

Computing

Curriculum Intent

A high-quality computing education equips pupils to understand and change the world through logical thinking and creativity, including by making links with mathematics, science, and design and technology. The core of computing is computer science, in which pupils are taught the principles of information and computation, and how digital systems work. Computing equips pupils to use information technology to create programs, systems and a range of media. It 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.

The national curriculum for computing aims to ensure that all pupils:

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation.
- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems.
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems.
- are responsible, competent, confident and creative users of information and communication technology.

At Clifford Road Primary the development and progression of skills and knowledge is organised as under these areas:

1. Computing Systems and Networks
2. Programming
3. Creating Media
4. Data Handling
5. Online safety
6. Ongoing skills and knowledge

Curriculum Implementation

The school uses two teaching and learning programmes to deliver computing:

1. Kapow (main teaching programme)
2. Teach Computing (enhances Kapow)

Most teaching units use the Kapow programme which is organised into these three strands:

- computer science
- information technology and
- digital literacy

Kapow Primary's Computing scheme of work has been designed as a spiral curriculum with the following key principles in mind:

- ✓ Cyclical: Pupils revisit the five key areas throughout KS1 and KS2.
- ✓ Increasing depth: Each time a key area is revisited; it is covered with greater complexity.
- ✓ Prior knowledge: Upon returning to each key area, prior knowledge is utilised so pupils can build on previous foundations, rather than starting again.

The Kapow Primary scheme is organised into 5 key areas, creating a cyclical route through which pupils can develop their computing knowledge and skills by revisiting and building on prior learning. They are:

Computing systems and networks	Programming	Creating media	Data handling	Online safety
Identifying hardware and using software, while exploring how computers communicate and connect to one another.	Understanding that a computer operates on algorithms, and learning how to write, adapt and debug code to instruct a computer to perform set tasks.	Learning how to use various devices – record, capture and edit content such as videos, music, pictures and photographs.	Ensuring that information is collected, recorded, stored, presented and analysed in a manner that is useful and can help to solve problems.	Understanding the benefits and risks of being online – how to remain safe, keep personal information secure and recognising when to seek help in difficult situations.

Computing planning overview – KS1 and KS2 2022-2023

	Term 1	Term 2	Term 3
Year 1	Kapow: - Improving mouse skills 5 lessons - Algorithms unplugged 5 lessons - Online safety lesson 1 and 2	Kapow: - Programming - Beebots 5 lessons (links to 3 little pigs) - Online safety lesson 3 and 4	Kapow: - Digital imagery (links to literacy and art) - Introduction to data (links to science)
Year 2	Teach Computing planning: - Digital photography lessons 2-5 (4 lessons) Kapow: - What is a computer? 5 lessons - Online safety lesson 1 and 2	Information technology: - Word processing (typing skills) https://s.typingclub.com/schools/signup.html - Copy and paste photos from the internet - Create a document with words and pictures Kapow: - Algorithms and debugging first 3 lessons - Online safety lesson 3 and 4	Kapow: - Online safety lesson 5 - Programming Scratchjr 5 lessons - Stop motion (option 3) - 5 lessons
Year 3	Teach Computing planning: - Desktop publishing Kapow: - Networks and the internet option 1 (5 lessons) - Online safety lesson 1 and 2	Kapow: - Programming: Scratch (5 lessons) - Emailing (5 lessons)	Kapow: - Comparison cards databases (5 lessons) - Video trailers option 1 (5 lessons) - Online safety lesson 3 and 4
Year 4	Teach Computing planning: - Photo editing Kapow: - Investigating weather (5 lessons) - Online safety lessons 1-3	Kapow: - Collaborative learning option 1 (5 lessons) Teach Computing planning: - Data logging (links to Science sound)	Kapow: - Further coding with Scratch (5 lessons) - Computational thinking (5 lessons) - Online safety – lessons 4-6
Year 5	Kapow: - Search engines option 1 (5 lessons) - Online safety lessons 1 and 2 Teach Computing planning: - Flat-file databases	Teach Computing planning: - Programming: Selection in physical computing (crumble) (links to Mars Rover for Science week) Kapow: - Online safety lessons 3 - 5	Kapow: - Programming music option 2 Scratch (5 lessons) - Stop motion animation option 2 (5 lessons) (ianimate app?)
Year 6	Kapow: - Bletchley Park (5 lessons) - History of Computers (5 lessons) - Online safety lessons 1 and 2	Kapow: - Intro to Python (5 lessons) - Online safety lessons 3 - 6	Teach Computing: - Spreadsheets - Programming B - Sensing

The language of computing is developed in every year group (see computing vocabulary progression document).

Teachers deliver the computing curriculum to their class either within weekly lessons or in blocked extended sessions.

Enriching the computing curriculum:

Opportunities to make links with other curriculum areas are used to further develop the children's skills. During British Science Week, computer science is celebrated, e.g., children from year 4 study Ada Lovelace and Grace Hopper. We have enjoyed a longstanding partnership with the BT Community Engagement team at BT Adastral Park, established in 2012. Our partnership has involved working alongside computer scientists to develop resources to teach computational thinking skills.

Children have represented the school in national competitions, including CoSpace, Crumble (line following and onstage) and Scratch. To enter, the children need to work as a team and develop code over a period of time using computational thinking skills as well as showing that they are able to adapt their code while under a time constraint. The children have achieved well in these events.

Curriculum Impact

The School's computing curriculum is comprehensive, well-designed and is planned to demonstrate progression and build on and embed skills. Progress is defined by the children knowing more and remembering more. We measure this through the following methods:

- What we observe – saved work, learning walks and drop ins
- What the pupils say - Pupil discussions/interviews with pupils about their learning
- What the children produce - pupil outcomes

The process will also include:

- Reflective discussions with staff and feedback;
- A reflection on standards achieved against the planned outcomes.