2021-22 Computing Curriculum Map

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| **Computing Curriculum** | | | | | | |
| Year | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
| EYFS | **I can Paint**  Introduction to technology and computing, through using MSPaint to practice mouse skills. | **I can use the Mouse and Keyboard**  Developing mouse control & keyboard skills using MS Paint to draw and write. | **I can sort!**  Sorting objects and making a chart of technological and non-technological things  **All About the Spring**  Using iPads to take photographs and record our spring plants. | **I can share a memory**  Linked to DT: Sharing learning they are proud of  How best to make a record of a special event in their lives, such as a trip to the zoo. | **Moving a Robot**  Introduction to early programming concepts, using individual commands with other learners and a Beebot. | **Moving a robot 2**  Explore sequences of commands, moving from one at a time to grouping our directional algorithms. |
| Y1 | **Technology around us**  Learners will develop their understanding of technology and how it can help them in their everyday lives. They will start to become familiar with the different components of a computer by developing their keyboard and mouse skills. Learners will also consider how to use technology responsibly whilst creating art work.  **We are digital painters** Learning painting skills in Microsoft Paint, developing their understanding of a range of tools used for digital painting. Creating digital paintings, while gaining inspiration from a range of artists’ work. Considering their preferences when painting with and without the use of digital devices. | **Moving a robot and hunting for treasure**  An introduction to early programming concepts. Learners will explore using individual commands, both with other learners and as part of a computer program. They will identify what each Beebot command does and use that knowledge to start predicting the outcome of programs. **Treasure hunters.**  Creating our own Bee Bot treasure maps and using those to complete a range of activities | **We are Coders** Starting to code using Kodable. Using coding games on Busythings and moving on to a range of coding software with J2code. | **Exploring Digital Writing** (link to English - Beegu)  Learners will develop their understanding of the various aspects of using a computer to create and manipulate text. They will become more familiar with using a keyboard and mouse to enter and remove text. Learners will also consider how to change the look of their text, and will be able to justify their reasoning in making these changes. Finally, learners will consider the differences between using a computer to create text, and writing text on paper. They will be able to explain which method they prefer and explain their reasoning for choosing this. | **Data, Classification and Animals** (linked to this term’s science)  Introduces pupils to data and information. Labelling, grouping, and searching are important aspects of data and information. Searching is a common operation in many applications, and requires an understanding that to search data, it must have labels. We will focus on assigning data (images) with different labels in order to demonstrate how computers are able to group and present data, whilst using our scientific knowledge of animal classification. | **Coding an Animation**  An introduction to on-screen programming through ScratchJr. Learners will explore the way a project looks by investigating sprites and backgrounds. They will use programming blocks to use, modify, and create programs. Learners will also be introduced to the early stages of program design through the introduction of algorithms. |
| Y2 | **Sequences with Beebots**  Developing pupils’ understanding of instructions in sequences and the use of logical reasoning to predict outcomes. Pupils will use given commands in different orders to investigate how the order affects the outcome. We will also learn about design in programming and will develop artwork for use in a program. We will design algorithms and then test those algorithms as programs and debug them.  **Beebots in Space!**  Creating their own Bee Bot space maps and using those to complete a range of activities. | **Research and Present (with digital writing)**  Learning how to research and use the internet safely and create a PowerPoint presentationlinked to the Great Fire of London. | **Data – Pictograms**  Learners will begin to understand what the term data means and how data can be collected in the form of a tally chart. They will learn the term ‘attribute’ and use this to help them organise data. They will then progress onto presenting data in the form of pictograms and finally block diagrams. Learners will use the data presented to answer questions.  **IT around us**  In this unit, learners will look at information technology at school and beyond, in settings such as shops, hospitals, and libraries. Learners will investigate how information technology improves our world, and they will learn about using information technology responsibly. | **Programming quizzes**Unit introduction This unit initially recaps on learning from the Year 1 ScratchJr unit ‘Programming B – Programming animations’. Learners begin to understand that sequences of commands have an outcome, and make predictions based on their learning. They use and modify designs to create their own quiz questions in ScratchJr, and realise these designs in ScratchJr using blocks of code. Finally, learners evaluate their work and make improvements to their programming projects. | DT – creating a book about our school and its environment | **Dressing Up**  **Conversation**  **We are coders**  Beginning to use Scratch and explore the blocks through simple sequences.  **Amazing Artists**  The learners will use Paint to recreate paintings by famous artists, ranging from Pointillism to Pop Art. |
| Y3 | **Sequencing sounds** Learners explore the concept of sequencing in programming through Scratch. They will be introduced to a selection of motion, sound, and event blocks which they will use to create their own programs, featuring sequences. The final project is to make a representation of a piano. The learning is paced to focus on all aspects of sequences, and make sure that knowledge is built in a structured manner. | **Events and actions in programs** We will explore the links between events and actions, while consolidating prior learning relating to sequencing. Learners begin by moving a sprite in four directions (up, down, left, and right). They then explore movement within the context of a maze, using design to choose an appropriately sized sprite. This unit also introduces programming extensions, through the use of **Pen** blocks. | **Connecting computers**  Learners develop their understanding of inputs, processes, and outputs. Introduction to computer networks, including devices that make up a network’s infrastructure, such as wireless access points and switches.  **Branching databases**  Learners will develop their understanding of what a branching database is and how to create one.  Design a branching database for identification of rocks (linked to science - Rocks; introduction to geology) | **Awesome Animators**  Learning about the history of animation and creating their own flip books, using ‘stick pivot’ on computers and a stop frame animation using tablets **Stop-frame animation** Learners will use a range of techniques to create a stop-frame animation using tablets. Next, they will apply those skills to create a story-based animation. We will conclude with learners adding other types of media to their animation, such as music and text. | **Repetition in shapes** Learners will create programs by planning, modifying, and testing commands to create shapes and patterns. They will use Logo, a text-based programming language.  You can use either a tablet, desktop or laptop computer for this unit. Logo software should be installed or accessible online, for example:  You can use Turtle Academy online at [turtleacademy.com/playground](https://turtleacademy.com/playground) | **Creating a Holiday poster for a Mediterranean Country**  (linked to geography - Why is the Mediterranean Sea so important?)  Researching a Mediterranean country and designing a poster to advertise holidaying in that location.  **Modern Art**  Creating a range of art pieces influenced by artists such as Warhol and Hockney.  e-safety: how to report our concerns about contact. Navigating the online world. |
| Y4 | **The Internet**  Learners will apply their knowledge and understanding of networks, to appreciate the internet as a network of networks which need to be kept secure. World Wide Web is part of the internet - opportunities to explore the World Wide Web to learn about who owns content and what they can access, add, and create. Evaluate online content to decide how honest, accurate, or reliable it is, and understand the consequences of false information. **Repetition in games** Learners will explore the concept of repetition in programming using the Scratch environment. | **Researching Women Who Changed the World**  (linked to English)  Using iPads to research women who changed the world.  Creating a PowerPoint focusing on one woman presenting the Powerpoint to the class. | **Terrific Toymakers!** (Computing and DT)  Designing a  simple toy that incorporates sensors and outputs and creating it in Scratch. Exploring and testing which Scratch blocks to use. Dragon’s Den – selling your toy to the class! | **Data logging**  Consider how and why data is collected over time. Learners will consider the senses that humans use to experience the environment and how computers can use special input devices called sensors to monitor the environment. Pupils will collect data as well as access data captured over long periods of time. They will look at data points, data sets, and logging intervals. Pupils will spend time using a computer to review and analyse data. Towards the end of the unit, pupils will pose questions and then use data loggers to automatically collect the data needed to answer those questions**.** | **Awesome Animators (for this year, as moving to Y3)**  Learning about the history of animation and creating their own flip books, using ‘stick pivot’ on computers and a stop frame animation using tablets **Stop-frame animation** Learners will use a range of techniques to create a stop-frame animation using tablets. Next, they will apply those skills to create a story-based animation. This unit will conclude with learners adding other types of media to their animation, such as music and text. | **Scratch Maths Software Developers**  (link to NCCE selection in quizzes)  Designing, coding and debugging a maths game in Scratch, focusing on inputs and outputs. |
| Y5 | **Variables in games** Exploring the concept of variables in programming through games in Scratch.. **People in Computing** In pairs, research and present information about an influential person in computing.  We will use desktop publishing software to create a poster of the person. | **Selection in physical computing** Children will use physical computing to explore the concept of selection in programming through the use of the Crumble programming environment.  (Crumbles borrowed from NCCE) | **Climate and biomes research and present**  (Linked to geography topic of climate and biomes.) Research and create a presentation about climate and biomes. | **We are architects!**  Designing and Building an art gallery in Sketch Up. Importing images of art work into the gallery | **We are Cryptographers (2 weeks)**  The pupils learn about communicating  information securely via cryptography (the science of keeping communication  and information secret)  **Introduction to Microbits**  Combining elements of all the four programming constructs: sequence from Year 3, repetition from Year 4, selection from Year 5, and variables from Y5. It gives the learners the opportunity to start using the concepts they have learned with a physical device — the micro:bit. We create four programs of increasing complexity, including dice, a magic 8 ball and two types of alarm. | **Scratch Maths for Y5**  Using Scratch to hone mathematical concepts.  Tiling patterns – repeating patterns; beetle geometry – exploring different geometrical rules. |
| Y6 | **Creating Web pages about inspirational figures from WW2**  (link to history - How did WW2 change Britain?) Unit introduction Learners will be introduced to creating websites for a chosen purpose. Learners identify what makes a good web page and use this information to design and evaluate their own website using Google Sites. Throughout the process, learners pay specific attention to copyright and fair use of media, the aesthetics of the site, and navigation paths. | **Selection in physical computing** Children will use physical computing to explore the concept of selection in programming through the use of the Crumble programming environment.  (Crumbles borrowed from NCCE) | **(ICT)Communication**  Learn about the World Wide Web as a communication tool. First, we will learn how we find information on the World Wide Web, through learning how search engines work (including how they select and rank results) and what influences searching, and through comparing different search engines. Then we investigate different methods of communication, before focusing on internet-based communication. Finally, they will evaluate which methods of internet communication to use for particular purposes.  **Creating a Virtual Pet in Scratch** (this project I devised for D of E research – depends on Year 6 interests). | **Tinkercad**  develop their knowledge and understanding of using a computer to produce 3D models. | **MICROBIT**  Link to STEM Project: Future technologies  Introduction to radio sensing. Designing a solution to one of the UN Global Goals. **(Working to enter Global Goals competition, alongside a school in either Nepal or Tunisia, chosen by the British Council).**  **Python**  Introduction to coding in Python. | |