

# Computing at Falconhurst School



## Intent for our Coders and Technology Users

At Falconhurst, we believe in giving the children the requisite skillset and creativity to not only exist confidently in a digital world but to excel in all aspects of Computing. Using their understanding from the wider curriculum, such as Maths, Science and Design Technology, they are actively encouraged to understand the many aspects of computing and the systems involved. With such a rapid pace of change, our intentions enable pupils to be digitally literate, so as things do change they have the necessary knowledge to adapt, learn, overcome difficulties and make educated choices which then form part of their new learning in readiness for the future and the next advancement.

## Characteristics of an Effective Coder and User of Technology

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>Competence in coding for a variety of practical and inventive purposes, including the application of ideas within other subjects</li> <li>The ability to connect with others safely and respectfully, understanding the need to act within the law and with moral and ethical integrity</li> </ul> | <ul style="list-style-type: none"> <li>An understanding of the connected nature of devices</li> <li>The ability to communicate ideas well by using applications and devices throughout the curriculum</li> <li>The ability to collect, organise and manipulate data effectively</li> </ul> |
|---|--|

## Implementation of Computing

Our pupils are expected to organise their knowledge, skills and understanding around the following learning hooks (key concepts).

- To code
- To communicate
- To create
- To collect

These key concepts (learning hooks for children) are encountered in timetabled computing lessons along with opportunities to use and apply across all areas of the curriculum so as to enable greater scope, understanding, context, flexibility and creativity in our children. Key concepts are taught within Information Technology (word processing, web designing, animation, video sound etc), Computer Science (computational thinking, coding, programming and networks) and Digital Literacy (online relationships, reputation, bullying, privacy, security, wellbeing etc).

Concept progression is mapped within milestones over the Primary phase and this enables pupils to reinforce and build upon prior learning, make connections to new learning and develop subject specific language.

The vertical accumulation of knowledge and skills typically expected from Years 1 to 6 is mapped below

Essential National Curriculum Opportunities Key Stage 1	Essential National Curriculum Opportunities Key Stage 2
<p>Understand what algorithms are, and how they are made using digital devices.</p> <p>Create simple algorithms and programs that follow a sequence of instructions.</p> <p>Write and test simple programs.</p> <p>Use logical reasoning to predict the behaviour of simple programs.</p> <p>Organise, store, manipulate and retrieve data in a range of digital formats</p> <p>Communicate safely and respectfully online, keeping personal information private and recognise common uses of information technology beyond school.</p> <p>Recognise common uses of computer technology beyond school.</p>	<p>Design and write programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</p> <p>Use sequence (ordering) and repetition (repeated instructions) in programs; work with variables (if...then...) and various forms of input and output; generate appropriate inputs and predicted outputs to test programs.</p> <p>Use logical reasoning to explain how a simple algorithm works, detect and correct errors in algorithms and programs (debugging)</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>Describe how internet search engines find and store data; use search engines effectively; be discerning in evaluating digital content; respect individuals and intellectual property; use technology responsibly, securely and safely.</p> <p>Select, use and combine a variety of software (including internet services) on a range of digital devices to accomplish given goals, including collecting, analysing, evaluating and presenting data and information.</p>

Essential Learning Objectives		Milestone 1 End of Year 2	Milestone 2 End of Year 4	Milestone 3 End of Year 6
To Code (Programming using Scratch, Scratch Jnr, Binary, Sphero, Python, etc)	Motion	Control motion by specifying the number of steps to travel, direction and turn (Scratch jnr, Lightbot, Code.org)	Use specified screen coordinates to control movement (Scratch)	Set IF conditions for movements. Specify types of rotation giving the number of degrees (Sphero, Scratch)
	Looks	Add text strings, show and hide objects and change the features of an object (Scratch Jnr, Pixil Art)	Set the appearance of objects in a program (Scratch)	Change the position of objects between screen layers (send to back, bring to front) Set the appearance of objects in a program and create sequences of changes (Scratch, Binary)
	Sound	Select sounds and control when they are heard, their duration and volume (Scratch Jnr)	Create and edit sounds. Control when they are heard, their volume, duration and rests (Scratch)	Upload sounds from a file and edit them. Add effects such as fade in and out and control their implementation (Scratch, Beepbox, Sampulator)
	Events	Specify user inputs (such as clicks) to control events (Scratch Jnr)	Specify conditions to trigger events (Scratch)	Set events to control other events by 'broadcasting' information as a trigger (Scratch, Python)
	Control	Specify the nature of events (such as a single event or a loop) (Scratch Jnr, Bee Bots, Code.org)	Use IF THEN conditions to control events or objects (Scratch)	Use IF THEN ELSE conditions to control events or objects (Scratch, Python, Sphero)
	Sensing	Create conditions for actions by waiting for a user input (Scratch Jnr)	Create conditions for actions by sensing proximity or by waiting for a user input (such as proximity to a specified colour or a line or responses to questions) (Scratch)	Use a range of sensing tools (including proximity, user inputs, loudness and mouse position) to control events or actions (Scratch, Sphero)
	Operators		Adding and multiplication in a battle ships game (Google Sheets) Sum - Adding (Scratch)	Use formula to find totals, averages and min/max numbers (J2data) Create a calculator (Python) Spreadsheets (Excel, Google Sheets)
To Communicate	Understand online risks and how to use technology safely (E-Safety). How to use the internet responsibly and how to respect people online. How to share digital content using email addresses.	Give examples of the risks posed by online communications Understand that comments made online that are hurtful or offensive are the same as bullying. Understand a range of online services and how they work. Understand that not everything online is correct and to be trusted. Understand shy people are not always who they say they are. Understand who they should talk to online.	Collaborate with others online on sites approved and moderated by teachers (Google Sites) Give examples of the risks of online communities and demonstrate knowledge of how to minimise risk and report problems Understand and demonstrate knowledge that it is illegal to download copyrighted material, including music or games, without express written permission, from the copyright holder Understand the effect of online comments and show responsibility and sensitivity when online Understand how simple networks are set up and used Choose the most suitable applications and devices for the purposes of communication	
	Generate content for myself Generate content for an audience	Use some of the advanced features of applications and devices in order to communicate ideas, work or messages professionally	Use many of the advanced features in order to create high quality, professional or efficient communications	
To Collect	Collect, record and use data to create charts.	Record and present numerical data using software designed for this purpose in areas across the curriculum. How to research the internet.	Select appropriate software, such as Excel, to devise, construct and manipulate data and present it in an effective and professional manner	

## Evaluating the Impact of our Computing curriculum on pupils' outcomes

Through the teaching of the computing skills, both the teachers and pupils assess their learning continuously throughout the lesson and over time. Our assessment systems and projects enable teachers to make informed judgements about the depth of their pupils' learning and the progress that they have made over time.