Computing Whole School Overview

In Computing, children in KS1 and KS2 will mainly be taught using the National Centre for Computing Education (NCCE), Teach Computing curriculum set out by the Department for Education (DfE). We have ensured that all areas of the National Curriculum are covered as well as the three of the strands of computing (see below). The Teach Computing Curriculum is a spiral curriculum, which means topics like programming are taught every year for 6 to 12 weeks. In EYFS the children will complete computing tasks related to their learning that half term. Some of these units will be units from Barefoot Computing at School and others will be lessons where the children use technology in their setting e.g. beebots and sound recorders. When teaching online safety teachers will use the Project Evolve curriculum to supplement their lessons. Eight key areas of online safety will be taught over the course of a 2-year cycle. These will then be revisited as the children progress through school. The teaching of computing allows our children to be prepared for the digital world that we are living in and provides them with the foundations needed in order to progress through KS1 and KS2 and beyond. The teaching of computing is progressive and has links to other subjects such as; Maths, Science and DT. There are opportunities for both formative and summative assessment planned into lessons.

Three strands of computing:

Information technology: The use of computers for functional purposes such as collecting and presenting information or using search technology.

Computer Science: Introduces children of all ages to understanding how computers and networks work. It also gives all children the opportunity to learn basic computer programming, from simple floor robots in Years 1 and 2, right up to creating on-screen computer games and programmes by Year 6.

Digital literacy: This is about the safe and responsible use of technology, including recognising its advantages for collaboration or communication. This also includes the skills and knowledge required to be an effective safe and discerning user of a range of computer systems.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Nursery	**Computer Science** Busy Bodies- ***Barefoot Computing Unit*** *Online safety: Self-image and identity- Project Evolve*	**Computer Science** Autumn-***Barefoot Computing Unit***	**Information Technology** Use recordable technology to add sound effects/speech to a story. *Online safety: Online relationships- Project Evolve.*	**Computer Science** Technology around us To identify technology in the home and school. *Online safety: Online bullying- Project Evolve.*	**Computer Science** Springtime-***Barefoot Computing Unit***	**Computer Science** Programmable toys- beebot- link to minibeasts. *Online safety: Privacy and security- Project Evolve.*

Reception	**Information Technology** Digital Painting To use a paint app to create a self-portrait. *Online safety: Health, wellbeing and lifestyle- Project Evolve*	**Computer Science** Moving programmable toys- cars/beebots *Online safety: Online reputation- Project Evolve*	**Computer Science** Winter Warmer-***Barefoot Computing Unit***	**Computer Science** Technology around us To identify technology linked to people who help us such as x-rays. *Online safety: Managing online information- Project Evolve*	**Computer Science** Boats Ahoy- ***Barefoot Computing Unit***	**Computer Science** Summer- ***Barefoot Computing Unit*** *Online safety: Copyright and ownership- Project Evolve*
Year 1	**Computer Science** COMPUTING SYSTEMS AND NETWORKS Technology around us To identify technology. To identify a computer and its main parts. To use a mouse in different ways. To use a keyboard to type. To use the keyboard to edit text. To create rules for using technology responsibly. **Digital Literacy skills taught** Basic keyboard skills: typing letters, numbers, symbols, backspace, Enter key Additional keyboard skills: Shift key for upper-case	**Information Technology** CREATING MEDIA Digital Painting To describe what different freehand tools do. To use the shape tool and the line tools. To make careful choices when painting a digital picture. To explain why they chose the tools that they used. To independently use a computer to paint a picture. To compare painting a picture on a computer and on paper. **Digital Literacy skills taught** Basic mouse skills: move, left-click, drag	**Computer Science** PROGRAMMING A Moving a robot To explain what a given command will do. To act out a given word. To combine forwards and backwards commands to make a sequence. To combine four direction commands to make sequences. To plan a simple program. To find more than one solution to a problem. **Digital Literacy skills taught** Recognise and control programmable toys	**Information Technology** DATA AND INFORMATION Grouping data To label objects. To identify that objects can be counted. To describe objects in different ways. To count objects with the same properties. To compare groups of objects. To answer questions about groups of objects. **Digital Literacy skills taught** Collect, count, group, and compare simple data. *Online safety: Online bullying- Project Evolve.*	**Information Technology** CREATING MEDIA Digital writing To use a computer to write. To add and remove text on a computer. To identify that the look of text can be changed on a computer. To make careful choices when changing text. To explain why they have used the tools that they choose. To compare writing on a computer with writing on paper. **Digital Literacy Skills taught** Basic keyboard skills: typing letters, numbers, symbols, backspace, Enter key	**Computer Science** PROGRAMMING B Introduction to animation To choose a command for a given purpose. To show that a series of commands can be joined together. To identify the effect of changing a value. To explain that each sprite has its own instructions. To design the parts of a project. To use their algorithm to create a program. *Online safety: Privacy and security- Project Evolve.*

	letters or symbols, arrow keys, Del key Basic mouse skills: move, left-click, drag Use equipment safely Create and edit (text and images) Access computing devices: power, login, etc. Compare technology at home and school Use technology safely and respectfully	Create and edit (text and images) Save and open files Contrasting digital/manual creation activities *Online safety: Self-image and identity- Project Evolve.*	*Online safety: Online relationships- Project Evolve.*		Additional keyboard skills: Shift key for upper-case letters or symbols, arrow keys, Del key Additional mouse skills: scroll, right-click, double-click Create and edit (text and images Save and open files Contrasting digital/manual creation activities.	
Year 2	**Computer Science** COMPUTING SYSTEMS AND NETWORKS Information technology around us To recognise the uses and features of information technology. To identify information technology in the home. To identify information technology beyond school. To explain how information technology benefits us. To show how to use information technology safely. To recognise that choices are made when using information technology.	**Information Technology** CREATING MEDIA Digital photography To know what devices can be used to take photographs. To use a digital device to take a photograph. To describe what makes a good photograph. To decide how photographs can be improved. To use tools to change an image. To recognise that images can be changed. **Digital Literacy skills taught** Use digital cameras Create and edit (text and images)	**Computer Science** PROGRAMMING A Robot algorithms To describe a series of instructions as a sequence. To explain what happens when we change the order of instructions. To use logical reasoning to predict the outcome of a program (series of commands). To explain that programming projects can have code and artwork. To design an algorithm. To create and debug a program that they have written. **Digital Literacy skills taught**	**Information Technology** DATA AND INFORMATION Pictograms To recognise that we can count and compare objects using tally charts. To recognise that objects can be represented as pictures. To create a pictogram. To select objects by attribute and make comparisons. To recognise that people can be described by attributes. To explain that we can present information using a computer. **Digital Literacy skills taught**	**Information Technology** CREATING MEDIA Making music To say how music can make us feel. To identify that there are patterns in music. To describe how music can be used in different ways. To show how music is made from a series of notes. To create music for a purpose. To review and refine our computer work.	**Computer Science** PROGRAMMING B Introduction to quizzes To explain that a sequence of commands has a start. To explain that a sequence of commands has an outcome. To create a program using a given design. To change a given design. To create a program using their own design. To decide how their project can be improved. *Online safety: Copyright and ownership- Project Evolve*

	Digital Literacy skills taught Use equipment safely. Compare technology at home and school. Use technology safely and respectfully.	Save and open files *Online safety: Health, wellbeing and lifestyle- Project Evolve*	Recognise and control programmable toys *Online safety: Online reputation- Project Evolve*	Contrasting digital/manual creation activities. Collect, count, group, and compare simple data. *Online safety: Managing online information- Project Evolve*		
Year 3	**Computer Science** COMPUTING SYSTEMS AND NETWORKS Connecting Computers To explain how digital devices function. To identify input and output devices. To recognise how digital devices can change the way we work. To explain how a computer network can be used to share information. To explore how digital devices can be connected. To recognise the physical components of a network. *Online safety: Self-image and identity- Project Evolve*	**Information Technology** CREATING MEDIA Stop frame animation To explain that animation is a sequence of drawings or photographs. To relate animated movement with a sequence of images. To plan an animation. To identify the need to work consistently and carefully. To review and improve an animation. To evaluate the impact of adding other media to an animation. **Digital Literacy skills taught** Create multimedia (text, sounds, images, video, and 3D objects) Apply common skills in new contexts	**Computer Science** PROGRAMMING A Sequence in music To explore a new programming environment and identify that each sprite is controlled by the commands they have chosen. To explain that a program has a start. To recognise that a sequence of commands can have an order. To change the appearance of their project. To create a project from a task description. *Online safety: Online relationships- Project Evolve.*	**Information Technology** DATA AND INFORMATION Branching databases To create questions with yes/no answers. To identify the object attributes needed to collect relevant data. To create a branching database. To identify objects using a branching database. To explain why it is helpful for a database to be well structured. To compare the information shown in a pictogram with a branching database. **Digital Literacy skills taught** Organise and present data *Online safety: Online bullying- Project Evolve.*	**Information Technology** CREATING MEDIA Desktop publishing To recognise how text and images convey information. To recognise that text and layout can be edited. To choose appropriate page settings. To add content to a desktop publishing publication. To consider how different layouts can suit different purposes. To consider the benefits of desktop publishing. **Digital Literacy skills taught** Make use of cut, copy, paste, as well as formatting tools Create multimedia (text, sounds, images, video, and 3D objects) Select appropriate content (purpose, accuracy	**Computer Science** PROGRAMMING B Events and actions To explain how a sprite moves in an existing project. To create a program to move a sprite in four directions. To adapt a program to a new context. To develop their program by adding features. To identify and fix bugs in a program. To design and create a maze-based challenge. *Online safety: Privacy and security- Project Evolve.*

					Apply common skills in new contexts	
Year 4	**Computer Science** COMPUTING SYSTEMS AND NETWORKS The internet To describe how networks physically connect to other networks. To recognise how networked devices, make up the internet. To outline how websites can be shared via the World Wide Web. To describe how content can be added and accessed on the World Wide Web. To recognise how the content of the WWW is created by people. To evaluate the consequences of unreliable content. *Online safety: Health, wellbeing and lifestyle- Project Evolve*	**Information Technology** CREATING MEDIA Audio editing To identify that sound can be digitally recorded. To use a digital device to record sound. To explain that a digital recording is stored as a file. To explain that audio can be changed through editing. To show that different types of audio can be combined and played together. To evaluate editing choices made. **Digital Literacy skills taught** Capture digital content using devices including sound recorders, video cameras, sensors, and controllers (Includes embedded devices, e.g. an integrated tablet camera Create multimedia (text, sounds, images, video, and 3D objects) Select appropriate content (purpose, accuracy	**Computer Science** PROGRAMMING A Repetition in shapes To identify that accuracy in programming is important. To create a program in a text-based language. To explain what 'repeat' means. To modify a count-controlled loop to produce a given outcome. To decompose a program into parts. To create a program that uses count-controlled loops to produce a given outcome. *Online safety: Online reputation- Project Evolve*	**Information Technology** DATA AND INFORMATION Data logging To explain that data gathered over time can be used to answer questions. To use a digital device to collect data automatically. To explain that a data logger collects 'data points' from sensors over time. To use data collected over a long duration to find information. To identify the data needed to answer questions. To use collected data to answer questions. **Digital Literacy skills taught** Capture digital content using devices including sound recorders, video cameras, sensors, and controllers (Includes embedded devices, e.g. an integrated tablet camera Organise and present data Use equipment safely..	**Information Technology** CREATING MEDIA Photo editing To explain that digital images can be changed. To change the composition of an image. To describe how images can be changed for different uses. To make good choices when selecting different tools To recognise that not all images are real To evaluate how changes can improve an image **Digital Literacy skills taught** Create multimedia (text, sounds, images, video, and 3D objects) Select appropriate content (purpose, accuracy Select appropriate content (ownership, copyright) Apply common skills in new contexts.	**Computer Science** PROGRAMMING B Repetition in games To develop the use of count-controlled loops in a different programming environment. To explain that in programming there are infinite loops and count controlled loops. To develop a design which includes two or more loops which run at the same time. To modify an infinite loop in a given program. To design a project that includes repetition. To create a project that includes repetition. *Online safety: Copyright and ownership- Project Evolve*

		Select appropriate content (ownership, copyright) Use equipment safely Apply common skills in new contexts		*Online safety: Managing online information- Project Evolve*		
Year 5	**Computer Science** COMPUTING SYSTEMS AND NETWORKS Sharing information To explain that computers can be connected together to form systems. To recognise the role of computer systems in our lives. To recognise how information is transferred over the internet. To explain how sharing information online lets people in different places work together. To contribute to a shared project online. To evaluate different ways of working together online. **Digital Literacy skills taught** Find suitable information online Select appropriate communication tools Use collaboration tools (e.g. shared documents).	**Information Technology** CREATING MEDIA Video editing To recognise video as moving pictures, which can include audio. To identify digital devices that can record video. To capture video using a digital device. To recognise the features of an effective video. To identify that video can be improved through reshooting and editing. To consider the impact of the choices made when making and sharing a video. **Digital Literacy skills taught** Capture digital content using devices including sound recorders, video cameras, sensors, and controllers (Includes embedded devices, e.g. an integrated tablet camera)	**Computer Science** PROGRAMMING A Selection in physical computing To control a simple circuit connected to a computer. To write a program that includes count-controlled loops. To explain that a loop can stop when a condition is met, e.g. number of times. To conclude that a loop can be used to repeatedly check whether a condition has been met. To design a physical project that includes selection. To create a controllable system that includes selection **Digital Literacy skills taught** Capture digital content using devices including sound recorders, video cameras, sensors, and controllers (Includes embedded devices, e.g. an integrated tablet camera)	**Information Technology** DATA AND INFORMATION Flat-file databases To use a form to record information. To compare paper and computer-based databases. To outline how grouping and then sorting data allows us to answer questions. To explain that tools can be used to select specific data. To explain that computer programs can be used to compare data visually. To apply their knowledge of a database to ask and answer real-world questions. **Digital Literacy skills taught** Organise and present data *Online safety: Online bullying- Project Evolve.*	**Information Technology** CREATING MEDIA Vector drawing To identify that drawing tools can be used to produce different outcomes. To create a vector drawing by combining shapes. To use tools to achieve a desired effect. To recognise that vector drawings, consist of layers. To group objects to make them easier to work with. To evaluate their vector drawing. **Digital Literacy skills taught** Make use of cut, copy, paste, as well as formatting tools Create multimedia (text, sounds, images, video, and 3D objects) Apply common skills in new contexts	**Computer Science** PROGRAMMING B Selection in quizzes To explain how selection is used in computer programs. To relate that a conditional statement connects a condition to an outcome. To explain how selection directs the flow of a program. To design a program which uses selection. To create a program which uses selection. To evaluate their program. *Online safety: Privacy and security- Project Evolve.*

	Online safety: Self-image and identity- Project Evolve	Create multimedia (text, sounds, images, video, and 3D objects) Select appropriate content (purpose, accuracy) Select appropriate content (ownership, copyright) Use equipment safely. Apply common skills in new contexts. *Online safety: Online relationships- Project Evolve.*	Use equipment safely.			
Year 6	**Computer Science** COMPUTING SYSTEMS AND NETWORKS Communication To identify how to use a search engine. To describe how search engines, select results. To describe how search engines, select results. To explain how search results are ranked. To recognise why the order of results is important, and to whom. To recognise how we communicate using technology. To evaluate different methods of online communication.	**Information Technology** CREATING MEDIA Web page creation To review an existing website and consider its structure. To plan the features of a web page. To consider the ownership and use of images (copyright). To recognise the need to preview pages. To outline the need for a navigation path. To recognise the implications of linking to content owned by other people. **Digital Literacy skills taught** Create multimedia (text,	**Computer Science** PROGRAMMING A Variables in games To define a 'variable' as something that is changeable. To explain why a variable is used in a program. To choose how to improve a game by using variables. To design a project that builds on a given example. To use their design to create a project. To evaluate their project. *Online safety: Online reputation- Project Evolve*	**Information Technology** DATA AND INFORMATION Spreadsheets To identify questions which can be answered using data. To explain that objects can be described using data. To explain that formula can be used to produce calculated data. To apply formulas to data, including duplicating. To create a spreadsheet to plan an event. To choose suitable ways to present data. **Digital Literacy skills taught** Organise and present data.	**Information Technology** CREATING MEDIA 3D modelling To use a computer to create and manipulate three-dimensional (3D) digital objects. To compare working digitally with 2D and 3D graphics. To construct a digital 3D model of a physical object. To identify that physical objects can be broken down into a collection of 3D shapes. To design a digital model by combining 3D objects. To develop and improve a digital 3D model. **Digital Literacy skills taught**	**Computer Science** PROGRAMMING B Sensing To create a program to run on a controllable device. To explain that selection can control the flow of a program. To update a variable with a user input. To use a conditional statement to compare a variable to a value. To design a project that uses inputs and outputs on a controllable device. To develop a program to use inputs and outputs on a controllable device. **Digital Literacy skills taught**

	Digital Literacy skills taught Find suitable information online Select appropriate communication tools *Online safety: Health, wellbeing and lifestyle- Project Evolve*	sounds, images, video, and 3D objects) Find suitable information online Select appropriate content (purpose, accuracy) Select appropriate content (ownership, copyright) Apply common skills in new contexts		*Online safety: Managing online information- Project Evolve*	Make use of cut, copy, paste, as well as formatting tools Create multimedia (text, sounds, images, video, and 3D objects) Apply common skills in new contexts.	Capture digital content using devices including sound recorders, video cameras, sensors, and controllers (Includes embedded devices, e.g. an integrated tablet camera Use equipment safely. *Online safety: Copyright and ownership- Project Evolve*