



Achieving Success Together

Curriculum Overview:

Computing



School Vision:

Our Teachers... are creative, engaging and adventurous, offering an excellent curriculum that challenges and inspires to ensure every child is **ACHIEVING**.

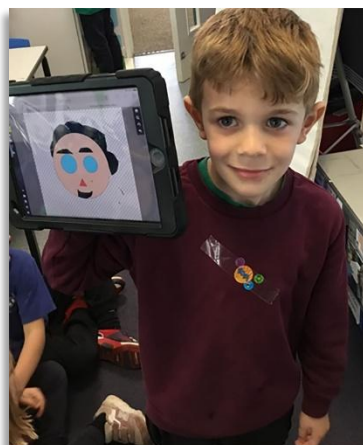
Technology is becoming a more and more integral part of our children's lives and futures, and our Computing curriculum gives teachers the tools to inspire our children to be the most digitally literate citizens they can be. Children are encouraged to be creative by using computational thinking, solving problems in exciting and engaging ways. They are challenged to programme games and animations, present learning using a variety of software and create, edit and publish media. Through their school journey, children will use a range of information technologies to develop their understanding of how digital devices and our online world is intertwined.

Our Children... learn resilience and are happy, confident and independent learners who thrive on celebrating their **SUCCESS**.

Computing teaches children about the opportunities our online world presents. They learn about significant individuals who have changed our digital world. Learning is taught in a spiralled curriculum that builds on knowledge, empowering children to constantly build on and apply their knowledge independently. Opportunities to share learning with teachers and peers are threaded into the curriculum, and children are encouraged to utilise their skills beyond the classroom.

Our School...is a safe and nurturing environment, where everyone works **TOGETHER** to role model our core values of respect, trust and honesty.

Online safety is an essential part of the curriculum that provides children with the skills, knowledge and support network to independently and safely explore an ever evolving online landscape. They are taught how to be responsible digital citizens and spot risks or dangers. They look at a range of communication technologies, the mechanics behind them and the associated expectations of using them. Together, the children learn how to be respectful, independent and confident online citizens.



Intent:

At Browick Road Primary and Nursery School, we are dedicated to delivering a high-quality computing education which will give our children the skills to become responsible, fluent, confident and creative participants of an increasingly digital world. Our intention is for the children to have a foundation of skills and knowledge to prepare them for a life with constantly evolving modes of communication, computer science and information technology.

At our school, the children have opportunities from the very youngest ages to use a variety of devices and software. As they move through the year groups, they will learn new skills and apply these in new and creative contexts. We strive to stay up to date with changes in the fluid computing landscape and use elements of the Teach Computing and Kapow curriculums to keep our curriculum fresh and engaging.

We encourage staff to embed computing across the curriculum to help make learning creative and accessible. We promote fluency with a range of tools to best express their understanding with the hope that all children will head to high school with the confidence and knowledge to choose the best tool to fulfil the task and challenge set by their teacher.



Implementation in EYFS & KS1: We use the NCCE Teach Computing Curriculum

Computing Systems and Networks

Creating Media

Programming

Data and Information

<i>Our curriculum and enquiries</i>	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
EYFS - Nursery	<p>Computing through continuous provision: computers and phones in the role play area.</p> <p>Exploring Hardware: Tinkering and exploring with different computer hardware and learning to operate a camera (iPads). Interactive whiteboards usage embedded as part of learning.</p> <p>Programming Bee-Bots: Learning about directions and experimenting with programming and tinkering.</p>					
EYFS - Reception	<p>All about instructions: Learn to give and receive instructions and understand the importance of precise instructions.</p> <p>Introduction to data: Children begin to sort and categorise data.</p> <p>Online Safety: Introduction to key Online Safety themes when necessary and appropriate. Explicitly taught as part of Online Safety Day.</p>					
YEAR 1	<p style="color: purple;">Technology Around Us</p> <p>Developing learners' understanding of technology and how it can help them. Becoming more familiar with the different components of a computer by developing their keyboard and mouse skills, and also start to consider how to use technology responsibly.</p>	<p style="color: green;">Digital Painting</p> <p>Exploring the world of digital art and its exciting range of creative tools. Empowering them to create their own paintings, while getting inspiration from a range of other artists. Considering preferences when painting with, and without, the use of digital devices.</p>	<p style="color: blue;">Moving A Robot</p> <p>Early programming concepts. Learners explore using individual commands, both with other learners and as part of a computer program. They will identify floor robot commands and use that knowledge to start predicting outcome of programs. Algorithms introduced.</p>	<p style="color: red;">Grouping Data</p> <p>Introduction to data and information. Pupils will demonstrate that they can count a small number of objects, before and after grouping. They will then begin to demonstrate their ability to sort objects into different groups, based on the properties they choose and answer questions about data.</p>	<p style="color: green;">Digital Writing</p> <p>Understanding the various aspects of using a computer to create and change text. Familiarisation with typing on a keyboard and beginning to use tools to change the look of writing. Considering the differences between using a computer and writing on paper to create text.</p>	<p style="color: blue;">Programming Animations</p> <p>Introduction to 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. Introduction of algorithms in a computer program.</p>
YEAR 2	<p style="color: purple;">Information Technology Around Us</p> <p>How information technology is being used for good in our lives. Initial focus on IT in the home, exploring how IT benefits society in places such as shops, libraries, and hospitals, whilst discussing the responsible use of technology, and how to make smart choices when using it.</p>	<p style="color: green;">Digital Photography</p> <p>Recognising that different devices can be used to capture photographs and gain experience capturing, editing, and improving photos. Finally, learners will use this knowledge to recognise that images they see may not be real.</p>	<p style="color: blue;">Robot Algorithms</p> <p>Developing understanding of instructions in sequences and using of logic to predict outcomes. Learners use given commands in different orders to investigate how order affects the outcome. They will also learn about design in programming. They will develop artwork and test it for use in a program and design algorithms to test and debug in programs.</p>	<p style="color: red;">Pictograms</p> <p>Introduction to the term 'data'. Learners begin to understand what data means and how this can be collected. 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.</p>	<p style="color: green;">Digital Music</p> <p>Exploring how music can make you think and feel. Making patterns and using those patterns to make music with both percussion instruments and digital tools. Create different rhythms and tunes. Finally, learners will share their creations and compare creating music digitally and non-digitally.</p>	<p style="color: blue;">Programming Quizzes</p> <p>Recap learning from 'Programming Animations' (Y1). Learners begin to understand that sequences of commands have an outcome. They predict, use and modify designs to create their own quiz questions in ScratchJr and realise these designs using blocks of code. Finally, evaluate work and make improvements to programming projects.</p>

Implementation in LKS2: We use the NCCE Teach Computing Curriculum

<i>Our curriculum and enquiries</i>	Computing Systems and Networks	Creating Media	Programming	Data and Information		
	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
<p>YEAR 3</p> <p>Online Safety: 1 lesson half-termly using Project Evolve.</p>	<p style="color: purple;">Connecting Computers</p> <p>Learners develop their understanding of digital devices, with an initial focus on inputs, processes, and outputs. They compare digital and non-digital devices, before introducing them to computer networks that include network infrastructure devices like routers and switches.</p>	<p style="color: green;">Stop-Frame Animation</p> <p>Learners use a range of techniques to create a stop-frame animation using tablets. 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.</p>	<p style="color: blue;">Sequencing Sounds</p> <p>Exploring the concept of sequencing in programming through Scratch - an introduction to the programming environment. A selection of motion, sound, and event blocks will be used to create programs, featuring sequences. The unit is paced to focus on all aspects of sequences, and make sure that knowledge is built in a structured manner.</p>	<p style="color: red;">Branching Databases</p> <p>Learners develop their understanding of what a branching database is and how to create one. They will use yes/no questions to gain an understanding of what attributes are and use them to sort groups of objects. Learners create physical and on-screen branching databases. They will create an identification tool using a branching database and test it out.</p>	<p style="color: green;">Desktop Publishing</p> <p>Learners become familiar with the terms 'text' and 'images' and understand their use in communicating messages. Learners will discover new terminology in desktop publishing and use their knowledge to create a template for a magazine front cover using desktop publishing software.</p>	<p style="color: blue;">Events and Actions in Programs</p> <p>Exploring the links between events and actions, whilst consolidating prior learning of sequencing. Learners will discover new ways to manipulate a 'sprite' in Scratch. The unit concludes with learners designing and coding their own maze tracing program.</p>
<p>YEAR 4</p> <p>Online Safety: 1 lesson half-termly using Project Evolve.</p>	<p style="color: purple;">The Internet</p> <p>Learners will apply their knowledge and understanding of networks, to appreciate the internet as a network of networks which need to be kept secure. They will learn that the World Wide Web is part of the internet, and will be given opportunities to explore it for themselves in order to learn about who owns content and what they can access, add, and create. Finally, they will evaluate online content to decide how honest, accurate, or reliable it is.</p>	<p style="color: green;">Audio Production</p> <p>Learners identify the input device (microphone) and output devices (speaker or headphones) required to work with sound digitally. Learners will discuss the ownership of digital audio and the copyright implications of duplicating the work of others. In order to record audio themselves, learners will use Audacity to produce a podcast, which will include editing their work, adding multiple tracks, and opening and saving the audio files.</p>	<p style="color: blue;">Repetition in Shapes</p> <p>This unit is the first of the two programming units in Year 4, and looks at repetition and loops within programming. Pupils will create programs by planning, modifying, and testing commands to create shapes and patterns. They will use Logo, a text-based programming language.</p>	<p style="color: red;">Data Logging</p> <p>Pupils will consider how and why data is collected over time. Pupils 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 and look at data points, data sets, and logging intervals. Pupils will use a computer to review and analyse data.</p>	<p style="color: green;">Photo Editing</p> <p>Learners develop their understanding of how digital images can be changed and edited, and how they can then be resaved and reused. They will consider the impact that editing images can have, and evaluate the effectiveness of their choices.</p>	<p style="color: blue;">Repetition in Games</p> <p>Exploring the concept of repetition in programming using Scratch. Learners can discover similarities between two environments. Learners look at the difference between count-controlled and infinite loops, and use their knowledge to modify existing animations and games using repetition. Their final project is to design and create a game which uses repetition, applying stages of programming design throughout.</p>

Implementation in UKS2: We use the NCCE Teach Computing Curriculum

<i>Our curriculum and enquiries</i>	Computing Systems and Networks	Creating Media	Programming	Data and Information		
	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
<p style="text-align: center; color: red;">YEAR 5</p> <p>Online Safety: 1 lesson half-termly using Project Evolve.</p>	<p style="text-align: center; color: purple;">Systems & Searching</p> <p>Learners develop their understanding of computer systems and how information is transferred between systems and devices. Learners consider small and large-scale systems. They explain the input, output, and process aspects of a variety of different real-world systems. Learners discover how information is found on the World Wide Web, through learning how search engines work and what influences searching.</p>	<p style="text-align: center; color: green;">Video Production</p> <p>Children learn how to create short videos in groups. They will be exposed to topic-based language and develop the skills of capturing, editing, and manipulating video. Learners are guided to take their idea from conception to completion with the opportunity to reflect on the success of their projects.</p>	<p style="text-align: center; color: blue;">Selection in Physical Computing</p> <p>Learners will use physical computing to explore the concept of selection in programming through the use of Crumbles. Children learn how to connect and program components (including output devices-LEDs and motors) through the application of their existing programming knowledge. Learners are introduced to conditions as a means of controlling the flow of actions.</p>	<p style="text-align: center; color: red;">Flat-file Databases</p> <p>This unit looks at how a flat-file database can be used to organise data in records. Pupils use tools within a database to order and answer questions about data. They create graphs and charts from their data to help solve problems. They use a real-life database to answer a question, and present their work to others.</p>	<p style="text-align: center; color: green;">Introduction to vector graphics</p> <p>In this unit, learners start to create vector drawings. They learn how to use different drawing tools to help them create images. Learners recognise that images in vector drawings are created using shapes and lines, and each individual element in the drawing is called an object. Learners layer their objects and group and duplicate them to support the creation of more complex pieces of work.</p>	<p style="text-align: center; color: blue;">Selection in quizzes</p> <p>Pupils learn how the If.. Then... Else structure can be used to select different outcomes depending on whether a condition is true or false. They represent this understanding in algorithms and then by constructing programs using Scratch. They use their knowledge of writing programs and using selection to design a quiz in response to a given task and implement it as a program.</p>
<p style="text-align: center; color: red;">YEAR 6</p> <p>Online Safety: 1 lesson half-termly using Project Evolve.</p>	<p style="text-align: center; color: purple;">Communication and collaboration</p> <p>Learners explore how data is transferred over the internet. Learners focus on addressing, before they explore the makeup and structure of data packets. Learners then look at how the internet facilitates online communication and collaboration; they complete shared projects online. Finally, they learn how to communicate responsibly by considering what should and should not be shared on the internet.</p>	<p style="text-align: center; color: green;">Web Page Creation</p> <p>This unit introduces learners to the creation of 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.</p>	<p style="text-align: center; color: blue;">Variables in Games</p> <p>Exploring the concept of variables in programming through games in Scratch. Learners find out what variables are and relate them to real-world examples of values that can be set and changed. Then they use variables to create a simulation of a scoreboard. Learners then focus on design before applying their knowledge of variables and design to improve their games in Scratch.</p>	<p style="text-align: center; color: red;">Introduction to Spreadsheets</p> <p>Organising data into columns and rows to create a data set. Learners Introduced to formulas to calculate data. They are taught how to apply formulas that include a range of cells, and apply formulas to multiple cells. Learners will use spreadsheets to plan an event and answer questions. Finally, learners will create charts, and evaluate their results.</p>	<p style="text-align: center; color: green;">3D Modelling</p> <p>Learners familiarise themselves with working in a 3D space, moving, resizing, and duplicating objects. They then create hollow objects using placeholders and combine multiple objects to create a model of a desk tidy. Finally, learners group and ungroup 3D objects, before planning, developing, and evaluating their own 3D model of a building.</p>	<p style="text-align: center; color: blue;">Sensing Movement</p> <p>A unit that brings together all four programming constructs: sequencing, repetition, selection, and variables. Pupils have the opportunity to use all of these constructs in a different, but still familiar environment, while also utilising a physical device — the micro:bit.</p>

Impact:

Teachers use formative assessment to measure the impact of the curriculum and adapt or extend learning as appropriate. We use questioning and discussion to gauge and further pupil understanding. Our ambition is for all children to be reflective learners who can demonstrate an interest in asking why, with the skills and knowledge to use technology creatively and solve problems. Children are encouraged to showcase, share, celebrate and publish their work which will best show the impact of our curriculum.

We measure pupils' attainment after each unit through a mix of work outcome, , self-assessment, knowledge acquisition (quizzing) and teacher judgement. This helps us understand where our pupils are with their learning and, as a result, the strength of our curriculum.