Computing – Knowledge Progression Overview

Our Intent: Our computing curriculum is underpinned by our pine cone values, *Responsibility, Honesty, Self-belief, Respect, Kindness, Curiosity, Independence & Resilience.* This is achieved by supporting children to develop computational thinking skills whilst encouraging them to become safe and responsible users of technology. We want our children to be able to use their ICT skills across the whole curriculum and use technology confidently and respectfully to support them in the wider world. .

Our aim is that children leave Pinewood:

- having had their lessons brought to life through ICT
- as responsible digital citizens who are able to make the most of opportunities presented by the changing digital world
- thinking about the safe use of the internet before accessing online material and know who to turn to for help when needed
- being able to confidently debug and solve problems
- as responsible digital citizens

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. A high-quality computing education equips pupils to use 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.

At Pinewood Infant School and Foundation Unit the children are introduced to a wide range of technology, including programmable toys, iPads and interactive whiteboards, allowing them to continually practice and improve the skills they learn. This ensures they become digitally literate so that they are able to express themselves and develop their ideas through information and computer technology– at a level suitable for the future workplace and as active participants in a digital world. We teach computing using the Purple Mash scheme of work that enables children to become effective users of technology who can:

* Understand and apply the essential principles and concepts of Computer Science, including logic, algorithms and data representation.
* Analyse problems in computational term, and have repeated practical experience of writing computer programs in order to solve such problems.
* Communicate ideas well by utilising appliances and devices throughout all areas of the curriculum.

Online Safety

We take online safety extremely seriously. We have an Online Safety Policy that provides guidance for teachers and children about how to use the internet safely. Our children participate in lessons on Online Safety and understand how to stay safe when using technology.

Skills are dependent on specific knowledge. A skill is the capacity to perform and in order to perform, a deep body of knowledge needs to be acquired and retained.

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

Early Years	Key Stage 1
In the Early Years, the key knowledge progression document takes reference from the Early Years Framework, Development Matters and Birth to 5 Matters	**In Key Stage 1, the key knowledge progression document takes full account of the national curriculum's requirements and groups these as follows; Algorithms|Creating Programs|Reasoning|Using Technology|Uses of IT beyond school|Safe Use (including Online Safety)**

Early Years

Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children's personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems ***will foster their understanding of our culturally, socially, technologically and ecologically diverse world****. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children's vocabulary will support later reading comprehension.*

Key Stage 1

Algorithms	Reasoning	Creating Programs	Using Technology	Uses of IT Beyond School	Safe Use (Online safety)
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	*Pupils should be taught to use logical reasoning to predict the behaviour of simple programs*	*Pupils should be taught to create and debug simple programs*	*Pupils should be taught to use technology purposefully to create, organise, store, manipulate and retrieve digital content*	*Pupils should be taught to recognise common uses of information technology beyond school*	*Pupils should be taught to 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*

	F1	F2	Y1	Y2	Y2 Exceeding
Algorithms			- Know that an algorithm is a set of instructions used to solve a problem or achieve an objective -Know that an algorithm written for a computer is called a program - Know that instructions should be given clearly and in the correct order	- Know that an algorithm is used on digital devices and is a simple set of steps designed to complete a task	- know how to make predictions about what will happen when a command is entered
Reasoning		- Know that information can be retrieved from technological devices and the internet	- know how to interpret what will happen at different stages of a program	- Know how to predict what the outcome of a simple program will be (logical reasoning) - Know how to identify the parts of a program that respond to specific actions	
Creating Programs	- Know how to complete a simple program on an electronic device e.g.BeeBot, iPad etc with some support	- Know how to complete a simple program on an electronic device e.g.BeeBot, iPad etc independently	- Know how to create a simple program and test it	- Know how to create and debug a simple program that achieves a specific purpose - Know that programs require precise and unambiguous instructions	- Know how to debug their code knowing that any unexpected outcome is down to their code and not a computer fault
Using Technology	- Know how to switch a range of digital devices (computer/iPad) on and off - to begin to know how to be able navigate their way around an iPad and operate a few simple apps	- Know how to navigate their way around an iPad and operate a few apps e.g. drawing on screen - Know the basic functions of an iPad (home button, lock button and volume buttons) - know how to access, understand and interact with a range of technologies, developing literacy skills	- Know how to create, edit and store purposeful, simple digital content e.g. know how to retrieve their work they have previously saved - Know how to use a website and a camera -Know how to record sound and play back - Know how to load programs (iPad apps) with support/open and close apps -Know how to log on and off with support - Know how to switch between portrait and landscape when using apps - Know how to switch between forward and back facing cameras (iPads)	- Know how to organise, retrieve and manipulate digital content purposefully - Know how to create, name, save, and retrieve content including photos, text and sound - Know how to change font/ size/colour and style of text - Know how to begin to log on/off digital devices independently - Know how to exit apps and close them down completely on an iPad - know how to create a simple animation to illustrate a story or idea	- know how to upload an image to use for a purpose
Uses of IT Beyond School	- begin to know about everyday technology	- Know about how everyday technology is controlled	- Know a variety of technology examples both in and out of school - know that we can communicate online e.g email/text/FaceTime	- Know how to differentiate between equipment that is digital and non-digital - know the different ways that messages can be sent e.g email/text /telephone and start to consider their advantages and disadvantages	
Safe Use (Online Safety)	- Know that care is needed when using technology	-know how to use the internet, with adult supervision, to find and retrieve relevant information - Know to tell an adult if they see something on a digital device that upsets them	- Know how to use technology safely and respectfully - Know how to and the importance of keeping personal information (such as passwords) private - Know how to save work to designated space/folder	- Know where to go for help if concerned - Know the SMART rules and explain what they mean	