Ellison Boulters Church of England Academy

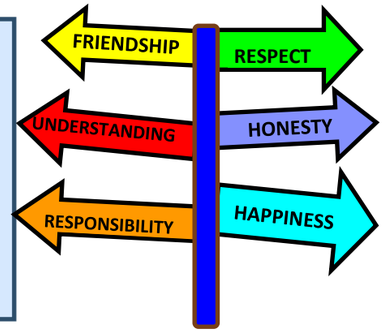
ACCESS FOR ALL CHILDREN

The Computing curriculum is creative, explorative and collaborative. Use of key vocabulary and support from peers and adults, as appropriate, ensure that all children, whatever their barriers, are able to access learning, articulate their ideas, complete tasks and be successful.

LET YOUR LIGHT SHINE

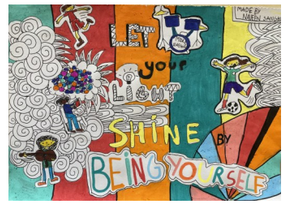
Matthew 5:16

COMPUTING Learning Journey



PEDAGOGY

Computing is rich in complex knowledge. To reduce cognitive over-load, tasks are broken into small steps, discussed and planned by children with each other and the teacher, and demonstrated through worked examples, still providing opportunities to be independently creative.



SUBJECT OVERVIEW

Computing is taught through the NCCE'S Teach Computing scheme of work in KS1 and KS2. In EYFS, Barefoot Computing and Sheffield Computing resources and objectives are used. In EYFS, computing is linked to curricular topic work and cross curricular opportunities are used in KS1 and KS2 for example in the data logging unit where Science data is recorded. Children gradually develop their knowledge of computing (substantive knowledge) alongside the skills (disciplinary knowledge) to implement what they have learnt. Most children bring personal knowledge of using devices and computers into school from home and are able to draw on this and apply it to their work when appropriate, sharing knowledge, skills and preferences with each other. The curriculum is sequenced so that any necessary prior learning is covered before the next unit of work; for this reason lessons from two year groups will appear in the cycle pf work for each year in KS1 and KS2. The teaching of online safety is embedded in lessons across the computing curriculum and across year groups. Children and parents sign user agreements in order to be allowed to access school systems and children also sign age appropriate user agreements at the start of each school year or when joining school. Understanding how to use computers and devices and their applications safely is of paramount importance and we aim to help children and parents understand risks and stay safe.

KEY Computing Systems and Networks | Creating Media | Programming | Data and Information

Computational thinkers

Children are digitally literate

Variety of Software and Hardware use

Use technology safely and appropriately

Y7

SENSING MOVEMENT (Y6)	SELECTION IN PHYSICAL COMPUTING (Y5)	SELECTION IN QUIZZES (Y5)	VARIABLES IN GAMES (Y6)	COMMUNICATION & COLLABORATION (Y6)	SYSTEMS & SEARCHING (Y5)
This unit combines elements of all the four programming constructs: sequence (Y3), Repetition (Y4), selection (Y5) and variables (Y6). Children use simple programs and test them on a micro:bit and then work on further projects with it.	Prior learning of repetition & conditions supports work with physical computer to explore the concept of selection through crumble programming & connect crumble & control components.	Children develop knowledge of selection by revisiting how conditions can be used in programming, use the if… then…else structures to select outcomes, learn how to write programs that ask questions and use selection to control the outcomes.	Children explore variables in programming through games in Scratch. They learn what variables are, relate them to real-world examples then use them to create a simulation of a scoreboard.	Children focus on the makeup & structure of data packets. They learn how the internet facilitates online communication & collaboration, complete shared projects online & evaluate different methods of communication.	Children build their understanding of computer systems and how information is transferred between systems and devices. They identify inputs, outputs and processors of real-world systems and discover how information is found on the world wide web.
SPREADSHEETS (Y6)	**FLAT-FILE DATABASES (Y5)**	**VIDEO PRODUCTION (Y6)**	**WEB PAGE CREATION (Y5)**	**3D DRAWING (Y6)**	**VECTOR DRAWING (Y5)**
Introduction to spreadsheets. Children organise data into rows & columns creating their data set, format data & use formulas, & use spreadsheets to plan an event.	Children use a flat -file database to organise data in records, use tools within a database to order & answer questions about data, & create graphs & charts to help solve problems.	Children learn how to create short videos. They develop the skills of capturing, editing and manipulating video.	This unit sees children creating websites for a chosen purpose. Children identify what makes a good web-site and use this information to design their own.	Children work in a 3D space, move, resize & duplicate objects, & create hollow objects. They plan & develop a combination of objects to create a 3D desk tidy & evaluate it.	Children create vector drawings using different drawing tools to help them create images & learn that drawings are created using shapes & lines. Children layer & duplicate objects.
This unit develops understanding of technology focus-ing on digital & non-digital devices & introducing the concept of connected computers—a network.	Children develop their understanding of networks, apply knowledge to realise the internet is a network of networks, explore the World Wide Web & realise it is part of the internet, evaluate online content for accuracy & reliability.	This unit revisits Scratch. Children are introduced to a selection of motion, sound & events & to use to create their own programmes which contain se-	Children explore links between events and actions, consolidating prior learning about sequences. They move their sprite in different directions and guide it through a maze they have designed.	Children use a text-based programming language; their understand progresses from sequences to count-controlled loops. They plan, test & modify programs.	Children explore repetition with Scratch, learn the difference between count-controlled & infinite loops & use the knowledge to modify animations & games.

Y5/6

YEAR B

YEAR A

Y5/6 ENRICHMENT

Children have the opportunity to be a digital leader

Y3/4

YEAR B

YEAR A

CONNECTING COMPUTERS (Y3)	THE INTERNET (Y4)	SEQUENCING SOUNDS (Y3)	EVENTS & ACTIONS (Y3)	REPETITION IN SHAPES (Y4)	REPETITION IN GAMES (Y4)
DESKTOP PUBLISHING (Y3)	**AUDIO ANIMATION (Y4)**	**PHOTO EDITING (Y4)**	**STOP-FRAME ANIMATION (Y3)**	**BRANCHING DATABASES (Y3)**	**DATA LOGGING (Y4)**
Following Digital writing, painting & music, children use desktop publishing software making careful choices of font size, type & colour.	Children identify input & output devices needed to record sound digitally, produce a podcast, edit their work, add sound tracks, open & save audio & evaluate others' work.	Children: develop their understanding of how digital images are changed , edited , resaved , & reused; consider the impact that editing images can have.	Children use tablets & a range of techniques to create a stop-frame animation, creating a story-based piece of work and adding media such as music and text.	Children will develop their understanding of what a branching database is and how to create one. They will create physical and on screen databases.	Children consider how & why data is collected over time. They learn about special input devices called sensors, data points, data sets, logging intervals, & analyse data.
PROGRAMMING QUIZZES (Y2)	**PROGRAMMING ANIMATIONS (Y1)**	**ROBOT ALGORITHMS (Y2)**	**MOVING A ROBOT (Y1)**	**INFORMATION TECHNOLOGY (Y2)**	**TECHNOLOGY AROUND US (Y1)**
Following 'Programming Animations', children begin to under-stand that sequences of commands have an outcome and make predictions based on learning. They use scratch to use & modify designs to create a quiz.	Children use Scratch Jr. for screen programming ; we investigate sprites & backgrounds & use programming blocks to use, modify & create programs.	Building on 'Moving a Robot' , children learn about sequencing & logical reasoning to predict outcomes. They design , test and debug algorithms in programs.	Children learn early programming concepts using commands with other learners & in a computer program. Algorithms used for early program design .	Children build on knowledge from year 1- *Technology around us* in *Information technology*. Children initially focus on IT in the home then explore its use in society.	Children develop their understanding of technology & how it can help them. They become familiar with different components of a computer.

Y3/4 ENRICHMENT

Children have the opportunity to be a digital leader

Y1/2 ENRICHMENT

Children have the opportunity to attend a computing club run by digital leaders.

Y1/2

YEAR B

YEAR A

PICTOGRAMS (Y2)	GROUPING DATA (Y1)	DIGITAL MUSIC (Y2)	DIGITAL WRITING (Y1)	DIGITAL PHOTOGRAPHY (Y2)	DIGITAL PAINTING (Y1)
This unit builds on Year 1 'Grouping Data', Children begin to understand what data means and how it can be collected in a tally chart. They use pictograms.	Data & information are introduced by putting objects into groups based on properties & labelling them. Children answer questions about the data.	Children explore how music makes them think & feel. They make patterns & use them with percussion instruments & digital tools to make rhythms & tunes based on animal movement.	Children type on a keyboard and use tools to change the look of the writing. They consider differences between using a computer or pen & paper to write.	Children learn to recognise that different devices can be used to take, capture, edit and improve photos. They recognise that images they see may not be real.	Children explore the world of digital art. They create paintings with a range of creative tools & consider own preferences for painting with(out) digital devices.

YR ENRICHMENT EFYS are provided with many opportunities to use technology encouraging and enabling them to be problem solvers, develop their creativity and curiosity and enable them to have strong foundation knowledge to enter year 1 with.

Yr R

ALGORITHMS AND PROGRAMMING	WHAT IS A COMPUTER? EXPLORING SOFTWARE AND HARDWARE	EXPLORING & PRESENTING INFORMATION, MULTIMEDIA & DATA
Children learn about algorithms through play based learning using CAS and Barefoot resources. The unplugged activities develop curiosity, creativity and problem solving skills.	Children use and explore different digital devices such as ipads and access content on them.	Children operate a digital device with support to fulfil a task such as creating digital art.