

Osmotherley CP Primary School Computing Curriculum



“ A high quality computing education equips pupils to use computational thinking and creativity to understand and challenge the world. ” DFE National Curriculum 2014

Intent

At Osmotherley Primary School we strive to provide a high-quality computing education, which engages, inspires and challenges pupils, equipping them to use computational thinking and creativity to become digitally literate. They will be able to use information, communication technology and express themselves through it as responsible, respectful and active citizens of the digital world.

Computing is taught in progressive steps in each area, which build on prior learning. Recalls at 2,6 and 12 weeks are used to ensure that knowledge is embedded in the children’s long-term memory, so that they know more, remember more and can do more.

Computing National Curriculum Purpose of Study 2014.

“ A high quality computing education equips pupils to use computational thinking and creativity to understand and challenge 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 the 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 context. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in the digital world.

Aims

Across the three key stages all pupils will learn 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 practice in writing computer programs in order to solve problems.
- Evaluate and apply information technology analytically to solve problems.
- Become responsible, competent, confident and creative users of information and communication technology.

How will computing be taught at Osmotherley School?

Computing at Osmotherley will be taught by delivering the statutory requirements for Computing within the National Curriculum in Key Stage 1 and 2. Although the technology strand has been removed from the Early Years Framework 2021, we believe that it is important for children to enter Year 1 with a strong foundation of computing knowledge. We have decided on the most important and appropriate knowledge for our Reception children and included it in our curriculum.

Within the teaching of computing at Osmotherley School, we want to encourage pupils to learn to use computational thinking and creativity to understand the potential computing has to change the world. Pupils will have discreet computing lessons, but as computing has deep links with maths, science and design and technology, they will learn to apply the skills gained, across a range of subjects. Pupils will be taught computer science, which is at the heart of the computing curriculum. They will learn the principles of information and computation, how digital systems work and how to put this knowledge to use through programming. They will build on this knowledge to create programs, systems and a range of content.

There will be an emphasis on ensuring the pupils become digitally literate; using technology safely, respectfully and responsibly and recognising what is acceptable/unacceptable behaviour. They will be able to use, express and develop their ideas through information and communication technology, becoming responsible, active participants in a digital world.

How will computing knowledge and skills be taught?

During their Reception Year:

The children will be given opportunities to:

- interact with age appropriate computer software to support their wider learning
- understand how to stay safe using technology at home and at school

Within Key Stage 1:

The children will be given opportunities to:

- Understand what algorithms are.
- Create and de-bug simple programs
- Use logical reasoning to predict the behaviour of simple programs
- Use technology purposefully to create, organise, store, manipulate and retrieve digital content
- Recognises common uses of technology outside school
- Use technology safely and respectfully

They will leave Key Stage 1 with this key knowledge:

1. What an algorithm is.
2. How to create and debug simple programs.
3. How to predict the behaviour of a simple program.
4. How to store and retrieve digital content.
5. Where technology is used outside school and how to use it safely and respectfully.

Within Key Stage 2:

The children will be given opportunities to:

- Design, write and de-bug programs that accomplish specific goals
- Use sequence, selection and repetition in programs, working with variables and various forms of input and output
- Use logical reasoning to explain how simple algorithms work
- Understand computer networks, including the internet and the opportunities they offer to communication and collaboration.
- Use search engines effectively and be discerning in evaluating digital content.
- Select, use and combine a variety of software on a range of digital devices to 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 ways of reporting concerns about content and contact.

They will leave Key Stage 2 with this key knowledge:

1. How to design, write and de-bug programs
2. What inputs and outputs are and how to use sequence, selection and repetition in programs
3. What an algorithm is and how it works.
4. How computer networks and the internet work.
5. How to use search engines safely and effectively.
6. How to collect, analyse, evaluate and present data and information.

COMPUTING CURRICULUM: PROGRESSION THROUGH THE COMPONENTS OF THE NATIONAL CURRICULUM

Early Years Reception Expected	Key Stage 1 Years 1 and 2 Expected	Lower Key Stage 2 Years 3 and 4 Expected	Upper Key Stage 2 Years 5 and 6 Expected
Online safety			
Pupils will know: - what to do if they don't like something they see when using technology.	Pupils will know: - what to do if they don't like something they see when using technology. - which search engines and software are safer for them to use. - to keep passwords private	Pupils will know: -how to stay safe whilst communicating with others online. -use ICT safely, identifying potential risks and knowing who to tell if anything worries them online	Pupils will know: -The privacy settings relevant for reducing risk. - how to find 'report and flag' buttons and name sources of help eg childline, Cybermentors. -how to find a Click-CEOP button and explain what it is for.

			-how to be a good online citizen and role model, articulating what constitutes good behaviour online.
Computer networks			
<p>Pupils will know:</p> <ul style="list-style-type: none"> - how to take a photo and save it into their folder using an i-pad. 	<p>Pupils will know:</p> <ul style="list-style-type: none"> - how to store photos and work safely on seesaw and know how to access them again in the future. 	<p>Pupils will know:</p> <ul style="list-style-type: none"> - what computer hardware is, demonstrating an understanding of input, output and storage devices used in everyday life. - how to use software and search engines effectively, becoming discerning in evaluating digital content. - the opportunities offered for communication and collaboration 	<p>Pupils will know:</p> <ul style="list-style-type: none"> - what computer hardware is, identifying and defining the functions of the processor, memory and back-up storage. -how networks work and provide multiple services such as the internet and world wide web. -the opportunities offered for communication and collaboration such as e-mail and video conferencing.
Programming			
<p>Pupils will know:</p> <ul style="list-style-type: none"> - how to operate a beebot. - that a computer needs to be given instructions to work. 	<p>Pupils will know:</p> <ul style="list-style-type: none"> - what an algorithm is. - how to create and debug a simple program. For example using purple mash. 	<p>Pupils will know:</p> <ul style="list-style-type: none"> -what an algorithm is and how to detect and correct errors in algorithms and programs (de-bug) -how to use computational thinking to show the use of sequence, select and 	<p>Pupils will know:</p> <ul style="list-style-type: none"> -how produce algorithms independently using logical and appropriate structures to create precise and accurate sequences of instructions.

	- how to predict the behaviour of a simple program by looking at the algorithm.	repetition in programs; designing and writing their own programs that accomplish specific goals. -how to use logical reasoning to detect problems and make changes.	-how to use flowcharts and other diagrams to explain how a model works. -how to use logical reasoning to solve problems and predict what will happen when variables within a model change.
Digital Literacy			
	Pupils will know: - how to use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	Pupils will know: -how to become discerning in evaluating digital content, checking the plausibility and usefulness of the content they find. -how to use a range of different approaches to search and retrieve digital information to accomplish given goals.	Pupils will know: -how to search for and select information, using different sources to double check the information found. -how to prepare, present and evaluate information in a range of forms, using ICT responsibly and safely.
Data Handling			
	Pupils will know: - how to 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.	Pupils will know: -how to select, sort and organise information to put in a database. -how to create a branching database from information they have collected and sorted. Add examples (when we know)	Pupils will know: -how to use formulas to change a spreadsheet model. -how to create data collection forms and enter the data accurately. -how to create graphs from the calculations on their spreadsheet. Add examples (when we know)

		Year A Year B Year C Year D	Year A Year B Year C Year D
Vocabulary			
internet technology click photo save	algorithm debug safety search engine program password login folder	safety risk respectful responsible input output storage hardware software search engine algorithm program debug computational thinking sequence select repetition database branching database	Report and flag Click-CEOP processor memory back-up storage network world wide web video conferencing e-mail flowcharts variables formula spreadsheet data

IN KEY STAGE ONE, ALL ASPECTS OF THE CURRICULUM WILL BE COVERED OVER 2 YEARS

IN KEY STAGE TWO, SPECIFIC ASPECTS WILL BE REVISITED IN A TWO-YEAR CYCLE SO COVERED BY ALL PUPILS IN LOWER AND UPPER KEY STAGE 2. AS PART OF AN ON-GOING PROCESS, PUPILS WILL BE ENCOURAGED TO TAKE THEIR LEARNING AND APPLY IT ACROSS OTHER CURRICULAR AREAS.