Computing KS1 and KS2 Long term plan outline

This planning follows a spiral curriculum adapted from the National Centre for Computing Education. It is delivered across EYFS through continuous provision and development of early skills, rather than discrete units of topical learning.

Year	Autumn		Spring		Summer	
EYFS	**Disciplinary knowledge focus:** **The prerequisite skills taught across Early Years that support progression into our computing curriculum.** Personal, Social and Emotional Development; Remember rules without needing an adult to remind them, show resilience and perseverance in the face of a challenge, know and talk about the different factors that support their overall health and wellbeing: - sensible amounts of 'screen time'. Communication and language; (Birth to three) Enjoys singing, music and toys that make sounds. Physical Development; Develop their fine motor skills so that they can use a range of tools competently, safely and confidently. Understanding the World; Repeat actions that have an effect (Birth to three), explore how things work (three and four Year olds), make sense of their physical world and their community through opportunities to explore, observe and find out about people, places, technology and the environment. Expressive Arts and Design; Explore, use and refine a variety of artistic effects to express their ideas and feelings. **ELG** Personal, Social and Emotional Development-Managing Self; 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. Expressive Arts and Design-Creating with Materials; Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.					
2 Year Olds	All about me/ Autumn	Nursery Rhymes Christmas/ Celebrations	Food, Glorious Food	Things That Move Easter	Amazing Animals	Plants and Flowers
	Development focus: Explore age appropriate apps on the iPads. Explore how to make toys work by pressing parts or lifting flaps to achieve effects such as sound and movement. To show interest in technological toys. e.g. wind-up toys, knobs and pulleys etc. Begin to understand how to handle equipment safely.					
YN	Marvellous Me/ Autumn	People Who Help Us Christmas/ Celebrations	I Wonder …	All Creatures Great and Small/ Plants Easter	Once Upon a Time	Oh I Do Like to be Beside the Seaside
	Development focus: Explore and complete educational programs on iPads and IWB. Complete simple games/programs on iPad/IWB with some support. Begin to understand that information can be retrieves from digital devices and the internet. Explore/investigate technological toys that have an effect. Draw a simple picture om a screen. Know how to operate simple equipment. Know how to handle equipment safely. Begin to understand internet safety.					
YR	Into the Woods	Sky Full of Stars	Are We There Yet?	Animal Kingdom	Dream Big	Dream Big
	Development focus: Independently complete simple games/programs on iPad/IWB. Know that information can be retrieve from digital devices and the interne. Begin to use the internet to find and retrieve information of interest to them. Explore technological toys/devices and discover/investigate how they work. Create content such as a video recording or a simple story on an app. Draw a detailed picture on a screen. Know how to handle equipment safely. Begin to give some reasons why we need to stay safe online.					

KS1	**Disciplinary knowledge focus: Year 1** **Digital Literacy** – Technology around us. **Information Technology** - digital painting, grouping data, digital writing. **Computer Science** - moving a robot, programming animations. **Disciplinary knowledge focus: Year 2** **Digital Literacy** - information technology around us **Information Technology** – digital photography, pictograms (organise and present data), digital music. **Computer Science** - robot algorithms, program quizzes.					
1	**How can technology help me?** **Unit focus**: Recognise technology in school and use it responsibly. **NC Ref**: 1.4, 1.5, 1.6	**Painting on paper or digital?** **Unit focus:** Choose appropriate tools in a program to create art and make comparisons with working non-digitally. **NC Ref**: 1.4	**Where will it go?** **Unit focus:** Write short algorithms and programs for floor robots and predict program outcomes. **NC Ref**: 1.1, 1.2, 1.3, 1.5	**How can we sort that?** **Unit focus:** Explore object labels, then use them to sort and group objects by properties. **NC Ref**: 1.4, 1.6	**Writing on paper or digital?** **Unit focus:** Use a computer to create and format text, before comparing to writing non-digitally. **NC Ref**: 1.4, 1.6	**Can a character move?** **Unit focus:** Design and program the movement of a character on screen to tell stories. **NC Ref**: 1.1, 1.2, 1.3, 1.4 ***iPad unit**
2	**How is IT being used for good in our lives?** **Unit focus:** Identify IT and how its responsible use improves our world in school and beyond. **NC Ref**: 1.4, 1.5, 1.6	**Which is the best shot?** **Unit focus:** Capture and change digital photographs for different purposes. **NC Ref**: 1.4, 1.5, 1.6	**How does the order of commands affect the outcome?** **Unit focus:** Create and debug programs and use logical reasoning to make predictions. **NC Ref**: 1.1, 1.2, 1.3, 1.4	**How can we collect and organise data?** **Unit focus:** Collect data in tally charts and use attributes to organise and present data on a computer. **NC Ref**: 1.4, 1.5, 1.6	**How can we use events to trigger code sequences in a quiz?** **Unit focus:** Design algorithms and programs that use events to trigger sequences of code to make an interactive quiz. **NC Ref**: 1.1, 1.2, 1.3 ***iPad unit**	**Music with percussion or digital tools?** **Unit focus:** Use a computer as a tool to explore rhythms and melodies, before creating a musical composition. **NC Ref**: 1.4

KS2	**Disciplinary knowledge focus: Year 3** **Digital Literacy** - connecting computers **Information Technology** – stop-frame animation, branching databases, desktop publishing. **Computer Science** – sequencing sounds (block-based programming language), events and actions in programs. **Disciplinary knowledge focus: Year 4** **Digital Literacy** - the internet **Information Technology** – audio production, data logging, photo editing. **Computer Science** – repetition in shapes (text-based programming language), repetition in games. **Disciplinary knowledge focus: Year 5** **Digital Literacy** - systems and searching. **Information Technology** – video production, flat-file databases, introduction to vector graphics **Computer Science** – selection in physical computing, selection in quizzes **Disciplinary knowledge focus: Year 6** **Digital Literacy** - communication and collaboration **Information Technology** – webpage creation, introduction to spreadsheets, 3D modelling **Computer Science** – variables in games, sensing movement (physical computing)					
3	**How do computers connect to other computers?** **Unit focus:** Identify that digital devices have inputs, processes, and outputs. How they can be connected to make networks. **NC Ref**: 2.2, 2.4, 2.6	**Can a picture move?** **Unit focus:** Capture and edit digital still images to produce a stop-frame animation that tells a story. **NC Ref**: 2.6, 2.7 ***iPad unit**	**How can we use sequence to create digital music?** **Unit focus:** Create sequences in a block-based programming language to make music. **NC Ref**: 2.1, 2.2, 2.3, 2.6	**How can branching databases help us in the real-world?** **Unit focus:** Build and use branching databases to group objects using yes/no questions. **NC Ref**: 2.6	**How and why is desktop publishing used in the real-world?** **Unit focus:** Create documents by modifying text, images, and page layouts for a specified purpose. **NC Ref**: 2.5, 2.6	**How can we use a range of events to trigger actions in programs?** **Unit focus:** Write algorithms and programs that use a range of events to trigger sequences of actions. **NC Ref**: 2.1, 2.2, 2.3, 2.6
4	**What is the internet?** **Unit focus:** Recognise the internet as a network of networks including the WWW, and why we should evaluate online content. **NC Ref**: 2.4, 2.5, 2.6, 2.7	**How can I create a podcast?** **Unit focus:** Capture and edit audio to produce a podcast, ensuring that copyright is considered. **NC Ref**: 2.5, 2.6, 2.7	**How can I use loops to create shapes?** **Unit focus:** Use a text-based programming language to explore count-controlled loops when drawing shapes. **NC Ref**: 2.1, 2.2, 2.3, 2.6	**How can data loggers help to carry out an investigation?** **Unit focus:** Recognise how and why data is collected over time, before using data loggers to carry out an investigation. **NC Ref**: 2.2, 2.6 ***iPad unit**	**How can I change a digital image?** **Unit focus:** Manipulate digital images and reflect on the impact of changes and whether the required purpose is fulfilled. **NC Ref**: 2.6, 2.7	**How are games created?** **Unit focus:** Use a block-based programming language to explore count-controlled and infinite loops when creating a game. **NC Ref**: 2.1, 2.2, 2.3
5	**How is information transferred between systems and devices?** **Unit focus:** Recognise IT systems in the world and how some can enable searching on the internet. **NC Ref**: 1.2, 2.2, 2.4, 2.7	**Can a model move? How can 'conditions' be used in programming?** **Unit focus:** Explore conditions and selection using a programmable microcontroller. **NC Ref**: 2.1, 2.2, 2.3, 2.6	**How can I plan, record, edit, and share a video?** **Unit focus:** Plan, capture, and edit video to produce a short film. **NC Ref**: 2.5, 2.6, 2.7 ***iPad unit**	**How can real-life databases be used to help us solve problems?** **Unit focus:** Use a database to order data and create charts to answer questions. **NC Ref**: 2.5, 2.6	**What are vector drawings?** **Unit focus:** Create images in a drawing program by using layers and groups of objects. **NC Ref**: 2.6	**How are interactive quizzes programmed??** **Unit focus:** Explore selection in programming to design and code an interactive quiz. **NC Ref**: 2.1, 2.2, 2.3, 2.6
6	**How can we work collaboratively online?** **Unit focus:** Explore how data is transferred by working collaboratively online **NC Ref**: 2.4, 2.6, 2.7 ***iPad unit**	**What makes a good webpage?** **Unit focus:** Design and create webpages, considering copyright, aesthetics, and navigation **NC Ref**: 2.5, 2.6, 2.7	**Can I use variables to improve my game?** **Unit focus:** Explore variables when designing and coding a game. **NC Ref**: 2.1, 2.2, 2.3, 2.6	**How can I use formulas to create calculated data?** **Unit focus:** Answer questions by using spreadsheets to organise and calculate data. **NC Ref**: 2.6	**What can I do with 3D modelling?** **Unit focus:** Plan, develop, and evaluate 3D computer models of physical objects. **NC Ref**: 2.6, 2.7	**What can a micro:bit do?** **Unit focus:** Design and code a project that captures inputs from a physical device. **NC Ref**: 2.1, 2.2, 2.3, 2.6