Computing Curriculum Principles

Vision

Our computing curriculum is designed to equip pupils with the knowledge and skills required for the future workplace and to help them be active participants in the digital world. Lessons enable pupils to understand and apply the fundamental principles of computer science, such as logic and algorithms, in order to analytically solve problems. Pupils will be able to protect themselves and keep themselves safe whilst using devices on the internet. Children will leave Leckhampton as responsible, competent, confident and creative users of information and communication technology.

Subject Leader Rationale

We follow Purple Mash's computing scheme to ensure a consistent, progressive approach from Early Years through to Year 6. This provides teachers with high-quality resources and clear sequencing of skills, while allowing flexibility to adapt to the needs and interests of our pupils. The rationale behind our approach is to balance three strands of computing: computer science, digital literacy and information technology. Together, these give children a strong foundation in coding and problem-solving, alongside the skills to use a wide range of digital tools effectively and safely.

Essential Knowledge

Children will know:

- How digital systems work and the basics of computer science.
- How to design, write and debug programs using logical reasoning.
- How to use a variety of software to create, organise, store, retrieve and present information.
- How to use technology safely, respectfully and responsibly, understanding risks and how to seek help.
- That computing links to many areas of learning and life, supporting communication, creativity and critical thinking.

Disciplinary Knowledge

Children will learn to work like computer scientists by:

- Asking questions, breaking problems down and testing solutions.
- Using algorithms, abstraction and logical reasoning.
- Debugging when things go wrong and improving their designs.
- Collaborating and sharing ideas effectively through digital platforms.
- Reflecting on how technology impacts individuals, communities and the wider world.

Characteristics of Effective Learning

We aim to ensure that our pupils experience "wow" moments in their learning and we know this happens more frequently when pupils are given opportunities to discover and find things out for themselves. Our curriculum has been designed so that pupils are able to use and apply their skills and knowledge in creative and interesting ways. As pupils move through each stage of their learning journey and develop more of an understanding of the world in which they live, pupils are taught and encouraged to use the following skills and characteristics;

Curiosity Questioning Analysing Researching Perseverance Problem solving Thinking critically Creativity Cooperation

Computing			
Reception			
Vocabulary	Technology, computer, laptop, tablet/iPad, device, screen, touchpad, keyboard, keys, programme, robot, bee-bot, online, offline, internet, personal information		
In Reception, computing is taught through purposeful, play-based experiences that support children's understanding of technology in their everyday lives (**Understanding the World**). Children explore and use a range of technology, including iPads/tablets, laptops and programmable toys, to support learning across the curriculum. They develop early skills in using touch screens, keyboards and touchpads, drawing digitally, recording sounds and creating simple programs (**Expressive Arts and Design**). Computing also supports communication, creativity and problem-solving (**Communication and Language**), while helping children to use technology independently and with confidence. Online safety is embedded throughout, with children learning how to stay safe and healthy, recognise personal information, understand the difference between online and offline, be kind to others, and know that the work they create belongs to them (**Personal, Social and Emotional Development**).			
Year 1			
Strands of Learning	**Information Technology**	**Computer Science**	**Digital Literacy**
Vocabulary	Login, avatar, open, save, digital art, tools, text, animation, drag and drop, image, criteria, sort, data, algorithm, sequence, blocks, objects, actions, events, program, technology, digital music		
Autumn	**Introduction to Purple Mash** To log in and out of Purple Mash. To open and use '2Dos'. To save work. **Creative Computing** To make digital art. To make and share jigsaws. To make a drag and drop game. **Data Explorers** To sort and group objects. To understand what data is. To represent data electronically.		**Online Safety: 2BeSafe** delivered throughout the year, covering the following subject areas: - Self-Image and Identity - Online Relationships - Online Reputation - Online Bullying - Managing Online Information - Health, Well-being and Lifestyle - Privacy and Security - Copyright and Ownership
Spring	**Animated Stories** To create digital art and text. To add animation to images. To add sound to an animated story.	**Creating and Following Instructions** To follow instructions. To create instructions. To understand simple algorithms.	**Online Safety: 2BeSafe** delivered throughout the year, covering the following subject areas: - Self-Image and Identity - Online Relationships - Online Reputation - Online Bullying - Managing Online Information - Health, Well-being and Lifestyle - Privacy and Security - Copyright and Ownership

Summer	**Making Beats** To create sounds using 2Explore. To combine instruments using 2Beat. To compose digital music.	**Coding** To use blocks to code. To understand objects, actions and events. To plan and design a program.	**Technology Around Us** To understand what technology is. To recognise technology in the local environment and wider world. **Online Safety: 2BeSafe** delivered throughout the year, covering the following subject areas: - Self-Image and Identity - Online Relationships - Online Reputation - Online Bullying - Managing Online Information - Health, Well-being and Lifestyle - Privacy and Security - Copyright and Ownership
Year 2			
Strands of Learning	**Information Technology**	**Computer Science**	**Digital Literacy**
Vocabulary	Direction, commands, algorithm, programs, debug, internet, world wide web, browser, website, webpage, search engine, portfolio, effects, spreadsheet, cells, columns, branching database, sequencing, interaction, timer, mind map, presentation, compose		
Autumn	**The Internet** To define the World Wide Web. To recognise browsers and websites. To connect to the internet. **Creating Pictures** To use digital tools to create art. To use 2Paint a Picture. To compile an online art portfolio. To compare digital art effects to non-digital effects.	**Route Explorers** To consider direction and distance. To create commands. To build and algorithm.	**Online Safety: 2BeSafe** delivered throughout the year, covering the following subject areas: - Self-Image and Identity - Online Relationships - Online Reputation - Online Bullying - Managing Online Information - Health, Well-being and Lifestyle - Privacy and Security - Copyright and Ownership
Spring	**Spreadsheets** To understand cells and columns. To insert images with values. To use totalling tools. To create graphs. **Questioning** To ask questions to collect or present data.		**Online Safety: 2BeSafe** delivered throughout the year, covering the following subject areas: - Self-Image and Identity - Online Relationships - Online Reputation - Online Bullying - Managing Online Information

	To keep a tally. To use 2Count to present data. To use a branching database.		- Health, Well-being and Lifestyle - Privacy and Security - Copyright and Ownership
Summer	**Presenting Ideas** To use and make mind maps. To use a mind map as a presentation tool. **Making Music** To use a digital music tool. To compose music digitally.	**Coding** To understand algorithms. To introduce sequencing. To code interaction between objects. To use timers. To debug code.	**Online Safety: 2BeSafe** delivered throughout the year, covering the following subject areas: - Self-Image and Identity - Online Relationships - Online Reputation - Online Bullying - Managing Online Information - Health, Well-being and Lifestyle - Privacy and Security - Copyright and Ownership
Year 3			
Strands of Learning	**Information Technology**	**Computer Science**	**Digital Literacy**
Vocabulary	Compose, reply, email, attachments, route, rotation, code, repetition, binary questions, graph, cell address, formula, function, analyse, media, customise		
Autumn	**Branching Databases** To ask binary questions. To complete branching databases in 2Question. To create and test branching databases.	**Route Planners** To write commands using rotation. To create algorithms and write code. To plan routes. To use repetition in 2Go.	**Online Safety: 2BeSafe** delivered throughout the year, covering the following subject areas: - Self-Image and Identity - Online Relationships - Online Reputation - Online Bullying - Managing Online Information - Health, Well-being and Lifestyle - Privacy and Security - Copyright and Ownership
Spring	**Spreadsheets** To create graphs. To understand cell addresses. To use the formula bar. To combine 2Calculate functions to analyse data.		**Email** To compose and reply to emails using 2Email. To open and send attachments. To understand how to use email communication safely. **Online Safety: 2BeSafe** delivered throughout the year, covering the following subject areas: - Self-Image and Identity - Online Relationships - Online Reputation - Online Bullying

			- Managing Online Information - Health, Well-being and Lifestyle - Privacy and Security - Copyright and Ownership
Summer	**Presentations** To add media to presentations. To customise presentations with animation and timings. To design an effective presentation.	**Coding** To use flowcharts in 2Chart. To use timers. To begin using repetition. To test and debug code.	**Online Safety: 2BeSafe** delivered throughout the year, covering the following subject areas: - Self-Image and Identity - Online Relationships - Online Reputation - Online Bullying - Managing Online Information - Health, Well-being and Lifestyle - Privacy and Security - Copyright and Ownership
Year 4			
Strands of Learning	**Information Technology**	**Computer Science**	**Digital Literacy**
Vocabulary	Systems, hardware, software, onion skinning, storyboarding, digital animations, logo, commands, refine, procedures, internet searching, selection, loop, variables, AI, artificial intelligence		
Autumn	**Unpacking Hardware and Software** To define different types of technology. To know how systems work together. To identify hardware. To understand software. **Animation** To know the types of animation. To understand onion skinning. To explore animation features. To use storyboarding. To create digital animations using 2Animate. **Composing Beats** To explore pulse. rhythm, pitch and texture. To compose a melody. To use Busy Beats to explore and compose digital music.		**Online Safety: 2BeSafe** delivered throughout the year, covering the following subject areas: - Self-Image and Identity - Online Relationships - Online Reputation - Online Bullying - Managing Online Information - Health, Well-being and Lifestyle - Privacy and Security - Copyright and Ownership
Spring		**Coding** To develop coding skills using 2Code.	**Effective Searching** To explore how to effectively search the internet.

		To introduce selection. To explore design properties. To introduce loops. To code number variables.	To explore the safety aspects of online information. **Online Safety: 2BeSafe** delivered throughout the year, covering the following subject areas: - Self-Image and Identity - Online Relationships - Online Reputation - Online Bullying - Managing Online Information - Health, Well-being and Lifestyle - Privacy and Security - Copyright and Ownership
Summer	**Introduction to AI** To explore how AI works. To investigate the positive and negative impact of AI. To consider AI in the future.	**Logo** To use Logo commands. To write commands in a sequence. To refine code using repetition and procedures.	**Online Safety: 2BeSafe** delivered throughout the year, covering the following subject areas: - Self-Image and Identity - Online Relationships - Online Reputation - Online Bullying - Managing Online Information - Health, Well-being and Lifestyle - Privacy and Security - Copyright and Ownership
Year 5			
Strands of Learning	**Information Technology**	**Computer Science**	**Digital Literacy**
Vocabulary	Records, fields, collaborative database, analyse, sprite, playability, formula, conversions, computational models, refine, simulate, decomposition, abstraction, document, template		
Autumn	**Databases** To understand records and fields. The create a collaborative database. To search databases. To analyse data.	**Game Creator** To explore the features of a good game. To design and make sprites and a game world. To evaluate the playability of games. To design and make a 3D maze adventure using 2DIY3D.	**Online Safety: 2BeSafe** delivered throughout the year, covering the following subject areas: - Self-Image and Identity - Online Relationships - Online Reputation - Online Bullying - Managing Online Information - Health, Well-being and Lifestyle - Privacy and Security - Copyright and Ownership

Spring	**Spreadsheets** To use formulae. To explore measurement conversions. To carry out numerical investigations. To create computational models. To work with data using spreadsheets in 2Calculate.	**Coding** To code efficiently by refining code. To simulate a physical system. To explore decomposition and abstraction. To use functions and variables.	**Online Safety: 2BeSafe** delivered throughout the year, covering the following subject areas: - Self-Image and Identity - Online Relationships - Online Reputation - Online Bullying - Managing Online Information - Health, Well-being and Lifestyle - Privacy and Security - Copyright and Ownership
Summer	**Word Processing** To create documents. To use images. To enter and edit text. To use tables and templates.	**Micro:bit** To develop use of sensor inputs and the accelerometer. To develop use of selection, variables, inputs and outputs. To code for micro:bit pins.	**Online Safety: 2BeSafe** delivered throughout the year, covering the following subject areas: - Self-Image and Identity - Online Relationships - Online Reputation - Online Bullying - Managing Online Information - Health, Well-being and Lifestyle - Privacy and Security - Copyright and Ownership
Year 6			
Strands of Learning	**Information Technology**	**Computer Science**	**Digital Literacy**
Vocabulary	Network, local area network (LAN), wide area network (WAN), dataset, export, import, graph, filter, function, flowchart, control simulation, user input, block, text code view, text output, Python, viewpoint		
Autumn	**Graphing** To create a range of graph types. To incorporate multiple datasets. To use graphs to solve a problem. To export and import files. **Spreadsheets** To perform calculations. To enter and use formulae. To present data. To solve real life problems.	**Networks** To identify examples of networks. To recognise types of networks. To understand internet services. To discuss positive and negative use of networks.	**Online Safety: 2BeSafe** delivered throughout the year, covering the following subject areas: - Self-Image and Identity - Online Relationships - Online Reputation - Online Bullying - Managing Online Information - Health, Well-being and Lifestyle - Privacy and Security - Copyright and Ownership
Spring	**Data Detectives** To filter and sort data. To group data.	**Coding** To use functions. To understand flowcharts and control simulations.	**Online Safety: 2BeSafe** delivered throughout the year, covering the following subject areas: - Self-Image and Identity

	To link tables. To analyse complex data and answer questions.	To code for user input. **Introduction to Python** To compare block and text code views. To code for text output. To work with different data types. To code repetition in Python.	- Online Relationships - Online Reputation - Online Bullying - Managing Online Information - Health, Well-being and Lifestyle - Privacy and Security - Copyright and Ownership
Summer	**3D Modelling** To work with viewpoints of 3D objects. To add and edit points on a model. To design for a purpose.		**Online Safety: 2BeSafe** delivered throughout the year, covering the following subject areas: - Self-Image and Identity - Online Relationships - Online Reputation - Online Bullying - Managing Online Information - Health, Well-being and Lifestyle - Privacy and Security - Copyright and Ownership