



# Hoyland Springwood Primary Computing Curriculum



Computing at Hoyland Springwood Primary intends to develop ‘thinkers of the future’ through a modern, ambitious and relevant education in computing. We want to equip pupils to use computational thinking and creativity that will enable them to become active participants in the digital world. It is important to us that the children understand how to use the ever-changing technology to express themselves, as tools for learning and as a means to drive their generation forward into the future. Whilst ensuring they understand the advantages and disadvantages associated with online experiences, we want children to develop as respectful, responsible and confident users of technology, aware of measures that can be taken to keep themselves and others safe online. Our aim is to provide a computing curriculum that is designed to balance acquiring a broad and deep knowledge alongside opportunities to apply skills in various digital contexts. Beyond teaching computing discreetly, we will give pupils the opportunity to apply and develop what they have learnt across wider learning in the curriculum.

## **Implementation**

Our scheme of work for Computing is delivered on a two yearly cycle, through the use of NCCE Curriculum and covers all aspects of the National Curriculum. This scheme was chosen as it has been created by subject experts and based on the latest pedagogical research. It provides an innovative progression framework where computing content (concepts, knowledge, skills and objectives) has been organised into interconnected networks called learning graphs. The curriculum aims to equip young people with the knowledge, skills and understanding they need to thrive in the digital world of today and the future. The curriculum can be broken down into 3 strands: computer science, information technology and digital literacy, with the aims of the curriculum reflecting this distinction.

The national curriculum for computing aims to ensure all pupils:

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

## Definitions

- 1) Digital literacy is the ability to navigate various digital platforms and understand, assess and communicate through them
- 2) Computer Science is the study of computers and computational systems
- 3) Information Technology is the study or use of systems (especially computers and telecommunications) for storing, retrieving, and sending information



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## Overview of learning

Information Technology	Digital Literacy	Computer Science	E-Safety
Additional E-Safety modules, one per half term			

	A		B	
EYFS	E Safety – Safety Snakes (Barefoot) Unit 1 and Unit 2	E Safety – Let’s Chatterbox (Barefoot) Unit 3 and Unit 4	E Safety – Safety Snakes (Barefoot) Unit 5 and Unit 6	E Safety – Let’s Chatterbox (Barefoot) Unit 7 and Unit 1
Year 1	Make a robot move	Digital Writing	Technology around us	E Safety -Let’s Chatterbox -Safety Snakes
Year 2	IT around us	Digital photography	Robot algorithms	E Safety -Do the right thing -Who does this belong to
Year 3	E Safety - Meet the Malwares - Know or know of	Events and actions	Stop frame animation	Branching databases
Year 4	The internet	Repetition in games	Photo editing	E Safety -Share with Care
Year 5	E Safety - Stop, think..... do I consent - -Johnnie English - Your mission is	Selection in quizzes	Video production	Systems and searching
Year 6	E Safety - The Phisherman game - You’re the cyber Expert	Web page creation	Variables in games	Communication



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Computing is covered on a two-year cycle which incorporates all 4 areas to be studied: Information Technology, Digital Literacy, Computer Science and E-Safety. Over the time at school, each pupil will cover each of these areas in equal quantities.

Each full term one unit of computing needs to be covered within their computing books.

## To choose your units:

Look at the current year groups being taught and the curriculum year that we are on (A or B). If the year is an even to odd year e.g. 2022-2023 then this will be a year A. If the year is odd to even year e.g. 2023-2024 then it is year B. There will be three colours covered within the two year groups. One unit of each of the three colours has to be covered. Where there are two units of the same colour, the most appropriate one can be chosen, either based on the year group or on where it fits best with the topics covered.

## For example:

A Year 3/4 class working on year A

The units are Meet the Malwares and Know or know of (E-Safety), Events and Actions (Computer Science), The Internet (Information Technology) and Repetition in Games (Computer Science).

The Meet the Malwares/ Know or Know of and The Internet have to be covered. There is a choice of Events and Actions and Repetition in Games – one of these must be covered.

## Progression of knowledge breakdown of 3 pillars of computing

	NC Objective	Foundation Stage	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Information Technology	<b>Key stage 1</b> Use technology purposefully to create, organise, store, manipulate and retrieve digital content  Recognise common uses of information technology beyond school  <b>Key stage 2</b> 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  Use search technologies effectively, appreciate how results are selected	Continuous Provision – Completed all year through Knows how to operate simple age-appropriate technology  Knows that technology is used at home and school  Use technology toys in role-play  Use technology to record my play and learning.  Use hardware to interact with software  Targeted specific knowledge  To develop an understanding of how to use online technology in a respectful way.	<b>Technology around us</b> To identify technology  To identify a computer and its main parts  To use a mouse in different ways  To use a keyboard to type  To use the keyboard to edit text  To create rules for using technology responsibly.	<b>Information technology around us</b> To recognise the uses and features of information  To identify information technology in the home  To identify technology beyond school  To explain how information technology benefits us  To show how to use information technology safely  To recognise the choices are made when using information technology.	<b>Branching databases</b> To create questions with yes/no answers  To identify the object attributes needed to collect relevant data  To create a branching database  To identify objects using a branching database  To explain why it is helpful for a database to be well structured  To compare the information shown in a pictogram with a branching database.	<b>The Internet</b> To describe how networks physically connect to other networks  To recognise how networked devices make up the internet  To outline how websites can be shared via the World Wide Web  To describe how the content of the WWW is created by people  To evaluate the consequences of unreliable content.	<b>Sharing information</b> To explain that computers can be connected together to form systems  To recognise the role of computer systems in our lives  To recognise how information is transferred over the internet  To explain how sharing information online lets people in different places work together  To contribute to a shared project online  To evaluate different ways of working together online.	<b>Communication</b> To identify how to use a search engine  To describe how search engines select results  To explain how search results are ranked  To recognise why the order of results is important, and to whom  To recognise how we communicate using technology  To evaluate different methods of online communication.
			<b>1) Computing systems and networks.</b>					



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		and ranked, and be discerning in evaluating digital content						
<b>Computing systems and network Vocabulary</b>	On, off, technology. Press, lift, push, pull, mouse, screen, keyboard, camera, QR codes	Technology, Man-made, digital, screen, mouse, keyboard, program, click/drag, cursor	Information Technology, computer, device, barcode, scanner, communication, entertainment, appliances, signal, e-safety	Information, data, attributes, group, branching, database, multiple, classify, structure, present	Network, internet, world wide web, Router, Security, website, webpage, browser, domain, reliable	System, Input, process, output, protocol, ipput address, packet, reuse, explore, collaboration	Internet, world wide web, search engine, browser, keyword, google, Tim Berners-Lee, Ranking, crawlers, Algorithm	



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NC Objective		Foundation Stage	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computer Science	<p><b>Key stage 1</b> understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions</p> <p><b>Key stage 2</b> use sequence, selection, and repetition in programs; work with variables and various forms of input and output</p> <p>use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</p>	<p><b>Targeted specific knowledge</b></p> <p>To explore a simple algorithm and debug.</p> <p>To develop problem solving skills within a team.</p>	<p><b>Moving a robot</b></p> <p>To explain what a given command will do</p> <p>To act out a given word</p> <p>To combine forwards and backwards commands to make a sequence</p> <p>To plan a simple program</p> <p>To find more than one solution to a problem</p>	<p><b>Robot Algorithms</b></p> <p>To describe a series of instructions as a sequence</p> <p>To explain what happens when we change the order of instructions</p> <p>To use logical reasoning to predict the outcome of a program (series of commands)</p> <p>To explain that programming projects can have code and artwork</p> <p>To design an algorithm</p> <p>To create and debug a program that I have written</p>	<p><b>Events and actions</b></p> <p>To explain how a sprite moves in an existing project</p> <p>To create a program to move a sprite in four directions</p> <p>To adapt a program to a new context</p> <p>To develop my program by adding features</p> <p>To identify and fix bugs in a program</p> <p>To design and create a maze-based challenge</p>	<p><b>Repetition in games</b></p> <p>To develop the use of count-controlled loops in a different programming environment</p> <p>To explain that in programming there are infinite loops and count controlled loops</p> <p>To develop a design which includes two or more loops which run at the same time</p> <p>To modify an infinite loop in a given program</p> <p>To design a project that includes repetition</p> <p>To create a project that includes repetition</p>	<p><b>Selection in games</b></p> <p>To explain how selection is used in computer programs</p> <p>To relate that a conditional statement connects a condition to an outcome</p> <p>To explain how selection directs the flow of a program</p> <p>To design a program which uses selection</p> <p>To create a program which uses selection</p> <p>To evaluate my program</p>	<p><b>Variables in games</b></p> <p>To define a variable as something that is changeable</p> <p>To explain why a variable is used in a program</p> <p>To choose how to improve a game by using variables</p> <p>To design a project that builds on a given example</p> <p>To use my design to create a project</p> <p>To evaluate my project</p>
	<b>Programming A Vocabulary</b>	Algorithm, debug, problem solve, overcome, explore, simple, complex	Programmed, robot, algorithm, button, direction, forward, backward, left, right, route	Program, robot, algorithm, direction, route, obstacle, design, error, chunking, debugging.	Programming, scratch, blocks, commands, code, events, motion, sequence, trialling, debugging.	Programming, scratch, blocks, commands, code, events, motion, sequence, trialling, debugging.	Programming, scratch, logical, commands, algorithm, condition, selection, sequence, trialling, debugging.	Programming, variable, scratch, events, code, LED, algorithm, motor, modify, debugging



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	NC Objective	Foundation Stage	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Digital Literacy	<p><b>Key stage 1</b> 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.</p> <p>recognise common uses of information technology beyond school</p> <p><b>Key stage 2</b> 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</p> <p>use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact</p> <p>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</p>	<p>To embed knowledge of how to stay safe online whilst playing a game.</p> <p>To develop an understanding of how to use online technology in a respectful way.</p>	<p><b>Digital Writing</b> To use a computer to write</p> <p>To add and remove text on a computer</p> <p>To identify that the look of text can be changed on a computer</p> <p>To make careful choices when changing text</p> <p>To explain why I used the tools that I chose</p> <p>To compare writing on a computer with writing on paper</p>	<p><b>Digital Photography</b> To know what devices can be used to take photographs</p> <p>To use a digital device to take a photograph</p> <p>To describe what makes a good photograph</p> <p>To decide how photographs can be improved</p> <p>To use tools to change an image</p> <p>To recognise that images can be changed</p>	<p><b>Stop-frame Animation</b> To explain that animation is a sequence of drawings or photographs</p> <p>To relate animated movement with a sequence of images</p> <p>To plan an animation</p> <p>To identify the need to work consistently and carefully</p> <p>To review and improve an animation</p> <p>To evaluate the impact of adding other media to an animation</p>	<p><b>Photo Editing</b> To explain that digital images can be changed</p> <p>To change the composition of an image</p> <p>To describe how images can be changed for different uses</p> <p>To make good choices when selecting different tools</p> <p>To recognise that not all images are real</p> <p>To evaluate how changes can improve an image</p>	<p><b>Video Editing</b> To recognise video as moving pictures, which can include audio</p> <p>To identify digital devices that can record video</p> <p>To capture video using a digital device</p> <p>To recognise the features of an effective video</p> <p>To identify that video can be improved through reshooting and editing</p> <p>To consider the impact of the choices made when making and sharing a video</p>	<p><b>Web Page creation</b> To review an existing website and consider its structure</p> <p>To plan the feature of a web page</p> <p>To consider the ownership and use of images (copyright)</p> <p>To recognise the need to preview pages</p> <p>To outline the need for a navigation path</p> <p>To recognise the implications of linking to content owned by other people.</p>
	<b>Digital Literacy Vocabulary</b>	Safety, online, respectful, disrespectful, password, strangers, safe adults	Paint program, tool, paintbrush, erase, fill, undo, click, drag, save, icon	Photography, editing, software, digital, portrait, landscape, scene, subject, lighting, colour	Animation, frame, illusion, sequence, onion skinning, playback, storyboard, audio, consistency, text	Photography, editing, software, crop, rotate/flip, copy, brightness, contrast, enlarge, reduce.	Video, audio, themes, message, dialogue, plot, props, zoom, angle, pan/tilt	Web page, website, domain, hypertext, purpose/ audience, browser, copyright, homepage, navigation pathways