Beaufront First School Long-Term Plan: Computing

Intent	Implementation	Impact
The Computing Curriculum at Beaufront meets the requirements of the National Curriculum and is informed by planning from Kapow. It is organised into 3 main strands of: ● Computer Science ● Information Technology ● Digital Literacy It is further broken down into: ● Computing Systems and Networks ● Programming ● Creating Media ● Data Handling ● Online Safety It aims to ensure that all pupils: ● Are equipped with the knowledge and understanding to use computational thinking and creativity. ● Are digitally literate in an ever-changing world. ● Are ready to live and work as active participants in a digital world. ● Engage with computing and technology with enjoyment and confidence, applying their developing knowledge and skills across the wider curriculum. ● Are able to use computers and technology competently and responsibly. ● Understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation.	All children will engage in weekly Computing lessons, which will be supplemented and complemented by STEM weeks and cross-curricular themed weeks. Children will also be able to use technology regularly across the wider curriculum from Nursery through to Year 4. Our inclusive and enriched curriculum enables all children to experience and engage with Computing through: ● Carefully planned and accessible sequences of lessons including theoretical and practical learning opportunities, designed to develop the knowledge, understanding and skills needed to engage fully with the Computing Curriculum. ● Carefully planned, appropriate resources and enriched learning experiences including STEM weeks and showcase projects. Children will also build skills in relation to: - Listening - Speaking - Problem Solving - Creativity - Planning - Adapting - Leadership - Teamwork	Through a focused, thorough and enriched Science Curriculum children are able to: ● Enjoy using digital technology in different ways across the curriculum and for different purposes. ● Confidently use computers and other technology to be creative and to solve real-world problems. ● Understand, use and create algorithms and code. ● Use computers, technology and online resources safely and responsibly. ● Think critically about changing digital technology and the use of new technologies in everyday life, for example, AI and the risks and benefits. ● Be good digital citizens. ● Discuss, critically think about, and respond to, 'Big Questions' about computer technology.

• Are able to analyse problems in computational terms. • Gain practical experience of writing computer programs and can use their skills to solve problems. • Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems. • Can explore and use technology creatively to complete engaging enrichment showcase projects. This will enable all children to acquire the knowledge, skills and understanding required for living in an ever-changing digital world.		

Computing Curriculum Objectives		
EYFS (Nursery & Reception)	**KS1 (Year 1 & 2)**	**KS2 (Year 3 & 4)**
ELGs *Personal, Social and Emotional* • Give focused attention to what the teacher says, responding appropriately even when engaged in activity, and show an ability to follow instructions involving several ideas or actions. • Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. • Explain the reasons for rules, know right from wrong and try to behave accordingly. *Understanding the World* • Talk about the lives of the people around them and their roles in society. • Know some similarities and differences	**National Curriculum** • Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. • Create and debug simple programs. • Use logical reasoning to predict the behaviour of simple programs. • Use technology purposefully to create, organise, store, manipulate and retrieve digital content. • Recognise common uses of information technology beyond school. • Use technology safely and respectfully, keeping personal information private;	**National Curriculum** *By the end of Key Stage 2, all of these objectives should be met in full. By the end of Year 4 children will:* • Be able to design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts, with support and scaffolding. • Use sequence, selection, and repetition in programs; work with variables and begin to explore and use various forms of input and output. • Develop logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.

between things in the past and now, drawing on their experiences and what has been read in class.

Expressive Arts and Design
- Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form, and function.
- Share their creations, explaining the process they have used.

Specific Objectives
Computing Systems and Networks
- Understand what a computer keyboard is and recognise some letters and numbers.
- Know that a mouse can be used to click, drag and create simple drawings.
- Know that to use a computer you need to log in to it and then log out at the end of your session.
- Know that different types of technology can be found at home and in school.
- Know that you can take simple photographs with a camera or iPad.
- Know that you must hold the camera still and ensure the subject is in the shot to take a photo.

Programming
- Know that being able to follow and give simple instructions is important in computing.
- Understand that it is important for instructions to be in the right order.
- Understand why a set of instructions may have gone wrong.

Creating Media

identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.

Specific Objectives
Computer Systems and Networks
- Know that "log in and log out" means to begin and end a connection with a computer.
- Know that a computer and mouse can be used to click, drag, fill and select and also add backgrounds, text, layers, shapes and clip art.
- Know that passwords are important for security.
- Know that when we create something on a computer it can be more easily saved and shared than a paper version.
- Know some of the simple graphic design features of a piece of online software.
- Know the difference between a desktop and laptop computer.
- Know that people control technology.
- Know that buttons are a form of input that give a computer an instruction about what to do (output).
- Know that computers often work together.

Programming
- Understand that an algorithm is when instructions are put in an exact order.
- Understand that decomposition means breaking a problem into manageable chunks and that it is important in computing.
- Know that we call errors in an algorithm 'bugs' and fixing these 'debugging'.
- Understand the basic functions of a Bee-Bot.

- Begin to understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration.
- Use search technologies effectively, and begin to appreciate how results are selected and ranked, and be discerning in evaluating digital content.
- Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information, with support and scaffolding.
- Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Specific Objectives
Computing Systems and Networks
- Know what a tablet is and how it is different from a laptop/desktop computer.
- Understand what a network is and how a school network might be organised.
- Know how the internet uses networks to share files →Understand that software can be used collaboratively online to work as a team.
- Know what a packet is and why it is important for website data transfer.

- Use digital cameras and iPads to take photographs and videos.
- Use simple editing software to change photographs and videos.
- Know that photographs and videos can be shared with others easily using computers, iPads and mobile phones via emails, the internet or other means such as Class Dojo.

Data Handling
- Know that sorting objects into various categories can help you locate information.
- Know that using yes/no questions to find an answer is a branching database.

Online Safety
- Know that adults need to help you to use the internet, for example, searching safely on Google.
- Know that YouTube has a 'kids' version that is safer than the regular version.
- Know what to do if you see something that you do not like or makes you feel worried, scared, or uncomfortable.
- Know that people online are strangers, just like many people we see offline.

- Know that you can use a camera/tablet to make simple videos.
- Know that algorithms move a bee-bot accurately to a chosen destination.
- Understand what machine learning is and how that enables computers to make predictions.
- Know that abstraction is the removing of unnecessary detail to help solve a problem.
- Know that coding is writing in a special language so that the computer understands what to do.
- Understand that the character in ScratchJr is controlled by the programming blocks.
- Know that you can write a program to create a musical instrument or tell a joke.

Creating Media
- Understand that holding the camera still and considering angles and light are important to take good pictures.
- Know that you can edit, crop and filter photographs.
- Know how to search safely for images online.

Data Handling
- Understand that you can enter simple data into a spreadsheet.
- Understand what steps you need to take to create an algorithm.
- Know what data to use to answer certain questions.
- Know that computers can be used to monitor supplies.

- Know the roles that inputs and outputs play on computers.
- Know what some of the different components inside a computer are e.g. CPU, RAM, hard drive, and how they work together.
- Know that you can use images, text, transitions and animation in presentation slides.

Programming
- Know that Scratch is a programming language and some of its basic functions → Understand that a variable is a value that can change (depending on conditions) and know that you can create them in Scratch.
- Understand how to use loops to improve programming.
- Understand how decomposition is used in programming.
- Understand that you can remix and adapt existing code → Understand that pattern recognition means identifying patterns to help them work out how the code works.
- Know what a conditional statement is in programming.
- Understand that algorithms can be used for a number of purposes e.g. animation, games

Creating Media
- Know that different types of camera shots can make my photos or videos look more effective.
- Know that I can edit photos and videos using film editing software.
- Understand that I can add transitions and text to my video.

	Online Safety ● Know that the internet is many devices connected to one another. ● Know that you should tell a trusted adult if you feel unsafe or worried online. ● Know that people you do not know on the internet (online) are strangers and are not always who they say they are → To understand that not everything I see or read online is true. ● Know that to stay safe online it is important to keep personal information safe → Know that you should ask permission from others before sharing about them online and that they have the right to say 'no.' ● Know that 'sharing online means giving something specific to someone else via the internet and 'posting' online means placing information on the internet → Understand what information I should not post online. ● Understand the difference between online and offline. ● Know what the techniques are for creating a strong password.	*Data Handling* ● Know that computers can use different forms of input to sense the world around them so that they can record and respond to data. This is called 'sensor data'. ● Know that a weather machine is an automated machine that responds to sensor data. ● Understand that weather forecasters use specific language, expression and pre-prepared scripts to help create weather forecast films. *Online Safety* ● Know that not everything on the internet is true: people share facts, beliefs and opinions online → Understand that technology can be designed to act like or impersonate living things. ● Understand that the internet can affect your moods and feelings → Understand that technology can be a distraction and identify when someone might need to limit the amount of time spent using technology. ● Know that privacy settings limit who can access your important personal information Information, such as your name, age, gender etc. ● Know what social media is and that age restrictions apply. ● Understand some of the methods used to encourage people to buy things online. ● Understand what behaviours are appropriate in order to stay safe and be respectful online.

Big Questions
What does it mean to be 'responsible digital citizens'? How has technology changed the world? Has technology changed the world for the better? How? Why do you think that? Has technology changed the world for the worse? How? Why do you think that? How could technology be improved? What would the impact of this be? How can technology be used for good? How can it be dangerous? How can you be digitally inclusive? If you could invent one thing in technology, what would it be and why? Should you own your data? Why/ why not? What, in your opinion, is the greatest invention in technology? Why do you think that?

Programme of Study - Overview			
	EYFS	KS1	KS2
Autumn 1A		Computing Systems and Networks Year 1 - Improving mouse skills Year 2 - What is a computer?	Computing Systems and Networks Year 3 - Networks Year 4 - Collaborative Learning (Google)
Autumn 2A		Programming 1 Year 1 - Algorithms Unplugged Year 2 - Algorithms and Debugging	Year 3 - Computing Systems and Networks: Journey inside a computer Year 4 - Further coding with Scratch
Spring 1A	Computing Systems and Networks: Using a computer	Year 1 - Creating Media: Digital Imagery Year 2: Data Handling: International Space Station	Year 3 - Creating Media: Video Trailers (iPads) Year 4 - Data Handling: Investigating Weather
Spring 2A	Programming: All about instructions	Programming 2 Year 1 - BeeBot (BeeBot or Virtual BeeBot) Year 2 - Scratch Junior	Programming Year 3 - Scratch Jnr Year 4 - Programming Scratch

Programme of Study - Overview			
	EYFS	**KS1**	**KS2**
Summer 1A	Computing Systems and Networks: Exploring Hardware	Online Safety Year 1 Year 2	Online Safety Year 3 Year 4
Summer 2A	Data Handling: Introduction to Data	Showcase Unit: Rocket to the Moon Project	Showcase Unit: HTML