

## Curriculum Statement for Computing



## Belonging, Being, Becoming

**Our principle aims, following the National Curriculum in England for computing are for pupils to:**

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

The core of our computing curriculum is the National Curriculum for England, which is supplemented by the Teach Computing scheme of work.

**The curriculum has been specifically sequenced in a logical progression** to ensure that new knowledge and skills build on what has been taught before: Early Years to Year 6. This enables our pupils to know more and

remember more. End points are clearly identified for each year group within each of the three strands through a whole school computing progression map.

**All children have access to a high-quality, ambitious computing curriculum** that is both challenging and enjoyable and raises pupil's aspirations. We widen their horizons through a context rich curriculum, that gives purpose to their learning, through high expectations for every child to succeed.



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.

**Every year group has a yearly curriculum map** that outlines the key areas of Computing which will be taught throughout the year. This ensures that an adequate amount of time and coverage is allocated to each key area. The school is well-equipped to support the computing curriculum with 3 laptop trolleys for each key stage along with an iPad trolley that is timetabled for classes to use to ensure that an adequate amount of time and coverage is allocated to each unit. We also have a class set of microbits, crumbles, dash and dot robots, and cubetto to enable children to use a variety of coding equipment to support their learning.

**Detailed medium-term planning** from Teach Computing supports teachers to plan a sequence of progressive weekly lessons and over time, giving the children time to master new substantive concepts. Within this document, key objectives, success criteria and vocabulary are outlined as well as pictorial examples of the learning to take place. Progression documents used to support

the medium-term plan, to ensure that staff are delivering a consistent and challenging curriculum that builds on prior learning.

**At Sir Alexander Fleming, we have five curriculum drivers** that are central to our school vision and ethos. They help to drive and shape the curriculum and are incorporated across all subjects and themes.



**Inclusion** – All pupils participate in computing. Each learner is an individual and we use a child centred approach to adapting our teaching to meet their need.

We make the following adaptations to the curriculum to ensure all pupils needs are met:

- Differentiating our curriculum to ensure all pupils can access it, for example, by grouping, 1:1 work, teaching style, content of the lesson etc.
- Adapting our resources and staffing.
- Using recommended aids, such as laptops, coloured overlays, visual timetables, larger font etc
- Differentiating our teaching, for example, giving longer processing times, pre-teaching of key vocabulary, reading instructions aloud, visual cues to accompany verbal instructions.

We use the NASEN 'Teacher Handbook: SEND' (2021) to further inform our inclusive practice by considering specific adaptations for each curriculum area.

Inclusion is supported through collaboration, particularly through programming activities as well as structured group tasks. By working together children can build dialogues, articulate the key concepts and develop a shared understanding.

Computing lessons build on each other within a unit. Each lesson typically starts with an introduction to introduce new concepts or recap learnt concepts and builds on to three activities. These may be practical tasks or discussion based tasks where children work together to explore and investigate new concepts. Lessons are often finished with a plenary to sum up the lesson's learning and assess understanding.

Within the lesson, teachers check pupils understanding effectively and address any misconceptions swiftly. The curriculum is designed and delivered in a way that allows pupils to know more and remember more. Key concepts are embedded in their long-term memory so they can apply them fluently.

**Wellbeing** - We place emphasis on a curriculum that develops the whole child. Through our core values – happiness, respect, responsibility, creativity, honesty, enthusiasm, confidence, kindness, cooperation and fairness – we ensure that the wellbeing of all members of the community is at the centre of our life in school and the key to raising academic success. Our children gain a sound knowledge of their own value and purpose, with the ability to make choices and decisions. In computing children are enabled to become creative, confident learners of technology who can solve problems, work collaboratively and think logically. Within many of our computing units, children are given the opportunities to create projects which build up pupil's confidence, self-esteem and wellbeing. Throughout the year, we regularly look at ways we can be safe online to ensure all children feel safe when using technology and know where to turn should they ever face anything they feel uncomfortable with while online.

**Oracy** – Our curriculum aims to develop learners who can think critically, reason together and have the vocabulary to express their knowledge and understanding. In computing, oracy is developed through introducing and using the key language and vocabulary within each unit. Children are expected to

use the appropriate terminology to explain their thoughts and ideas within each of the computing units.

**Enrichment** - A range of visits or visitors into school are planned across the curriculum. These are organised by teachers, to offer a range of experiences that help to broaden the understanding of curriculum content, enrich the curriculum delivery with real-life experiences and most importantly help the children embed and retrieve their learning.

In computing, enrichment includes a KS1 and KS2 coding club which takes place after school for a half term each year where they are taught to code using the app; SCRATCH.

Children use their learning from computing lessons to complete challenges in coding club. Sir Alexander Fleming also takes part in the national internet safety day coordinated by the UK Safer Internet centre in February of each year. The whole school explore the annual theme and take part in different activities to embed the learning surrounding internet safety. We also use our ECadets to lead a class assembly each half term to embed internet safety throughout the year. At the beginning of each computing lesson, teachers focus on an online safety theme taken from Project Evolve and use this as a discussion point for their class.

**Physical activity** – Sport England Survey shows that active children are happier, more resilient and more trusting of others and it's also shown a positive association between being active and higher levels of mental wellbeing, individual development and community development. At Sir Alexander Fleming we build physical activity into computing through incorporating activities where children can move around within the lesson. For example, within coding in KS1, children work together to create an algorithm for their partners to follow moving around the classroom or playground from a starting point to an end point. Within KS2, children are encouraged to move around the classroom to explore each other's projects to support and appreciate each other's hard work. Children also develop their fine motor skills through having opportunities to become familiar with input devices such as a keyboard and mouse within the 'creating media' units.

**The EYFS curriculum** includes rich opportunities for children to develop their computational thinking concepts and approaches. Children are taught different problem-solving skills needed for everyday life through physical computing and

unplugged activities. At Sir Alexander Fleming, we create many opportunities for the children to use technology to solve problems and produce creative outcomes. We use the barefoot resources to support teaching and learning of computing in the Early Years to enable them to become more confident and aware of technology as they move into KS1. Throughout the whole of the Foundation Stage, the pupils will have opportunities to build and apply their computing understanding both inside and outside.

**In Key Stage 1**, pupils are 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. In computer science lessons, pupils are taught to create and debug simple programs and use logical reasoning to predict the behaviour of simple programs. Within the Teach Computing scheme of work pupils are taught to use technology purposefully to create, organise, store, manipulate and retrieve digital content. Pupils are taught to recognise common uses of information technology beyond school and how to 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.

Building on the skills taught, **pupils in KS2** are 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.

**Assessment** is woven throughout the curriculum and is used by staff to check pupil's understanding of key concepts. At the beginning of each lesson the class teacher will recap on previous learning to ensure children can recall the information; they then share a learning objective and success criteria with the children. This informs them what they are learning and the steps they need to take to be successful. The teacher will assess the pupils against the success criteria. The assessment will be based on the pupil's application of taught knowledge through class discussion, answering questions, practical activities and if appropriate written work. This supports in identifying gaps in knowledge and understanding enabling teachers to respond appropriately. We also recognise the value of assessment as an important learning tool which provides opportunities for pupils to strengthen their memories through concerted effort.

**The impact of our computing curriculum is that:**

- Our pupils love computing and can explain the importance of the subject in their everyday lives. They can also explain how the subject will help them in their future careers.
- Our pupils have a sound understanding of the knowledge and skills they have been taught which prepares them for their next stage of education.
- Our teachers have high expectations for every pupil which is evident throughout the high standards of work which pupils clearly take pride with.
- Our teachers have good subject knowledge and are aware of the resources available to help them plan well-structured lessons.
- Our subject leaders have a clear understanding of the schools' strengths and areas for improvement. There is a constant drive to ensure that we can be the best we can be.