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
Our computing curriculum is skills based and aims to provide children with the key skills and knowledge they need to be confident and safe users of technology. The curriculum is progressive and aims to build on previous knowledge by focussing on three key areas in each key stage, ensuring that skills in each area are revisited regularly. In KS1, children learn one unit on technology in our lives, one on coding and programming and one on multimedia each year. In KS2, children learn one unit on coding and programming, one on multimedia and one on data handling. Multimedia units ensure that children become confident and creative users of technology and programming units enable children to develop their computational thinking and problem solving skills. The concept of using technology safely and responsibility is also interwoven throughout the curriculum, ensuring that children are frequently revisiting the essential knowledge they require to be safe and responsible users of technology.

Essential Knowledge has been carefully sequenced and repeated across strands in each subject so that pupils remember what they have been taught. Consequently, pupils build strong foundations on which more complex concepts and ideas can be built. Essential knowledge forms the key learning outcomes which are mapped across the strands and re-visited regularly both within and across subsequent years. Key subject specific vocabulary for each year group is identified to further support this process. Computing is taught weekly to aid the retention of this essential knowledge. As pupils become more confident with new knowledge and skills, they are given opportunities to compare and contrast and apply their disciplinary knowledge.

Disciplinary Knowledge is progressively mapped out to equip pupils with the necessary knowledge and skills to be able to think like a computer scientist. Key questions are used to enable children to demonstrate their disciplinary knowledge, such as: What do I want to achieve? What will I use to achieve my goal? Does it work? Can I detect any errors? Can I correct any errors? What is the problem? How can I solve this problem? How can I use this technology safely and responsibly? How can I collect, analyse, evaluate and present my information? Disciplinary knowledge is explored through the strand of `Essential Technological Skills` across the curricular map.

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

Year 1

Strands of Learning	Multimedia: text, sound, images and motion	Coding and programming	Using technology safely and responsibly	Technology in our lives	Essential Technology Skills
Vocabulary	technology, computer, tablet, Chromebook, iPad, record, touchpad, mouse, keyboard, save, open, icon, file, e-book, algorithm, debugging, Beebot, instructions, sequence, predict, login, password				
Autumn			To identify the importance of keeping personal information private. To understand the importance of saving, storing and organising their work.	To recognise the ways that we use technology in school and at home and learn about different electronic devices such as tablets and laptops. To recognise the devices that we have at home. To understand why we might need to save files.	To log on to school computers using a login and password. To begin using a touchpad on a laptop. To begin typing on a keyboard. To learn how to open, save and retrieve files on a laptop. *(Teach Computing)*
Spring	To use technology to create pictures and record sounds. To learn how to save and retrieve information from the internet on an iPad. To create an e-book on an iPad using Book Creator.		To learn how to retrieve digital content from the internet safely. To know that they should always speak to a trusted adult if they see something inappropriate on digital technology. To understand how to use the internet safely and responsibly. *(Internet Safety Day)*	To understand that technology is used in the wider world to create books, art and audio and how these technologies can make the process quicker than traditional methods.	To type on a tablet device. To save and retrieve files on a tablet device. To create a document on a tablet with text and images.
Summer		To begin learning that an algorithm is a set of instructions for a specific task and that it can be used to make a process quicker. To write algorithms for a Beebot by pressing buttons and predicting what will happen for a sequence of instructions. To understand that debugging is the process of finding mistakes in an algorithm. To begin debugging by finding errors in an a Beebot algorithm and trying to correct them. *(Barefoot Computing)*		To understand that an algorithm is a list of instructions and that we follow them all the time in our daily lives e.g., teacher instructions in a lesson, getting dressed, baking a cake.	To begin inputting algorithms on a device using buttons. To begin finding and correcting mistakes in an algorithm.

	Computing				
	Year 2				
Strands of Learning	**Multimedia: text, sound, images and motion**	**Coding and programming**	**Using technology safely and responsibly**	**Technology in our lives**	**Essential Technology Skills**
Vocabulary	retrieve, copy, paste, space bar, delete, backspace, home keys, code, program, tinkering,				
Autumn			To learn how to log on to a website safely. To understand the importance of keeping login details private.	To understand why typing is such an important skill to learn in school and the wider world.	To log on to a website. To use the letter keys, space bar, delete button and backspace on a keyboard. To begin learning how to touch type on a keyboard. *(Typing Club)*
Spring	To create a Google Docs document containing text and pictures using copy and paste.		To use the internet safely to research a topic. To know that they should always speak to a trusted adult if they see something inappropriate on digital technology. To understand how to stay safe online. *(Internet Safety Day)*	To understand that many things the children see like worksheets, letters, posters etc. are made on a word processor.	To use a word processor to create a document with text and pictures. To learn how to copy and paste on a Chromebook or Mac. To save and retrieve files on a Chromebook or Macbook.
Summer		To understand that we can make programs in software like Scratch by writing algorithms in lines of code. To explore programs in Scratch Jr and predict what will happen when they make changes to the code. To understand that making changes to the code is called tinkering. To create an animated 'knock knock' joke by writing and debugging algorithms in Scratch Jr. *(Barefoot Computing)*			To begin tinkering with algorithms using programming software. To begin writing and debugging simple algorithms using programming software.

Computing						
Year 3						
Strands of Learning	**Multimedia: text, sound, images and motion**	**Coding and programming**	**Using technology safely and responsibly**	**Technology in our lives**	**Data Handling**	**Essential Technology Skills**
Vocabulary	sprite, Google, Google Slides, slide, animation, Google Forms, digital content					
Autumn	To create a presentation document around a topic using Google Slides.		To use the internet safely and responsibly to retrieve digital content. To know that they should always speak to a trusted adult if they see something inappropriate on digital technology.	To understand how presentation software is used by teachers and by adults in the wider world to present information and ideas.		To use presentation software to create a document with different slides containing images and text. To learn how to confidently save, print, copy, paste and open documents on Chromebooks or Macs. To continue learning how to touch type on a keyboard. *(Typing Club)*
Spring	To present simple data and information from a survey using Google Slides.		To understand how to communicate safely and responsibly on the internet and to know how and where to report any concerns. To understand how to stay safe online. *(Internet Safety Day)*	To understand how data is collected and analyzed using computer programs in the wider world.	• To create a simple survey using Google Forms. • To collect, analyse and evaluate data using Google Forms. *(Switched on Computing)*	To create a survey and analyse the results using survey software. To create a presentation document and share with peers.
Summer		To create simple algorithms that make a sprite move. To understand that a sprite is a computer image that performs actions in a program. To debug errors in a Scratch algorithm. To create sequences by linking lines of code together. To understand the importance of the sequence of commands in a program. *(Teach Computing)*				To begin writing and debugging algorithms with more several line of code using programming software.

Computing

Year 4

Strands of Learning	Multimedia: text, sound, images and motion	Coding and programming	Using technology safely and responsibly	Technology in our lives	Data Handling	Essential Technology Skills
Vocabulary	reasoning, loops, infinite loop, controlled loop, repetition, repeat…until, input, output, the internet, website, internet search, Bing, World Wide Web, spreadsheet, data, formula, analyse, evaluate, Google Forms					
Autumn	To collaborate as a class to create a website using Google Sites.		To understand the importance of keeping personal information private online and how to communicate safely and responsibly online. To learn how to use search technologies safely and responsibly. To understand that not everything we read or see online is reliable and could contain misinformation or manipulated images. To know that they should always speak to a trusted adult if they see something inappropriate on digital technology.	To understand how computer networks work and to identify different inputs and outputs in a network. To understand how the internet works and the difference between the internet and the World Wide Web. To understand how search engines work. To understand how web designers use software to design websites in the wider world.		To design a website using web design software. To learn how to use search engines effectively.
Spring			To understand how to stay safe online. *(Internet Safety Day)*	To explain why typing is an important skill to learn. To understand how computers are used to handle data quickly and efficiently.	To collect and record data and input it into Google Sheets. To analyse and evaluate a set of data. To use formulas in spreadsheets to convert data. *(Barefoot Computing)*	To continue learning how to touch type on a keyboard. *(Typing Club)* To analyse data in a spreadsheet and begin using formulas to make calculations with data.

Summer		To understand that repetition and loops can be used in a program to save time. To use repetition, infinite loops and count controlled loops in a program using repeat commands. To use logical reasoning and debugging skills to detect and correct errors in an algorithm. *(Teach Computing)*				To begin writing and debugging more complex algorithms using programming software.

	Computing					
	Year 5					
Strands of Learning	**Multimedia: text, sound, images and motion**	**Coding and programming**	**Using technology safely and responsibly**	**Technology in our lives**	**Data Handling**	**Essential Technology Skills**
Vocabulary	if…then, events, timed events, , if…else, database, field, records, group, sort, collect, presentation, stop motion, animation, video editing, edit, green screen, import, trim, split, storyboard, shots, special effects, animations, transitions					
Autumn				To understand that many jobs in the wider world require typing as a skill. To understand that computers are used to store data as they have the capacity to hold large amounts of information in a small space.	To understand that a database is a collection of information stored in a single table. To learn how to group and sort information in a database. To know how to search a database for specific information. *(Teach Computing)*	To continue learning how to touch type on a keyboard. *(Typing Club)* To store information on a database and be able to search a database for specific information.
Spring	To produce a green screen video using iPads, a green screen and video editing software. To produce a stop motion animation using modelling materials, iPads, a green screen and video editing software.		To learn how to share videos safely, securely and responsibly and recognise the dangers of sharing videos online. To understand the importance of privacy online and how we should never share personal information. To understand that video content we see online is not always reliable and may have been manipulated or contain inaccurate information. To know that they should	To understand how people working in film/TV production use cameras, video editing software and green screen technology to make films.		To film and edit a video using video editing software. To use a green screen to add different backgrounds to videos. To use stop motion animation with green screen technology.

			always speak to a trusted adult if they see something inappropriate on digital technology. To understand how to stay safe online *(Internet Safety Day)*.		
Summer		To begin using events and timed events in programs. To start adding conditionals into programs using if/else and if/then statements. To continue using sequences, repetition and loops in programs using repeat…until and repeat…while commands. *(Hour of Code)*			To begin writing and debugging more complex algorithms with larger amounts of code using programming software.

	Computing					
	Year 6					
Strands of Learning	Multimedia: text, sound, images and motion	Coding and programming	Using technology safely and responsibly	Technology in our lives	Data Handling	Essential Technology Skills
Vocabulary	decomposition, input, output, microbit, manipulation, Garageband, digital footprint, sampling, repetition, reliable					
Autumn			To understand the dangers of the internet such as grooming, sharing photos, online relationships, online gaming. (Police Officer visit) To know that they should always speak to a trusted adult if they see something inappropriate on digital technology.	To understand typing will be an important skill in secondary school. To understand how computers can be used to display data visually in a variety of ways.	To collect, analyse and evaluate data using Google Sheets. To present data in a range of different ways using Google Sheets. *(Teach Computing)*	To continue learning how to touch type on a keyboard. *(Typing Club)* To input data on a spreadsheet and analyse and evaluate that data. To present data in a range of different ways.
Spring	To produce digital music using Garageband on iPads using techniques such as sampling and repetition in producing music.		To understand how to stay safe online (Internet Safety Day)	To learn that music can be produced electronically as well as on instruments, or by using a combination of both. To learn that professional musicians record music using digital technology and how this can be easier and more accessible than traditional methods.		To produce digital music on audio creation software using sampling and repetition techniques.
Summer		To understand the difference between an input and output and investigate examples of both using a Microbit. To plan, design and program a working game in Scratch. To debug errors in a Scratch game using logical reasoning and decomposition to break	To understand the potential dangers and issues of social media such as filtered or manipulated images, addiction, impact of wellbeing, digital footprints etc. To understand that not everything we see or read	To understand that game designers design video games by designing and debugging algorithms. To understand examples of inputs and outputs in their lives, such as automatic lights, radar		To create a working game using programming software by writing and debugging algorithms. To write algorithms to create a program where different inputs lead to different outputs.

		the code into smaller parts. To present and demonstrate a working game with inputs and outputs using Microbits.	online is reliable and to learn how to identify reliable content.	speed signs, ring doorbell etc.		