Our Curriculum

Newton Hill Community School

Ready For Learning - Ready For Life

Rationale & Intent

At Newton Hill Community School our computing curriculum 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 computing 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.

Our Computing Vision:

At Newton Hill Community School we believe computing is an integral part of today's modern lifestyle and it is our aim to deliver a diverse exploration of this subject matter. As future technologies emerge it is necessary to equip the young people of our school with skills and knowledge which are flexible enough to cater for any 21st century device or software with secure independence. Through enterprising and inspirational activities we strive to provide opportunities for children to work creatively, collaboratively and with responsibility. We aim to enthuse and equip children with the skills, strategies and knowledge that will enable them to reap the benefits of the online world, whilst being able to minimise risk to themselves or others.

The key computing skills are taught through discrete lessons but we also provide opportunities for these skills to be applied within the wider curriculum where possible and appropriate. Each unit of work follows a sequence of carefully planned lessons which build on prior knowledge and skills. During lessons, children are exposed to high quality teaching and the necessary knowledge and vocabulary required to help them learn and develop their work through modelling and guided learning, building up to independent working.

At Newton Hill we have a big focus on programming (Coding). We have chosen to do this because it brings knowledge to life for children. It requires children to practically apply their computer knowledge to a range of situations, problem-solving and persevering to refine and correct their work. It is a real life skill which opens children's eyes to one of a number of future careers in computing and IT.

Progression Overview

In Year 1, children begin their computing journey by learning what an algorithm is and thinking logically about different scenarios and computer programming in simple terms. They develop the skills needed to create their own animated story book before creating a scene and characters and use code blocks to make their characters perform actions.

Throughout Year 2, children further develop their knowledge of coding by designing algorithms that include repeat and timed commands. They look at how the internet works and how to search online effectively and safely. Children are introduced to spreadsheets and taught the basic features in order to total amounts and produce simple graphs. They also learn different techniques to deliver an effective presentation and work in groups to create and deliver a presentation to the rest of the class.

By Year 3, children's understanding of coding is progressed by designing algorithms that represent a physical system. They deepen their understanding of the differences between timers and repeat commands. Children are also taught how to type effectively, beginning with the 'home keys' and using both hands. Communication is a big focus in Year 3 and the children learn how to open and respond to emails safely, as well as learning to add attachments to their emails.

In Year 4, children develop their coding skills by continuing the use of selection by using 'if/else' commands. They also learn how to use variables to determine the length of a repeat. Children develop their work on Spreadsheets in Year 2 by learning how to format cells in different ways. They learn how to add a formula to a cell to automatically make a calculation in that cell. During their animation unit, children learn the skill of 'onion skinning' in order to design and create an effective animation for others to watch.

Year 5 moves the children's understanding of coding on by teaching how to program a playable game that includes timers and a score pad. They are then introduced to databases and learn the benefits of electronic versions. They evaluate different databases and the key skill of being able to search for information before creating their own database on a chosen topic.

By Year 6, children are able to write more complex programs using functions, inputs and control simulations. They use these skills to create their own text-based adventure that appeals to younger children. Children develop their typing skills through the context of blogging. They will plan their own theme and content for a blog. Children further develop their electronic presentation skills through PowerPoint, where they used advanced features such as animation and hyperlinks, to create an interactive presentation.

In every year group we are explicit about online safety. We ensure children understand the importance of communicating safely and respectfully online, keeping personal information private, and recognise common uses of information technology beyond school.

Key Stage 1 Journey

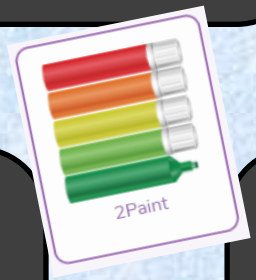
Cycle A

Autumn:

*Online safety (Staying safe online)

Tech outside school (Everyday technology)

Creating pictures (2Paint a picture)



Spring:

Online Safety (Digital Footprints)

Questioning & effective searching (2Question)

Spreadsheets (2Calculate)

Summer:

Online Safety (Say no to meanies)

Coding (Chimp)

Presenting ideas (2Quiz)

Cycle B

Autumn:

Online safety (Keywords)

Grouping & sorting (Shapes)

Lego builders (Instructions)

Spring:

Online Safety (Sites)

Maze explorers (2go)

Animated stories (2Create)

Summer:

Online Safety (Recap & Review)

Pictograms (2Connect)

Making music (2Sequence)

***See additional E-Safety SoW**

Lower Key Stage 2 Journey

Cycle A

Autumn:

*Online safety

(Who is responsible?)

Coding (Gibbon)

Spring:

Online Safety

(Private Information)

Spreadsheets
(2Calculate)
Graphing (2Graph)

Summer:

Online Safety

(Words can hurt)

Touch typing (2Type)

Writing for different Audience (Link to cross-curricular & genre)

Autumn:

Online Safety

(Keywords)

Logo (2Logo)

Animation (2Animate)

Spring:

Online Safety

(Apps)

Email (2Email)

Searching (Google)

Summer:

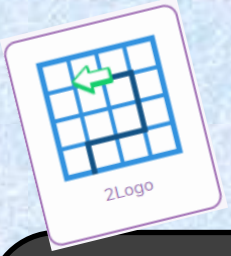
Online Safety

(Revisit & Review)

Simulation (2Simulate)

Hardware investigation
(Technology parts)

Cycle B



***See additional E-Safety SoW**

Upper Key Stage 2 Journey

Cycle A

Autumn:

*Online safety (Talking Safely)

Spreadsheets (Excel)

Databases

Spring:

Online safety (Digital Citizenship)

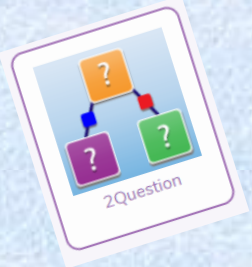
Coding (Gorilla)

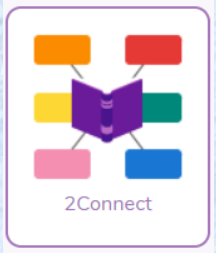
Summer:

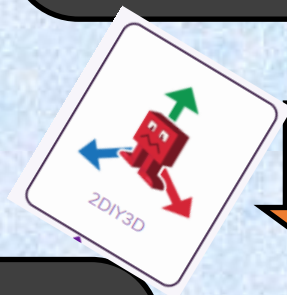
Online safety (Privacy Rules)

Game Creation (2DIY3D)

Quizzing (2Quiz)







Cycle B

Autumn:

Online safety (Cyberbullying)

Modelling (2Design)

Blogging (2Connect Part 1)

Spring:

Online safety (Social Networking)

Concept Maps (2Connect Part 2)

Summer:

Online safety (Revisit & Review)

Text Adventure (Choose your own adventure)

Networks (cables and wireless)

***See additional E-Safety SoW**

Year 1 Skills

Computer Science

Understand what algorithms are.

Create simple programs.

Information Technology

Use technology purposefully to create digital content.
Use technology purposefully to store digital content.
Use technology purposefully to retrieve digital content.

Digital Literacy

Use technology safely.
Keep personal information private.
Recognise common uses of information technology beyond school.

Vocabulary

rules, online, private information, email, instructions, buttons, robots, patterns, program, videos, camera stills, sounds, image bank, word bank, space bar, purpose, online tools, communicate photographs, video, sound, data, pictogram, digitally
Year

Year 2 Skills

Computer Science	Understand that algorithms are implemented as programs on digital devices. Understand that programs execute by following precise and unambiguous instructions. Debug simple programs. Use logical reasoning to predict the behaviour of simple programs.
Information Technology	Use technology purposefully to organise digital content. Use technology purposefully to manipulate digital content.
Digital Literacy	Use technology respectfully. Identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.
Vocabulary	appropriate/ inappropriate sites, cyber-bullying, digital footprint, keyword searching, forward, backward, right -angle turn, algorithm, sequence, debug, predict paint, effects, templates, animation, documents, index finger typing, enter/return, caps lock, backspace, information sources, communication, purposes, website content, capturing moments, magnified images, questions , data collection, graphs, charts, save, retrieve

Year 3 Skills

Computer Science

Write programs that accomplish specific goals.
Use sequence in programs.
Work with various forms of input.
Work with various forms of output.

Information Technology

Use search technologies effectively.
Use a variety of software to accomplish given goals.
Collect information.
Design and create content.
Present information.

Digital Literacy

Use technology responsibly.
Identify a range of ways to report concerns about contact.

Vocabulary

blogs, e-safety, rules, secure passwords, report abuse button, gaming, sequence, instructions, sequence de-bugging, test + improve, logo commands, sequence, programming, multimedia, presentations, alignment, brush size, repeats, reflections, green screening, amend, copy, paste, school, network, devices, computer parts, collaborate, appropriate online communication, search tools, appropriate websites, owner, questioning, data-base, construct, contribute, recording data, data logger, present data

Year 4 Skills

Computer Science

Design programs that accomplish specific goals Design and create programs.
Debug programs that accomplish specific goals.
Use repetition in programs.
Control or simulate physical systems.
Use logical reasoning to detect and correct errors in programs.
Understand how computer networks can provide multiple services, such as the World Wide Web Appreciate how search results are selected.

Information Technology

Select a variety of software to accomplish given goals.
Select, use and combine internet services.
Analyse information.
Evaluate information.
Collect data.
Present data.

Digital Literacy

Understand the opportunities computer networks offer for communication.
Identify a range of ways to report concerns about content.
Recognise acceptable/unacceptable behaviour.

Vocabulary

blogs, e-safety, rules, secure passwords, report abuse button, type + edit logo commands, sensors, open-ended problems, bugs in programs, complex programming, creating + modifying, specific purpose, photo modifying, keyboard shortcuts, bullet points, spell check, constructive feedback different networks, information collection, reliability, owners database creation, database searches, inaccurate data

Year 5 Skills

Computer Science

Solve problems by decomposing them into smaller parts.
Use selection in programs.
Work with variables.
Use logical reasoning to explain how some simple algorithms work.
Use logical reasoning to detect and correct errors in algorithms.
Understand computer networks, including the internet.
Appreciate how search results are ranked.

Information Technology

Combine a variety of software to accomplish given goals.
Select, use and combine software on a range of digital devices.
Analyse data.
Evaluate data.
Design and create systems.

Digital Literacy

Understand the opportunities computer networks offer for collaboration.
Be discerning in evaluating digital content.

Vocabulary

responsible online communication, informed choices, virus threats, blogs, messaging, explore procedures, refine procedures, variable, hardware + software control, change, inputs, different outputs, articulate solutions, commands online sharing, multimedia, effects, multimedia modification, transitions, hyperlinks, editing tools, refining, online sharing computing devices, internet parts, collaboration, responsibility, searching strategies, webpages spreadsheets, complex searches (and/or: </>), problem solving, present answers, analyse information, question data, interpret

Year 6 Skills

Computer Science

Solve problems by decomposing them into smaller parts.
Use selection in programs.
Work with variables.
Use logical reasoning to explain how some simple algorithms work.
Use logical reasoning to detect and correct errors in algorithms.
Understand computer networks, including the internet.
Appreciate how search results are ranked.

Information Technology

Combine a variety of software to accomplish given goals.
Select, use and combine software on a range of digital devices.
Analyse data.
Evaluate data.
Design and create systems.

Digital Literacy

Understand the opportunities computer networks offer for collaboration.
Be discerning in evaluating digital content.

Vocabulary

responsible online communication, informed choices, virus threats, blogs, messaging, predicting outputs, plan, program, test & review a program, program writing, control, mimics + devices, sensors, measure input, create variables, link errors, appropriate online tools, audience, atmosphere, structure, copyright, information collection, html code, storing, information movement, connecting devices, different audiences, research strategies, search result rankings, acknowledge resources, generate, process, interpret, store, present information plausibility, appropriate data tool, interrogate, investigations