Computing Progression of Knowledge and Skills

	Year 3	Year 4	Year 5	Year 6
Computer Science: Programming	Create simple programs using sequence. Understand that algorithms are precise instructions. Find and correct simple errors.	Design and create programs using sequence and simple selection. Understand inputs and outputs. Debug increasingly complex programs.	Use sequence, selection and repetition confidently. Create programs for specific purposes using variables. Debug independently.	Design, create and refine complex programs using variables, inputs and outputs. Apply logical reasoning to identify and solve errors.
Computational Thinking	Break simple tasks into manageable steps. Predict outcomes of simple algorithms.	Decompose problems into smaller parts and identify patterns.	Apply decomposition and pattern recognition to solve increasingly complex problems.	Select and apply the most effective approach to solve problems. Evaluate and improve solutions.
Computer Systems and Networks	Understand that devices connect together to share information. Identify different types of digital devices.	Understand how networks enable communication and sharing. Begin to understand the internet.	Describe how digital systems work together. Understand how technology supports everyday life.	Explain how the internet works, including how information is shared and accessed globally. Understand opportunities and risks associated with networks.
Information Technology: Creating and Presenting	Use technology to research, create and present information. Organise digital content effectively.	Select appropriate digital tools to create and present work. Combine text, images and media.	Use a range of software to create purposeful digital content. Edit and improve work based on feedback.	Select and combine digital tools independently to create content for a specific audience and purpose.
Data and Information	Understand that information can be collected and organised digitally.	Collect, record and interpret data using data loggers and digital tools.	Analyse and present information effectively using technology.	Evaluate, analyse and present data using appropriate digital tools. Interpret findings and draw conclusions.
Digital Literacy	Use search tools to find information. Understand that not all information online is reliable.	Compare sources of information and begin to evaluate reliability.	Use technology effectively to research and communicate. Recognise how information can be manipulated.	Critically evaluate online content, understanding credibility, bias and 'fake news'.
Online Safety	Understand how to stay safe online and protect personal information. Know how to report concerns.	Understand respectful online communication and appropriate behaviour.	Understand digital footprints and online reputation. Recognise risks associated with online activity.	Demonstrate responsible and ethical online behaviour. Understand privacy, security and strategies for keeping safe online.
Creating and Designing	Create simple digital content including animations and presentations.	Design and create digital products including animations and 3D models.	Create purposeful digital projects using a wider range of tools and technologies.	Independently plan, create, test, evaluate and improve digital products for specific audiences and purposes.

By the end of Year 6, pupils will know:

- How algorithms control digital systems.
- How sequence, selection, repetition and variables are used within programs.
- How computer networks and the internet enable communication and information sharing.
- How search results are selected and why online information should be evaluated critically.
- How digital tools can be used to collect, analyse and present information
- How to behave safely, respectfully and responsibly online
- How technology impacts modern life and future opportunities.

By the end of Year 6, pupils will be able to:

- Design, write, test and debug programs.
- Apply computational thinking to solve problems.
- Select appropriate digital tools for different purposes
- Create, edit and evaluate digital content.
- Collect, analyse and present data.
- Research effectively and evaluate information critically.
- Use technology safely, responsibly and independently.
- Communicate and collaborate effectively using digital technologies.

Computing Vocabulary Progression

Strand	Year 3	Year 4	Year 5	Year 6
Algorithms & Programming	algorithm, program, code, command, sequence, debug, predict, input	selection, condition, event, output, repetition, loop, test, decompose	variable, control, simulation, flowchart, debugging, input, output	computational thinking, efficiency, logic, evaluate, refine, process, algorithm
Problem Solving & Learnacy	problem, solution, error, instruction, pattern	decompose, pattern, test, improve, logical	strategy, evaluate, adapt, debug, refine	analyse, evaluate, efficiency, optimise, reflect, justify
Computer Systems & Networks	computer, device, keyboard, screen, internet, website	network, connection, online, digital, communication	system, hardware, software, secure, technology	server, router, network, World Wide Web, communication, infrastructure
Creating Digital Content	file, folder, save, document, presentation, image	spreadsheet, graph, database, record, collect, 3D model	pixel, resolution, edit, manipulate, media, format	audience, purpose, collaboration, communication, data analysis
Data & Information	data, information, share, organise	collect, record, database, analyse, graph	interpret, compare, present, evaluate, manipulate	analyse, conclude, accuracy, trends, evidence, data analysis
Online Safety	password, personal information, safe, report, respect	privacy, cyberbullying, responsible, copyright, digital footprint	encryption, credentials, scam, risk, online identity, permission	digital citizenship, confidentiality, authenticate, information security, ethical, reputation
Digital Literacy	search, research, communicate, online	source, reliable, unreliable, verify	misinformation, verify, secure, credibility	bias, credibility, fake news, evaluate, authenticity, media literacy
Physical Computing	input, output	sensor, device	Micro:bit, controller, variable, program	Crumble Kit, control system, automation, debugging