order to develop original digital content and programs.

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National Curriculum Aims		End of Early Years Foundation Stage			End of Key Stage 1	
		<p><b>Birth to Five Matters:</b> Children require access to a range of technologies, both digital and non-digital in their early lives. Exploring with different technologies through play provides opportunities to develop skills that children will go on to develop in their lifetimes. Investigations, scientific inquiry and exploration are essential components of learning about and with technology both digitally and in the natural world. Through technology children have additional opportunities to learn across all areas in both formal and informal ways. Technologies should be seen as tools to learn both from and with, in order to integrate technology effectively within early years practice.</p>			<p><b>Key stage 1</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions</li> <li><input type="checkbox"/> create and debug simple programs</li> <li><input type="checkbox"/> use logical reasoning to predict the behaviour of simple programs</li> <li><input type="checkbox"/> use technology purposefully to create, organise, store, manipulate and retrieve digital content</li> <li><input type="checkbox"/> recognise common uses of information technology beyond school</li> <li><input type="checkbox"/> 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.</li> </ul>	
Substantive Knowledge	Key Concept	Nursery		Reception	Y1	Y2
		Birth-3	3–4-year-olds	5-year-olds	6-year-olds	7-year-olds
Computer Science	Programming	I can listen and respond to a simple instruction.	I can listen and understand an instruction that has two parts.	I know an algorithm is a set of instruction.	I can understand and talk about an algorithm is a list of instructions that must be done in the right order.	I understand and can explain that usually a program with an algorithm can be broken up into smaller parts.
		I can listen and respond to a simple instruction.	I can listen and understand a question or instruction that has two parts.	I know instructions make something happen so it works.	I can create a list of instructions to make things happen really well and talk about it.	I can create an algorithm to make something happen successfully. I can talk and explain it.
		I can show an interest in toys with buttons, flaps and simple	I can explore and operates mechanical toys, e.g. turns the knob	I can control the movement of a floor robot (eg cubetto) using single commands.	I can control and debug commands for a BeeBot or Screen Sprite to move it to a given position.	I can control a program and know when to test and when to debug it if it doesn't work.

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		mechanisms and begins to learn to operate them.	on a wind-up toy or pulls back on a friction car.			
		I can show an interest in toys with buttons, flaps and simple mechanisms and begins to learn to operate them.	I can explore and show an interest in technological toys with knobs or pulleys, real objects such as cameras, and touchscreen devices such as mobile phones and tablets	With support of a teacher I am beginning to say and predict where the floor robot will finish after a command takes place.	I can predict and talk about where the BeeBot or Screen Sprite will finish after a list of commands takes place.	I can predict and explain some of the things that may happen before I give a series of commands.
<b>VOCABULARY</b>						
<b>Computer Science:</b>		<i>Buttons On</i>	<i>Remote control Kubetto Forwards On, off</i>	<i>Kubetto Instructions Forwards, backwards, Correct order</i>	<i>ScratchJr, Bee-Bot, Forwards, backwards, turn, left, right, clear, go, command, sprite, compare, programming, programming area, block, joining, start, program, background, delete, reset, algorithm, predict, effect, change, value, block, instructions, appropriate, design</i>	<i>Sequence, command, program, run, program, start, predict, blocks, actions, sprite, modify, match, debug, features, evaluate</i>
<b>Information and communication technology</b>	<b>Creating media</b>	Shows an interest in making sense of objects and how they behave and work.	I can explore simple equipment, e.g. turns on CD player, uses a remote control, can navigate touch-capable technology with support.	I can complete a simple task on a computer.	I can talk about and use technology to create a range of context (text based: digital writing, image based: digital painting, number based: grouping data)	I can talk about and explain my ideas well using the right software and formats.
			I can explore and acquire basic skills in turning on and operating some digital equipment	I know I need to save my work.	I can save and load (retrieve) my work.	I can confidently save and load (retrieve) my work on a range of devices.

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				With teacher support I can load my digital work and can enter text (name). I can talk about my digital work.	I can change what is in my work and the look of my work. (change the format)	I can talk about and explain how I have changed my work and the look of my work. (change the format)
			I can explore and shows an interest in technological toys with knobs or pulleys, real objects such as cameras, and touchscreen devices such as mobile phones and tablets	I know what a camera is for and take a picture.	I can talk about what a camera is for and take a picture.	I can talk about and explain what a camera is for and download an image or video onto a device.
			I can explore toys making them work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images	With the support of a teacher, I know I can enter numbers into a computer.	I can talk about how databases are used.	I can talk about and explain how databases are used.
	<b>Data and Information</b>					

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<b>VOCABULARY</b> <b>IT:</b>		<i>Ipad kettle</i>	<i>Computer Laptop Cd player Lightbox Microwave Toaster</i>	<i>Paint Colour Keyboard Mouse Type Camera Picture Program Headphones</i>	<i>Technology, computer, mouse, trackpad, keyboard, screen, click, drag, input device, shift, spacebar, capital letter, full stop, safely, responsibly, Paint program, tool, paintbrush, erase, fill, undo, toolbar, bold, italic, underline, Object, label, group, search, image, colour, shape, property, value, data set, less, most, fewest, the same</i>	<i>Information technology (IT), computer, barcode, scanner/scan, Device, camera, photograph, capture, image, digital, landscape, portrait, horizontal, vertical, field of view, narrow, wide, format, framing, focal point, subject, matter, flash, focus, background, foreground, editing, filter, Pixl, changed, real, create, open, edit, More than, less than, most, least, organise, data, object, tally chart, votes, total, pictogram, enter, data, tally chart, compare, count, explain, attribute, group, same, different, most popular, least popular</i>
<b>Digital Literacy</b>	<b>Computing systems and networks</b>	Shows an interest in making sense of objects and how they behave and work.	I can explore and shows an interest in technological toys such as mobile phones and tablets.	I know that some work is online (internet based) and some offline.	I can identify and talk about some common uses of technology outside of the school.	I understand and can talk about and explain age rules for sites and good examples of some online risks are given.
			I can follow rules, understanding why they are important.	I know that I can tell a trusted adult if something worries me online.	I understand and can talk about some basic rules about how to communicate safely with other people online.	I can talk about and explain some basic rules about how to communicate safely with other people online.
		I can play with increasing confidence on		I can say that some information is private (e.g. passwords) and I must not share it.	I can identify and talk about personal information that should be kept private.	I can talk about and explain about how personal information should be kept private and not shared online.

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		my own and with other children, because I know my key person is nearby and available.		With support from the teacher I know that not all context on websites is true.	I can begin to understand and talk about that not all the context on websites is true.	I can talk about and explain in detail that not all information on websites is true.
<b>VOCABULARY</b> <b>Digital Literacy</b>		<i>Safe</i>	<i>Rules</i>	<i>Technology</i> <i>Online</i> <i>Tell and adult</i> <i>Think before you click</i>	<i>Private</i> <i>Password</i> <i>Address</i> <i>Online</i> <i>Internet</i>	<i>Search engine</i> <i>Personal information</i> <i>Key words</i> <i>Online</i> <i>Internet</i> <i>Cyber-bullying</i>