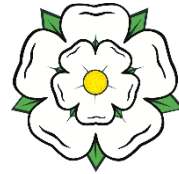# Osmotherley Primary School
Computing Curriculum

" 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.

Implementation

Computing at Osmotherley will be taught by delivering the statutory requirements for Computing within the National Curriculum in Key Stage 1 and 2 and using the Teach Computing scheme by the Raspberry Pi Foundation. 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.

Computing is taught in progressive steps in each area, which build on prior learning. The Computing and Design Technology curriculums from local secondary schools have been viewed, and the subject leaders consulted, to ensure children leave Osmotherley with the skills to excel in Key Stage 3.

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, through the Teach Computing scheme. They will learn the principles of information and computation, how digital systems work and how to put this knowledge to use through coding. They will build on this

knowledge to create programs, systems and a range of content. Children will begin their coding experiences with programmable toys and the beebot app, moving into block based programming with scratch junior and scratch and text based programming, Logo. This will provide them with the skills to further their learning using python and CSS/HTML in Key Stage 3. Children have access to i-pads from Reception and chromebooks from Y2 to Y6 to support digital literacy and blended learning.

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 organise their work for ease of access and will have had an introduction to many of the programmes they will use at secondary school. They will be able to use, express and develop their ideas through information and communication technology, becoming responsible, active participants in a digital world.

Impact

At the end of the unit, spaced recalls at 2, 6 and 12 weeks are used to assess the essential knowledge that the children are expected to remember. This essential knowledge is shared with parents and carers at the start of each learning unit. Individual children who have gaps in key essential knowledge after the week 12 recall, have 5 minute keep up sessions with a member of staff to address the gaps.

Monitoring of the computing curriculum is conducted by the subject leader, the headteacher and the governors through lesson visits, pupil voice interviews and analysis of essential knowledge gaps.

Essential knowledge:

Children at the end of Early Years will be able to:
1. Use seesaw to record and further their learning.
2. Create algorithms to move a programmable toy.
3. Know how to stay safe using technology at home and at school.

Children at the end of Key Stage 1 will know:
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 create, store and retrieve digital content.

5. Where technology is used outside school and how to use it safely and respectfully.

Children at the end of Key Stage 2 will know:

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 show if anything worries them online	Pupils will know: -The privacy settings relevant for reducing risk. - 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			
Pupils will know: - how to take a photo of their learning, record an explanation and save it to their folder on seesaw. - how to type their name on a keyboard. - how to use their finger on the screen to mark make.	Pupils will know: - how to store photos and work safely on seesaw and know how to access them again in the future. - how to use a mouse or mousepad to draw a picture on 'drawings.'	Pupils will know: - 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	Pupils will know: - 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			
Pupils will know: - how to operate a beebot. - that a computer needs to be given instructions to work.	Pupils will know: - what an algorithm is. - how to create and debug a simple program. For example using scratch junior. - how to predict the behaviour of a simple program by looking at the algorithm.	Pupils will know: -what an algorithm is and how to detect and correct errors in algorithms and programs (de-bug) using scratch. -how to use computational thinking to show the use of sequence, select and repetition in programs; designing and writing their own programs that accomplish specific goals.	Pupils will know: -how produce algorithms independently using logical and appropriate structures to create precise and accurate sequences of instructions in scratch. -how to use flowcharts and other diagrams to explain how a model works.

		-how to use logical reasoning to detect problems and make changes.	-how to use logical reasoning to solve problems and predict what will happen when variables within a model change.
Digital Literacy			
Pupils will know: - information can be found on the internet. - different devices that connect to the internet.	Pupils will know: - how to use search technologies effectively (Kiddle), 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. (Y1 seesaw, Y2 google drawings.)	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. Year A Year B	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. Year A Year B

		Year C Year D	Year C Year D
Vocabulary			
internet technology click photo save instruction	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.

Osmotherley Primary School: Computing - Two Year Rolling Programme Overview.

EYFS	Autumn	Spring	Summer
Year A	Online safety Computer networks	Programming - beebot / botley	Digital Literacy - SeeSaw Computer networks

KS1	Autumn	Spring	Summer
Year A (2023-24)	**Online safety / Computer systems and networks.** **Creating media -** digital photography	**Data and information -** grouping data. **Programming A -** moving a robot.	**Programming B -** programming quizzes **Creating media -** digital writing
Year B (2022-23)	**Online safety / Digital Literacy.** (Photo permission.) **Computer systems and networks -** google classroom. **Creating media -** digital painting.	**Programming A -** robot algorithms **Data and information -** pictograms	**Programming B -** programming animations **Creating media -** digital music

LKS2	Autumn	Spring	Summer
Year A (2023-24)	**Online safety. Computer systems and networks -** connecting computers. **Creating media -** stop frame animation.	**Programming - Programming A -** repetition in shapes. **Data and information -** data logging	**Creating media -** desktop publishing **Programming B -** repetition in games.
Year B (2022-23)	**Online safety -** Internet Legends (Ada Lovelace) **Computer networks -** google classroom / google drive organisation. **Creating media -** audio production.	**Programming A -** sequencing sounds. **Data and Information -** branching databases.	**Creating media -** photo editing. **Programming B -** events and actions in programming.

UKS2	Autumn	Spring	Summer
Year A (2023-24)	**Online safety** **Computer systems and networks -** communication and collaboration. **Creating media -** video production.	**Programming A -** selection in physical computing. **Data and information -** flat file databases.	**Creating media -** introduction to vector graphics. **Programming B -** sensing movement.
Year B (2022-23)	**Online safety -** Internet Legends (Tim Berners-Lee). **Computer networks -** google classroom/drive **Creating media -** web page creation.	**Programming A -** variables in games **Data and information -** introduction to spreadsheets.	**Creating media -** 3D modelling. **Programming B -** selection in quizzes.

Online Safety Computer networks Programming Digital literacy Data handling

	Year A (2021-22)		
	Autumn Term	Spring Term	Summer Term
Enquiry Cycle 1	IDENTITY AND DIVERSITY Who do you think you are?	HUMAN RIGHTS AND SOCIAL JUSTICE Can one person make a difference?	SUSTAINABLE DEVELOPMENT What on Earth is going on?
Reception small steps	1. Use an i-pad to take photos. 2. Know that information can be found on the internet using the safe search engine Kiddle.	1. Type their name on a keyboard. 2. Know different devices that connect to the internet. 3. Know that a computer needs to be given instructions to work. 4. Operate a programmable toy.	1. Draw a picture on the i-pad on seesaw. 2. Know to tell a trusted adult if they see something they don't like when on an internet device. 3. Take a photo of their learning, record an explanation and save it to their folder on seesaw.
Key stage 1 Small steps	1. Use photos, text, videos and voice recordings to record independent learning and save to their seesaw folder.	1. Draw using a finger on a screen. 2. Draw using a mouse or mouse pad. 3. Log on to access work saved in seesaw folder.	1. Create and debug a simple program using the beebot app (Y1) and scratch junior (Y2).

	2. Know to tell a trusted adult if they see something they don't like when on an internet device. 3. Know to use kiddle when searching for images online.	4. Log into google account to access work on google classroom (Y2) 5. Know to keep their passwords private. 6. Know what an algorithm is. 7. Create and debug a simple program. For example using purple mash. 8. Predict the behaviour of a simple program by looking at the algorithm. (Codapillar / beebot app)	2. Use appropriate search technologies and evaluate digital content. 3. Use google drawings or seesaw to create a poster with images and text.
Key stage 1 essential knowledge	Know how to keep their login information safe. Know how to keep their photos and work safe on an ipad or chromebook. Know what to do if something upsets them when online.	Know how to store and retrieve digital content. Know what an algorithm is. Know how to create and debug simple programs. Know how to predict the behaviour of a simple program.	Know how to create and debug simple programs. Know how technology is used safely and respectfully. Know how to combine a variety of software to achieve a goal.
Lower key stage 2 Small steps			
Lower key stage 2 Essential knowledge			
Upper key stage two Small steps			
Upper key			

stage two Essential knowledge			

Year B (2022-23)			
	Autumn Term	Spring Term	Summer Term
Enquiry Cycle 2			
Reception small steps	Know how to take a photo using the ipad.		
Key stage 1 Small steps	1. Know how to take a photo on Seesaw and add text or speech to explain. (Y1) 2. Know how to log on to google classroom (Y2), complete a quiz and submit it to the teacher. 3. Know that kiddle is a safer search engine to use. 4. Know that passwords are used to keep our information and documents safe. 5. Know to tell a trusted adult if you see something you don't like when online. 6. Know how to log into seesaw and open your journal to look through your work. (Y1)		

	7. Know how to log onto and open google drive, create a new folder and move work into it to keep it organised. 8. Know how to draw a picture using a finger on an i-pad or a mousepad on the chromebook on seesaw or Google draw.		
Key stage 1 essential knowledge	Know to tell a trusted adult if you see something you don't like when online. Know that passwords keep our information safe. Know how to use google drive, google classroom (Y2) and seesaw (Y1) effectively to store and retrieve documents.		
Lower key stage two Small steps	1. Know how to log onto google classroom. 2. Know how to log onto Purplemash. 3. Know to show a trusted adult if something upsets them online. 4. Know not to share personal information when communicating online. 5. Who was Ada Lovelace? 6. Know how to type and add images to a google slides document.		

Lower key stage 2 Essential knowledge	know how to stay safe whilst communicating with others online. know how to use ICT safely, identifying potential risks and knowing to show a trusted adult if anything upsets them online.		
Upper key stage two Small steps	1. Know not to share personal information when communicating online. 2. Know what the CLICK-CEOP button looks like and what it is used for. 3. Who is Tim Berners-Lee? 4. What is the difference between the WWW and the internet? 5. Know how to use software and search engines effectively, becoming discerning in evaluating digital content.		
Upper key stage two Essential knowledge	Know that privacy settings are important for reducing risk. Know how to find a Click-CEOP button and explain what it is for.		

	Know how to be a good online citizen and role model, articulating what constitutes good behaviour online.	