



Computing Overview

“Computing is the use of technology to solve problems, create content and understand the digital world we live in, and how to stay safe in it.”

At Ellington Primary School, we recognise the significant role that computing plays in the world, and in line with the National Curriculum, we believe that all the pupils we teach should have a broad and balanced experience of technology. In our computing lessons, pupils are encouraged to develop their computational thinking skills, providing them with the ability to approach problem solving activities with confidence across a range of other subjects, including maths, science and history. From the very youngest year groups, children are taught key skills within the different strands of computing: ‘Coding and Computational Thinking’, ‘Information Technology’ and ‘Computing Systems and Networks’. Through these strands, we ensure that pupils experience and become confident with a wide range of software and hardware, including physical computing components. Woven through this teaching and linking with our PSHE curriculum is a deep-rooted understanding of online safety, which is absolutely essential to ensure pupils’ navigation through our digital world.

Purpose of study

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.

Aims

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.

Attainment targets

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

Subject Content

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.

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.

[A link to the National Curriculum: Computing Programmes of Study](#)

Curriculum

Alongside our Computing advisor, we have created a comprehensive curriculum to best embed and cover all elements of the Primary Computing curriculum. The progression of knowledge and skills statements build year on year to deepen and challenge our learners. We use Purple Mash as the core of our curriculum tied with Teach Computing and activities from both Project Evolve and Barefoot Computing to create a comprehensive curriculum providing full curriculum coverage and a variety of skills for our children.

Due to the constant and rapid evolution of technology in our modern world, we will always strive to update and adapt areas of our computing curriculum as needed to ensure that it remains relevant to our children and the context of our school.

Intent

At Ellington Primary School, our vision is to cultivate a deep-rooted enjoyment for Computing among all our pupils, fostering confidence, passion, and responsibility in their use of technology both within and beyond the school environment. Through interesting, relevant and inclusive lessons, they will be able to leave Year 6 with a good understanding of how computers and the Internet work, along with being able to complete tasks on them creatively, independently and reflectively for a range of purposes and audiences.

The Computing curriculum at Ellington is designed to empower students in embracing and harnessing the potential of emerging technologies. By imparting essential knowledge, principles, and concepts, our curriculum cultivates a deep understanding of Computing. As the renowned theoretical physicist and cosmologist **Stephen Hawking** aptly stated, *"Whether you want to uncover the secrets of the universe, or you want to pursue a career in the 21st century, basic computer programming is an essential skill to learn."* In today's dynamic landscape, pupils must not only adapt but thrive amidst rapid technological advancements. Our curriculum ensures that pupils are not only proficient in current tools but also equipped with the adaptability and creativity required to navigate future career opportunities with confidence.

Our computing curriculum is underpinned by our curriculum drivers:

Aspirations

Engaging in a meaningful computing curriculum at primary school level undoubtedly raises aspirations amongst pupils. Understanding the principles of computer science and mastering a range of computational thinking skills by the time pupils leave year six opens up a world of possibilities as they progress through the education system, allowing them to engage with the modern world effectively. We believe that it is particularly important to ensure that all children have an equal opportunity to engage with computing at school, regardless of gender or social economic background.

Wider World

Developing children's digital literacy is essential to ensuring that they have an appreciation of the wider world. Children engage regularly in activities which help them to understand how their actions online can affect others and to take responsibility for their behaviour in the digital world, which extends across international borders. Computing helps children to connect with the wider world and gives them access to a wealth of information about different cultures, and we constantly strive to ensure that they are turning into responsible digital citizens as they explore this online content.

Independent Thinking

Independent thinking is constantly fostered through our computing curriculum. From a young age, children are presented with problem solving activities which they tackle either collaboratively or independently. The very nature of engaging with technology in lessons means that children are frequently required to evaluate their own success in what they are aiming to achieve, and take responsibility for making progress.

Implementation

Computing skills are taught explicitly at Ellington with every pupil receiving dedicated Computing lessons throughout each half-term. Each half-term has a focus on either Information Technology, Coding and Computational Thinking *or* Computing Systems & Networks with Online Safety lessons also included throughout each half-term. The skills acquired are then embedded throughout the curriculum.

Learning is sequenced to build knowledge, skills and vocabulary. Throughout the units of work, teachers encourage children to make links between past learning and new content. We recognise prior learning and build upon it with memorable learning experiences and provide targeted support where necessary. The units address the requirements of the National Curriculum and are broken down to cover all elements of the different strands of Computing.

What will I see if I visit a computing lesson at Ellington?

Knowledge Check:

An opportunity at the start of the lesson to revisit prior learning to support with the recall and retention of key knowledge as well as addressing misconceptions.

Creative Quality First Teaching:

Teachers use and adapt units of work to ensure that they are delivering high quality and inclusive computing teaching for all children in their class. SEND pupils are supported by strategies specific to computing lessons, such as supportive paired work, scaffolded resources and visual aids. Children take part in regular paired and group tasks which stimulates classroom dialogue, articulation of concepts and development of shared understanding.

Clear Instruction:

Children are supported in each stage of learning via clear instruction from the teacher. Complex computing concepts are introduced in small steps, ensuring that terms and vocabulary are fully embedded before moving on to higher levels of understanding.

Skilful teacher questioning:

Teachers use effective questioning to uncover misconceptions and address them as they occur.

Creative, safe and supportive environment:

Children and adults work together to make classrooms safe and happy places to be. Mistakes are celebrated and seen as opportunities to learn. Children are reminded of personal safety and risk assessment. We use the Zones of Regulation to support children in making positive choices around their behaviour and refer to class charters and school rules.

Links to our curriculum drivers and school values:

Wherever possible, teachers highlight links to curriculum drivers and school values so that children recognise their importance and support their learning, for example links may be made to careers relevant to that subject or unit of work.

Lock It In:

Completed in the plenary, this activity is an opportunity to assess key learning from the lesson and is used to support future planning.

Impact

The impact of our Computing curriculum is that we provide pupils with a set of skills to embed a lifelong love of learning and that they build on the knowledge and skills from previous learning. We ensure that every child can become a confident user of

technology, while being able to use it to accomplish a wide variety of goals, both at home and in school. Children are encouraged to participate in a range of extra-curricular activities centred around computing and they are given opportunities to take part in exciting opportunities to present the work they have been doing in computing with wider audiences and other schools. By the time they leave Ellington, children have a secure and comprehensive knowledge of how technology works in the world around them and have developed their understanding of how to deal with online situations safely. We aim for our children to become confident global citizens.

Through the explicit teaching of Computing skills, both the teachers and the pupils assess their learning continuously throughout the units. To help children get to a deep level of understanding, we use quizzes and knowledge organisers that we return to again and again. This is known as interleaving. The knowledge organisers outline what we want the children to know within each unit. The 'Knowledge Check' activities completed at the start of each computing lesson include questions that require the pupils to recall information from previous units of work and knowledge that they have acquired in previous years, ensuring that they regularly need to draw on prior understanding and retrieve and link information effectively.

Due to the improved consistency of our approach to Computing at Ellington Primary School, we have seen a big improvement in the children's ability to talk about their learning and an embedding of key vocabulary. The children feel confident to use the knowledge organisers to help them vocalise their understanding and make links between the learning they have done in different year groups. We have also ensured that engagement with Computing lessons is extremely high, regardless of children's SEND status, due to the careful scaffolding of tasks, clear display and frequent use of unit vocabulary and collaborative working environment during the lessons. We ensure that all children have access to equal opportunities and a varied range of computing resources, regardless of social status.

By nature, Computing is going to be practical and hands on. We use 'floor books' to record the learning the children have provided in Computing, as well as giving the children the opportunity to record individually their responses to key questions. Teachers ensure that children understand and apply the correct vocabulary linked to different elements of the curriculum and this is also recorded within the floor books. Prior and future learning links are also included, so that there is a clear sequence in relation to the progression of skills and activities. Children frequently refer to the computing 'S Plan', which makes clear the links between previous years' work and what they are currently studying, and helping them to be able to talk about the recurring strands that they come back to again and again as they progress through the school.