



Computing Curriculum Map

INTENT

At Hoyle Court Primary School, it is our vision to inspire children to see the huge potential computing and information technology provide for us.

With technology playing such a significant role in society today, we believe ‘computational thinking’ is a vital skill for children; enabling them to analyse and solve problems in a variety of contexts. Computing has deep links with mathematics, science, and design and technology, and can support children’s learning across many areas.

At Hoyle Court, we provide a curriculum, which allows all children to apply the fundamental principles and concepts of computer science, regardless of their ability or background. Children develop analytical problem-solving skills and learn to evaluate and apply information technology. Pupils are introduced to a wide range of technology, including PCs, laptops, iPads and interactive whiteboards, allowing them to continually practice and improve the skills they learn.

Our curriculum also enables children to become responsible, competent, confident and creative users of information technology. As well as the benefits of ICT, we are also aware of the risks. As a result, e-safety is an integral part of our Computing and PHSE curricula.

We provide opportunities so that when children leave us they have acquired the skills required to be able to participate effectively and safely in our digital world.

IMPLEMENTATION

EYFS

Computing is not explicitly taught at EYFS but elements of other areas of learning prepare children for learning in computing as they get older. E.g. Understanding the World – exploring how things work, PSHE – self-confidence and keeping safe.

KS1 & KS2

Computing is made up of four subject areas – Computer Science, Information Technology, Digital Literacy and Creating Media. These areas are covered through the following half-termly units adapted from the NCCE and Purple Mash curriculum. Some computing lessons, especially in KS1, may be taught ‘unplugged’ i.e. not on a computer. This might involve sequencing instructions orally or using other technology such as Beebots. In KS2, each class has a weekly computing lesson in our ICT suite.

In addition to the NCCE lessons, we adopt the Project Evolve curriculum to teach pupils about being safe and responsible online. Project Evolve is based on the UKCIS framework “Education for a Connected World” (EFACW) and covers knowledge, skills, behaviours and attitudes across eight strands - Self-Image and Identity, Online Relationships, Online Reputation, Online Bullying, Managing Online Information, Health, Well-being and Lifestyle, Privacy and Security and Copyright and Ownership.

	Essential knowledge and skills	Vocabulary	Local context / Enrichment
Early Years	Hedgehogs <ul style="list-style-type: none"> Count in everyday contexts Repeat actions that have an effect Show attention to sounds and music 	button, press, tap, on, off, sound, music, loud, quiet, stop, go, again, light, screen, toy, device, turn, play, listen, watch.	Access to programmable toys such as Bee-Bots to develop early problem-solving skills.
	Squirrels <ul style="list-style-type: none"> Increasingly follow rules, understanding why they are important Match their developing physical skills to tasks and activities in the setting 	rules, safe, careful, take turns, control, move, forward, backward, stop, start, arrow, robot, remote, game, instructions, order, first, next, last, program.	Opportunities to explore technology through role play (phones, keyboards, tills).

	<p>Owls</p> <ul style="list-style-type: none"> • Explore how things work • Show resilience and perseverance in the face of challenge • Develop their small motor skills so that they can use a range of tools competently • Know and talk about the different factors that support their overall health and wellbeing including sensible amounts of ‘screen time’ • Count objects, actions and sounds. • Continue, copy and create repeating patterns. • Explore, use and refine a variety of artistic effects to express their ideas and feelings 	<p>technology, computer, tablet, keyboard, mouse, touchscreen, screen time, healthy, break, pattern, repeat, create, build, fix, problem, solution, try again, debug, instructions, sequence, program, predict, test.</p>	<p>Use of interactive whiteboards and tablets to support phonics, maths and creative activities.</p> <p>Discussions about healthy screen time and using technology safely.</p>	
<p>Key Stage 1</p>	<p>Computing Systems and networks:</p> <ul style="list-style-type: none"> • To identify information technology beyond school • To explain how information technology helps us • To explain how to use information technology safely • To create rules for using technology • To recognise the uses and features of information technology • To identify technology • To identify a computer and its main parts • To use a mouse in different ways • To use a keyboard to type on a computer • To use the keyboard to edit text • To identify the uses of information technology in the school • To recognise that choices are made when using information technology 	<p>Creating Media:</p> <ul style="list-style-type: none"> • To use a computer to write • To add and remove text on a computer • To identify that the look of text can be changed on a computer • To use a computer on my own to paint a picture • To use tools to change an image • To recognise that photos can be changed • To use a digital device to take a photograph • To describe what different freehand tools do • To use the shape tool and the line tools • To make careful choices when painting a digital picture • To explain why I chose the tools I used • To compare painting a picture on a computer and on paper • To make careful choices when changing text • To explain why I used the tools that I chose • To compare typing on a computer to writing on paper • To make choices when taking a photograph • To describe what makes a good photograph • To decide how photographs can be improved 	<p>Computing Systems and Networks: technology, computer, screen, mouse, trackpad, keyboard, keys, type, click, double-click, login, safe, rules, information technology, choice.</p> <p>Creating Media: paint program, tool, paintbrush, erase, fill, undo, shape, line, colour, brush, picture, word processor, text, cursor, space, backspace, font, bold, italic, underline, format, photograph, image, edit.</p> <p>Programming: Bee-Bot, forwards, backwards, turn, clear, go, command, instructions, directions, left, right, route, plan, algorithm,</p>	<p>Children use digital cameras/iPads to document trips and school events.</p> <p>Safer Internet Day participation.</p> <p>Cross-curricular links through digital art, simple animation and recording.</p>

Programming:

- To use my algorithm to create a program
- To describe a series of instructions as a sequence
- To explain what happens when we change the order of instructions
- To use logical reasoning to predict the outcome of a program
- To explain that programming projects can have code and artwork
- To design an algorithm
- To create and debug a program that I have written
- To choose a command for a given purpose
- To show that a series of commands can be joined together
- To identify the effect of changing a value
- To explain that each sprite has its own instructions
- To combine 'forwards' and 'backwards' commands to make a sequence
- To combine four direction commands to make sequences
- To plan a simple program
- To recognise that choices are made when using information technology
- To act out a given word
- To find more than one solution to a problem
- To design the parts of a project

Data and information:

- To explain that we can present information using a computer
- To label objects
- To identify that objects can be counted
- To describe objects in different ways
- To count objects with the same properties
- To compare groups of objects
- To answer questions about groups of objects
- To recognise that we can count and compare objects using tally charts
- To recognise that objects can be represented as pictures
- To create a pictogram
- To select objects by attribute and make comparisons
- To recognise that people can be described by attributes

program, sequence, predict, debug, sprite, block, start, run.

Data and Information: object, label, group, search, image, property, colour, size, shape, data, tally, pictogram, more, less, most, fewest, same, compare, information.

Computing Systems and networks:

- To explain how digital devices function
- To identify input and output devices
- To explain how a computer network can be used to share information
- To explore how digital devices can be connected
- To recognise the physical components of a network
- 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 (WWW)
- To describe how content can be added and accessed on the World Wide Web (WWW)
- To evaluate the consequences of unreliable content
- To recognise how the content of the WWW is created by people
- To recognise how digital devices can change the way that we work

Creating Media:

- To plan an animation
- To review and improve an animation
- To evaluate the impact of adding other media to an animation
- To explain that audio recordings can be edited
- To apply audio editing skills independently
- To combine audio to enhance my podcast project
- To evaluate the effective use of audio
- To choose appropriate page settings
- To add content to a desktop publishing publication
- To consider how different layouts can suit different purposes
- To combine images for a purpose
- To evaluate how changes can improve an image
- To explain that animation is a sequence of drawings or photographs
- To relate animated movement with a sequence of images
- To identify the need to work consistently and carefully
- To identify that sound can be recorded
- To recognise the different parts of creating a podcast project
- To recognise how text and images convey information
- To recognise that text and layout can be edited
- To consider the benefits of desktop publishing
- To explain that the composition of digital images can be changed
- To explain that colours can be changed in digital images
- To explain how cloning can be used in photo editing
- To explain that images can be combined
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Computing Systems and Networks:

internet, network, router, server, wireless access point, website, web page, web browser, World Wide Web, link, download, share, permission, information, accurate, advert, input, output, device, connect.

Creating Media: animation, frame, sequence, image, photograph, media, audio, microphone, speaker, record, edit, trim, import, layout, template, font, copy, paste, desktop publishing, purpose, evaluate.

Programming: Scratch, sprite, block, command, code, sequence, event, loop, repetition, count-controlled loop, algorithm, debug, bug, test, decompose, procedure, design, refine.

Data and Information: data, attribute, value, table, database, branching database, compare, organise, select, order, decision

Podcast or audio projects linked to curriculum learning.

Animation projects linked to storytelling.

Opportunities to evaluate online information during research tasks.

Collaborative projects using shared digital platforms.

Safer Internet Day and online safety workshops.

	<p>Programming:</p> <ul style="list-style-type: none"> To identify that commands have an outcome To recognise that a sequence of commands can have an order To create a project from a task description To adapt a program to a new context To develop my program by adding features To identify and fix bugs in a program To design and create a maze-based challenge To create a program in a text-based language To modify a count-controlled loop to produce a given outcome To decompose a task into small steps To create a program that uses count-controlled loops to produce a given outcome To modify an infinite loop in a given program To design a project that includes repetition To explore a new programming environment To explain that a program has a start To change the appearance of my project To explain how a sprite moves in an existing project To create a program to move a sprite in four directions To identify that accuracy in programming is important To explain what 'repeat' means To develop the use of count-controlled loops in a different programming environment To explain that in programming there are infinite loops and count-controlled loops To develop a design that includes two or more loops which run at the same time 	<p>Data and information:</p> <ul style="list-style-type: none"> To create a branching database To explain why it is helpful for a database to be well structured To plan the structure of a branching database To independently create an identification tool To create questions with yes/no answers To identify the attributes needed to collect data about an object To explain that the composition of digital images can be changed To explain that colours can be changed in digital images To explain how cloning can be used in photo editing To explain that images can be combined To combine images for a purpose To evaluate how changes can improve an image 	<p>tree, question, structure, information.</p>	
<p>Upper Key Stage 2</p>	<p>Computing Systems and networks:</p> <ul style="list-style-type: none"> To explain that computers can be connected to form systems To identify how to use a search engine To describe how search engines select results To explain how search results are ranked To explain the importance of internet addresses To recognise how data is transferred across the internet To explain how sharing information online can help people to work together To evaluate different ways of working together online To recognise how we communicate using technology To evaluate different methods of online communication To recognise the role of computer systems in our lives To recognise why the order of results is important, and to whom 	<p>Creating Media:</p> <ul style="list-style-type: none"> To use a digital device to record video To capture video using a range of techniques To create a storyboard To identify that video can be improved through reshooting and editing To consider the impact of the choices made when making and sharing a video To review an existing website and consider its structure To plan the features of a web page To outline the need for a navigation path To create a 3D model for a given purpose To plan my own 3D model To create my own digital 3D model To explain what makes a video effective To identify that drawing tools can be used to produce different outcomes To create a vector drawing by combining shapes To use tools to achieve a desired effect To recognise that vector drawings consist of layers To group objects to make them easier to work with To apply what I have learned about vector drawings To consider the ownership and use of images To recognise the need to preview pages To recognise the implications of linking to content owned by other people To recognise that you can work in three dimensions on a computer To identify that digital 3D objects can be modified To recognise that objects can be combined in a 3D model 	<p>Computing Systems and Networks: system, connection, internet, World Wide Web, search engine, algorithm, data, address, packet, router, protocol, communication, collaboration, public, private, secure, ranking, content, domain name server, Internet Protocol.</p> <p>Creating Media: vector, layer, object, align, resize, rotate, group, image, edit, audio, video, clip, trim, transition, storyboard, export, layout, navigation, hyperlink, copyright, fair use, purpose, audience, evaluate.</p> <p>Programming: algorithm, program, code, variable, input, output, selection, condition, repetition, loop, count-controlled loop, infinite loop, debug, test, refine, event, operator, control, microcontroller, circuit.</p>	<p>Physical computing projects (e.g., Micro:bit and Crumble controllers).</p> <p>Website or media creation.</p> <p>Links with secondary schools or STEM providers.</p> <p>Opportunities to analyse real data sets.</p> <p>Careers links highlighting pathways into technology fields.</p>

<p>Programming:</p> <ul style="list-style-type: none"> • To control a simple circuit connected to a computer • To write a program that includes count-controlled loops • To explain that a loop can stop when a condition is met • To design a physical project that includes selection • To create a program that controls a physical computing project • To define a 'variable' as something that is changeable • To explain why a variable is used in a program • To choose how to improve a game by using variables • To design a project that builds on a given example • To use my design to create a project • To create a program to run on a controllable device • To explain that selection can control the flow of a program • To update a variable with a user input • To use an conditional statement to compare a variable to a value • To design a project that uses inputs and outputs on a controllable device • To develop a program to use inputs and outputs on a controllable device • To explain that a loop can be used to repeatedly check whether a condition has been met • To evaluate my project 	<p>Data and information:</p> <ul style="list-style-type: none"> • To use a form to record information • To compare paper and computer-based databases • To outline how you can answer questions by grouping and then sorting data • To explain that tools can be used to select specific data • To explain that computer programs can be used to compare data visually • To use a real-world database to answer questions • To create a data set in a spreadsheet • To explain that formulas can be used to produce calculated data • To apply formulas to data • To create a spreadsheet to plan an event • To choose suitable ways to present data • To build a data set in a spreadsheet 	<p>Data and Information: data, dataset, spreadsheet, cell, formula, calculation, range, chart, analyse, compare, filter, sort, criteria, record, field, graph, results, conclusion.</p>	
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IMPACT

In Computing we assess children's progress by:

- Evidence of learning is recorded in Wonderful World books or Key Stage floor books when learning evidence is submitted/stored on the computer.
- Teachers use their judgement to assess children against the objectives for each unit.

By the time the children at Hoyle Court Primary leave our school, they will have developed the skills to enable them to:

- Children will be confident users of technology, able to use it to accomplish a wide variety of goals, both at home and in school.
- Design and write programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.
- Use sequence, selection and repetition in programs, work with variables and various forms of input and output.
- Use logical reasoning to explain how a simple algorithm works and to detect and correct errors in algorithms and programs.
- Understand computer networks including the internet; how they can provide multiple services, such as the worldwide web; and the opportunities they offer for communication and collaboration.
- 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.
- 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.