



# Computing

## **Mission Statement**

### **Loved**

We love one another as Jesus taught us - our friends, our families and those who we may never meet.

### **Valued**

We value everyone - everyone is important; pupils, staff, parents, governors and members of the community— no matter their race, religion ability or need. We try to live like Jesus taught us.

### **Challenged**

We challenge each other - not only with our learning but challenge each other to be more merciful to others, have a little more understanding of others' needs and challenge each other to be better people.

## Our Intent

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world. (National Curriculum 2014).

Our aim is for children to become confident users of technology and to develop the skills and knowledge relating to Computer Science, Digital Literacy and Information Technology. Computing education is an integral part of preparing children to live in a world where technology is continuously evolving. Work and social activities are being increasingly transformed by access to varied and developing technology. We endeavour to ensure that our children fully grasp the relevance of and the possibilities of emerging technologies so that they can play an active, yet safe part in this rapidly changing landscape.

To build upon children's knowledge and understanding from Foundation to Year 6 following the expectations of the National Curriculum 2014 and Development Matters 2021.

To enable children to build and apply a repertoire of knowledge and skills linked to the three strands of the national curriculum: computer science, digital literacy and information technology.

Build knowledge of principles of information and computation, how digital systems work, and how to put this knowledge to use through programming.

Become digitally literate – able to use, express themselves and develop ideas through information and communication technology.

To encourage children to become confident, creative and independent learners, able to solve problems using computational thinking.

To make high quality cross-curricular links whilst maintaining the distinctive nature of the subject.

To ensure children recognise the opportunities and threats that exist from the use of technology and understand how to access technology safely.

## Curriculum

In Key Stage 1, pupils should be taught to:

- understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
- create and debug simple programs
- use logical reasoning to predict the behaviour of simple programs
- use technology purposefully to create, organise, store, manipulate and retrieve digital content
- recognise common uses of information technology beyond school
- use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.

In Key Stage 2, pupils should be taught to:

- design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration
- use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
- select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
- use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

# Curriculum Implementation

## Teaching & Learning

The school uses the DfE approved National Centre for Computing Education's Teach Computing resources as a basis for providing a clear and comprehensive scheme of work in line with the National Curriculum in KS1 and 2 according to the recommended schedule. This has been reviewed since the last policy and with consultation/advice from an SME to a more bespoke, streamlined version of the NCCE's planning.

E-safety is developed both through the NCCE/ProjectEvolve resources, and through PSHE lessons and activities undertaken in our Trust-wide Internet Safety Day. Children in all year groups are exposed to a range of topics which encourage progression across the key strands of computer science, digital literacy and information technology. All children have access to the hardware and software needed to develop knowledge and skills of digital systems and their applications.

Children have the opportunity to explore and respond to key issues such as digital communication, cyberbullying, online safety, security, plagiarism and social media.

The importance of online safety is continuously reinforced and shown through contributions to our 'Keeping Safe' display. Parents are informed when issues relating to online safety arise and further information/support is provided if required.

Progress is assessed on an on-going basis using the NCCE in-built quizzes or assessment rubrics for each unit of learning. This ensures teachers are aware of individual pupil's progress in computer science, information technology and digital literacy.

## Early Years Foundation Stage -

In EYFS, guidance/resources from Development Matters 2021 and Barefoot Computing are used to incorporate aspects of computing throughout the EYFS curriculum. The most relevant statements for computing are taken from the following areas of learning:

- Personal, Social and Emotional Development;
- Physical Development;
- Understanding the World;
- Expressive Arts and Design.

Computing		
Three and Four-Year-Olds	Personal, Social and Emotional Development	• Remember rules without needing an adult to remind them.
	Physical Development	• Match their developing physical skills to tasks and activities in the setting.
	Understanding the World	• Explore how things work.
Reception	Personal, Social and Emotional Development	• 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'.
	Physical Development	• Develop their small motor skills so that they can use a range of tools competently, safely and confidently.
	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	• 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	• Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

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	Computing Long Term Overview					
	Advent 1	Advent 2	Lent 1	Lent 2	Pentecost 1	Pentecost 2
<b>Year 1</b>	Programming A - Moving a robot (NCCE)		Programming B - Introduction to animation (NCCE)		Creating media - Digital Painting/Writing (NCCE)	
	(Computing systems and networks - Technology around us (NCCE) taught cross-curricular and demonstrated through computer use in other modules and discussions. Data and information - Grouping data (NCCE) taught cross-curricular through Science and Maths lessons.)					
<b>Year 2</b>	Creating media - Digital photography (NCCE)	Creating media - Making music (NCCE)	Programming A - Robot algorithms (NCCE)		Programming B - An introduction to quizzes (NCCE)	
	(Computing systems and networks - Technology around us (NCCE) taught cross-curricular and demonstrated through computer use in other modules and discussions. Data and information - Pictograms (NCCE) taught cross-curricular through Maths lessons.)					
<b>Year 3</b>	Computing systems and networks - connecting computers (NCCE)	Creating media - animation (NCCE)		Creating media - desktop publishing (NCCE)		Programming B - Events and actions (NCCE)
	(Data and information - branching databases can be taught cross-curricular through Science.)					
<b>Year 4</b>	Computer systems and networks - the Internet (NCCE)	Creating media - photo editing (NCCE)	Programming A - Repetition in shapes (NCCE)		Programming B - Repetition in games (NCCE)	
	(Creating media - audio editing (NCCE) taught cross-curricular to create a podcast demonstrating knowledge learned in one of the Geography/History units.)					
<b>Year 5</b>	Computer systems and networks - sharing information (NCCE)	Creating media - Vector drawing (NCCE)	Data and information - Flat-file databases (NCCE)		Programming A - selection in physical computing (NCCE)	Programming B - selection in quizzes (NCCE)
	(Creating media - video editing (NCCE) taught cross-curricular to create a video demonstrating knowledge learned in one of the Geography/History units.)					
<b>Year 6</b>	Computer systems and networks - communication / Creating media - Web page creation (NCCE)		Data and information - Spreadsheets (NCCE)	Programming A - Variables in games (NCCE)		Programming B - Sensing (NCCE)

## Assessment and Reporting to Parents

**Teacher assessment** – This is ongoing in lessons and on the completion of a topic, using assessment tools embedded within the NCCE 'Teach Computing' curriculum e.g: knowledge quizzes or rubrics to assist with teacher assessment for KS1 and 2. Throughout school, questioning, observation of work and approaches used, pupils' responses to their own and each other's work, and final outcomes evidenced in books/saved work all inform the assessment process

**Self and peer assessment** – Opportunities for this are used at the end of topics involving positive and constructive critique of their own work, and that of others.

**Reporting to parents** – Comments regarding progression against the age-related expectations for this subject are reported to parents as part of the end of year report.

### Monitoring

The Curriculum leader, alongside SLT, is responsible for monitoring and evaluating curriculum progress.

This is done through:

- work scrutiny,
- planning scrutiny,
- resource audits,
- learning walks which involve lesson observation drop-ins,
- pupil interviews,
- subject-knowledge audits with staff.



### Ideas for Families to Develop their Child's Interest in Computing

**Code Club** – For Upper KS2 children, Code Club is offered as an after-school enrichment opportunity, utilising resources from the Raspberry Pi Foundation to develop understanding of coding and the skills involved using Scratch and Python.

Elements of physical computing are also studied using Micro:bits and Lego Spike. These resources are also freely available at <https://projects.raspberrypi.org/en/codeclub>

**Hour of Code** - The Hour of Code started as a one-hour introduction to computer science, designed to demystify "code", to show that anybody can learn the basics, and to broaden participation in the field of computer science. It has since become a worldwide effort to celebrate computer science, starting with 1-hour coding activities but expanding to all sorts of community efforts. Activities can be found here: <https://hourofcode.com/uk/learn>

**Interland** – Interland is an online learning resources focussing on developing knowledge of internet safety in a fun format. It can be found here:

[https://beinternetawesome.withgoogle.com/en\\_uk/interland](https://beinternetawesome.withgoogle.com/en_uk/interland)

### Priorities for 2022-23

**Priority 1:** Ensure that the computing curriculum - and the teaching of it – drives progress.

**Priority 2:** Ensure that our children are fully aware of the dangers presented to them in their online worlds, having engaged in pertinent discussions about e-safety through a broad and balanced curriculum incorporating the NCCE/ProjectEvolve resources and Trust-wide initiatives.

**Priority 3:** Ensure that equipment and resources for staff and pupils are audited to ensure that they are fit for purpose.

